ORAL SESSION: STD / HIV INTERACTIONS

O-001 ANAL SEXUALLY TRANSMISSIBLE INFECTIONS AS RISK FACTORS FOR HIV SEROCONVERSION: DATA FROM THE HIM COHORT

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Objectives: An increasing incidence of sexually transmitted infections (STIs) has been reported in homosexual men over the past decade, and increases in HIV incidence have also been observed. STIs are believed to increase the risk of HIV acquisition. However, most longitudinal studies have been conducted in heterosexuals, and few have focused on homosexual men. We examined sexual behaviour and common STIs as independent risk factors for HIV seroconversion in a community-based cohort of HIV-negative homosexual men in Sydney, Australia.
Methods: Between 2001 and 2004, 1,427 initially HIV-negative men were enrolled. They were tested annually for HIV, for gonorrhoea and chlamydia in the urethra and anus (strand displacement amplification, BDProbeTec), and for herpes simplex virus types 1 and 2 (HSV-1 and HSV-2) using type specific ELISA, with Western Blot testing of specimens of borderline reactivity. Participants also reported diagnoses of STIs since their last interview. Detailed information on sexual risk behaviours was collected every six months, including number of episodes of insertive and receptive unprotected anal intercourse (UAI) with regular and casual partners of different HIV status (negative, positive, and status known). Receptive UAI was separated by whether or not ejaculation occurred.
Results: There were 49 HIV seroconversions through 2006, an incidence of 0.80 per 100 person-years. Age, education, income and occupation were not associated with HIV acquisition. A higher number of episodes of receptive UAI with HIV positive or HIV status unknown partners was strongly associated with HIV seroconversion (RR=22.8, 95% CI 9.46-55.0, for reporting 6-10 episodes of receptive UAI with withdrawal with HIV status unknown partners and RR=30.6, 95% CI 7.31-127, for reporting >10 episodes of receptive UAI with ejaculation with HIV-positive partners, each compared with men who did not report that behaviour). In multivariate analysis of behavioural risk factors, HIV seroconversion was significantly associated with a higher number of episodes of receptive UAI with withdrawal with a partner of unknown HIV status (p trend<0.001) or receptive UAI with ejaculation with a partner known to be HIV positive (p trend<0.001). In univariate analysis, self-reported urethral chlamydia (RR=2.50, 95% CI 1.05-5.94), anal warts (RR=4.38, 95% CI 1.85-10.38) since last interview, a study diagnosis of anal gonorrhoea at current interview (RR=6.85, 95% CI 1.63-28.6), and prevalent HSV-1 infection at baseline (RR=3.23, 95% CI 1.15-9.03) were significantly associated with HIV seroconversion. After controlling for sexual risk behaviours, a study diagnosis of anal gonorrhoea remained strongly related to HIV seroconversion (RR=7.41, 95% CI 1.75-31.8). Most cases of anal gonorrhoea diagnosed were asymptomatic. In addition, there was an independent association with anal warts (RR=3.43, 95% CI 1.43-8.19), and prevalent HSV-1 infection was of borderline significance (RR=2.78, 95% CI 0.99-7.80).
Conclusion: Certain anal STIs were associated with HIV seroconversion, even after adjustment for UAI. For some anal conditions, in particular gonorrhoea, infection was frequently asymptomatic. In addition, HSV-1 associated anogenital herpes may be a neglected co-factor predisposing to HIV infection. These findings suggest that frequent sexual health screening and prompt treatment of anal STIs may be an important means of HIV prevention in homosexual men.

O-002 RISK FACTORS FOR EARLY SYPHILIS AMONG YOUNG HIV-INFECTED MEN IN NORTH CAROLINA, USA

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Objectives: North Carolina (NC), located in the southeastern United States, ranked 5th among states with the highest estimated numbers of persons living with HIV infection in 2005. NC has been experiencing an HIV epidemic among college students who are primarily Black in racial/ethnic origin and men who have sex with men (MSM). Although NC's syphilis rates declined to 3.2 cases per 100,000 in 2005, there is growing concern over HIV-positive persons co-infected with early syphilis (primary, secondary, or early latent syphilis) considering its potential impact on HIV transmission. To understand the intersect between the HIV and syphilis epidemics in NC, we assessed the risk factors for early syphilis among a sample of young, newly diagnosed HIV-positive men.
Methods: We reviewed surveillance and interview records from disease intervention specialists (DIS) for men aged 18-30 years with newly diagnosed HIV infections between January 1, 2000 and December 31, 2005 in NC. DIS are trained staff who interview persons with HIV or syphilis to identify their contacts and ensure evaluation and treatment. In NC, HIV testing from public clinics includes HIV RNA screening for acute infection; both HIV and syphilis reporting are mandatory. Bivariate analyses were conducted to assess demographic, behavioral and sexual risk factors for early syphilis among HIV-infected young men, calculating odds ratios (OR) with 95% confidence intervals (CI).
Results: Between 2000 and 2005, we identified 1460 men aged 18-30 years who were newly diagnosed with HIV, 90 (6%) of whom were also infected with early syphilis. Among these co-infected persons, the median age was 26; 80 (78%) were Black and 16 (18%) were college students. Fifty-eight (64%) of co-infected persons were MSM. Half (54%) of these men were diagnosed with both infections on the same date of evaluation; 8 (9%) men were identified with acute HIV infection, and 43 (48%) presented with primary or secondary syphilis. Co-infected men were more likely to be Black (OR (95% CI) 1.9 (1.1, 3.1)), and report anonymous sex (OR 2.4 (1.5, 3.6)). Co-infected men were more likely to be MSM (OR 3.3 (1.6, 6.6)) or bisexual (OR 4.6 (2.1, 10.1)). The number of sexual partners was predictive of an increasing likelihood of co-infection; co-infected persons were 5-times more likely to report >10 sexual partners in the past year (2.1, 12.6). Co-infected men were more likely to meet sexual partners on the internet (OR 1.9 (1.1, 3.2)) or on college campuses (OR 3.4 (1.5, 8.0)), and to report club drug use (OR 2.7 (1.2, 5.9)).
Conclusions: Over a 6 year period, 6% of men aged 18-30 years with newly diagnosed HIV infections reported in NC were also co-infected with early syphilis. Co-infected young men were more likely to be Black MSM or bisexual men with multiple sexual partners, who met their partners on the internet or on college campuses. The intersecting epidemics of HIV and syphilis warrant aggressive public health interventions to prevent enhanced disease transmission among young persons at high risk for co-infections.

O-003 HIGH MYCOPLASMA GENITALIUM ORGANISM BURDEN IS ASSOCIATED WITH SHEDDING OF HIV-1 INFECTED CELLS FROM THE CERVIX

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Objectives: Inflammatory syndromes such as vaginitis, cervicitis, and urethritis are strongly associated with HIV-1 shedding in genital secretions. Although Mycoplasma genitalium is now an accepted cause of urethritis in men and has been associated with cervicitis and endometritis in women, the effect of M. genitalium infection on

HIV-1 shedding remains unknown. The objective of this study was to assess the relationship between M. genitalium organism burden and cervical shedding of HIV-1 infected cells among Kenyan women.

Methods: Between December 1994 and April 1996 HIV-1 positive women (n=303) attending a municipal STD clinic in Mombasa, Kenya provided cervical swab samples that were archived and later tested for M. genitalium using PCR. All M. genitalium-positive specimens underwent a second PCR assay to quantify the genomes/mL. Organism burdens were dichotomized at the median and women were classified as negative, low positive (< median), and high positive (>median). Qualitative shedding of HIV-1 infected cells from cervical swab specimens was previously determined by PCR amplification of gag DNA sequences. Mucopurulent cervicitis (MPC) was defined as ≥30 polymorphonuclear leukocytes per high power field or visible cervical mucopus.

Results: M. genitalium was detected in 52 (17.2%) women. Among those with M. genitalium, the median organism burden was 3,195 genomes/mL (range <200-5,945,850 genomes/mL). Shedding of HIV-1 infected cells from the cervix was detected in 154 (51.2%) women. While there was no association overall between M. genitalium infection and cervical shedding of HIV-1 infected cells (OR 1.4; 95% CI 0.7-2.5, p=0.31), women with high organism burdens were significantly more likely to have HIV-1 DNA detected in the cervix than M. genitalium negative women (ORadj 3.0; 95% CI 1.1-7.9) after adjusting for age, hormonal contraceptive use, and CD4 count. This effect was more pronounced among immunosuppressed women (CD4<500) (ORadj 4.5; 95% CI 1.2-17.4). In contrast, there was no association between M. genitalium infection and shedding of HIV-1 infected cells among women with low organism burden, or among those with high organism burdens who had CD4>500. MPC was not associated with M. genitalium infection overall, nor with high organism burdens among immunosuppressed women (CD4<500), despite an association between MPC and high M. genitalium organism burdens among immunocompetent women (CD4>500) (ORadj 3.0; 95% CI 1.1-7.9).

Conclusion: High M. genitalium organism burden was strongly and independently associated with HIV-1 shedding of infected cells from the cervix. This effect seemed to not be mediated by cervicitis, suggesting that M. genitalium may increase HIV-1 shedding by a mechanism other than recruitment of inflammatory cells.

O-004 NEUROSYPHILIS IN A CLINICAL COHORT OF HIV-INFECTED PATIENTS

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Objectives: Neurosyphilis may occur more frequently, present more rapidly, and not respond as well to therapy in HIV-infected patients. Our goal was to describe the clinical presentation and long-term follow-up of patients enrolled in a clinical cohort of HIV-infected patients who were diagnosed and treated for neurosyphilis.

Methods: We assessed incident neurosyphilis cases between 1995 and 2006 in a large urban HIV clinical cohort in which comprehensive demographic, clinical and therapeutic data were collected longitudinally. Patients were diagnosed with neurosyphilis if they had a positive serum RPR confirmed by a positive treponemal-specific test and either or both of the following: (a) one or more cerebrospinal fluid (CSF) abnormalities on lumbar puncture (LP) [WBC>10/mcl; protein >50 mg/dl; reactive VDRL] (b) an otherwise unexplained neurological finding. Nonparametric Kaplan Meier estimates are presented.

Results: There were 41 cases of neurosyphilis that met criteria [median age 38.6 years, 79.1% male, 88.4% Black, 51.2% had a previous history of syphilis; mean number of follow-up RPR 4.5 (median 4.0)]. Median pre-treatment RPR titer 1:512; median CD4 cell count at the time of neurosyphilis diagnosis 277 cells/ml (IQR 87-341), median HIV-1 RNA 6443 copies/ml (IQR 636- 50,000), 16.3% were virologically undetectable at the time of diagnosis and 62.8% received at least 6 months of highly active antiretroviral therapy (HAART) during follow-up]. 38.5% were asymptomatic [they underwent a LP for: lack of RPR titer response despite therapy (57%), pregnancy (7%), and baseline serum RPR titer>128 (36%)]; symptomatic patients presented most often with uveitis (33.3%), motor weakness (16.7%), headache (12.5%) and altered cognition (12.5%). 95% had 1 or more abnormality on CSF examination and 31.7% had all 3. Of those who had a CSF abnormality, the most common was a positive VDRL (65.8%) followed by elevated protein (57.0%) and elevated WBC (59.5%). Two subjects with positive syphilis serologies and normal CSF examination presented with otherwise unexplained sensorineural hearing loss and dysarthria and motor weakness. Both were treated for presumptive neurosyphilis. 12/41 (29.3%) relapsed following appropriate therapy for neurosyphilis [2/12 (16.7%) documented as lack of four-fold drop in RPR titers >365 days after treatment and 10/12 (83.3%) due to a four-fold increase in titers 30 or more days following therapy]. 2/12 (16.7%) patients had a symptomatic relapse and were diagnosed with recurrent neurosyphilis, 1/12 (8.3%) presented with secondary syphilis, and 9/12 (75%) experienced asymptomatic serological relapses. Kaplan Meier estimates of relapse comparing time-varying CD4 cell counts and change in CD4 cell count from baseline (Figure 1), and use of HAART for > 6 months during follow-up and any azithromycin prophylaxis use (Figure 2) are presented (logrank test for all comparisons >0.05).

Conclusions: In this small sample, HIV-infected patients with neurosyphilis and low CD4 cell counts, a decrease in CD4 cell counts over time, not on HAART and not on azithromycin prophylaxis may be more likely to relapse following therapy for neurosyphilis.

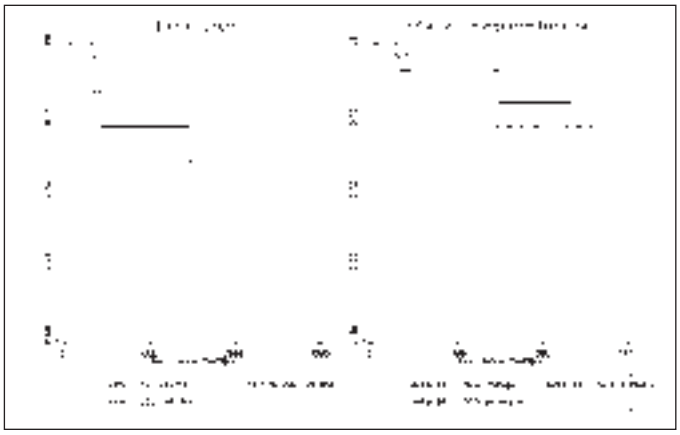

Figure 1

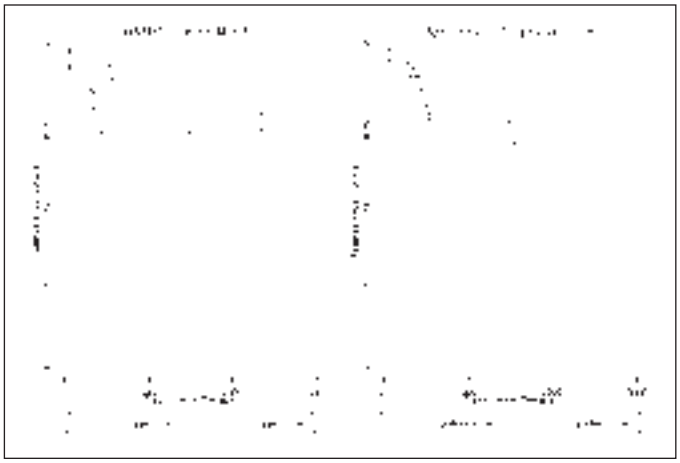

Figure 2

O-005 INTRA-VAGINAL PRACTICES IN A MICROBICIDE FEASIBILITY STUDY IN MWANZA, TANZANIA: BASELINE ASSOCIATIONS WITH BACTERIAL VAGINOSIS, SEXUALLY TRANSMITTED INFECTIONS AND HIV

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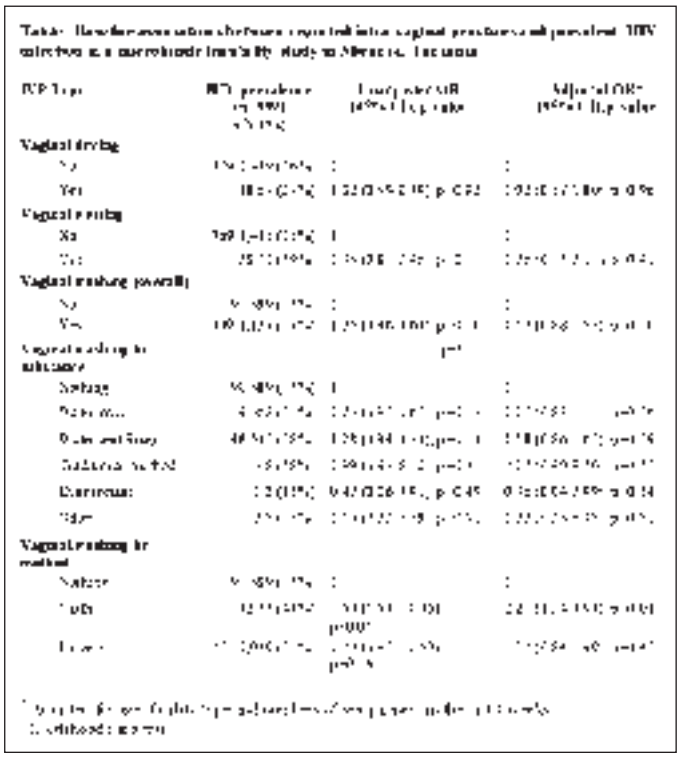
Objectives: Intra-vaginal practices (IVP), including vaginal drying, washing and wetting, are common in sub-Saharan Africa and have been investigated as possible contributors to the heterosexual transmission of HIV. The objectives of this study were to describe and quantify the types of IVP at baseline in a microbicide feasibility study, and to investigate associations between IVP, bacterial vaginosis (BV), and sexually transmitted infections (STIs), including HIV.

Methods: Women, aged 16 to 54 years, who were at high risk for HIV, were recruited into a microbicide feasibility study from food and recreational facilities in Mwanza, Tanzania. At the time of recruitment, each woman had a face-to-face demographic and behavioural interview, a pelvic exam, and tests for BV, gonorrhoea, chlamydia, herpes simplex virus 2 (HSV-2) and HIV. In the behavioural interview, women were asked about their IVP use in the past three months.

Results: 1,573 women were recruited. Of these women, 70 (4.5%) reported vaginal drying practices, 68 (4.3%) reported vaginal wetting practices, and 1,174 (74.6%) reported intra-vaginal washing practices. Of the women who reported intra-vaginal washing, 1,171 (99.7%) did so for hygiene, 52 (4.4%) to avoid HIV/STIs, 13 (1.1%) to avoid pregnancy, and 8 (0.7%) to have sex during menses. Most women used water only (56.8%) or soap and water (48.2%), and very few used disinfectant or antiseptic (0.7%). Most women (92.5%) used their fingers to wash inside the vagina, although 6.5% used a cloth, either alone or in conjunction with finger washing. Intra-vaginal washing was not significantly associated with HIV in either the unadjusted or adjusted analysis (Table); however, intra-vaginal washing using a cloth was associated with HIV in the adjusted analysis (OR 2.21, 95% CI 1.24-3.94). Neither vaginal drying nor wetting practices were significantly associated with HIV in the unadjusted or adjusted analysis. IVP was not significantly associated with gonorrhoea or chlamydia in the unadjusted or adjusted analysis. BV and HSV2 were significantly associated with IVP in the unadjusted analysis, yet were not associated when adjusted for age, facility type and numbers of partners in the past 4 weeks. Intra-vaginal washing using a cloth was associated with pelvic inflammatory disease (PID) in the adjusted analysis (OR 2.22, 95% CI 1.22-4.05) (data not shown).

Conclusions: With a high prevalence of intra-vaginal washing, even small increases in HIV risk may be important for transmission at the population level. In this study population, the majority of women engage in intra-vaginal washing for hygienic purposes, using water only or soap and water. These practices were not significantly associated with prevalent HIV infection. Although vaginal intra-vaginal washing using cloth was significantly associated with HIV, few women engaged in this practice, therefore it is unlikely to have a substantial impact on the HIV epidemic in this population. However, these women should be counselled regarding their individual risk for HIV infection and PID. Research on IVP should continue to be evaluated in the context of microbicide development, since it may impact effectiveness. This baseline analysis will be compared to prospective data on BV, STI and HIV incidence.



O-006 EBV CERVICAL SHEDDING INCREASES THE RISK OF CERVICAL DYSPLASIA IN HIV+ FEMALES

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Objectives: HIV-infected women are at higher risk for HPV infection, persistent HPV infection, cervical abnormalities and cervical cancer. Although many HIV+ women are infected with HPV, even in this immune suppressed population, relatively few women progress to cervical abnormalities indicating that HPV infection is necessary but not sufficient for development of cervical cancer. Thus, other cofactors must augment the oncogenic potential of HPV. The known oncogenic virus, Epstein-Barr virus (EBV), is also shed from the cervix. The role of EBV cervical shedding in the development of HPV-related cervical dysplasia was explored.

Methods: After informed consent, cervical samples from 352 HIV+ women were obtained at the time of Pap smear screening. HPV DNA was detected using the Roche Reverse Line Blot assay. EBV DNA was initially detected using a less-sensitive generic PCR assay from cervical vaginal lavages in the first 236 women and then detected using a more sensitive specific PCR assay in cervical swabs for the final 116 women. Pap smears were obtained and classified using the Bethesda criteria. Demographics and other clinical criteria were also collected.

Results: The HIV+ female cohort was 86% African-American, 67% single, and 80% have 12th grade or higher education. The initial group of 236 women demonstrated 12.7% shedding EBV, 43% shedding high-oncogenic risk HPV and 45% having an abnormal Pap smear. Fourteen women (5.9%) were co-shedding EBV and high-oncogenic risk HPV, 12 of these (87%) had an abnormal Pap smear with 10 having either LSIL or HSIL. The rate of an abnormal Pap smear in co-shedders was increased as compared to those women shedding only high-oncogenic risk HPV (58%, p=.047). Similar analysis removing those women with ASCUS demonstrated 83% of the co-shedders having cervical dysplasia as compared to 53% of women only shedding high-oncogenic risk HPV (p=.05). For the second group of

116 HIV+ women, a more sensitive EBV assay was utilized. A total of 42% of these women were shedding cervical EBV with 17% shedding both EBV and high-oncogenic risk HPV. In this population, co-shedders were also more likely to have an abnormal Pap smear (67%) as women shedding HPV alone (40%, p=.07). When removing women with ASCUS, 64% of the women co-shedding EBV and HPV had dysplasia as compared to only 23% shedding HPV alone (p=.02). Combining both populations, 65% of the women shedding both EBV and high-oncogenic risk HPV had concurrent cervical dysplasia as compared to 42% of those women shedding only high-oncogenic risk HPV (p=.016, OR 2.92, CI 1.12 ' 8.36).
Conclusions: HIV+ women co-shedding EBV and high-oncogenic risk HPV from their cervix are at increased risk of developing cervical dysplasia. The exact role of EBV in this process is not clear in this process. Current experiments are focusing on determining the cell type infected with EBV and the status (lytic vs latent) of this virus in cervical tissue.

ORAL SESSION: CHLAMYDIA TRACHOMATIS

O-007 CHLAMYDIA SCREENING IN THE UNITED STATES: WHERE ARE WE NOW?

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Objectives: To describe the epidemiology of genital Chlamydia trachomatis infections among men and women in the United States a decade after screening recommendations targeting young, sexually-active women were introduced and large-scale screening efforts were initiated.
Methods: Data from the notifiable disease case surveillance system, the national Infertility Prevention Project, the National Job Training Program (for socio-economically disadvantaged young adults), the National Health and Nutrition Examination Survey (NHANES, a population-based, nationally-representative survey of non-institutionalized women and men), and adult and juvenile corrections facilities were used to generate national chlamydia case and prevalence rates. Data were stratified by sex, race/ethnicity, geographic area, and age. Rates were examined over time. Data from 2005 were used for the preliminary analyses; where available, 2006 data will be presented.
Results: The number of chlamydia cases reported continues to climb: in 2005, 976,445 chlamydia cases were reported, corresponding to a rate of 332.5 cases per 100,000 population, an increase of 32.3% compared to the case rate in 2000, the first year all 50 states and the District of Columbia reported chlamydia cases. Rates among women increased by 25.3% from 2000 to 2005; rates among men increased by 61.7% over the same time period. Among women aged 15-24 years attending family planning clinics, the 2005 state-specific median positivity rate was 6.3% (range 3.0% to 20.3%), and trends showed flat or slightly increasing rates. Positivity rates were higher among women aged 15-24 attending prenatal clinics: the 2005 median state-specific rate was 8.0% (range 2.8% to 16.9%). Participants (aged 16-24 years) in the National Job Training Program also had high chlamydia prevalence rates in 2005 (median state-specific rate: women, 9.2%; men, 8.1%). Population-based chlamydia prevalence rates from NHANES from 1999-2002 were highest among women aged 14-19 years (4.6%) and men aged 20-29 years (3.2%). Overall, chlamydia rates are highest in adult corrections facilities; the 2005 positivity rate among women less than 20 years was almost 20%. Among men of the same age, the rate was over 10%. In juvenile corrections facilities (adolescents aged 12-19 years), the 2005 positivity rate was 16.3% among women and 6.6% among men.
Conclusions: While increases in reported chlamydia cases may be partially due to better chlamydia detection and reporting as well as more widespread screening, increases also may be due to increases in disease. Prevalence rates remain high, despite recommendations from the Centers for Disease Control and Prevention and the U.S. Preventive Services Task Force that sexually-active women aged 25 years or younger be routinely screened for chlamydia. The continuing high burden of disease may be due to low screening rates; coverage rates are only about 50% nationwide according to current estimates. Increasing screening coverage in women should be the highest priority. Other prevention strategies may include partner treatment and screening males.

O-008 HOME SAMPLING VERSUS CONVENTIONAL SAMPLING FOR SCREENING OF GENITAL CHLAMYDIA TRACHOMATIS IN YOUNG MEN AND WOMEN A RANDOMISED CONTROLLED TRIAL (CLINICALTRIALS. GOV ID NCT00283127)

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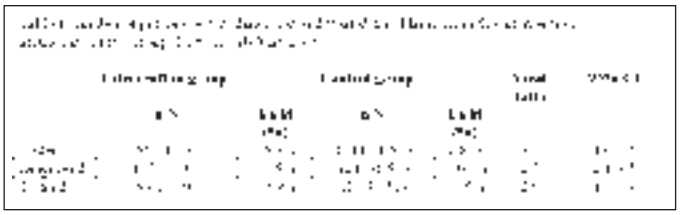
Background: Genital Chlamydia trachomatis infection is the most common bacterial STI in Norway. Left untreated it may cause complications such as infertility, ectopic pregnancy and chronic pelvic pain. As chlamydia is primarily an asymptomatic disease, many people do not seek health services for testing. We wanted to determine whether screening with home sampling would result in more young men and women getting tested, diagnosed and treated for chlamydia compared to the current strategy of opportunistic screening by conventional sampling in the health services.
Method: We conducted a population based randomised controlled trial among all persons aged 18-25 years registered in one Norwegian county (41 519 persons). 10 000 persons was randomly assigned to receive a urine container, a questionnaire and information about chlamydia by mail (intervention), and offered to send a first void urine sample free of charge by mail to the laboratory. The 31 519 other persons received no intervention or information (control). Samples obtained in the health services included cervical and urethral swabs and first void urine samples. All mailed samples and all ordinary samples from the health services were analysed in the same local laboratory using BDProbeTec ET Chlamydia Amplified DNA assay. Information on received treatment within 30 days of diagnosis was obtained from the Norwegian Prescription Database (NorPD). We calculated yield ratios for the proportion of persons tested, diagnosed and treated in the two groups. The study period lasted between February and May 2006.
Results: In the intervention group 16.5% got tested and in the control group 2.8 %, yield ratio 5.0 (95% CI 4.6-5.4). 1.05% was diagnosed with chlamydia in the intervention group and 0.46% in the control group, yield ratio 2.7 (95% CI 2.1-3.5). In the intervention group 0.89% received treatment versus 0.35% in the control group, yield ratio 2.6 (95% CI 1.9-3.4) (tab 1). 41% of the persons tested in the intervention group were male compared to only 21% in the control group. The chlamydia prevalence in the intervention group was 6.3% (6.7% in females, 5.7% in males) and in the control group 11.9 % (9.6% in females, 20.2% in males).
Conclusion: Screening with home sampling is more efficacious than conventional opportunistic screening by sampling in the health services in testing, diagnosing and treating young people with chlamydia in Norway. Further analysis is needed to determine if screening with home sampling is also cost effective.



O-009 C.TRACHOMATIS SEROPREVALENCE ATLAS OF FINLAND 1983-2003

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Background and Objective: During the past 30 years sexual behaviour has changed in Finland with increases both in sexual activity and risk-taking behavior among females. Starting from the early 1980's this has resulted in increasing incidence of common STDs (e.g. infections with human papillomavirus, HPV, and Chlamydia trachomatis) in young adults. To study the nature of the C. trachomatis epidemic we identified a sizeable random sample (12,000 women) of over 400,000 women belonging to the population-based Finnish Maternity Cohort (FMC).
Material and Methods: Since 1983 >98% of pregnant Finnish women (altogether 750,000) have participated screening for congenital infections organized by the National Public Health Institute, and donated a serum sample during the first trimester of each pregnancy to the FMC-serum bank. First pregnancy serum samples were retrieved for the subcohort of 12,000 women. Mean age of the women at the time of serum withdrawal was 24 years. The subcohort was further stratified by calendar years: 1983-1989, 1990-1996, 1997-2003, and age at time of serum withdrawal: 15-22 and 23-28 years. Serum IgG antibodies to C. trachomatis were analysed with standard MOMP peptide ELISA. As a surrogate of risk-taking sexual behaviour herpes simplex virus type-2 (HSV-2) IgG-antibodies were determined by a type-specific glycoprotein G ELISA. Spatio-temporal variation of the C. trachomatis seroprevalence rates were visualized by a series of maps smoothing the community level input data with a 2 x 2 km raster layer. The rates for biggest cities (with 100 or more study subjects) were shown as such using coloured circles (circle size indicating population of the city). This method has been used in HPV seroprevalence and cancer mapping studies. The random sampling of 12,000 subjects resulted in coverage of almost all the 440 communities in Finland with percentages of study subjects out of the total number of pregnant women varying between 0 (less than 20 communities) to 10% per community. According to standard procedures areas with less than one inhabitant/km2 were masked.
Results and Discussion: Moderate to high (15% to 25%) seroprevalences were seen in southern Finland over the two decades. It was remarkable that increasing seroprevalences were seen in the 1990's in cities in the south-eastern Finland close to the Russian border. The increase in seroprevalence occurred concomitantly with increased migration from Russia following collapse of the Soviet Union. It is now possible to thoroughly study the ecological dynamics of C. trachomatis epidemic and its sequelae in Finland.

O-010 NATIONAL CHLAMYDIA SCREENING PROGRAMME (NCSP) IN ENGLAND: WHERE ARE WE NOW?

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Objectives: Genital chlamydial infection is the most commonly reported STI in genitourinary medicine clinics in the UK; however, most people do not have symptoms and are thus unaware of their infection and the need to seek treatment. Asymptomatic young men and women are being targeted through the National Chlamydia Screening Programme (NCSP) in England. The NCSP began in April 2003 and is being rolled out in three phases. Provision of screening throughout England is expected during 2007. This presentation describes the latest facts and figures.
Methods: The responsibility for the implementation of the programme is devolved to local level (152 Primary Care Organisations in England, 85 Programme areas) according to local needs and resources. The guidance for the programme is set nationally. Local areas offer screening to sexually active women and men less than 25 years of age (estimated 5.5 million) attending clinical and non-clinical settings outside of traditional genitourinary medicine (GUM) clinics. Urine or self-taken vaginal swab samples are tested by nucleic acid amplification. Treatment, partner notification, and follow-up services are provided predominantly by non hospital community services. Screening data from April 2003 through December 2006 were analysed; key demographic, behavioural and testing characteristics of the population screened are reported.
Results: Over 270 000 screens have been performed to date, increasing from just over 17 000 in year 1 to over 100 000 in year 3. The population screened were mostly of white ethnicity (82%) and female (83%). However, the proportion of screens in men has increased year on year (Year 1 ' 7%, Year 4 ' 20%). Screening is occurring in an increasingly diverse range of settings, with the majority in community contraceptive services (41%), youth settings (19%) and general practice (13%). Chlamydia positivity among persons under 25 years of age screened at non-GUM settings was 10.5% [CI 10.3-10.6] in women and 10.8% [CI 10.5-11.1] in men. Highest positivity levels were found in women aged 16-19; men aged 20-24, those reporting behavioural risk factors and certain ethnic groups. Data for year 4 will be presented.
Conclusions: Screening for genital chlamydial infection in England is well underway. Offering a chlamydia test has proven to be acceptable to young people in a variety of settings. Screening volumes, the proportion of screens which are in men and the range and diversity of settings in which screening is offered are all increasing. A key challenge is continuing to increase screening coverage to drive down prevalence. Monitoring of epidemiological and behavioural trends and identifying effective screening practices are critical in evaluating the NCSP and its impact on chlamydial infection and its associated complications.

O-011 PREVALENCE OF UROGENITAL CHLAMYDIA TRACHOMATIS INFECTIONS: A GLOBAL REVIEW

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Objectives: Recent advances have been made in the diagnosis of Chlamydia trachomatis urogenital infections. To estimate the global burden of Chlamydia infections in an era of improved diagnosis, this systematic review sought to summarize the global literature on the age- and gender-specific prevalence of C. trachomatis as detected by sensitive detection assays.

Methods: PUBMED and EMBASE electronic databases were systematically searched until July 2005 for peer-reviewed articles that used nucleic acid detection methods (polymerase chain reaction, ligase chain reaction, strand displacement assays, transcription-mediated amplification or nucleic acid hybridization) to detect C. trachomatis in cervical, vaginal, urethral, or urine samples. Data were abstracted on study location, population, sample size, detection assay, type of sample, and age-specific prevalence.

Results: A total of 232 articles were identified including 375,039 participants (229,387 females, 122,930 males, and 22,722 with gender not reported). Most available data on C. trachomatis prevalence were from participants in North America (41% of articles) and Europe (39%), with limited data from participants in Africa (10%), Asia (7%) and Central-South America (3%). Geographical mapping revealed a lack of data for the majority of countries in Central Asia, the Middle East and Africa (figure). Across diverse geographical regions, C. trachomatis prevalence in females was consistently higher than that in similarly-aged males. In both genders, C. trachomatis prevalence was highest at younger ages, notably in those aged 15-24 years in whom prevalence reached over 20% in some populations. C. trachomatis prevalence tended to be lower than 10% in persons 25-39 years of age in all geographical sites, with the exception of a higher prevalence found in four Asian studies. In participants aged 40 years and over, C. trachomatis prevalence was generally less than 5%. More than twice as many studies on C .trachomatis prevalence were conducted from 2000 to mid-2005 (n=167 with 297,324 screened) as from 1992 to 1999 (n=65, with 77,715 screened). Heterogeneity in study populations precluded any reliable analysis of time trends in C. trachomatis prevalence.

Conclusion: Trends in age- and gender-specific C. trachomatis prevalence did not dramatically differ across geographical sites. C. trachomatis prevalence was highest in adolescents and young adults and consistently declined with age in all geographical areas surveyed. Further studies are needed to more accurately assess and monitor C. trachomatis prevalence in regions with limited or no data and in almost all regions to monitor changes over time.

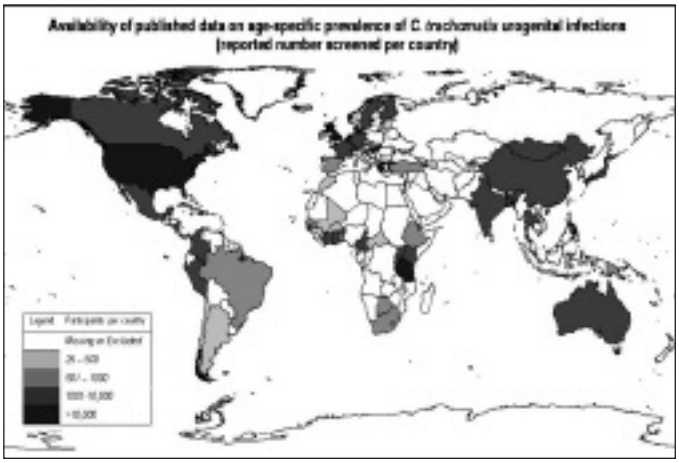

Figure 1: Age-specific data availability (n screened)

O-012 CLONAL SPREAD OF A PLASMID MUTANT OF CHLAMYDIA TRACHOMATIS

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Objectives: A new variant of Chlamydia trachomatis with a deletion in the cryptic plasmid has been detected in Sweden (T. Ripa and P. Nilsson, Euro Surveill., 9 November 2006). This plasmid mutant can only be detected by some of the commercially available C. trachomatis assays. The aim of the study was to describe the prevalence of this plasmid mutant of C. trachomatis in the Southern part of Sweden, and to examine the genotype of selected strains harbouring the plasmid mutant.

Methods: Consecutive urine samples submitted to The Department of Clinical Microbiology in Malmö, Sweden were tested for C. trachomatis (CT) with the Abbott m2000™ real-time PCR assay and an in-house PCR for the plasmid mutant. Aliquots of urine samples were sent to The Department of Clinical Microbiology in Aarhus, Denmark for Chlamydia testing by the Roche COBAS_ AMPLICOR CT (plasmid PCR) and the GEN-PROBE APTIMA_ Combo 2 assay (TMA targeting the CT 23S rRNA). Selected plasmid mutants of CT were furthermore genotyped by a novel method developed in Aarhus. The genotyping method consists of a combination of PCR and sequencing of the omp1 gene, plus a set of Variable Number Tandem Repeat (VNTR) targets in the CT genome.

Results: Both the Roche COBAS AMPLICOR CT and the Abbott m2000 plasmid PCR were unable to pick up the plasmid mutant, whereas the GEN-PROBE APTIMA Combo 2 assay detected all CT plasmid mutants characterized by the in-house PCR for the deletion in the cryptic plasmid. Overall 42 (9 %) CT positive urine samples were found among 463 samples examined. The plasmid mutant was found in 14 (33 %) of the 42 Chlamydia-positive samples. Seven of the 14 CT strains harbouring the plasmid mutant were genotyped and all were found to be of the same type: E 8, 7, 1.

Conclusions: The spread in the southern part of Sweden of a new variant of C. trachomatis with a deletion in the cryptic plasmid seem to be due to a single clone. The high proportion of CT plasmid mutants in the population tested may indicate that the use of a Chlamydia screening assay incapable of detecting the plasmid mutant will soon lead to an epidemic spread of C. trachomatis. It may also suggest a fast turnover of urogenital Chlamydia infections in the population screened caused by rapid testing and treatment of urogenital infections. E-mail JK Møller: JKM@dadlnet.dk

ORAL SESSION: HEALTH SERVICES AND POLICY I

O-013 INCREASING ACCESS TO SEXUAL HEALTH ADVICE FOR HIGH RISK INDIVIDUALS THROUGH AN AUTOMATED, INTERNET BASED SERVICE

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Objective: It may be difficult for young people to know if they need testing for sexually transmitted infections and some primary care physicians may be unsure about what tests to order for patients with different risk profiles. Our aim was to help overcome these barriers by implementing an automated, internet based service that allowed internet users to receive specific recommendations for STI screening based on their online responses to a series of questions relating to their recent sexual practices ('Check Your Risk' (CYR), available at: www.mshc.org.au). This study evaluated this service and compared the risk profile of individuals using CYR with that of patients attending a sexual health centre in the same city over the same time period.

Methods: An automated and individualised web based algorithm was developed using current recommendations for STI testing. The characteristics of individuals visiting CYR were compared to those attending the Melbourne Sexual Health Centre (MSHC) for the first time over the same 6 month period, from January to June 2006.

Results: There were 2492 (59% men, 41% women) who visited the CYR online service and 2735 (59% men, 41% women) who attended the MSHC over the period. 513 (22%) of the men visiting CYR and 467 (18%) of the men visiting MSHC reported sex with other men, with a median of 6 (SD 26.4) and 6 (SD 29.4) part-

ners in the previous 12 months respectively (p=0.9). 43 (1.8%) of the women visiting CYR and 54 (2.1%) of the women visiting MSHC reported sex with other women, with a median of 1 (SD 9.3) and 1 (SD 2.1) partners in the previous 12 months respectively (p=0.5). Among men reporting sex with women only, the median number of female sex partners in the preceding 12 months was 2 (SD 10.6) and 3 (SD 5.8) for those visiting CYR and MSHC respectively (p=0.8). For women reporting sex with men only, the median number of male partners was 2 (SD 11.1) and 2 (SD 4) for those visiting CYR and MSHC respectively (p=0.03). Participants responded favourably to the CYR online service, with 70% rating it as 'useful' or 'very useful'.

Conclusions: This internet based sexual risk assessment tool was accessed frequently by individuals with a high risk profile that was similar to those who attended the sexual health service in the same city. The CYR service cost A$4000 to set up. CYR effectively increased the outreach of the centre's services substantially, via the internet and was given a positive rating by the majority of its users.

O-014 SCALING UP PREVENTIVE INTERVENTIONS FOR FEMALE SEX WORKERS IN BENIN: IMPACT ON HIV AND STI PREVALENCE.

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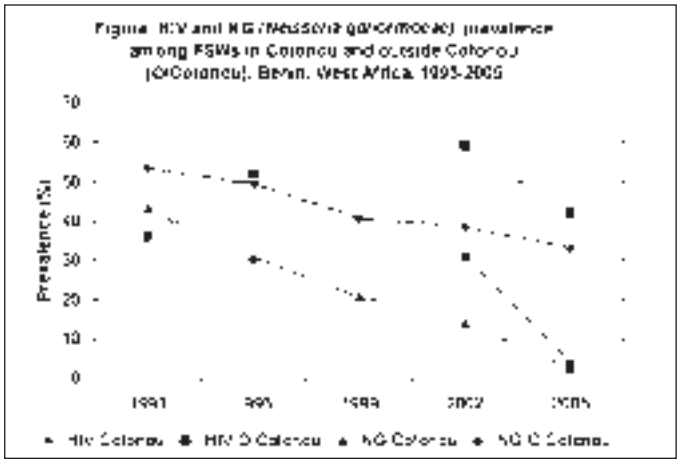
[2]Health Protection Agency, LONDON, United Kingdom
[3]UNDP, COTONOU, Benin (Dahomey)
[4]Projet Sida[3]-Benin, COTONOU, Benin (Dahomey)
[5]National AIDS Control Program, COTONOU, Benin (Dahomey)

Objectives: To assess time trends in HIV and STI prevalence among female sex workers (FSWs) in Benin from 1993 to 2005 and to compare the trends observed in Cotonou, the largest city of Benin, where an HIV/STI preventive intervention targeting this population started in 1993, to those observed in other cities of the country, where the intervention was introduced only in 2001-02.

Methods: From 1993 to 2006, an HIV/STI preventive intervention project targeting FSWs was carried out in Cotonou, Benin, under funding from the Canadian International Development Agency (CIDA). This intervention included STI care, using clinical screening algorithms applied at regular clinic visits, condom promotion, capacity building, community development and empowerment activities. The CIDA-funded project was scaled up to 5 other cities of Benin in 2001-2002. The 6 cities where the intervention took place comprised around 70% of all FSWs enumerated in Benin in 2004. Within the project, serial cross-sectional surveys of HIV and STI prevalence were carried out in Cotonou in 1993, 1996, 1999, 2002 and 2005, as well as in the other cities in 2002 and 2005. Data on HIV prevalence among FSWs outside Cotonou (O/Cotonou) were also available from the National AIDS Control Program for 1993 and 1996. HIV antibodies were tested on serum or dried-blot spots using an enzyme immunoassay (EIA), with confirmation of the initially positive results with a second different EIA. Cervical or self-administered vaginal swabs were tested for Neisseria gonorrhoeae (NG) and Chlamydia trachomatis (CT) using similar nucleic acid amplification tests in all surveys. Syphilis was tested on serum samples with RPR and TPHA confirmation in the first three surveys only.

Results: The accompanying figure shows the highly significant (p<0.0001) decline of NG prevalence among FSWs in Cotonou, from 43.2% in 1993 to 2.8% in 2005. NG prevalence O/Cotonou was 31.0% in 2002, a level similar to that observed in Cotonou in 1996, but declined significantly (p<0.0001) after the implementation of the intervention to 3.8% in 2005. HIV prevalence declined progressively among FSWs in Cotonou (see figure), from 53.3% in 1993 to 33.3% in 2005 (p<0.0001). Elsewhere, HIV prevalence increased from 36.0% in 1993 to 58.9% in 2002, before decreasing to 42.1% in 1995 (p=0.006). CT prevalence decreased slowly but significantly (p=0.0004) in Cotonou, from 9.4% in 1993 to 3.4% in 2005, whereas it was stable O/Cotonou between 2002 and 2005 (6.2% vs. 5.8%, p=0.91). Syphilis decreased significantly (p=0.0002) among FSWs in Cotonou, from 8.9% in 1993 to 1.5% in 1999.

Conclusions: The delay in the implementation of the project O/Cotonou allowed the examination of the available data as if resulting from a natural experiment. The data presented in the figure thus strongly suggest that the intervention had a dramatic impact, especially on NG prevalence. Furthermore, scaling up the intervention to the majority of the FSWs in Benin seems to have accelerated the decline, likely by avoiding re-seeding of the infection from one city to another by this highly mobile population and their equally mobile clients.



O-015 IMPACT OF SCALING UP TARGETED INTERVENTIONS IN BENIN, WEST AFRICA, ON STI PREVALENCE AND SEXUAL BEHAVIOUR IN CLIENTS OF SEX WORKERS

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Objectives: To assess the impact of interventions targeted towards female sex workers (FSW) and their male clients on HIV/STI prevalence and sexual behaviour of male clients.

Methods: From 1993 to 2006, a HIV/STI preventive intervention project was implemented in Cotonou, Benin, funded by the Canadian International Development Agency (CIDA). This intervention initially targeted FSWs, and included STI care using clinical screening algorithms applied at regular clinic visits, condom promotion, capacity building, community development and empowerment activities. The project was expanded to cover male sexual partners of FSWs (clients, boyfriends) in 2000, also focusing on condom promotion and improved STI care among this population. The interventions were scaled up to 5 other cities of Benin in 2001-2002. The 6 cities where the intervention took place comprised around 70% of all FSWs enumerated in Benin in 2004. Within the project, serial cross-sectional surveys of HIV/STI prevalence and sexual behaviour were carried out among clients of FSW in Cotonou in1998, 2002 and 2005, as well as in the five other cities (O/Cotonou) in 2002 and 2005. Urine samples were tested for HIV antibodies using an enzyme immunoassay, with confirmation of initially positive results by urine Western blot; and for Neisseria gonorrhoeae (NG) and Chlamydia trachomatis (CT) using nucleic acid amplification tests, in all surveys.

Results: The accompanying table shows the highly significant ($p<0.01$) decline in NG prevalence among male clients of FSWs in Cotonou, from 5.4% in 1998 to 1.6% in 2005. NG prevalence O/Cotonou was 3.5% in 2002, and declined significantly to 0.59% in 2005. CT prevalence also declined significantly O/Cotonou from 4.8% to 1.8%, while HIV prevalence remained stable over time both in Cotonou and O/Cotonou. In addition, reported rates of condom use by clients at last sex with a FSW increased from 56% in 1998 to 95% in 2005 in Cotonou; and from 49% in 2002 to 96% in 2005 O/Cotonou. Consistent condom use rates with FSW increased from 39% in 1998 to 86% in 2005 in Cotonou; and from 42% in 2002 to 79% in 2005 O/Cotonou. Interestingly, while reported condom use rates at last sex with a FSW were similar in Cotonou to those O/Cotonou around the time of implementation of the interventions (56% in 1998 vs 49% in 2002 respectively), by 2005, rates had risen to very similar levels both in Cotonou and O/Cotonou (95% and 96% respectively), indicating a more rapid increase in condom use rates O/Cotonou. This is also seen for reported consistent condom use rates with FSWs. Similarly, a more rapid decline in NG prevalence has taken place among clients O/Cotonou.

Conclusions: These results demonstrate that it is possible to reach male clients of FSWs for preventive and clinical services. The data strongly suggest that such interventions, implemented in conjunction with interventions targeted towards FSW, can have a significant effect on sexual behaviour and STI rates (particularly NG) among this population.

HIV/STI prevalence and condom use rates among male clients of female sex workers in Cotonou and outside Cotonou (O/Cotonou), Benin, West Africa, 1998-2005

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O-016 HEALTHCARE ACCESS AND FOLLOW-UP OF CHLAMYDIAL AND GONOCOCCAL INFECTIONS IDENTIFIED IN AN EMERGENCY DEPARTMENT SETTING

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Objectives: (1) To examine two potentially important factors, healthcare coverage and reporting the Emergency Department (ED) as a primary source for healthcare, influencing successful treatment and follow-up of ED-identified chlamydial (Ct) and gonococcal (GC) infections. (2) To describe the geospatial distribution of ED-identified infections.

Methods: Adult patients aged 18-35 years attending an urban ED were screened for Ct and GC; participants provided specimens for amplification testing and completed a brief questionnaire. Patients testing positive were contacted by Disease Intervention Specialists (DIS) and notified of their infection status. Analyses focus on infected patients for whom we have treatment and follow-up information. We used generalized linear models with log link and binomial error distribution to estimate risk ratios (RRs) and 95% confidence intervals (CI). We used ArcGIS to create count maps of ED-identified infections.

Results: Of 5,537 patients successfully screened in the ED, 348 (6.3%) patients tested positive for Ct, 143 (2.6%) tested positive for GC, and 43 (0.8%) tested positive for both. Approximately two-thirds (65%) of infected patients were female and the majority (91%) were African American. The average age was 23.2 ± 4.6 years. Approximately 40% of infected patients reported they were not covered by Medicaid, Medicare, HMO, or private insurance and 20% reported the ED as their primary source for healthcare. DIS attempted to contact all patients identified as infected during their ED visit. Of the 532 infected patients, 278 (52%) received treatment as part of the study, 87 (16%) received treatment during their ED visit, and 63 (12%) reported receiving treatment elsewhere (either at a local health department or at their primary care physician). DIS were unable to locate 53 (10%) infected patients, 6 (1%) patients were out of jurisdiction, 7 (1%) were in jail or a rehabilitation facility, 21 (4%) patients were located but refused treatment, and 17 (3%) did not show up for their scheduled follow-up appointment. Among infected persons with no healthcare coverage, 25% (n=56) were untreated compared to 15% (n=47) of infected patients who reported having healthcare coverage (RR: 1.7, 95% CI: 1.2, 2.3). Among patients reporting the ED as a primary source for healthcare, 26% (n=27) had untreated infections compared to 18% (n=77) of infected patients reporting they usually get healthcare from a private doctor, a clinic, an HMO, or no usual place (RR: 1.4, 95% CI: 1.0, 2.1). Both of these relationships varied by reported recent antibiotic use. We were able to match 90% of reported addresses to a physical location. A count map of ED-identified infections suggests positive clustering of infection around the ED (Moran's coefficient = 0.15, Figure 1).

Conclusions: EDs often serve as primary care sites for difficult-to-reach populations. We were able to successfully locate and treat the greater part of ED-identified infections. However, one-fifth of infected patients did not receive treatment. Untreated infections were a combination of persons not located and persons refusing treatment. ED-based screening programs can benefit from integration with local public health infrastructure to improve notification and treatment services.

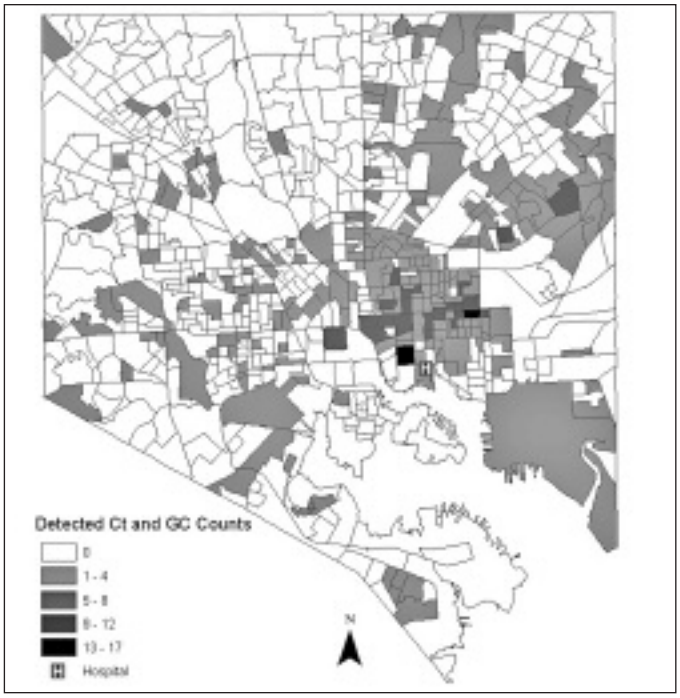

Figure 1: Counts of Ct and GC infections detected in ED

O-017 CAN YOU HEAR ME NOW? THE SUITABILITY OF TEXT MESSAGING TO CONTACT STD CLINIC PATIENTS

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Objectives: Contacting STD clinic patients to convey test results or to remind them to visit the clinic for re-testing may improve treatment rates and identify recurrent infections. However, resources are often not available for clinic staff to contact patients individually. Mobile phone technologies, including text messaging, are an increasingly popular form of communication and could be used as an automated notification system. We sought to characterize the use of text messaging among patients visiting an urban STD clinic and their acceptance of receiving health-related text messages from the clinic.
Methods: Questionnaires were administered by computer-assisted self-interviews to English-speaking patients, 18 years and older, attending the Denver Metro Health (STD) Clinic. The survey consisted of approximately 35 items and took less than 10 minutes to complete typically. Verbal consent was obtained.
Results: Between February 14 and March 8 2007, 245 patients were approached and 203 (82%) surveys were completed. 162/203, (80%) reported having a mobile phone. Of those, 93% (147/158) indicated their mobile phones had text messaging capability, and of these, 88% (129/147) said they use text messaging. A majority of patients who used text messaging (92/129, 71%) said they would be comfortable receiving health-related text messages from the clinic. When asked to choose acceptable text messages from four alternatives, most (61%, 59/97) selected 'Your test results are in! Please call the Denver Metro Health Clinic at….' 'Please call Denver Health for an important health message at…' was acceptable to 36% (35/97). 'Please call the Denver Metro Health Clinic for an important health message at…' was acceptable to 25% (24/97); 'We need to see you! Please call the Denver Metro Health Clinic at:' was acceptable to 20% (19/97); and 5% (5/97) did not prefer any of these.
Conclusions: A majority patients from the Denver Metro Health Clinic use mobile phone text messaging and would find it an acceptable means of receiving health-related messages from the clinic. Overall, almost half of all patients may be reached using this technology. These findings suggest that text messaging may be a suitable option for STD clinics to communicate a range of health-related information to patients, including results notifications, clinic reminders and prevention messages.

O-018 RAPID HIV TESTING IN AN URBAN STD CLINIC

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Objective: To measure the impact of incorporating rapid HIV testing at the Southeast STD Clinic, the only publicly funded STD clinic in the Washington, DC area.
Methods: All clinic clients were offered HIV testing unless they were already positive or had a test in the previous 3 months. Historically, a blood specimen was drawn and sent to the Public Health Lab where ELISA and confirmatory Western Blot assays were performed. Clients were told to return in 2 weeks for their results. On September 1, 2005 the clinic incorporated the OraQuick ADVANCE Rapid HIV-1/2 Antibody Assay. Since then, oral fluid testing was done in-house and clients were given results in 20-40 minutes. Preliminary positives were confirmed with Western Blot assays. Persons with indeterminate Western Blot results were retested. We compared the number of HIV tests done, percentage positive, and impact on clinic staff and clients a year before and a year after incorporating rapid HIV testing.
Results: From September 1, 2004 to September 1, 2005 3,500 ELISA assays were done. Of these, 59 (1.7%) were positive. Of the 59 confirmatory Western Blot assays done, 53 (89.8%) were positive, 5 (8.5%) were indeterminate, and 1 (1.7%) was negative. From September 1, 2005 to September 30, 2006 3,645 OraQuick ADVANCE assays were done. Of these, 77 (2.1%) were positive. Of the 77 confirmatory Western Blot assays done, 48 (62.3%) were positive, 13 (16.9%) were indeterminate, and 16 (20.8%) were negative.
Conclusions: Despite a gradually declining census over the last several years, the number of HIV tests done per year has increased. This is most likely due to the incorporation of rapid HIV testing. The benefit of providing more clients with rapid HIV testing must be weighed against the increased burden on clinic staff and the anxiety of clients with indeterminate or false-positive results.

ORAL SESSION: PREVENTION / INTERVENTIONS I

O-019 CIRCUMCISION AND RISK OF HIV SEROCONVERSION IN THE HIM COHORT OF HOMOSEXUAL MEN IN SYDNEY

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Objectives: Three recently reported randomized controlled trials conducted in heterosexual men in Africa have reported that adult circumcision is associated with a greater than 50% reduction in the risk of HIV acquisition. However, there are few longitudinal studies which have examined whether circumcision may protect homosexual men against HIV. It is likely that circumcision will be less effective in preventing HIV in homosexual men because most are infected by receptive rather than insertive intercourse. We examined circumcision as a risk factor for HIV seroconversion in a community-based cohort of homosexual men in Sydney, Australia.
Methods: Between 2001 and 2004, 1,427 initially HIV-negative men were enrolled. Circumcision status was self-reported at baseline, and self-report was validated by clinical examination during study visits in a sub-sample of approximately 300 participants. All participants were tested annually for HIV and offered testing for other sexually transmitted infections (STIs), including gonorrhoea and chlamydia in the urethra and anus (strand displacement amplification, BDProbeTec), and for herpes simplex virus types 1 and 2 (HSV-1 and HSV-2) using type specific ELISA, with Western Blot testing of specimens of borderline reactivity. Demographic information was collected at baseline and detailed information on sexual risk behaviours was collected every 6 months.
Results: At baseline, 66% of participants reported being circumcised; mostly as infants. The proportion circumcised ranged from 83% in those aged 45 or more to only 50% in those aged less than 25 ($P < 0.0001$). There were 49 HIV seroconversions through 2006, an incidence of 0.80 per 100 person years (PY). Anorectal gonorrhoea, and anal warts were independent risk factors for HIV infection. Overall, being circumcised was not related to HIV infection (relative risk (RR) 1.07, 95% CI 0.56-2.06). After controlling for non-concordant unprotected anal intercourse (UAI), anorectal STIs and age, there remained no association between circumcision and HIV seroconversion (RR = 0.88, 95% CI 0.45-1.74). Only nine of the 49 seroconversions occurred among men who reported no receptive UAI, an incidence of 0.35 per 100PY. When analyses were restricted to this group, circumcision was also not associated with HIV seroconversion (RR = 0.99, 95% CI 0.25-3.96).
Conclusion: Circumcision status was not associated with HIV seroconversion in this cohort of homosexual men. Circumcision is unlikely to be an effective means of HIV prevention in homosexual men as most HIV infections occur after receptive rather than insertive intercourse. In addition, our analyses limited to those men who reported no receptive UAI, who are more likely to have been infected through insertive sex, suggest that circumcision may not reduce HIV risk even for insertive

anal intercourse, although larger studies with more power would be required to confirm this. Other preventive strategies are required to reduce HIV incidence in homosexual men.

O-020 MALE CIRCUMCISION AND WOMENS RISK OF INCIDENT CHLAMYDIAL, GONOCOCCAL AND TRICHOMONAL INFECTIONS

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Objectives: Circumcised men have lower risk of HIV acquisition than uncircumcised men, and prevention interventions focusing on male circumcision (MC) are being planned worldwide. The role of MC on men's risk of non-HIV sexually transmitted infections (STIs) is not well-understood, and the role of MC on subsequent disease risk to men's female partners is also unknown. MC could indirectly affect women's STI risk by changing men's risk of initial STI acquisition, and thus altering the probability that women will be exposed to infected men, or directly by changing the efficiency of transmission from STI-infected men to susceptible women. We examined associations between MC and women's risk of acquisition of three STIs: Chlamydia trachomatis (Ct), Neisseria gonorrhoeae (GC), and Trichomonas vaginalis (Tv).
Methods: We analyzed data from a prospective cohort study on hormonal contraception and incident HIV and STI (Hormonal Contraception and the Risk of HIV Acquisition (HC-HIV) study) among women from Uganda, Zimbabwe and Thailand. Participants were seen quarterly for up to two years; at enrollment and each follow-up visit, women underwent physical exams with specimen collection and structured face-to-face questionnaires capturing sexual and behavioral data. Gonococcal and chlamydial infections were diagnosed by polymerase chain reaction using endocervical swabs, and trichomonal infection was diagnosed by wet mount. Women self-reported the circumcision status of their primary partner. Using Cox proportional hazards models, we compared time to acquisition of Ct, GC, Tv, and the three STIs combined for women according to their partner's MC status.
Results: Among 5,925 women (2,180 from Uganda, 2,228 from Zimbabwe, and 1,517 from Thailand), 18.6% reported a circumcised primary partner at baseline, 70.8% reported an uncircumcised partner, and 9.7% did not know their partner's circumcision status. During follow-up, 411, 307 and 373 participants had a first incident chlamydial, gonococcal or trichomonal infection, respectively. In multivariate analysis, after controlling for contraceptive method, age, age at coital debut, and country, the adjusted hazard ratio (HR) comparing women with circumcised partners to those with uncircumcised partners for Ct was 1.22 (95% confidence interval (CI): 0.94 to 1.59); for GC, adjusted HR: 0.93 (95% CI: 0.70 to 1.24); for Tv, adjusted HR: 1.05 (95% CI: 0.81 to 1.37), and for the three STIs combined, adjusted HR: 1.02 (95% CI: 0.86 to 1.22). Sensitivity analysis excluding women reporting multiple sexual partners had little influence on the effect estimates for GC and Tv; however, for Ct, analyses restricted to women with only one sexual partner indicated that those with circumcised partners had increased risk of acquisition compared to participants with uncircumcised partners (restricted HR: 1.33, 95% CI: 1.01 to 1.75).
Conclusions: In this cohort, MC was not associated with women's risk of acquisition of gonococcal or trichomonal infections. MC similarly had no effect on Ct for all participants together, but when restricted to monogamous women, those with circumcised partners appeared to have increased Ct risk. Further research is warranted to determine whether MC has direct or indirect effects on women's STI risk.

O-021 VAGINAL MICROBICIDE AND DIAPHRAGM USE FOR INFECTION PREVENTION RESEARCH: A RANDOMIZED ACCEPTABILITY AND FEASIBILITY STUDY AMONG HIGH-RISK WOMEN IN MADAGASCAR

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Objectives: Vaginal microbicides and diaphragms have both been proposed as female-initiated tools for sexually transmitted infection (STI) and HIV prevention. In preparation for an upcoming randomized trial exploring these methods for STI prevention, we conducted a four-arm, prospective pilot study to examine the acceptability and feasibility of using a candidate vaginal microbicide and a diaphragm individually and in combination.
Methods: We enrolled participants aged 15-55 years at high STI risk from four cities in Madagascar and followed them weekly for four weeks. At baseline women were randomized to four study arms: Arm 1, microbicide AcidForm applied in the dome of a diaphragm; Arm 2, inert control gel hydroxyethylcellulose (HEC) applied in the dome of a diaphragm; Arm 3, HEC alone applied intravaginally; and Arm 4, AcidForm alone applied intravaginally. All women were provided with male condoms and instructed to use them with every sex act. Women in gel-diaphragm arms were instructed to put gel into the dome of the diaphragm before insertion and to wear it continuously with once-daily removal for washing. Women in gel-only arms were asked to insert gel before each sex act. During follow-up visits, participants received physical exams and face-to-face interviews measuring sexual behavior and study product use.
Results: We screened 314 women to enroll 192 (61%). Retention over the four-week study period was 98%. Participants reported a median of 7 sexual partners per 'typical' week at baseline (range: 2-60) and 11-15 partners per week, varying by randomization group, during follow-up (range: 0-93). Self-reported use of study products was high (76-96% in gel-diaphragm arms; 65-85% in gel-only arms); women in the two gel-diaphragm arms used products more consistently over the follow-up period than women in the two gel-only arms. Participants reported using condoms in approximately 60-75% of sex acts, with women in Arm 1 using condoms less consistently than women in other arms. Women generally found diaphragms easy to insert and remove (97%) and to wear continuously (92%). About half of participants (53%) in the gel-only arms reinserted gel with every sex act as instructed. No women experienced urinary tract infections during follow-up. Women in the two AcidForm arms had more genitourinary symptoms (12% and 15% in Arms 1 and 4 vs. 5% in both Arms 2 and 3) than those randomized to use control gel. Women reported problems with study products at 10% of follow-up visits: keeping the diaphragm in continuously was the most commonly reported problem among gel-diaphragm users, whereas gel-only users noted problems finding time, opportunity or privacy to insert gel. No serious adverse events occurred.
Conclusions: Over the short follow-up period, use of experimental study products was high and few problems were noted. We detected no obvious migration away from condoms. Given differences in genitourinary symptoms between groups, we will more closely monitor product safety among early enrollees in the randomized trial. In summary, a trial measuring the effectiveness of a vaginal microbicide used with and without diaphragm against acquisition of STIs appears feasible and acceptable in this high-risk, low-income target population.

O-022 TAKING QUALITY STI SERVICES TO SCALE FOR SEX WORKERS IN INDIA: THE 'AVAHAN' EXPERIENCE

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Objective: India has a growing HIV epidemic driven mainly by sex work in four states in the south and by injecting drug use in two states in the north-east. The high risk populations are diverse, mobile and not easy to reach. One of the key challenges in HIV prevention efforts is achieving adequate coverage of high risk populations with comprehensive prevention services. The India AIDS Initiative (Avahan) supported by Bill & Melinda Gates Foundation supports State Lead Partners (SLPs) through local Non-Governmental Organizations (NGOs) to implement comprehensive prevention interventions including community mobilization, outreach and peer education, condom promotion and treatment of Sexually Transmitted Infections (STIs). Avahan's prevention programs are focused on those most at risk of contracting and spreading HIV, in the six highest prevalence states and along the highways.
Methods: To achieve high quality prevention services across a large number of Avahan partners and geographic coverage, a systematic approach of STI Capacity Building (CB) was initiated. A central CB team developed Clinic Operational Guidelines and Standards (COGS) and supervisory tools, trained SLP STI coordinators, provides regular supportive supervision and monitors outcomes. STI coordinators train NGO clinic staff and supervise clinical activities. NGO clinics provide STI syndromic management, regular screening and presumptive treatment for sex workers. The clinic activities are supported by peer led outreach activities and active involvement of sex workers. The COGS defined the minimum standards for STI services. It was the basis for training and supervision and serves as a benchmark against which the performance of the clinics is monitored. A five point quality assessment tool for numerical scoring of the key service parameters of clinic operations and clinic utilization was applied during regular supervisory clinic visits. Clinic and outreach staff report on service indicators through a monthly reporting system.
Results: The reported data from 133 NGOs representing 379 clinics revealed that 242,488 or 86% of targeted sex workers accessed the clinic services at least once for the period from January 2005 to December 2006. In December 2006 a quarter of sex workers (23%) made monthly visits to the clinic for STI check-ups. There have been declining rates of STI syndromes as a proportion of the contacted sex workers, from 25% in March 2005 to 8% in December 2006. On a scale of 0-5, the clinic operational quality of services in the 203 clinics visited in the period under review improved from 1.5 to 3.61 and the clinic utilization performance increased from 0.43 to 2.39.
Conclusions: Quality STI interventions for sex workers can be brought to scale and standardized with a systematic capacity building support and tools for monitoring service utilization and quality of care. Active involvement of sex workers in clinic services management is essential for improving coverage.

O-023 MALE PARTNER CHARACTERISTICS AND SAFE 2 INTERVENTION EFFICACY

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Background: The efficacy of STI-reduction interventions may be improved by teaching women to avoid men who practice high-risk sexual behaviors. Two controlled, randomized trials of a cognitive/behavioral intervention for high-risk minority women (SAFE and SAFE 2) significantly reduced STI reinfection among participants at 1-year follow-up. In SAFE, we used detailed information about womens' sexual partners to identify men referred to as 'Players' who had sex with more than one participant during follow-up. This group of men habitually practiced unsafe sex and were associated with high rates of reinfection (chlamydia and/or gonorrhea) among participants. In this study using SAFE 2 data, we again identified 'Players', compared their characteristics to other sex partners, described women who had sex with them to women who did not, and evaluated their impact on SAFE 2 intervention efficacy.
Methods: We utilized a seven-point matching system using partner initials, age, ethnicity, education, employment, marital, and circumcision status to identify men with proven relationships with multiple study women. We used t-test and chi-squared analyses to compare their characteristics to other participant sex partners and characteristics of women having sex with them to women having sex with other men. Additionally, we used chi-squared analysis to estimate the impact of 'Players' on reinfection rates.
Results: We identified 227 'Players' in SAFE 2 of 1,694 total partners (13.4%); 145 women (22.3% of the total) were involved. Compared to other men, 'Players' were more likely to use street drugs in the past 3 months, be in a non-steady relationship, and 'never' or 'hardly ever' use condoms. When partnered with these men, women were more likely to be uninformed about either the number of other women he had sex with in the past year or whether he used street drugs. Of interest, 39.3% of all follow-up STIs among women occurred when they were partnered with Players. Moreover, women partnered with one or more 'Players' during the 1-year follow-up period had significantly more sex partners during that period than women partnered only with Non-players (3.5 vs. 1.9, $p < .01$), and were more likely to use street drugs (33.8% vs. 21.2%, $p = .03$). Finally, women assigned to the intervention condition were significantly less likely than control women to be partnered with 'Players' during the follow-up period (18.2 vs. 30.2, $p < .01$).
Conclusions: 'Players' are a group of men with a well-defined cluster of characteristics, including proven relationships with multiple study women and high rates of STI transmission. They exhibit behavioral traits commonly associated with STI acquisition, including non-steady relationships, unprotected sex, and street drug use. They are suggestive of a core group of STI transmitters, whose intervention partners have more partners themselves, use drugs, and have higher consequent rates of STIs. SAFE 2 intervention participants, however, were less likely to partner with Players. The intervention may have provided participants with the ability to recognize the risks associated with Players, and avoid them. E-Mail: Holden@UTHSCSA.EDU

CHARACTERISTICS OF "PLAYERS" COMPARED TO OTHER MEN

	"Players" n = 227	Other Men n = 1467	p-value
Age (mean)	23.2 ± 3.9	23.7 ± 4.9	NS
# his partners, past year (mean)	1.8 ± 0.3	2.5 ± 0.5	< .01
Woman "doesn't know" # his partners, past year (%)	27.8	12.5	< .01
He uses drugs, past 3m (%)	43.7	32.4	< .01
Woman "doesn't know" his drug use, past 3m (%)	13.4	7.5	.01
Non-steady relationship (%)	87.4	28.5	< .01
No condom use (%)	58.1	51.7	.07
(Woman) reinfected, CT and/or GC (%)	28.3	21.6	.01
(Woman) reinfected, GC (%)	8.5	3.2	< .05

CHARACTERISTICS OF WOMEN WHO HAD SEX WITH "PLAYERS" COMPARED TO WOMEN WHO HAD SEX ONLY WITH OTHER MEN

	"Players" n = 145	Other Men n = 104	p-value
Age (mean)	27.0 + 4.3	27.1 + 2.6	NS
# her partners, follow-up year (mean)	3.5 + 4.8	1.9 + 0.7	< 0.1
Current drug use (%)	37.2	25.5	< 0.5
Reinfection CT and/or GC (%)	33.9	21.2	< 0.1
Group (%)			
Intervention	48.2	61.8	< 0.1
Control	30.2	69.8	

O-024 EFFICACY OF A BEHAVIORAL INTERVENTION TO PROMOTE CONDOM USE AMONG FEMALE SEX WORKERS IN TWO MEXICAN-U.S. BORDER CITIES

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Objectives: HIV prevalence is increasing among female sex workers (FSWs) in Tijuana (adjacent to San Diego, CA) and Ciudad (Cd.) Juarez (adjacent to El Paso, TX), both of which are located on major drug trafficking routes. We compared the efficacy of a behavioral intervention to promote condom use in two groups: (1) FSWs who injected drugs (FSW-IDUs), and (2) FSWs who did not inject drugs.
Methods: FSWs aged ≥18 years without known HIV infection living in Tijuana and Cd. Juarez who had unprotected sex with >1 client in the past 2 months were recruited from 2004-2005 through outreach. At baseline and six months later, women underwent interviews and antibody testing for HIV and syphilis; LCR was conducted on vaginal swabs for gonorrhea and Chlamydia. Women were randomized to an attention control condition or an intervention integrating motivational interviewing and theoretical principles of behavior change. However, it did not include harm reduction or condom negotiation within the context of drug use.
Results: Of 924 FSWs (474 in Tijuana; 450 in Cd. Juarez), 18% had injected drugs. At baseline, among FSW-IDUs (N=166), prevalence of HIV, syphilis titers ≥ 1:8, gonorrhea and Chlamydia was significantly higher at 13.9%, 22.1%, 12% and 18.4% compared to 4.2%, 10.7%, 4% and 10.3% among other FSWs (N=758), respectively. The follow-up rate at six months was 81%. We observed a significant decline in incident STIs (intervention: 8%; control: 13%; p=0.049) and HIV (0 per 100 py vs. 2 per 100 py), with commensurate changes in unprotected vaginal and anal sex with clients. Although FSW-IDUs also experienced fewer incident STIs, this subgroup showed less improvement (intervention: 13% vs. control: 27%; p=0.24). Whereas non-IDUs reported significant changes in the total # of unprotected sex acts with clients in the past month (intervention: -11; control: -6; p=0.006), changes for FSW-IDUs were less impressive (-10 vs. -2, p=0.25). Non-IDUs had increases in positive outcome expectancies (p=0.049) and improved attitudes about AIDS prevention (p=0.0497), whereas FSW-IDUs had no change in either (p=0.79 and p=0.31, respectively). Since this intervention did not address injection risks, FSW-IDUs reported no marked changes in needle sharing in the last month (intervention: 68%; control: 79%, p=0.33), nor were differences observed for sharing of paraphernalia (73% vs. 83%, p=0.28).
Conclusions: These preliminary findings provide promising evidence in favor of this behavioral intervention for promoting condom use among FSWs who are non-IDUs. Since data collection is ongoing in two additional cities (Matamoros and Nuevo Laredo), overall efficacy results are pending. This analysis found that FSW-IDUs were capable of reducing high risk behaviors, but their high levels of risk persisted, underscoring the need for interventions that (1) assist FSW-IDUs with negotiation of condom use in the context of their own and/or their sex partners' drug use; and (2) reduce sharing of injection equipment using culturally-sensitive approaches. Since prevalence and incidence of HIV and STIs remain high, especially among FSW-IDUs, urgent action is required to stem epidemics that threaten both Mexico and the U.S.

ORAL SESSION: GENITAL HERPES

O-025 POPULATION-BASED SURVEILLANCE OF NEONATAL HERPES IN NEW YORK CITY: FINDINGS FROM THE FIRST YEAR

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The information in this presentation has not been disseminated by CDC and does not represent agency determination or policy. HSR# 2070 has been assigned to this project.
Objectives: Herpes simplex virus infection among newborns (neonatal herpes, or nHSV) can be life-threatening but is preventable. Incidence of nHSV in the United States is not well-described; however, previous estimates range from 11.4 to 67/100,000 live births. The majority of what is known about the epidemiology of nHSV in the United States is derived from infected infants presenting to hospital referral centers. Changes in adult genital herpes epidemiology can result in changes in the epidemiology of neonatal herpes. In April 2006, reporting nHSV cases was made mandatory in New York City (NYC). The objective of this analysis is to measure the incidence of nHSV in NYC and to characterize reported cases to identify missed opportunities for prevention and education of health-care providers (HCPs).
Methods: By law, both HCPs and laboratories in NYC must report nHSV cases to the NYC Department of Health and Mental Hygiene. A case is defined as an infection in an infant aged <61 days that is confirmed by clinical diagnosis or by a positive result from culture, polymerase chain reaction, or direct florescent antibody laboratory testing. Reports are received electronically, by paper, and by telephone. Surveillance staff apply the case definition and seek birth and death certificates for patients. We measured the number of reports and calculated an annualized case rate by using the number of live births in NYC in 2005. We also measured the distribution of report type, viral type, and sex, as well as the median age at presentation and the number of deaths.
Results: We identified 18 reports meeting the case definition during the first 9 months of surveillance (April'December 2006). This can be annualized to 22 cases, with a case rate of 17.6/100,000 live births. Of the 18 reported cases, seven were reported by HCPs, five of which were confirmed with laboratory testing. Seven (39%) of the cases were HSV-1; nine (50%) were HSV-2; and two (11%) were untyped (one from a HCP; one from a laboratory). Ten (56%) patients were females. The median age at presentation for the patients was 9.5 days (range: 0'49). Three of the cases resulted in death: two females with HSV-1 and one male with HSV-2. HSV was the cause of death for the boy and one of the girls.

Conclusions: Incidence of nHSV in NYC is midrange for that measured in the United States. The proportion of female and male patients was similar. Although the numbers are limited, a substantial proportion of the cases were attributable to HSV-1, which is not vaccine-preventable. The case-fatality rate is high at 16.7%, but this might reflect reporting bias. Ongoing activities will include detailed case investigations of incident cases to identify any missed opportunities for prevention as well as any delays in diagnosis or failure to institute appropriate therapy. Any such instances will inform provider education efforts. Contact: shandel@health.nyc.gov

O-026 THE GEOGRAPHIC PREVALENCE AND MULTILEVEL DETERMINANTS OF COMMUNITY-LEVEL RISK FACTORS FOR HSV-2 INFECTION IN SLUM COMMUNITIES IN CHENNAI, INDIA

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Objectives: To determine the geographic prevalence of HSV-2 infection among slum communities in Chennai, India and to determine community-level risk factors for HSV-2 infection after controlling for individual-level risk factors.
Methods: From March to June 2001, participants were enrolled in a multi-site, international, randomized-control HIV intervention. Of 965 designated 'slum communities' in Chennai, India, 29 were selected. Trained field workers conducted enumeration and 65 households with at least one 18-40 year old were selected by a systematic random sampling in which one eligible individual was randomly selected. Participants provided voluntary informed consent, completed a survey and gave biologic samples for HSV-2 testing. A second survey to assess slum community characteristics was conducted among community key informants. Exploratory statistical and geographic analysis was conducted. Models were generated resulting in a final multilevel nonlinear model to determine if community-level factors explained differences in HSV-2 controlling for individual-level factors.
Results: 14% (1,947/14,000) of adults living in the 29 communities were selected for study participation; 85% completed the survey and of these, 99% provided STI samples. We eliminated 19% of respondents who were not sexually active. One community was excluded due to a low response rate and thus, 1,275 participants from 28 community slums were included in the final analysis. Participants were on average 30 years old, female, married and had less than or some primary school education. On average, participants had 0.20 casual sex partners in the past year, 6% had a history of an STI and 7% had used drugs in the past 3 months. At the community level, there was significant variation ($p<0.001$) in HSV-2 prevalence. On average, 3% of slums had working men's quarters, 13% brothels, 27% MSM, 46% IDUs and 45% had very often or frequent public intoxication. Slums had on average 3 wine shops. Electricity and water structures existed in 86% and 43% of communities, respectively. Thatch material was used in the home and roof construction in 61% and 57% of communities, respectively. SES-related items were entered into a principal components analysis to identify one community-level measure of SES with very good reliability. The final model indicated that for every unit increase in community-level SES there was a 0.75 decrease in the odds of HSV-2 infection and for every increase in the proportion of key informants reporting the existence of IDUs in the community there was a 1.87 increase in the odds of HSV-2 infection after controlling for individual-level age, sex, number of casual sex partners and drug use. In the final model the statistically significant community factors explained an additional 11% of variance associated with individual level HSV-2 infection for individuals within 28 different communities. AIC and BIC statistics indicated a good fit model.
Conclusion: In slum communities in Chennai, India, community-level SES and presence of IDUs were independently associated with HSV-2 infection after controlling for individual-level factors. Future studies are needed to test the mechanisms through which these community-level factors may be operating such as increasing the probability of selecting an IDU as a sex partner.

O-027 RISK OF SUBJECT-LEVEL MISCLASSIFICATION IN STUDIES OF HERPES SIMPLEX VIRUS: AND THE USEFULNESS OF THE TERM 'SHEDDER'

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Objective: Studies reporting HSV detection rates frequently classify subjects as shedders if observed to have genital or oral HSV detected using PCR or culture. Short observation intervals are cited as a limitation for the underestimate of the presumed true number of shedders. We sought to examine the definition of shedder both in its accuracy and its clinical usefulness.
Methods: We examined episodes of genital shedding among HSV2 seropositive study participants who provided daily home swab collection at the Virology Research Clinic. Shedding episodes are defined as consecutive HSV DNA detection using PCR with no more than one missing or negative specimen. Based on these data, we determined the statistical distribution of both shedding duration and of time between clinically-distinct shedding episodes as geometric. Using known properties of the geometric distribution, the probability of observing shedding (and consequently of assigning the designation of shedder) was computed in a hypothetical HSV2 seropositive population while varying the following measures: population shedding frequency (2%-30%), length of observation interval (1-120 days), average episode duration (1-16 days), and average time between episodes (1-800 days, depending on shedding rate). Those not determined to be shedders during the observation interval are considered to be misclassified. We also determined appropriate observation intervals to minimize misclassification by assuming shedding rate.
Results: 187 HIV-seronegative HSV2-seropositive study participants contributed daily home sampling sessions between 1992 and 2006. Over study participation, 576 shedding episodes were detected. Both episode duration and time between episodes were well described by a geometric distribution with average values of, respectively, 3.5 and 9.3 days. Using these average values for duration and time between episodes, the misclassification rate was below 5% for a true shedding rate of 10% (15%, 20%, 30%) if the length of the observation interval exceeded 90 (60,45,30) days. HSV-2 positive subjects at the VRC tend to shed on 20% to 30% of days, and as such our current standard 30-day length of observation period was found to incur a possible 12% misclassification rate; whereas an increase to 60 days observation decreases misclassification to below 2% as most subjects would have detectable shedding. However, this finding assumes that episodes last 3.5 days, whereas in fact there is great variability; some are much shorter and are even more likely to be undetected.
Conclusions: Long observation intervals are needed to detect shedding when population shedding rates are low. Some published shedding observation intervals are insufficient to correctly identify subjects seropositive for HSV2 as shedders and may provide a classification which has questionable clinical relevance. When episodes are long or rare, misclassification increases. A more accurate summary measure for each participant is the individual shedding rate, computed as number of positive days out of days sampled. While subjects not observed to shed contribute a zero rate, these rates are unbiased for true shedding regardless of time observed. Further, methods accounting for time observed, such as Poisson regression, will properly account for increasing variability in shedding rate with shorter period of observation.

O-028 RACIAL DISPARITIES IN HERPES SIMPLEX VIRUS TYPE 2 (HSV-2) SEROPREVALENCE IN THE UNITED STATES: ARE THEY IMPROVING?

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Objective: Racial disparities in rates of STDs such as syphilis, while still a major concern, have been decreasing over past decades; however, it is unclear whether the same is true for herpes simplex virus type 2 (HSV-2) infections. A recent study found that overall HSV-2 seroprevalence has decreased in the U.S. since the early 1990's. We sought to determine whether racial disparities in HSV-2 infections have also decreased.
Methods: We used data from the National Health and Nutrition Examination Surveys 1988-1994 and 1999-2004 to examine differences in HSV-2 seroprevalence between non-Hispanic blacks (blacks) and non-Hispanic whites (whites) over time in nationally-representative samples of U.S. 14-49 year-olds.
Results: In 1988-1994, the age-adjusted HSV-2 seroprevalence among blacks was 43.2% (95% CI 41.2-45.3) and among whites was 16.5% (14.4-18.9), yielding a black- white prevalence difference of 26.7% (23.6-29.9) and a prevalence ratio of 2.6 (2.2-3.0). In 1999-2004, the age-adjusted HSV-2 seroprevalence among blacks was 41.7% (38.5-45.1) and among whites was 13.0% (12.0-14.1), yielding a black-white prevalence difference of 28.7% (24.8-32.2) and a prevalence ratio of 3.2 (2.6-9.7). Black-white prevalence differences increased with age in both time periods, to a maximum of 39.4% among 40-49 year-olds in 1988-1994 and 35.5% among 40-49 year-olds in 1999-2004. The black:white prevalence ratio among 14-19 year-olds was 2.8 in 1988-1994 and 5.0 in 1999-2004, and among 20-29 year-olds it was 2.3 in 1988-1994 and 5.5 in 1999-2004. Among women with only 1 lifetime sex partner, age-adjusted HSV-2 seroprevalence was 32.5% in blacks and 6.3% in whites in 1988-1994, a prevalence difference of 26.2% and prevalence ratio of 5.2, and it was 13.3% in blacks and 1.8% in whites in 1999-2004, a prevalence difference of 11.4% and prevalence ratio of 7.2. Among women with 2-4 lifetime sex partners, age-adjusted HSV-2 seroprevalence was 51.0% in blacks and 17.5% in whites in 1988-1994, a prevalence difference of 33.5% and prevalence ratio of 2.9, and it was 48.6% in blacks and 12.3% in whites in 1999-2004, a prevalence difference of 36.4% and prevalence ratio of 4.0. Similar but less pronounced patterns were seen for males. In 1988-1994, 3.7% of HSV-2-seropositive blacks reported a prior diagnosis of genital herpes versus 13.5% of HSV-2-seropositive whites (p=0.0003), while in 1999-2004, 8.2% of HSV-2-seropositive blacks reported a prior diagnosis of genital herpes versus 18.7% of HSV-2-seropositive whites (p<0.0001).
Conclusions: Despite an overall decrease in HSV-2 seroprevalence in the United States over the past decade, racial disparities have not improved. This is particularly concerning given the role of HSV-2 in facilitating HIV acquisition and transmission. Differences in the proportion of HSV-2-seropositive blacks and whites who have been diagnosed with genital herpes may contribute to ongoing disparities. However, differential sexual network risks appear to play the largest role, given vast racial differences in HSV-2 seroprevalence even among those with few lifetime sex partners.

O-029 TYPE-SPECIFIC SEROPREVALENCE OF HERPES SIMPLEX VIRUS TYPE 2 AND ASSOCIATED RISK FACTORS IN MIDDLE-AGE WOMEN FROM SIX COUNTRIES: THE IARC MULTICENTRIC STUDY

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Objectives: Previous studies of HSV-2 seroprevalence have been limited by use of non-specific serologic assays lacking clear differentiation of HSV-2 and HSV-1 antibodies. Global comparisons of type-specific serological HSV-2 seroprevalence estimated using central laboratories and central protocols across multiple countries are also limited. Our objective was to determine type-specific seroprevalence of HSV-2 and HSV-1 using the gold standard Western blot assay, central laboratories and standard protocols across six countries, and to determine risk factors for HSV-2 among middle-age women in these six countries.
Methods: A total of 658 women from Colombia, Peru, Mali, Morocco, Thailand, and Spain who participated as controls in an International Agency for Research on Cancer (IARC) multicenter cervical cancer case-control study were included in the current analyses. A central standard protocol and questionnaire were used for recruitment and data collection at each site. Women underwent structured interviews on demographics and sexual and reproductive history. In Colombia, Spain, and Thailand, current male partners of participating women were also interviewed about their sexual behavior. Blood samples from women were used to detect type-specific serum antibodies to HSV-2 and HSV-1 using the University of Washington Western blot assay. For each country, age-adjusted odds ratios (OR) and 95% confidence intervals (CI) were determined using logistic regression. Adjusted OR (AOR) and 95% CI were determined controlling for age, marital status, total number of sexual partners in lifetime, and history of oral contraceptive use. Pooled analyses were adjusted for country.
Results: The median age of female study participants ranged from 42-52 years. Median number of lifetime sexual partners was two in Mali and Peru, and one in all other countries. The majority of women were married except in Colombia (49%) and Peru (49%). History of oral contraceptive use was low across all countries except Morocco (57%). HSV-2 seropositivity was 33% in pooled analyses, and highest in Colombia (57%) and Mali (43%). HSV-2 seropositivity was lowest in Spain (9%), similar among women in Peru (36%) and Thailand (37%), and lower in Morocco (26%). In contrast, overall HSV-1 seropositivity was nearly 90% or higher in all study sites, ranging from 89% in Colombia to 100% in Spain, and notably low in Thailand (51%). HSV-2 seroprevalence was independently associated with having ≥ 2 lifetime sexual partners in Morocco (AOR 2.7; 95% CI 1.2-6.1) and Thailand (AOR, 4.4; 95% CI 1.3-15.4). Being unmarried was an HSV-2 risk factor in Colombia, Peru, and Spain, although associations were not significant in Mali (AOR, 1.9; 95% CI 0.7-4.8). Oral contraceptive use was not associated with HSV-2 in any site. Women with a male partners whose sexual debut occurred at an early age (≤ 17 years) had a significantly higher risk of being HSV-2 seropositive (OR, 4.3; 95%CI 1.3-13.7).
Conclusions: HSV-2 seroprevalence in middle-age women varied over 4-fold across countries and was consistently associated with risky sexual behaviors in both women and their male sexual partners.

O-030 RAPID ONSET AND CLEARANCE OF GENITAL HSV REACTIVATIONS IN IMMUNOCOMPETENT ADULTS: THE VIRUS IS USUALLY 'ON'

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Objectives: The recent demonstration of HSV-specific T cells persisting in genital skin proximal to neuronal endings suggests that genital herpes simplex virus type 2 (HSV-2) reactivation may occur more frequently than previously appreciated.

Methods: Twenty-five HSV-2 seropositive healthy adults collected anogenital swabs at 4 time periods each day for 60 days. Swabs were assayed for HSV DNA using a sensitive quantitative PCR assay.
Results: Swabs were collected at all 4 time periods on 949 (74%) days. HSV DNA was detected on 191 (20%) of these 949 days, at only 1 time period on 55 (29%) days and at 2, 3 and 4 time periods on 24 (13%), 21 (11%), and 91 (48%) days, respectively. The median duration of HSV reactivation was 13 hours (14 hours for 61 HSV-2 reactivations and 6 hours for 6 HSV-1 reactivations); 61% of all reactivations lasted ≤12 hours and 29% lasted ≤6 hours. Lesions were reported in only 3 (7%) of 44 reactivations lasting ≤12 hours. Time of day did not influence HSV reactivation. The median copy number of HSV DNA per mL at initial and last detection in a reactivation was 10^3.5 and 10^3.3, respectively. The median reactivation frequency was 1.5 reactivations per 30 days or 18 reactivations annually. Reactivations lasting ≥12 hours were associated with a higher initial HSV copy number than those lasting <12 hours (10^4.9 versus 10^3.1, respectively, $p < 0.001$).
Conclusions: Over half of HSV mucosal reactivations last 12 hours or less; these short reactivations are usually asymptomatic and associated with rapid appearance and elimination of virus in the immunocompetent host. This high frequency of short subclinical genital mucosal ulceration helps explain the high rate of sexual transmission of HSV-2 and the increased risk that HSV-2 confers in HIV acquisition.

ORAL SESSION: MYCOPLASMA GENITALIUM

O-031 PREVALENCE OF MYCOPLASMA GENITALIUM INFECTION AND RISK OF PELVIC INFLAMMATORY DISEASE AND EPIDIDYMITIS AFTER AN UNTREATED INFECTION: A COHORT STUDY IN THE GENERAL POPULATION

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Objectives: Mycoplasma genitalium (M. genitalium) is a sexually transmitted infection causing urogenital symptoms in both men and women. Antibiotic treatment provides symptom relief in infected individuals. The significance of asymptomatic infections remains unknown. Based on cross-sectional association studies, it has been speculated that asymptomatic infections in women may cause pelvic inflammatory disease (PID), infertility and ectopic pregnancy. The aim of this study was to estimate the risk of PID in women and epididymitis in men in the general population with an asymptomatic and untreated M. genitalium infection.
Methods: In this retrospective cohort study, we analyzed samples from 853 men and 990 women in the general population for M. genitalium. The tested individuals had earlier submitted specimens in a Chlamydia trachomatis screening programme. These specimens had been stored since 1997, and in the present study M. genitalium was detected by polymerase chain reaction (PCR). The individuals in the cohort were followed in registers to identidy hospitalised cases of PID and epididymitis and out-patient treatment with doxycycline within one year after the untreated infection.
Results: The prevalence of M. genitalium infection was 2.3% in women and 1.1% in men. None of the nine men infected with M. genitalium developed epididymitis or received treatment with doxycycline, and none of the 21 women infected with M. genitalium developed PID or received treatment with doxycycline.
Conclusions: The prevalence of M. genitalium infection in the general, mainly asymptomatic population was low, and untreated asymptomatic infections could not be shown to affect the incidence of PID in women or epididymitis in men. Based on these results, screening of asymptomatic individuals for M. genitalium cannot be recommended. The population will be followed in registers to find out if the infections have an impact on the development of ectopic pregnancy in women.

O-032 INNATE IMMUNE RESPONSES ELICITED BY MYCOPLASMA GENITALIUM: NEW INSIGHT INTO TLR-MEDIATED INFLAMMATION

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Objectives: Mycoplasma genitalium (MG) has been implicated in several reproductive tract disease syndromes including mucopurulent cervicitis, endometritis, PID, and tubal factor infertility in women. To better understand the inflammatory response associated with MG in women, sought to define the components and mechanisms whereby MG induces inflammation. Identification of the MG products that elicited cytokines also were evaluated as potential immunomodulating microbicides that could prime transient innate immune responses increasing resistance to STIs.
Methods: Female Swiss Webster mice were inoculated intravaginally with the MG G37 type strain. MG G37 replication and dissemination was monitored by qPCR of vaginal swabs and kinetically-harvested tissues. To elucidate the components of MG responsible for cytokine secretion, select recombinant MG proteins were evaluated for their ability to induce Th1 cytokine expression using a mouse vaginal model and confirmed using cultured human vaginal and cervical epithelia via cytometric-bead array. For these studies two membrane lipoproteins and two heat-shock proteins were selected. To determine which toll-like receptors (TLR) mediated inflammation, HEK293 cells expressing specific TLR were transfected with an NF-kB-responsive SEAP reporter plasmid, exposed to recombinant MG proteins, and measured for SEAP elaboration 6h and 24h following application.
Results: Intravaginal inoculation of MG G37 reproducibly resulted in persistent bacterial colonization of the lower and upper genital tract tissues. Secondary bacterial pyometra and leukocyte infiltration was observed suggesting a mobilization of vaginal bacteria to the upper genital tract. Six hours after intravaginal application of MG Heat-shock protein 60 (Hsp60) in the mouse, IL6, G-CSF, KC, and RANTES were all significantly increased in vaginal lavages ($p<0.05$). Cytokine levels returned to baseline by 24h indicating a lack of prolonged inflammation. Hsp60 significantly increased secretion of TNF-alpha, IL6, IL8, and IL1-alpha ($p<0.05$) from human cervical and vaginal epithelial cells 6h after application. Interestingly, MG Hsp10 did not induce significant Th1 cytokine secretion in cultured epithelia or in mouse vaginal lavages. Testing of both lipoproteins revealed that both MG307 and MG309 induced robust Th1 responses from the mouse and cultured human epithelia. Specifically, KC, G-CSF, RANTES, and IL1-beta were significantly increased in mouse lavages 6h following application ($p<0.05$) in a pattern distinct from MG Hsp60. Similar to MG307, MG309 induced significant IL6 and TNF-alpha secretion from cervical and vaginal epithelia ($p<0.05$). MG309 also induced significant levels of IL8 ($p<0.05$) thereby further differentiating the innate responses to select MG proteins. The cytokine elaboration induced by MG proteins was dose-dependently mediated by TLR2/6.
Conclusions: Establishment of genital MG G37 infection in the mouse has provided a relevant model to investigate the pathological sequelae associated with MG infection and to evaluate prospective therapeutic interventions. Selected MG lipoproteins and Hsp60 induced TLR-mediated secretion of pro-inflammatory Th1 cytokines from human vaginal and cervical epithelia, and in mouse vaginal lavages. These results provide insight into the mechanisms of MG-induced inflammation. The data suggest that topical application of MG products could be a novel strategy for the prevention of MG infection and other STIs.

O-033 MYCOPLASMA GENITALIUM: AN EFFICIENT STRATEGY TO GENERATE GENETIC VARIATION FROM A MINIMAL GENOME

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Objective: Several studies have suggested that M. genitalium (MG) causes persistent urogenital tract infections in humans. Variation of the MG 191 (mgpB) gene, the second gene of the MG adhesion operon through genetic exchanges with repetitive gene sequences located throughout the MG genome (MgPar regions) has been proposed as one of the mechanisms for persistaence This study was undertaken to determine if the third gene in this operon (MG192 or mgpC) undergoes similar variation.
Methods: Seven MG strains were obtained from American Type Culture Collection (ATCC). The type strain G37 was serially passed 35 times in vitro. Two sequential urine specimens were obtained 10 days apart from a MG-infected man. Multilocus genotyping studies showed that the MG strains found in this patient were the same. The MG192 sequence in the G37 genome was analyzed for homology and percent identity to each of the nine MgPar sequences. The entire variable region of the MG192 and all or selected MgPar loci were amplified by PCR from all MG strains studied. All PCR products were sequenced after subcloning.
Results: Sequence comparison between the MG192 gene and the nine MgPars in the G37 genome revealed that the 5'-end half of the MG192 gene had 78-94% identity to all nine MgPars except for MgPar 6. The MG192 sequences in all ATCC strains except for TW48-5G and TW10-5G were identical to that of the published G37 genome sequence. MG192 sequence shift was identified between the 1st and 35th passage of the G37 strain. From the two patient specimens, three MG192 variant sequences were identified from each specimen and none were identical. Based on exact matches between multiple variable loci inside and outside the MgPa operon, it appears that all ATCC strains are very closely related to the G37 type strain. The MG192 sequence shift observed during in vitro passage of the G37 strain could be accounted for by a gene crossover event and a gene conversion event with MgPar 8. The MG192 sequence variation identified in two ATCC strains could be explained by both gene crossover and gene conversion events (in TW48-5G) or gene crossover events alone (in TW10-5G) with one or two MgPar loci of G37. Analysis of the MG192 variants and MgPar sequences in the two patient specimens revealed that the MG192 variants appear to have been generated by two to four segmental recombination events between the MG192 expression site and a specific MgPar in this patient. Given that each MgPar was found to be identical between the first- and second-visit specimen, the recombination events all appear to have resulted from non-reciprocal recombination events (gene conversion).
Conclusions: Our analysis suggests that the MG192 sequence variation is achieved by recombination between the MG192 expression site and MgPar sequences by gene crossover and gene conversion events. It appears that MG has the ability to generate unlimited variants of both the MG191 and MG192 genes from its minimized genome, which presumably allows the organism to evade host defenses through antigenic variation.

O-034 MYCOPLASMA GENITALIUM SYMPTOMS AND CONCORDANCE IN SEXUAL DYADS

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Objective: To assess the frequency of urogenital symptoms in patients harboring M. genitalium and to measure the concordance of M. genitalium [MG] PCR positive results within sexual dyads.
Methods: Residual samples collected from participants enrolled in a study of chlamydial infection within sexual dyads were used for this study. Participants in the original study were selected to maximize the chlamydia prevalence. Symptoms included in the analysis were urethral discharge and dysuria for males and discharge, dysuria, and abdominal pain for females. M. genitalium PCR was performed using the MgPa1/MgPa3 primers with a Dig-ELISA detection system. To provide a perspective of expected concordance, M. genitalium concordance within dyads was compared to that of other STI detected using PCR techniques as part of the original study. Logistic regression with generalized estimating equations to account for multiple observations per person was used to evaluate the association between symptoms and MG positive results. McNemar's test and _ statistics were used to analyze the concordance of MG positives within dyads.
Results: STI diagnostic data were available from 279 sexual dyads; 272 had MG PCR results. MG was found in at least one member of 55 (20.2%) dyads; prevalence in males and females was 9.6 and 13.8%, respectively. MG was not associated with the presence of any symptoms in males (p-values 0.18 and 1.00 for discharge and dysuria, respectively) or females (p-value 0.53, 0.14, and 0.18 for discharge, dysuria and abdominal pain, respectively). This lack of association with the presence of symptoms was similar to findings for chlamydia or trichomonas infections (all p-values >0.05 for both males and females). Of the 55 dyads with MG, both members of 15 (27.3%) dyads were positive while the remaining 40 had only one member with a positive result. The _ value was 0.34 [95% CI 0.19, 0.50, p-value <.0001]. This level of agreement was also similar to chlamydia and trichomonas infections identified within dyads; _=0.32 [95%CI 0.21, 0.43] and _=0.32 [95%CI 0.17, 0.47], respectively.
Conclusions: The presence of symptoms was not useful in predicting MG positive results in this population with a high prevalence of M. genitalium. Although symptoms are not associated with individual MG positive results, this is also the case for chlamydia and trichomonas infections suggesting that this infection is often asymptomatic. Concordance of MG-positive results within dyads was similar to the concordance for infection with chlamydia or trichomonas, thus providing further support for the sexual transmission of this pathogen. The data presented here provides evidence that this pathogen is not restricted to patients presenting with urethritis or cervicitis and that any efforts to manage M. genitalium should include management of sexual partners

O-035 URETHRITIS IN YOUNG MEN IN THE U.S.: FACTORS ASSOCIATED WITH IDIOPATHIC AND PATHOGEN-ASSOCIATED CASES

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Objective: Urethritis is the most common male reproductive tract syndrome yet 20-50% of cases have no defined etiology. Asymptomatic infection with known urethral pathogens, which drives ongoing population-level transmission, is not uncommon. Studies of urethral infection in men conducted among sexually transmitted disease (STD) clinic populations may not identify the full range of associated risk factors. This study aimed to identify characteristics associated with symptomatic and asymptomatic urethral infections among a general population sample of young men in the United States.
Methods: During Wave III of the National Longitudinal Study of Adolescent Health (2001-2002) urine specimens and questionnaire data were collected from 5,774 men ages 18-26. Neisseria gonorrhoeae and Chlamydia trachomatis were detected using ligase chain reaction, and Trichomonas vaginalis and Mycoplasma genitalium were identified using polymerase chain reaction. Symptomatic urethritis was defined as self-reported dysuria or urethral discharge in the past 24 hours (using identical symptom questions in an STD clinic population, ~90% of men reporting either symptom had objective evidence of urethritis [e.g., ≥5PMNs per HPF]). Idiopathic urethritis was defined as symptomatic urethritis in the absence of an identified pathogen. A stratified weighted analysis generated population-based estimates.

Results: The prevalences of symptomatic pathogen-associated and idiopathic urethritis were 0.2% and 1%, respectively, while the prevalence of asymptomatic urethral infection with known pathogens was nearly 6%. Asymptomatic cases were more likely to be Black (aOR=4.8 [95% CI 3.5-6.6]) or Hispanic (aOR=3.2 [1.9-5.3]), to have had vaginal intercourse (aOR=3.0 [1.6-5.8]), and to be ≤16 at first vaginal intercourse (aOR=1.8 [1.3-2.5]), but less likely to report receptive oral sex from any of their last three partners (aOR=0.7 [0.45-1.0]). In contrast, men with idiopathic urethritis were more likely to report an STD diagnosis within the last year (aOR=11.7 [4.2-32.5]) and having paid someone for sex (aOR=3.5 [1.0-12.0]), but less likely to report Native American or Asian/Pacific Islander descent (aOR=0.03 [0.01-0.15]) or ≥6 lifetime vaginal intercourse partners (aOR=0.14 [0.05-0.38]). Black race was not associated with idiopathic urethritis, and neither age nor correct and consistent condom use were significantly associated with idiopathic urethritis or asymptomatic urethral infection. Data were too sparse for multivariate analyses of pathogen-associated symptomatic urethritis.
Conclusion(s): Risk factors identified for pathogen-associated cases were consistent with those observed in STD clinic populations. Idiopathic urethritis was associated with a mix of both high- and low-risk characteristics, which were distinct from those associated with infection with known pathogens, but still suggest a sexually transmitted agent.

O-036 PERSISTENT MYCOPLASMA GENITALIUM AND ENDOMETRITIS AMONG WOMEN TREATED FOR PELVIC INFLAMMATORY DISEASE

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Objective: Pelvic Inflammatory Disease (PID) is a frequent condition in young women, often resulting in reproductive morbidity. Although Neisseria gonorrhoeae and/or Chlamydia trachomatis are recovered from approximately a third to a half of PID cases, the etiologic agent is often unidentified. Our objectives were: 1) to determine the association between M. genitalium and PID; 2) to assess the success of M. genitalium treatment using a standard PID treatment regimen; and 3) to determine the risks of infertility, chronic pelvic pain, and recurrent PID following M. genitalium upper genital tract infection.
Methods: Participants were 682 women in the PID Evaluation and Clinical Health(PEACH) Study with pelvic pain; pelvic organ tenderness; and leukorrhea, mucopurulent cervicitis, or untreated cervicitis. We compared endometritis (>=5 surface epithelium neutrophils per X400 field absent of menstrual endometrium and/or >=2 stromal plasma cells per X120 field) between women with and without M. genitalium, identified using PCR. Pregnancy, infertility, live birth, recurrent PID, and chronic pelvic pain were compared among women with and without M. genitalium.
Results: We detected M. genitalium in 88 (12%) of the women tested: 11% of cervical specimens and 8% of endometrial specimens were positive. Infection of the cervix and endometrium were highly correlated (Pearson's correlation 0.63, $p < 0.0001$), with 74% of endometrial positive cases also positive at the cervix and 60% of cervical positive cases also positive in the endometrium. Both plasma cells and neutrophils were identified in 75% of the women with endometrial M. genitalium compared to 42% of the women without M. genitalium in the endometrium. Women with M. genitalium identified in the endometrium were more likely to be less than 25 years of age (OR 2.5, 95% CI 1.2 ' 5.3), to douche two or more times per month (OR 2.3, 95% CI 1.2 ' 4.3), to use drugs (OR 2.2, 95% CI 1.2 ' 4.0), and to smoke cigarettes (OR 1.8, 95% CI 1.0 ' 3.2). Consistent condom use was rare and was nonsigificantly more common among women testing negative for M. genitalium. A positive test for M. genitalium was significantly associated with endometritis at baseline (OR 3.4, 95% CI 1.6 ' 8.7), endometritis 30 days post treatment with cefoxitin and doxycycline (OR 3.7, 95% CI 1.6, 6.9), and shorter time to recurrent PID. Rates of treatment failure (41%), infertility (18%), recurrent PID (28%), and chronic pelvic pain (44%) were high among women testing positive for M. genitalium at baseline. Results were similar in a subset of women testing negative for N. gonorrhoeae and C. trachomatis. There were no significant differences in infertility, pregnancy, or live birth between women with and without M. genitalium, although infertility and chronic pelvic pain were more frequent and pregnancy and live birth less frequent among women with persistent M. genitalium.
Conclusions: M. genitalium is commonly detected in the cervix and endometrium of women with clinically suspected PID and is associated with endometritis, persistent endometritis, and recurrent PID. Cefoxitin and doxycycline, a CDC recommended PID treatment regimen, is ineffective for the treatment of M. genitalium upper genital tract infection.

ORAL SESSION: MEASUREMENT OF BEHAVIORS

O-037 GOOD PERFORMANCE CHARACTERISTICS FOR RAPID PROSTATE-SPECIFIC ANTIGEN (PSA) TEST: IMPLICATIONS FOR QUALITATIVE RESEARCH

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Objective: Prostate-specific antigen (PSA) is a useful biological marker of semen exposure in studies of condom and microbicide efficacy. PSA has been used to assess reliability of self-reported sexual behavior and compare different interview techniques. Quantitative PSA tests are expensive and require specialized equipment usually restricted to central laboratories. In this study, we evaluated the performance of two rapid immunochromatographic strip tests detecting semen (one for PSA and one for seminogelin [SG]) compared to a quantitative PSA assay to identify semen in vaginal specimens.
Methods: Vaginal swabs were collected from 313 female sex workers in Dhaka, Bangladesh. Swabs were eluted into 3mL of phosphate-buffered saline. PSA concentrations were determined with the IMx Total PSA assay (Abbott). Samples were also tested using ABAcard (Abacus Diagnostics) for detection of PSA and RSID (Independent Forensics) for detection of SG. Characteristics of the test devices necessitated greater dilution of samples with RSID than ABAcard. For ABAcard, 200 microliters of swab eluate was applied directly to the sample well of the cassette. For RSID, swab eluates were diluted 1:5 in running buffer, and 100 microliters was applied to the sample well. Using plausible assumptions of initial semen volumes, dilution in vaginal fluid and further dilution during specimen preparation and testing, we estimated that semen would have been diluted 1:50 ' 1:5,000 for ABAcard testing and 1:500 ' 1:50,000 for RSID testing. For ABAcard, the appearance of the positive test line on the strip was compared to lines for PSA standard concentrations ranging from 0.5 to 50 ng/mL; positives were graded as low, medium or high. For RSID, any visible line was considered positive.
Results: In 402 specimens, PSA concentrations determined by IMx ranged from 0 to >5000 ng/mL. Using >1 ng PSA/mL to define evidence of recent semen exposure, 154 specimens (38%) were positive. Both strip tests were easy to perform and each cost considerably less per test (~US$5) than IMx (~US$30). ABAcard was 100% sensitive (95%CI 98-100) and 95% specific (95%CI 92-97) compared to IMx. With test strips containing PSA standards as visual guides for scoring, results from the ABAcard were semiquantitative. Semen was detected by RSID in 80 specimens. Of the 154 IMx-positive specimens, RSID detected only 69 (45%). The table shows ABAcard and RSID results stratified by PSA concentration.

Conclusions: The performance of ABAcard to detect semen in vaginal swab specimens was comparable to the quantitative IMx assay with a cutoff of 1 ng PSA/mL defining a positive result. In contrast, RSID was less sensitive for identification of semen in vaginal swabs processed as described. SG detection with RSID may have performed better using different sample preparation. Using a PSA-based test capitalizes on previous research describing clearance of this marker from vaginal fluid following known semen exposure. PSA detection using ABAcard requires no instrumentation and can be performed easily and economically in resource-constrained settings. Having PSA rapid test results available immediately after an interview could provide opportunities for qualitative researchers to explore discrepancies between the objective marker and respondents' reports of sexual activity.

PSA Concentration (ng/mL)	Number Tested	% ABAcard Positive	% RSID Positive
< 1.0	249	4.8	4.4
1.1 – 4.9	43	100.0	25.6
5.0 – 14.9	44	100.0	38.6
15.0 – 149.9	43	100.0	46.5
150.0 – 999.9	20	100.0	85.0
> 1000	4	100.0	100.0

Figure 1: Detection of semen markers in vaginal swabs

O-038 COMPARING 4 QUESTIONNAIRE DELIVERY METHODS FOR COLLECTION OF SELF REPORTED SEXUAL BEHAVIOUR DATA IN RURAL ZIMBABWEAN YOUTH

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Objectives: A sexual health survey in rural Zimbabwean youth was used to compare validity and reliability of sexual behaviour measures between 4 different questionnaire delivery methods.
Methods: Using a random permuted block design, 1495 youth (mean age 18.2) were randomized to receive one of four questionnaire delivery *Methods:* self administered questionnaire (SAQ=373); SAQ accompanied by audio CD (audio=376); face to face interview with sensitive questions placed in a confidential voting box (FTFI=365); audio computer assisted survey instrument (ACASI=381). Dried blood spots were collected for HIV and HSV2; females were tested for pregnancy. Qualitative data were collected on perceived method acceptability (n=115).
Results: Non response was higher in SAQ and Audio than in FTFI and ACASI ($p<0.001$). Socially censured behaviour was reported more frequently by participants using Audio or ACASI; they were more likely to report having kissed someone or having had sex. The adjusted odds ratio for kissing was higher when compared to SAQ and FTFI (both adjusted odds ratio (AOR) = 1.71 p=0.1 and 0.11 respectively) and for ever having had sex were Audio (AOR=2.05 p=0.005) and ACASI (AOR=1.98 p=0.007) when compared to SAQ and FTFI. Age at first sex was lower in ACASI (15.2 [95%CI 14.1-16.2] than in SAQ (15.9 [95%CI 14.3-17.5]), FTFI (16.9 [95%CI 16.9-17.7]), and Audio (16.7 [95%CI 16.0-17.4]). Few participants had positive biomarkers. These did not vary by questionnaire method. Participants said it was easier to understand when they could hear as well read questions. Participants who completed the questionnaire using FTFI expressed difficulty answering sensitive questions, even when they understood their answers were not known to the interviewer.
Conclusion: Rates of response and reporting of socially censured behaviours varied by questionnaire method. More complete data were collected using ACASI which gave participants a sense of privacy, provided auditory assistance, and help with skip patterns.

O-039 SEXUALLY TRANSMITTED DISEASES (STD) TESTING AMONG MEN WHO HAVE SEX WITH MEN PARTICIPATING IN PROJECT CHAT, CHICAGOS HIV BEHAVIORAL SURVEILLANCE SURVEY

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Objectives: Over 1,500 men who have sex with men (MSM) acquired infectious syphilis in Chicago between 2000-2005. In response, a targeted social marketing campaign urged MSM to make syphilis testing 'part of their routine', consistent with CDC recommendations that all sexually active MSM have at least annual screening for syphilis, and other STDs. Our objectives were to identify the extent of STD testing and STD diagnoses in MSM participating in Project CHAT, and to identify characteristics associated with testing in the midst of the syphilis outbreak.
Methods: Project CHAT, part of National HIV Behavioral Surveillance designed to capture a large and diverse sample of MSM, is a cross-sectional, community venue-based, time-space sample. Surveys were administered to consenting men >17 years of age attending MSM-oriented venues, and included questions on sexual and drug use behavior, as well as histories of HIV and STD testing and diagnoses. At 97 different venues around Chicago, 163 sampling events were conducted between 12/01/03 and 10/31/04.
Results: Of 1,147 sexually active MSM respondents, information on whether they had been tested for STDs in the previous 12 months was available for 1,133 (98.7%). Overall, 547 (48.3%) had been tested for STDs, including 498 (43.9%) who had syphilis tests, 437 (38.5%) who were tested for gonorrhea, and 193 (17.0%) reported being tested for other STDs, including 112 for Chlamydia. Younger MSM were more likely to have STD tests, with 342/636 (53.7%) of those <35 years reporting STD tests, compared to 204/496 (41.1%) of those >= 35 years of age. Having health insurance had no impact on having had STD tests, as 426/896 (47.5%) with health insurance and 118/234 (50.4%) of those without insurance reporting testing in the past 12 months. Methamphetamine use was correlated with having STD testing; 464/1,015 (45.7%) of nonmethamphetamine users had testing, compared to 64/97 (66.0%) using it <= once/month, and 19/21 (90.5%) using it at least once/week. Those with >= 3 casual sex partners in the past year were twice as likely to be tested for STDs than those with < 3 partners (OR 2.04, 95% CI 1.6, 2.6). Of 116 HIV-infected MSM, 70 (60.3%) were tested for syphilis and 56 (48.3%) for gonorrhea in the past 12 months; of 906 HIV-negative men, 411 (45.4%) were tested for syphilis, and 363 (40.1%) for gonorrhea. Of the HIV-positive MSM, 8 (6.8%) reported that they had been diagnosed with syphilis in the past 12 months, and 9 (7.7%) with gonorrhea; 11 (1.2%) HIV-negative men had been diagnosed with syphilis, and 22 (2.4%) with gonorrhea.
Conclusions: Fewer than half of sexually active MSM reported having been tested for STDs during the proceeding 12 months, despite an ongoing syphilis epidemic, an aggressive 'get tested' social marketing campaign, and CDC guidelines recommending regular testing. HIV-positive MSM were more likely to be tested for and to be diagnosed with STDs, possibly due to more contact with medical providers. These data highlight the importance for increased awareness of the need for STD testing among both MSM and their providers.

O-040 AGE- AND GENDER-SPECIFIC ESTIMATES OF PARTNERSHIP FORMATION AND DISSOLUTION RATES AMONG A PROBABILITY SAMPLE OF HETEROSEXUAL SEATTLE ADULTS AGE 18-39

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Objectives: The rate at which people form and dissolve sexual partnerships is a primary determinant of sexually transmitted infection (STI) transmission dynamics, and a standard parameter in mathematical models of STI. These rates are typically estimated from cross-sectional studies of extant or recent partnerships, but may be biased by over-sampling longer partnerships. We used data on persons' lifetime sexual experiences taken from a 2003-2004 random digit dial (RDD) survey in Seattle to estimate age- and gender-specific rates of partnership formation and dissolution.

Methods: Seattle residents age 18-39 years completed the RDD survey (N=1,194; 46.2% participation rate); we considered heterosexual participants (i.e. those reporting all opposite-sex partners during their lifetime) with complete survey data in these analyses (n=919). The survey instrument collected sexual history data including participants' lifetime number of partners and data on the participants' 5 most recent partners. A question asked if the 2 most recent partnerships were ongoing; we assumed all other partnerships had ended. Using partnership start and end dates, we calculated partnership duration and participant's age at the start of each partnership initiated at ages 16-39. For participants with >5 lifetime partners, we estimated the starting age for additional partnerships by assuming that those not described in the survey were equally distributed between sexual debut age and the earliest described partner. We approximated durations for these partnerships by sampling known durations from all completed partnerships beginning at the same age. We calculated age-specific formation rates for new partnerships by dividing the number of new partnerships formed at an age by the total person-time for that age, and estimated dissolution probabilities using Kaplan-Meier plots.

Results: Respondents explicitly described 2,987 partnerships; we imputed an additional 5,268 (8,255 total partnerships). The average new partnership formation rate between ages 16-39 was 0.53 partners per year (95% confidence interval, 0.48-0.59) among women and 0.79 (0.68-0.89) partners per year among men. For women, the rate of new partnership formation peaked at age 19 at 0.84 (0.72-0.96) partners per year, decreased throughout the 20s, and remained at approximately 0.20 after age 30. For men, the formation rate peaked at age 20 at 1.26 (1.01-1.51) partners per year and declined to approximately 0.50 at age 30. The rate of partnership dissolution followed an inverse exponential curve with >20% of all partnerships lasting ≤1 week. Male-reported partnerships ended more quickly than female-reported partnerships. One year after initiation, 31% of male and 42% of female partnerships were ongoing. There were also apparent differences between survival probabilities based on age at partnership formation. After one year, only 27% of 638 partnerships begun between ages 30-39 were ongoing, while 42% of 1,526 initiated between ages 15-17 were ongoing.

Conclusions: This study provides new empirical estimates of age- and gender-specific partnership formation and dissolution rates for heterosexuals age 16-39, which will be valuable for mathematical models of STI transmission dynamics, particularly stochastic, individual-based models. Specifically, we will use these estimates in a model predicting the impact of a state-wide expedited partner therapy program on bacterial STI in Washington State.

O-041 A THREE-ARM RANDOMISED CONTROLLED TRIAL COMPARING COMPUTER-ASSISTED SELF-INTERVIEW WITH COMPUTER-ASSISTED PHYSICIAN INTERVIEW AND PEN AND PAPER FACE-TO-FACE SEXUAL HISTORY TAKING IN A CLINICAL SETTING

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Objectives: To compare recording of specific sexual behaviours among patients attending two London sexual health clinics according to three modes of interview: computer-assisted self-interview (CASI), computer-assisted physician interview (CAPI) and routine pen and paper face-to-face interview (PAPI). All three interview methods were directed at collecting the data specified by the clinics' standard proformas.

Methods: A randomized controlled trial was conducted in two London sexual health clinics in 2005-6. Patients over the age of 16 attending with a new clinical episode were eligible. Those who consented to the study were randomly allocated to CASI, CAPI or PAPI. The recording of total numbers of sex partners, same sex partners, concurrent sexual relationships, paying for or selling sex, not using condoms with casual partners, and reporting anal sex were compared across the three groups. Analysis was conducted by intention to treat, and odds ratios adjusted for gender and clinic. Generalized estimating equations were used to calculate summary odds ratios across all outcomes.

Results: 795, 744 and 779 patients participated after randomisation to the CASI, CAPI and PAPI arms of the study respectively. Recording of behaviours was generally similar in the CASI and CAPI arms of the study. Compared to PAPI significantly higher recording was seen for multiple partners (CASI 38.7%, CAPI 36.4%, PAPI 31.7%), concurrent sexual relationships (CASI 16.0%, CAPI 20.5%, PAPI 8.0%), and having anal sex (CASI 23.1%, CAPI 22.31%, PAPI 15.9%). By contrast reporting of same sex partners, recent unprotected casual sex and paying for or selling sex did not differ significantly across trial arms. A summary measure across all the behaviors specified above found greater recording with CASI (OR 1.4 [CI 1.2-1.6] and CAPI [OR 1.4 [CI1.2-1.7]). Data on the impact of interviewing methods on sexual health outcomes will be reported separately.

Conclusions: The use computer assisted interviews in sexual health clinics, with or without physicians present, results in more detailed information about stigmatized sexual behaviors being recorded than with traditional face to face methods.

O-042 COMPARISON OF INFORMAL CONFIDENTIAL VOTING AND FACE-TO-FACE INTERVIEWING IN COLLECTING SEXUAL RISK DATA FROM MEN WHO HAVE SEX WITH MEN (MSM) AND TRANSGENDERS (HIJRA) IN BANGALORE

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Objective: The accuracy of self-reporting of sensitive sexual risk behaviour and drug use is highly susceptible to misreporting biases. Informal Confidential Voting Interviews (ICVI) may minimise social desirability bias by increasing privacy of the interview setting. The objective of this study was to compare reported risky behaviour among MSM and Hijra reported through two interviewing techniques: ICVI and face-to-face interviews (FTFI).

Methods: This survey was carried out under Avahan, the India AIDS Initiative. A total of 85 cruising sites were selected in Bangalore urban, 8 clusters were hammam-based sex work sites (hammams are where Hijra sell sex to men) and 77 were public locations where a time-location sample was used to identify MSM and Hijra (cruising for both commercial and non-commercial sex). Seven individuals were selected by cluster and randomly allocated to one of the two data collection ***Methods:*** ICVI and FTFI. Identical questions between the two samples of weighted-data (adjusted for sampling frame) were compared with Fisher exact test

Preliminary *Results:* A total of 372 MSM (men aged 18 or older who had ever had sex with another man) and Hijra were interviewed for the FTFI and 153 respondents completed ICVI. The average age for both samples was 29 years. ICVI participants were more likely to report injecting drug use (4% vs 1% p=0.008) and paying to have sex with a female sex worker (FSW) in the last year (28% vs. 8% p=0.001) than the FTFI respondents. However, there were no differences in participant responses to questions on socio-demographics; sexual debut with another male; never used a condom (12% vs 14%); proportion who had ever sold sex to men (58% vs 56%); those currently with a main female sex partner (26% vs 20%) and non-condom use with a main female partner (17% vs 19%).

Conclusion: The ICVI yielded higher reports of stigmatised behaviour on intravenous drug use and sex with a FSW in the last year but no signficant difference in the disclosure of other sensitive information. It is possible that differential refusal to participate by FTFI or ICVI may have introduced some differences in the composition of the sample (e.g. sexual identity) which may have influenced the results. Relevant multivariate analysis will be carried out to better understand results. Contrary to previous studies among the general population in other countries, ICVI does not seem to improve response to sensitive questions among MSM in India. This was the first study investigating this method among MSM in India, and further research is therefore needed to assess the quality of this inexpensive survey method in other high-risk and general populations.

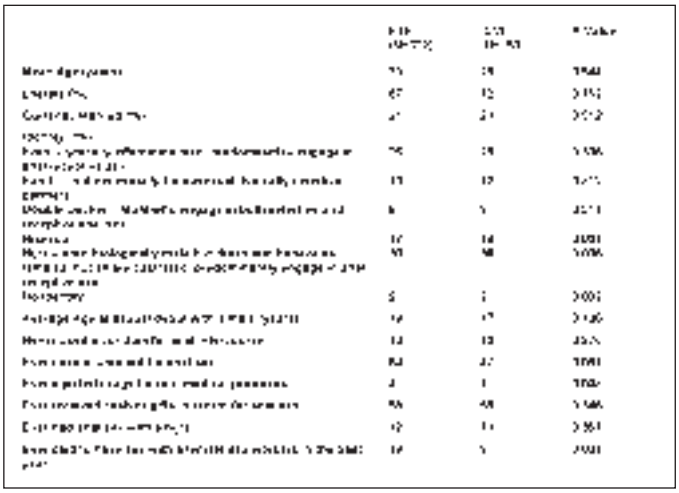

Table 1: Comparison between the FTFI and ICVI

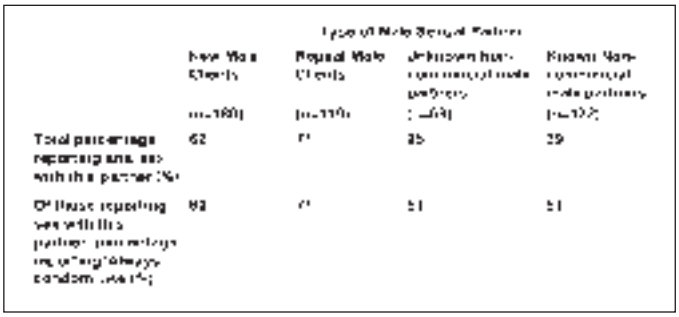

Table 2: Sexual Behaviour and Condom Use

ORAL SESSION: PATHOGENESIS OF SEXUALLY TRANSMITTED INFECTIONS

O-043 HERPES SIMPLEX VIRUS TYPE-2 SPECIFIC CD8+ T-CELLS IN HUMANS PREFERENTIALLY EXPRESS MESSENGER RNA ENCODING FT-VII, A KEY MOLECULE FOR HOMING OF MEMORY LYMPHOCYTES TO SKIN

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Objective: An important aspect of host immunity is homing of pathogen specific T-cells to sites of infection. Our lab has previously shown that herpes simplex virus type 2 (HSV-2) -specific T-cells express cutaneous lymphocyte-associated antigen (CLA) and the related E-selectin ligand (ESL). These adhesion molecules may direct T-cell homing to inflamed, HSV-2-infected cutaneous and genital tissues in which lumenal vascular endothelial cell E-selectin is up-regulated. Interestingly, CLA and ESL are not expressed on T-cells specific for viral pathogens such as Epstein-Barr (EBV), cytomegalovirus (CMV), or influenza (FLU) that do not target the skin. The exact mechanisms by which CLA and ESL expression are regulated have not been elucidated. Two genes, encoding fucosyltransferases IV (FT-IV) and VII (FT-VII), have been shown in cell transfection and mouse knockout models to be essential for expression of CLA, ESL, and homing to skin. By studying for the first time circulating CD8+ T-cells known to be specific for a skin pathogen and proven to localize to skin, we may begin to understand on a transcriptional level how skin-homing T-cells are programmed to express specific receptors on their surface. Ultimately, decoding this process may aid in vaccine design for mucocutaneous STD pathogens, by eliciting memory T-cells with appropriate skin-homing properties.

Methods: CD8+ T-cells specific for HSV-2, EBV, and CMV were isolated from whole unmanipulated blood from seropositive donors using tetramer (tet) staining and cell sorting. RNA from these cell populations was isolated and cDNA synthesized using oligo-dT priming. Real-time polymerase chain reaction (RT-PCR) was used to measure the level and FT-VII mRNA in these pathogen-specific CD8+ T-cells using GAPDH as a control housekeeping gene. Levels of FT-VII mRNA were compared between groups of HSV-2 tet+ vs. CMV or EBV tet+ cell specimens using the unpaired Mann-Whitney test. For within-subject comparisons, levels of FT-VII mRNA were compared between virus tet+ cells and bystander CD8+ T-cells using the Wilcoxon matched-pairs signed-rank test (GraphPad 3.0 Software).

Results: We detected a statistical difference in the levels of FT-VII mRNA between the HSV-2 tet+ vs. EBV tet+ groups but not between the HSV-2 tet+ vs. CMV tet+ groups (p=0.02 and p=0.29, respectively). Within subjects, HSV-2 tet+ CD8+ cells had higher levels of FT-VII mRNA than did CD8+ tet- populations (p=0.02). In contrast, FT-VII mRNA levels within EBV or CMV tet+ cells were not significantly higher than were levels among bystander CD8 T-cells (p=0.31 and p=0.44, respectively).

Conclusion: Circulating HSV-2-specific CD8+ T-cells contain significantly higher levels of FT-VII mRNA in comparison to EBV-specific CD8+ T-cells or bystander non-HSV-specific cells. The increased amount of FT-VII mRNA in the cells may enable HSV-2-specific cells to home more quickly in response to recurrent outbreaks of HSV-2 infection in the skin or mucosa. Ongoing investigations are using HSV-2-specific vs. control EBV- or CMV-specific T-cells as a probe of the phenotype of skin-homing T-cells at the protein and mRNA levels.

O-044 CHARACTERIZATION OF THE CHLAMYDIA-SECRETED PROTEASE CPAF

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A chlamydia-secreted protein designated as CPAF (chlamydial proteasome-like activity factor) has been shown to degrade various host factors, including transcriptional factors (e.g. RFX5) for evading immune recognition and (NF-kB) inflamma-

tory responses, cytokeratin 8 for inclusion expansion and BH3-domain only proteins for blocking apoptosis. Although CPAF is encoded by a single open reading frame in chlamydial genome, two fragments designated as CPAFn and CPAFc respectively were the main materials purified. The cleavage of CPAF into CPAFn and CPAFc is a physiological process required for CPAF proteolytic activity. Pulse/chase experiments revealed that CPAF was initially synthesized in chlamydia-infected cells as a 70kDa full length protein and rapidly cleaved into CPAFn and c fragments. Full length CPAF expressed via a transgene in mammalian cells remained uncleaved and had no proteolytic activity while CPAF expressed in bacteria was processed and possessed RFX5 degradation activity. CPAF mutants deficient in processing even when expressed by bacteria failed to degrade RFX5. However, the RFX5 degradation activity was partially restored when the mutant CPAF was artificially induced to undergo cleavage. These observations have demonstrated that cleavage of CPAF is both necessary and sufficient for CPAF activity. The cleaved CPAFn and c fragments have to form stable intramolecular dimers for obtaining proteolytic activity. Precipitation with antibodies recognizing CPAF dimers removed the proteolytic activity responsible for degrading host transcription factor RFX5 from chlamydia-infected host cell cytosol while precipitation with antibodies recognizing free CPAF fragments alone failed to do so. Separation of CPAFn from CPAFc resulted in loss of proteolytic activity. Furthermore, neither the expressed full length CPAF that was not processed nor the co-expressed CPAFn and c fragments that failed to form dimers degraded RFX5. These observations demonstrate that intramolecular dimerization is required for CPAF to degrade host proteins. CPAF, being a secreted protein not part of the chlamydial organism structure, is also surprisingly immunogenic during chlamydial infection in humans. In comparison with many other chlamydial antigens including known immunodominant antigens, C. trachomatis-infected women produced the highest titers of antibodies to CPAF. The human anti-CPAF antibodies can neutralize CPAF proteolytic activity. Immunization of mice with CPAF induced a robust protective immunity against chlamydial challenge infection. Ongoing efforts are to explore CPAF as a target for developing diagnosis, intervention and prevention strategies for chlamydial infection.

O-045 HOST GENETIC POLYMORPHISMS AS POTENTIAL PREDICTORS OF SPONTANTEOUS RESOLUTION OF GENITAL CHLAMYDIAL INFECTION

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Objective: To evaluate host genetic markers that are predictive of spontaneous resolution of genital chlamydial infection.
Methods: Retrospective analyses in the Reaching for Excellence in Adolescent Care and Health (REACH) study previously revealed associations of polymorphisms in HLA-DQB1 and the interleukin-10 gene (IL10) promoter with chlamydia outcomes. To explore these associations further, we genotyped polymorphisms of HLA class II (DRB1 and DQB1) loci and single nucleotide polymorphisms (SNP) of IL10 (nucleotide positions -1082 G/A, -819 C/T, and -592 C/A) among mostly adult and African American subjects enrolled in the Human Immune Responses to Chlamydia trachomatis Infection (HIR-CT) Study, our ongoing prospective study of CT outcomes (persistent CT by PCR versus spontaneous resolution). We studied 129 patients >16 years of age who returned to the Jefferson County (AL) Department of Health STD Clinic for CT treatment within 60 days of a positive CT screening test. No treatment was prescribed at the time of screening because patients lacked CT-associated syndromes (e.g., urethritis or cervicitis) or other treatment indications (e.g., CT contact). We excluded women who were pregnant or had a prior hysterectomy, as well as subjects with upper genital tract complications at the time of screening or discordant CT OmpA genotypes between screening and treatment visits. The associations of genetic and non-genetic factors with CT outcomes were assessed in univariate and multivariable models.
Results: The median age of the 129 subjects (115 females and 114 African Americans) was 21 years (range 17-54), and 54 (42%) had a history of prior CT. The median interval between screening and returning for therapy was 13 days (range 4-59). Spontaneous resolution of CT prior to therapy occurred in 23 (18%) subjects, more frequently in men than women (5 [36%] vs 18 [16%]; P = 0.08) and in those with a history of CT than those without (24% vs 13%; P = 0.10). The IL10 A-C-C haplotype was significantly associated with CT resolution; it was detected more frequently in patients with resolved CT than in those with persistent CT (17 [74%] vs 47 [44%]; P = 0.01). Heterozygosity at -592 (C/A) was also more common in those who resolved CT (20 [87%]) compared with those who did not (55 [52%]) (P = 0.01). HLA-DQB1*05 occurred more frequently in patients with CT persistence (42 [40%] vs 5 [22%]; P = 0.10). After adjustment for gender, race, interval between visits, and history of prior CT, the IL10 -592 C/A genotype retained its association with spontaneous resolution of infection (P = 0.01).
Conclusions: In our HIR-CT study population, the IL10 -592 C/A genotype was independently associated with spontaneous resolution of genital CT. Verification of this finding in a larger cohort followed by analyses of underlying functional mechanisms should help define cytokine responses that mediate CT clearance and will provide greater power to detect associations of other genetic determinants that contribute to CT clearance. Correspondence: William M. Geisler - wgeisler@uab.edu

O-046 MECHANISMS OF TRANSCRIPTIONAL REGULATION OF SUBFAMILY I AND II TPR GENES OF TREPONEMA PALLIDUM SUBSP. PALLIDUM

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Objectives: Syphilis is caused by Treponema pallidum subsp. pallidum, a spirochete which can be neither cultivated in vitro nor genetically manipulated. Approximately 2% of the small T. pallidum (Nichols strain) genome is occupied by the tpr gene family (tprA- tprL), which encodes for a group of potential virulence factors. TprC/D, F/I, E, G, J, and K are the targets of a strong humoral and cellular immune responses and TprK undergoes antigenic variation. Immunization with some recombinant Tpr peptides significantly alters lesion development following infectious challenge. Regulation of gene expression is a mechanism by which pathogenic bacteria rapidly adapt to environmental conditions and escape from harmful adaptive host responses, and, in syphilis, may permit the establishment of a chronic infection. A key step in control of gene expression in bacteria is regulation at the transcriptional level. Distinct patterns of transcription among T. pallidum strains, and the presence of unique motifs within tprC, D, F, I, E, G, and J promoters, strongly suggest mechanisms of regulation of expression of these genes. We have identified two groups of elements in the Subfamily I (tprF, I, C, and D) and II (tprE, G, and J) tpr promoters potentially involved in transcription regulation: homopolymeric guanosine (poly-G) tracts of varying length, located immediately upstream of the tpr transcriptional start sites (TSS), and putative binding motifs for the cAMP receptor protein (CRP), a recognized transcriptional regulator. The aim of our study was to investigate the influence of the poly-G sequences on modulating tpr transcription and the ability of a T. pallidum CRP homolog to recognize its predicted binding motifs.
Methods: To assess whether changes in length of the poly-G modulate transcription, tprE, G, J, F and I promoter regions containing homopolymeric tracts with different numbers of G's, the ribosomal binding site and start codon were cloned in frame with the green fluorescent protein (GFP) reporter gene. Promoter activity was then measured as fluorescence emission from E. coli cultures transformed with the different constructs and by using real time qRT-PCR to evaluate GFP transcription. Electrophoretic Mobility Shift Assay (EMSA) using recombinant T. pallidum CRP was used to investigate binding to the predicted CRP binding motifs.

Results: For tprJ, G, and E-derived clones, fluorescence was significantly higher with promoter constructs containing ≤8 G's, while plasmids containing the same promoters with 9 G's or more gave no significant signal above the background, suggesting that expression of these genes is high only when the poly-G tract contains <8 G's. In contrast, Tprl/F-derived clones induced similar levels of fluorescence regardless of the number of G's within the promoter. Message quantification confirmed these results. EMSA showed that recombinant T. pallidum CRP binds tprE, G, and J promoters. Furthermore, preliminary data suggest that transcription is increased following CRP binding.
Conclusions: The involvement of multiple factors in tpr transcriptional regulation supports T. pallidum ability to tightly regulate Tpr expression, most likely as part of the adaptive response of this pathogen to external stimuli originating from the immunological or micro-environmental changes in the host during infection.

O-047 VIRUS-SPECIFIC CD8+ T CELLS PERSISTING NEAR SENSORY NERVE ENDINGS LIMIT HSV-2 REACTIVATION IN HUMAN GENITAL SKIN

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Objective: To define in vivo the role that HSV-2 specific CD8+ T cells play in controlling reactivation and clearance of HSV-2 from genital skin.
Methods: We studied 6 patients with culture proven genital herpes. In situ staining by Quantum dot-conjugated peptide-MHC multimers (Qdot multimers) were used to analyze the in vivo localization of HSV-2-specific CD8+ T cells in sequential genital lesions taken during disease evolution. CD8+ T cell infiltration in peripheral tissue was analyzed in patients treated with or without antiviral therapy. HSV-2 genome copies were also monitored by real-time PCR in the same biopsy.
Results: During acute phase, a massive CD8+ T cell infiltration was localized to the site of the genital lesion. The appearance of HSV-2 specific CD8+ T cells in the epidermis was associated with a rapid clearance of virus from the skin lesion. After lesion healing, in correlation with loss of HSV DNA from skin biopsies, HSV-2 -specific CD8+ T cells persisted at dermal-epidermal junction and selectively accumulated near sensory nerve endings. The same pattern of persisting HSV-2 specific CD8+ T cells was also seen in patients underwent daily antiviral therapy. Four cases of subclinical reactivation were detected in two out of six patients, in which viral reactivation was quickly controlled by the hosts without the formation of a skin ulcer or erosion. These biopsies appeared as clinically and histologically normal skin with detectable amount of HSV-2 DNA, and displayed a moderate increase in both HSV-specific and total CD8+ T cell infiltration in the dermis.
Conclusions: HSV-specific CD8+ T cells infiltrate selectively to the site of infection and persist adjacently to sensory nerve endings in genital skin after lesion healing. These cells appear to be able to prevent viral manifestations in vivo and abrogate the appearance of genital lesions. Our findings indicate that the virus-specific CD8+ T cells persisted in the peripheral mucosa may play an important role in immune surveillance after resolution of herpes lesions, and influence the frequency and clinical course of HSV-2 reactivation in human. jiazhu@u.washington.edu

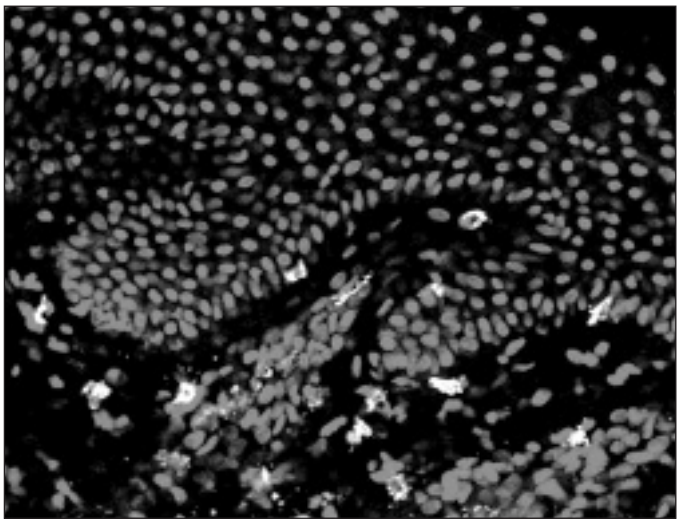

Figure 1: HSV-2 specific CD8+ T cells persist in skin

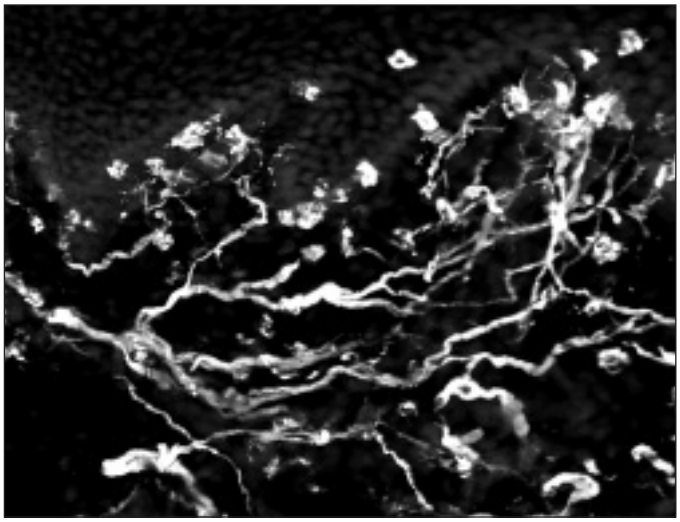

Figure 2: CD8+ T cells accumulate near sensory nerve endings

O-048 PHENOTYPIC AND GENOTYPIC VARIATION AT INCA WITHIN SAME-SEROVAR STRAINS OF CHLAMYDIA TRACHOMATIS ISOLATED FROM CLINICAL SAMPLES OF INDIVIDUAL PATIENTS

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Objective: Chlamydia trachomatis is the most common bacterial STDs in the United States and the leading cause of preventable blindness worldwide. Because of its spore-like nature and biphasic intracellular developmental cycle, techniques for its genetic analysis are severely limited, restricting understanding of the molecular biology of this widespread pathogen. Isogenic strains possessing mutations in specific genes are potentially important tools for the study of pathogenesis in vitro and in animal models of infection. We previously described C. trachomatis isolates that form multiple non-fusogenic inclusions within single cells infected with multiple elementary bodies. Inclusions formed by these isolates uniformly lacked the protein IncA in the inclusion membrane (IM). The objective of this study was to identify and characterize the relatedness of same-serovar strains of C. trachomatis that possessed either IncA- or IncA phenotypes isolated from the same patient.

Methods: To explore the possibility that wild-type strains were among the naturally occurring mutants, we screened 44 low-passage IncA-negative isolates with anti-IncA monoclonal antibody (Mab). Relatedness of matched pairs was examined by monoclonal antibody labeling as well as DNA sequence analysis of several genes including in CT199 (incA), CT681 (omp1)and CT166 (cytotoxin). We also screened isolates from previously reported patients who had multiple same-serovar infections over extended periods of time.
Results: Using this approach two isolates (nonfusing serovars F and J) were found to contain minority inclusion same-serovar populations with the IM positively labeled for IncA. By screening isolates from patients with sequential same-serovar isolates, a non-fusing variant was found within the sequential same-serovar isolates in two of seven of these patients. A non-fusing variant was found within the sequential same-serovar isolates (both serovar Ia) in two of seven of these patients.
Conclusions: In summary, we identified two pairs of C. trachomatis strains in two clinical specimens that share MOMP antibody labeling while having a distinct phenotypic difference (IncA positive fusing inclusions versus IncA negative nonfusing inclusions). We conclude that these two strains are closely genotypically related based on DNA sequence analysis. Also, we identified two IncA negative strains among sequential same-serovar (Ia) isolates from two patients. Gene sequence analysis from additional genes will be conducted to attempt to further link variants with their potential wild-type ancestors and to provide further evidence that C. trachomatis strains persisting in humans can mutate from a wild type phenotype to a variant phenotype and back again during the course of infection.

ORAL SESSION: STD'S AND WOMEN

O-049 HORMONAL CONTRACEPTIVE USE, HERPES SIMPLEX VIRUS INFECTION, AND RISK OF HIV-1 ACQUISITION AMONG KENYAN WOMEN

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Objectives: Studies of the effect of hormonal contraceptive use on the risk of HIV-1 acquisition have generated conflicting results. A recent study from Uganda and Zimbabwe found that women using hormonal contraception were at increased risk for HIV-1 if they were seronegative for herpes simplex virus type 2 (HSV-2), but not if they were HSV-2 seropositive. We have previously reported that hormonal contraception was associated with increased HIV-1 risk among a high-risk group of Kenyan women. The objective of the present study was to explore the effect of HSV-2 infection on the relationship between hormonal contraception and HIV-1 in this population.
Methods: Data were from a prospective cohort study of 1206 HIV-1 seronegative sex workers from Mombasa, Kenya who were followed monthly. Multivariate Cox proportional hazards analyses were used to adjust for demographic and behavioral measures and incident sexually transmitted diseases.
Results: Two hundred thirty-three women acquired HIV-1 (8.7/100 person-years). HSV-2 prevalence (81%) and incidence (25.4/100 person-years) were high. In multivariate analysis, including adjustment for HSV-2, HIV-1 acquisition was associated with use of oral contraceptive pills [adjusted hazard ratio (HR) 1.59, 95% confidence interval (CI) 1.10-2.28] and depot medroxyprogesterone acetate (adjusted HR 1.85, 95% CI 1.37-2.48). The effect of contraception on HIV-1 susceptibility did not differ significantly between HSV-2 seronegative versus seropositive women. HSV-2 infection was associated with elevated HIV-1 risk (adjusted HR 3.70, 95% CI 1.69-8.09).
Conclusions: In this group of high-risk African women, hormonal contraception and HSV-2 infection were both associated with increased risk for HIV-1 acquisition. HIV-1 risk associated with hormonal contraceptive use was not related to HSV-2 serostatus.

O-050 HORMONAL CONTRACEPTION AND THE ACQUISITION OF CERVICAL CHLAMYDIAL AND GONOCOCCAL INFECTIONS

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Objectives: Hormonal contraception (HC), including combined oral contraceptives (COC) and depot medroxyprogesterone (DMPA) are among the most highly used contraceptives worldwide. Use of these methods is particularly high in Sub-Saharan Africa and other geographic areas where the prevalence of chlamydial and gonococcal infections is high. Previous research suggests that both COC and DMPA use may increase the acquisition of Chlamydia trachomatis (CT) while the current evidence concerning HC use and Neisseria gonorrhoeae (GC) acquisition is inadequate to draw firm conclusions. We used data from a large multi-country study of HC and HIV acquisition to examine the association between COC and DMPA use and the acquisition of CT and GC infections.
Methods: We enrolled 6,109 women from family planning clinics in Uganda (UG), Zimbabwe (ZM) and Thailand (TH); 5937 women who returned for follow-up between 1999 and 2004 with a valid CT or GC result contributed 42,872 visit segments to the analysis. At enrollment, participants were aged 18-35 years, were HIV-uninfected and used either COCs, DMPA or no-hormonal (NH) method. Participants were seen quarterly for up to two years; at each visit participants were interviewed about contraceptive use and sexual behaviors and underwent physical exams including collection of cervical swabs. Chlamydial and gonococcal infections were diagnosed using polymerase chain reaction (PCR). We compared time to acquisition of CT and GC infections among COC, DMPA and NH users using the Anderson-Gill extension of the Cox regression model.
Results: We diagnosed 459 incident CT and 343 incident GC infections. CT incidence was 4.3 per 100 women-years (wy) (3.7, 3.3 and 6.6 per 100wy in UG, ZM and TH, respectively) and GC incidence was 3.2 per 100wy (4.6, 3.1 and 1.5 per 100wy in UG, ZM and TH, respectively). CT incidence was 5.1, 3.8 and 4.2 per 100 wy for COC, DMPA and NH users; GC incidence was 3.8, 3.2 and 2.8 per 100 wy for COC, DMPA and NH users, respectively. In multivariate analysis, controlling for study site, age, living with partner, education, pregnancy, breastfeeding, STI history, participant behavioral risk, coital frequency, condom use, partner nights away from home and partner having other sex partners, the adjusted hazard ratio (HR) for CT infection was 1.39 (95% CI 1.09-1.77) for COC users and 1.09 (95% CI 0.84-1.41) for DMPA users compared with women in the NH group. For GC infection the HR for COC and DMPA users was 1.70 (95% CI 1.25-2.31) and 1.50 (95% CI 1.10-2.05), respectively. Additional adjustment for bacterial vaginosis, trichomoniasis, and HSV-2 infection resulted in little change in the HRs for either CT or GC infections.
Conclusions: This multi-country study with large numbers of incident CT and GC infections suggests that COC use is associated with an increased risk of acquiring both CT and GC infections, while DMPA use is associated with an increased risk of acquiring GC. This adds important new evidence that hormonal contraceptive use appears to increase women's risk of cervical CT and GC infections.

O-051 CHANGES IN BV-ASSOCIATED BACTERIAL CONCENTRATIONS WITH VAGINAL METRONIDAZOLE THERAPY

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Objectives: Several novel bacteria have been associated with bacterial vaginosis (BV) through use of cultivation-independent methods such as PCR. We sought to describe the changes in vaginal bacterial concentrations following antibiotic therapy for BV using a panel of bacterium-specific quantitative PCR (qPCR) assays. We hypothesized that cure of BV would result in a decrease in vaginal bacterial load for key BV-associated bacteria, including three uncultivated bacteria in the Clostridiales Order that we have designated BV-associated bacterium (BVAB) 1, 2, and 3, as well as Megasphaera phyloype 1. Conversely, we hypothesized that the concentration of Lactobacillus crispatus would increase in subjects successfully treated for BV.

Methods: Vaginal swabs were collected from women (n=20) with BV diagnosed by Amsel's clinical criteria. Both pre and post-treatment swabs were tested by bacterium-specific qPCR, with post-treatment swabs collected within 1 month (25-43 days) following treatment with one 5-day course of vaginal metronidazole. All women had BV cure confirmed by Amsel's criteria. qPCR assays employed a TaqMan format for detecting each bacterium's specific 16S rRNA gene sequence in a highly sensitive and specific fashion. P-values were calculated using the Wilcoxon signed rank test.

Results: Extremely high levels of BV-associated bacteria were found in some subjects pre-treatment including BVAB1 (median=2.04E+08 16S rDNA gene copies per swab), BVAB2 (2.16E+06), BVAB3 (1.93E+05) and Megasphaera (1.42E+07). qPCRs for Megasphaera demonstrated a four log reduction in the median bacterial load from pre to post-treatment (p=0.001). There was a three to three and a half log reduction in the median bacterial load of BVAB1(p=0.16), BVAB2 (p=0.001) and Gardnerella vaginalis (p=0.002) and a two and a half log reduction in BVAB3 (p=0.25). L. crispatus, a dominant member of healthy vaginal flora, had an inverse correlation with BV status and a four log increase in median bacterial load from pre to post-treatment (p=0.01), with median quantities of 9.11E+06 gene copies per swab.

Conclusions: Extremely high levels of bacterial DNA from several rarely cultivated species were detected in the vaginal fluid of subjects with BV. There were significant reductions in vaginal bacterial loads with successful antibiotic treatment, providing further evidence that some fastidious BV-associated bacterial species play an important role in the pathogenesis of BV. Quantities of L.crispatus and BV-associated bacteria were inversely correlated.

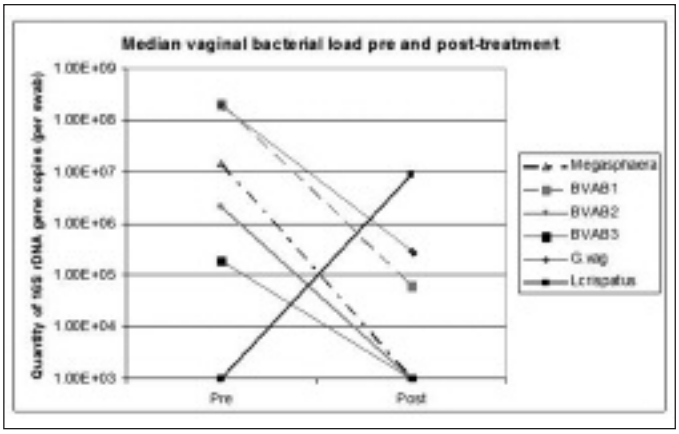

Figure 1: Changes in median vaginal bacterial load

O-052 CERVICITIS IN WOMEN ATTENDING STD CLINICS IN WASHINGTON STATE, U.S.

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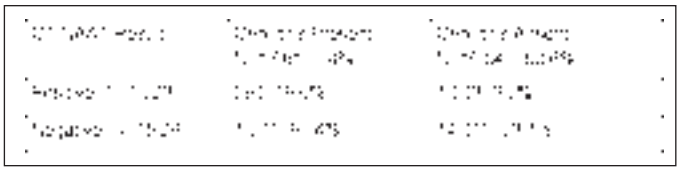
Objectives: To analyze women seeking care at STD clinics participating in the Region 10 Infertility Prevention Project (IPP) in the U.S. Pacific Northwest in order to describe (1) the proportion of cervicitis associated with C. trachomatis (CT), and (2) risk factors associated with cervicitis among women with and without CT.

Methods: Women attending 18 STD clinics that provided universal testing for CT using transcription-mediated amplification (Aptima-CT; GenProbe) in Washington State from January 1998 through June 2005 comprised the study population. We examined cervicitis (mucopurulent endocervical discharge, easily induced endocervical bleeding, and/or edematous ectopy) prevalence and assessed risks associated with cervicitis by CT status. Although gonorrhea is rare in this population (0.3% of 57,534 women tested at IPP sites in 2003), we analyzed a subset of women with gonorrhea test results, and validated the resultant model in the remaining study population.

Results: For 16,610 available records (median age of subjects, 25 y), CT positivity was 8.0%; valid specimens were cervical swabs (82.3%) and urine (16.1%) (1.6% of visits had missing specimens). Compared to women with CT- cervicitis, women with CT+ cervicitis were more likely to have had CT in the prior year (OR 2.0 (95% CI 1.4-2.9)), report a new (OR 1.7 (1.3-2.2)) or multiple partners in the last 2 months (OR 1.5 (1.1-1.9)), or report a symptomatic partner (OR 5.0 (3.6-6.7)) or contact to a CT+ partner (OR 8.5 (5.9-12.4)). Among 1,323 CT+ tests, cervicitis was directly associated with younger age ($P < 0.001$), report of new (OR 1.4 (1.1-1.9)) or multiple (OR 1.4 (1.1-1.8)) partners, symptomatic partner (OR 3 (2.2-4.2)), or contact to CT (OR 1.6 (1.2-2.2)). Among 15,287 CT- tests on women, condom use at last sex (OR 0.9 (0.7-1.0)), CT in prior year (1.4 (1.1-1.7)), multiple (OR 1.4 (1.2-1.6) or symptomatic (OR 2.3 (1.9-2.8)) partners and contact to CT (OR 1.7 (1.3-2.3)) were associated with cervicitis. Significantly fewer women with CT- cervicitis reported recent contact to CT relative to women with CT+ cervicitis (28% vs. 4.4%; $P < 0.001$). In a multivariate model that included all subjects and controlled for CT infection and contact to CT, independent risk factors for cervicitis included symptomatic partner (OR 2.2 (1.8-2.6)) and condom use at last sex (OR 0.8 (0.7-0.9)).

Conclusion: Among CT+ women, cervicitis was associated with risks suggestive of recent CT acquisition (new/symptomatic partner, contact to CT), supporting the hypothesis that cervical inflammation may in part depend on factors reflective of duration of CT infection, including lack of immediate mucosal immune response or higher CT burden at incident infection. Cervicitis in CT- women was also associated with STD-related risks and detected less often in women who reported condom use at last sex, suggesting that transmissible agents apart from CT and gonorrhea are causative and common.



O-053 SUBCLINICAL PELVIC INFLAMMATORY DISEASE (PID) IS ASSOCIATED WITH FALLOPIAN TUBE DAMAGE

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Objectives: Acute PID is an important cause of tubal factor infertility. A large proportion of women with tubal factor infertility have evidence of prior infections with Chlamydia trachomatis or Neisseria gonorrhoeae, but no history of prior acute PID illness. Subclinical PID is a condition characterized by inflammatory changes of the female upper genital tract (endometrium and/or fallopian tubes) in the absence of clinical evidence of acute PID. The objective of this study is to determine whether subclinical PID is associated with fallopian tube damage.
Methods: Women with risk factors for acute PID but who lacked signs and symptoms of PID were enrolled in this longitudinal study. Nonpregnant women were eligible for enrollment if they had a current diagnosis of chlamydia, gonorrhea, bacterial vaginosis or mucopurulent cervicitis, or if they had a recent sexual exposure to either N. gonorrhoeae, C. trachomatis or nongonococcal urethritis. Subclinical PID was diagnosed in women who had endometritis on endometrial biopsy performed at enrollment. Endometritis required the presence of at least 5 PMNs per hpf and at least 1 plasma cell per lpf. Three months after enrollment a hysterosalpingogram (HSG) was performed to assess for damage to the fallopian tubes.
Results: 420 participants with adequate endometrial biopsies and HSGs were included in the analysis. Subclinical PID was present in 58 women (14%). Fallopian tube damage was identified in 38 women in the cohort (9%). In women with subclinical PID, the rate of fallopian tube damage was 17.2% (10/58), while only 7.7% (28/362) of women without subclinical PID had tubal damage ($p<0.05$, RR 2.2, 95% CL 1.1, 4.3). Subclinical PID remained associated with fallopian tube damage when the analysis was restricted to women with documented lower genital tract infection. Endometritis in the absence of a lower genital tract infection was not associated with fallopian tube damage.
Conclusions: Subclinical PID is associated with a two-fold increased risk of fallopian tube damage. The results of this prospective study are consistent with retrospective data linking subclinical PID and tubal factor infertility. The optimum treatment strategy to prevent fallopian tube damage following subclinical PID remains to be determined.

O-054 CHLAMYDIAL AND GONOCOCCAL INFECTIONS IN WOMEN SEEKING PREGNANCY TESTING AT FAMILY PLANNING CLINICS

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Objective: Assess genital chlamydial (CT) and gonococcal (GC) infection prevalence and associated predictors in women seeking pregnancy testing at family planning clinics.
Methods: Analysis of demographic data and results of urine pregnancy testing and urine CT and GC testing (APTIMA COMBO 2_ Assay; Gen-Probe, Inc., San Diego, CA) in 1465 females ages 16 to 45 who presented seeking a pregnancy test in April 2005 at one of 61 family planning clinics in South Carolina. The CT and GC testing was offered free, as part of a statewide chlamydia awareness campaign by the Infertility Prevention Project (Region IV), and none of the clients knew in advance that the CT and GC testing would be offered. Our analyses were restricted to African American and Caucasian races, as other race/ethnic groups were too small for meaningful evaluation. Fisher's Exact test was utilized and 2-sided P values are reported.
Results: The median age was 22 years, with 1055 (72%) subjects ages 16 to 25 and 410 (28%) ages 26 to 45. The race distribution consisted of 779 (53%) African American and 686 (43%) Caucasian subjects. A positive pregnancy test was noted in 943 (64%) subjects and was not significantly associated with age; there was a trend towards a lower pregnancy frequency in African American vs Caucasian subjects (484 [62%] vs 459 [67%]; $P = 0.06$). CT and GC infection were detected in 179 (12%) and 31 (2%) subjects, respectively. Predictors of CT infection were younger age (153 [15%] infections in 15- to 25-year-olds vs. 26 [6%] in 26- to 45-year-olds; $P < 0.001$) and African American race (127 [16%] vs 52 [8%]; $P < 0.001$), but not pregnancy (109 [12%] in pregnant vs 70 [13%] in non-pregnant subjects; $P = 0.3$). Similarly, predictors of GC infection were younger age (31 [3%] vs 0 [0%]; $P < 0.001$) and African American race (26 [3%] vs 5 [0.7%]; $P < 0.001$), but not pregnancy (20 [2%] vs 11 [2%]; $P = 1.0$). Age and race remained predictors of CT and GC infection in stratified analyses.
Conclusions: CT infection prevalence was high in women seeking pregnancy testing at family planning clinics, and was predicted by younger age and African American race. The majority of women seeking pregnancy testing were pregnant, and the prevalence of CT infections did not significantly differ in pregnant versus non-pregnant subjects. CT infection screening in women seeking pregnancy testing at family planning clinics provides the opportunity to identify the infection in pregnant women, a group with greater morbidity from associated complications and who need a test of cure following treatment and rescreening later in pregnancy.
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ORAL SESSION: MULTI-LEVEL DETERMINANTS OF STD / HIV TRANSMISSION

O-055 RESURGENCE OF SYPHILIS IN NEW ORLEANS IN THE AFTERMATH OF HURRICANE KATRINA

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Objectives: The resurgence of syphilis and other infectious diseases in the aftermath of natural and man-made disasters has been described. The reasons are multi-factorial but the breakdown of public health infrastructure and clinical services is thought to be a major contributor. In the aftermath of Hurricane Katrina the healthcare system was left in shambles and the Delgado Personal Health Center (formerly the Delgado STD Clinic) was closed for 1 year. We describe a resurgence of syphilis in New Orleans post-Katrina. Syphilis rates in Orleans Parish and syphilis cases at the clinic before and after the hurricane were compared. Increases in HIV seroconversions have also been described following syphilis outbreaks so we also compared the HIV positivity rates in the clinic pre and post-Katrina.
Methods: Syphilis rates in Orleans Parish and syphilis cases at Delgado PHC before and after the hurricane were obtained from the LA Office of Public Health and from the clinic. The clinic re-opened on September 6, 2006, therefore clinic data from 2006 represent the last 4 months of the year. Rapid HIV testing (Unigold_) was offered in the clinic with Western Blot confirmation.
Results: In Orleans Parish, the case rate for 1° and 2° syphilis rose from 14/100,000 in 2005 to 26/100,000 in 2006 (p=0.058). Early latent cases rose from10/100,000 to 41/100,000 over the same time period (p=0.00001). In 2005 an average of 4.5 cases of 1°and 2°syphilis were seen at the clinic each month. When the clinic re-opened in 2006 there were 3 cases of primary and secondary syphilis seen on the first day of operation. Primary and secondary cases at Delgado PHC were 4.5 cases/month in 2005 and 4.75 cases/month in 2006. In contrast, early latent cases rose from 2.4 cases/month to 6.5 cases/month (p=0.01). During the same time period, the HIV positivity rates at the clinic increased from 1.1% to 2.1% (p=0.014).

Conclusions: The rise in the number of early latent syphilis cases noted after Hurricane Katrina in Orleans Parish is highly significant. Although there was an increase in the number of 1° and 2° cases as well, it did not reach statistical significance. The syphilis cases seen since September 2006 in the clinic also reflect these findings. One possible explanation for these findings is that patients were unable access care due to the paucity of healthcare facilities in the city for the year following the storm resulting in 1° and 2° stages of syphilis being missed. More early latent cases were then detected once syphilis screening was restored in the community and as contacts to 1° and 2°cases could be identified and screened. The increase in syphilis case rates has been accompanied by an increase in the HIV rates in the clinic. These results confirm a lesson from the past; syphilis resurgence follows large scale natural and man-made disasters. Restoration of STI services should be a public health priority following large scale natural disasters to prevent the resurgence of syphilis and other STIs that contribute to increased HIV transmission. email: staylo2@lsuhsc.edu

O-056 HIV PREVENTION WHILE THE BULLDOZERS ROLL: A STUDY EXPLORING THE EFFECTS OF THE DEMOLITION OF GOAS RED-LIGHT AREA ON HIV PREVENTION AMONGST SEX WORKERS

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Background: Despite evidence of the effectiveness of targeting Sex Workers (SWs) for HIV prevention, coverage remains inadequate. One barrier is closure of places where women work. In June 2004 the red-light area of Goa (Baina) was demolished. We describe the effect of the eviction on organisation of SW and their vulnerability to HIV.
Methods: During a cross-sectional study (11/2003-12/2005) SWs were recruited using respondent driven sampling. Respondents completed an interviewer-administered questionnaire. Self-taken vaginal swabs were tested for trichomonas (InPouch), gonorrhoea and chlamydia(Amplicor PCR, Roche). Dry-blood-spots were tested for HIV(Virinostika II+0, Labsystems, Murex). Women who had ever worked in Baina were compared with those who had never worked in the red-light area. A qualitative study was conducted involving key-informant interviews, observation and field workers diaries, group discussions, mapping, and in-depth interviews with SWs.
Results: Interviews were conducted with 34 key informants, 16 SWs and 50-100 informants during participatory observations. Changing sex work operation: The demolition and its aftermath were characterised by harassment, hounding out, and loss of income. The women became more mobile through short term trips for SW known as 'dates' or 'scattering'. The SW was forced to become invisible and hide amidst 'family people'. The sex work that emerged hinged on the expansion of existing small-scale operations, as well as new modes of operation attracting both ex-Baina SWs and new recruits. A more risky environment: SWs began working in new settings, isolated and prone to arrest. The unfamiliar setting together with the pressing need for income weakened the women's negotiating position. They lost the community support that protected them against customer violence and gave them confidence to negotiate their own safety, whilst, the destitution of the community also lost them their social safety net. Health became the lowest priority. Reduced access to services: During the demolition there was growing ambivalence towards the HIV organisations, who the women resented for having embraced only to be made scapegoats for the HIV epidemic anyway. Following the demolition there was reduced access to HIV prevention services and free condoms. SWs described a preference for private doctors, and yet the loss of income made private health care unaffordable with tragic consequences. In the span of a week two girls died of a febrile illness preferring to journey to Andhra Pradesh rather than use public health services in Goa.
Quantitative study: 326 women were recruited. Forty eight percent (41-55) of the non-Baina SWs had started sex work since the demolition of Baina. The adjOR for STIs in SWs ever-worked in Baina compared to SWs never-worked in Baina was 0.43[CI 0.19-0.98(p 0.04)]. The adjOR for ever having an HIV prevention session was 25.3[CI 8.2-75.9(p<0.001)].
Conclusion: Baina SW's lower STI risk and higher exposure to HIV prevention suggests the benefits to having SW concentrated in one area. The demolition of this red-light area may have made the working environment more hazardous and less conducive to HIV prevention, suggesting SW's human and reproductive rights need to be in the cornerstone of HIV prevention.

O-057 LOW VIRAL LOADS HELP EXPLAIN LOW HIV TRANSMISSION PROBABILITIES FROM DISCORDANT COUPLES STUDIES

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Objectives: HIV transmission probabilities per sex act have been derived from data on discordant couples in Rakai, Uganda. Although these studies provide the most reliable source of data for these estimates, the study design is likely to lead to underestimates of the transmission probability in the general population. Individuals with higher viral loads will tend to transmit the infection to their partner more quickly than those with lower viral loads, resulting in the exclusion of higher viral load individuals from prevalent couples studies. This bias may go some way to counter recent claims that the sexual transmission probabilities derived from data are not sufficient to explain the rapid spread of HIV in sub-Saharan Africa. Methods: We compared estimates of the overall per-contact HIV transmission probability derived from data on discordant couples in Rakai and data on the general HIV-positive population in Masaka. HIV positive individuals are enrolled from a general population cohort in Masaka district, Uganda into the Rural Clinical Cohort (RCC). The RCC has enrolled 473 HIV positive individuals and plasma viral loads (PVL) are measured annually. Individual viral loads were available from 1996-2003. Of the 473 positives enrolled, 250 had at least one PVL measurement taken prior to antiretroviral treatment from which the mean of the individual's log viral loads was calculated. Data were available from discordant couples in Rakai on the proportion of HIV-positive partners in each PVL quartile and the estimated per-contact transmission probability. The overall transmission probability was calculated by multiplying the transmission probability by PVL quartile obtained from discordant couples by the proportion of HIV positive individuals falling into each PVL quartile from discordant couples in Rakai and in the general HIV positive population in Masaka (table 1).
Results: The mean PVL of HIV positive partners in Rakai was 4.02 log RNA copies per ml. The distribution of PVLs in the Masaka data is shown in the figure. The mean PVL was significantly higher in HIV-positives in Masaka (4.6 log copies per ml) than in HIV-positives in discordant couples in Rakai (p<0.0001) both before and after adjusting for differences in the age and sex distributions of the cohorts . Other differences in study design and analysis are likely to increase the difference between the estimates. The overall transmission probability based on the PVL distribution in the general HIV-positive population in Masaka was 0.00177, 38% greater than that based on data on discordant couples (table).
Conclusions: The distribution of PVLs in prevalent discordant couple studies includes fewer individuals with high PVLs than the general HIV-positive population. We have shown that this could lead to substantial underestimation of overall HIV transmission probability. Discordant couples are also likely to have lower rates of cofactor STIs than the general population and this is likely to increase the transmission probability in the general population still further. These biases may help to explain why some models based on transmission probabilities from couples studies have failed to account for the extent of the HIV epidemic.

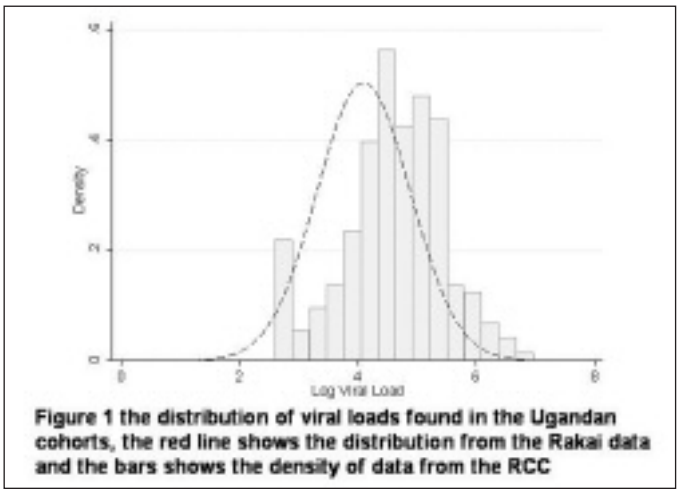

Figure 1 the distribution of viral loads found in the Ugandan cohorts, the red line shows the distribution from the Rakai data and the bars shows the density of data from the RCC

Figure 1: Distribution of viral loads

Viral load quantiles (log copies/ml)	Transmission probability per sex act	Proportion of sample in quantile	
		Rakai	Masaka
<1700 (<3.23)	0.0001	0.2471	0.0400
1700-12000 (3.23-4.08)	0.0013	0.2588	0.1800
12000-38490 (4.08-4.58)	0.0014	0.2414	0.2780
>38490 (>4.58)	0.0023	0.2528	0.5140
Mean, weighted by proportion in sample		0.00138	0.00177

Figure 2: Adjusted estimates of transmission probability

O-058 THE RISK OF HIV-1 INFECTION PER SEXUAL CONTACT IN ABSENCE OF ANTIRETROVIRAL THERAPY: A SYSTEMATIC REVIEW AND META-ANALYSIS OF OBSERVATIONAL STUDIES

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Introduction: Quantifying the risk of HIV-1 infection per sexual contact is important to assess the individual risk of HIV infection, to make predictions and to interpret current epidemiological patterns of HIV prevalence between populations and different settings.
Methods: Systematic review and meta-analysis of empirical studies providing HIV-1 transmission estimates per heterosexual or homosexual sexual act. Pubmed, Science direct, and NLM Gateway databases and bibliographies of relevant articles were searched. The search covered the period up to September 2005. Pooled estimates (p) and 95%confidence interval (CI) were based on the inverse variance method using a random effect model. Meta-regression analysis was used to explore heterogeneity between estimates.
Study Selection: Based on our inclusion criteria, 23 studies (out of 38 studies found) on heterosexual populations and two studies on homosexual populations reporting one or more estimates were included. Forty-nine crude heterosexual contact estimates and nine receptive anal contact estimates were included in the meta-analysis. Secondary analyses by risk factors were also conducted. Eleven, six, three and two studies reported infectivity estimate by genital ulcer infection status, disease stage, viral load and male circumcision status.
Results: For developed countries, the crude probability of transmission from female-to-male (FtoM) estimate (p=0.0005, CI=(0.0003, 0.0007)) was half the one for male-to-female (MtoF) estimate (p=0.0008 CI=(0.0007, 0.0010)). Receptive anal sex transmission was significantly higher (p=0.016, CI=(0.011, 0.23)). Homosexual and heterosexual anal sex estimates were not significantly different. Data on insertive anal sex were unreliable, but might be in the range of 0.0018-0.0035. For developing countries, FtoM (p=0.0030, CI=(0.0009, 0.0100)) and MtoF (p=0.0017, CI=(0.0010, 0.0030)) estimates were not significantly different but, after adjustment for study design, they were approximately four times larger (MtoF RR= 3.6 CI=(1.5, 8.6)) and FtoM RR=4.1 CI=(1.7, 10.0)) than the developed country MtoF estimate. Results of our secondary analysis by disease stage suggested a 3.5 (CI=(1.3, 9.6)) and 2.6 (CI= (1.1, 6.4)) -fold increase in HIV risk when index cases were in the initial and late phase of HIV infection respectively, compared to the asymptomatic phase (p=0.0007 CI=(0.00004, 0.0014)). Genital ulceration as a cofactor increased per act estimates seven-fold (RR=6.8 CI= (2.8, 16.4)) whereas unmeasured risk factors associated with commercial sex work exposure (e.g. FSW or a client) increased HIV risk by around 10 times (RR=9.8 CI= (2.5, 38.9)).
Discussion: This is the first systematic review and meta-analysis of HIV-1 transmission probability per sexual act which explored heterogeneity between estimates. Despite the numerous studies of infectivity, many uncertainties remain regarding HIV transmission probability estimates, especially between developed and developing countries. The differences are unlikely to be due to different study designs, but mostly to different distributions of unmeasured risk factors among the sampled populations. The lack of male circumcision in the populations where the reviewed studies were carried out (East africa and Thailand) may explain the non-significant difference between gender-specific transmission estimates in developing countries.

O-059 ASSORTATIVE MIXING OF SEXUALLY TRANSMITTED INFECTIONS AND DRUG USE IN SOCIAL NETWORKS IN A CORE GROUP OF MEN WHO HAVE SEX WITH MEN AND DRUG USERS

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Objective: Respondent-driven sampling (RDS) is a chain referral method that is increasingly used to recruit from 'hidden' populations, such as men who have sex with men (MSM) and drug users (DUs). RDS also provides information on mixing between different subpopulations, as participants recruit their peers into the study. Using RDS, we recruited individuals from a ´core group´ of MSM and/or DUs in Los Angeles, and estimated mixing between individuals based on prevalent HIV-1 and syphilis RPR+, reported drug use, and whether individuals had sex and/or taken drugs with their recruiter.
Methods: Between August 2005 and January 2007, RDS was used to recruit 449 individuals (25 seeds, 424 recruits) who were MSM and/or DUs (used methamphetamine, cocaine and/or heroin) in Los Angeles, California. All subjects provided informed consent, an anonymous interview, underwent testing for HIV-1 by oral testing (OraQuick, Orasure Technologies) and confirmatory Western blot (BioRad), and syphilis testing by RPR (Arlington Scientific) and TPPA (FujiRebio Diagnostics). 'Seed' individuals were excluded, and missing data were treated as negative. 'Trees' of recruitment were generated using information on who recruited whom, and the odds ratio (OR) of an individual recruiting another individual in the same subpopulation was calculated using a stochastic context-free grammar, which allowed us to perform a likelihood ratio test against the null hypothesis OR=1, corresponding to random mixing versus OR>1, corresponding to assortative mixing.

Results: The 424 recruits were predominantly male (387, 91%), with a mean age of 43 (range 19-68). HIV prevalence (113/424, 26.7%) and syphilis RPR+ (31/424, 7.3%) were high. The prevalence of drug use varied by drug, with lower reporting of heroin (13/424, 3%), amphetamine (16/424, 3.8%) and methamphetamine (18/424, 4.2%), and higher reporting of marijuana (66/424, 15.6%) and cocaine (83/424, 19.6%). A high frequency of individuals reported having sex (114/424, 26.9%) or taking drugs (161/424, 28%) with their recruiter. Assortative mixing was extremely high for HIV (OR=24.1, P<0.001) and high for syphilis RPR+ (OR=4.37, P<0.01). Assortative mixing by drug was extremely high for amphetamine (OR=35.1, P<0.001) and methamphetamine (OR=14.7, P<0.01), and high for cocaine (OR=4.24,P<0.001) and marijuana (OR=3.49,P=0.06). Assortative mixing by the relationship with the recruiter was high for sex (OR=3.95,P<0.001) and low for taking drugs (OR=1.64,P=0.02).
Conclusions: Despite the use of social networks for recruitment in RDS, there was significant assortative mixing by HIV, syphilis RPR+ and drug use (esp. amphetamine/methamphetamine). RDS can recruit from core groups at high risk of sexually transmitted infections such as HIV through the overlap between social, sexual and drug-using networks.

O-060 STRUCTURAL ATTRIBUTES OF SEX WORK VENUES LINKED TO STI INCLUDING HIV INFECTION IN PERUVIAN SEX WORKERS

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Objective: Determine independent associations between structural attributes of sex work venues and individual risk of sexually transmitted infection (STI) including HIV infection in Peruvian female sex workers (FSW).
Methods: In 2005-06 a probabilistic sample of FSW located in twenty Peruvian cities excluding Lima, data was recruited from a sampling frame of sex workplaces. Altogether 749 such venues were assessed using observation and key informant interviews. Instrument items fell into several domains including: proximity to community services; physical traits including hygiene facilities and lighting; staffing patterns; nature of security systems; health promotion materials accessibility; and both accessibility and policy related to condom use, alcohol consumption and STI clinical services. We summarize venue characteristics using descriptive statistics preliminary to multilevel modeling together with FSW practices and STI/HIV outcome measures (syphilis seroprevalence, Gram stain for bacterial vaginosis, and PCR for C. trachomatis and N. gonorrhoeae).
Results: There was considerable variation in the density of sex work venues across cities with the highest found in Ilo (67.0/100,000 population), Barranca (35.2/100,000) and Tarrapoto (34.0/100,000) and the lowest in Cusco (5.3/100,000) and Piura (6.5/100,000). Of 749 venues, 43% were bars or restaurants (bar), 28% were nightclubs or discotheques (club), 9% were streets, parks or ports (street), 8% were brothels 5% were hotels or hostel and the remaining 6% were grouped to include apartment, garage or gas station, karaoke bar, shopping center or shop. Approximately 38% of streets and 30% of bars and clubs respectively were within 10 blocks of an STI clinical service but only 10% of brothels had this characteristic. Approximately 55% of brothels and clubs and 47% of streets were located near an interstate road or tollbooth vs. only 38% of bars. While all but 1 club, 98% of bars and 90% of brothels were 'supervised' by an administrator, pimp or madame, only 5% of streets had this trait. The median number of FSW working varied from 10 for brothel (Interquartile range: 6, 20), followed by 8 in clubs (IQR: 6, 14), 6.5 in streets (IQR: 5, 10), and 4 in bars (IQR: 3, 6). While most brothels had on-site rooms where sexual services were provided (92%), 25% of bars, 18% of streets (includes tents and boats) and 8% of clubs also had this feature. Of 210 venues with on-site rooms, 60% provided a bed and 38% provided a mattress or carton on the floor; 83% provided electric lighting while remaining venues offered flashlights, candles or no lighting in rooms. Although 77% of brothels had a condom point of sale, this was much less common in streets, bars and clubs (38%, 10% and 10% respectively); and of those reporting a condom point of sale on the premises, interviewers were only able to inspect the supply in 60% of venues.
Conclusion: There is considerable variability in venue attributes across cities included in this study. These characteristics will be considered in a multilevel model to examine potentially independent risk factors associated with STI/HIV prevalence in FSW with particular attention to characteristics amenable to intervention.

ORAL SESSION: CLINICAL AND EPIDEMIOLOGIC ASPECTS OF HIV / AIDS

O-061 UNDIAGNOSED HIV INFECTION AMONG COMMUNITY SAMPLES OF GAY MEN IN THE UK

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Objectives: In the United States, undiagnosed HIV infection among gay men has been associated with perceptions of low risk despite high levels of sexual risk behaviour, presenting a significant risk for the onward transmission of HIV. The role of undiagnosed HIV in the UK epidemic has been less well explored. Here, we examine the extent of, and factors associated with, undiagnosed HIV infection among community samples of gay men in five UK cities.
Methods: Cross-sectional surveys of commercial gay venues in London, Brighton, Manchester, Glasgow and Edinburgh between 2003 and 2005. Anonymous, self-complete questionnaires and Orasure™ oral fluid collection kits, for samples to be tested for HIV antibodies, were obtained from 3672 men (61% response rate). Of these, 3501 had a confirmed positive or negative oral fluid result and are included in these analyses.
Results: 318 men were HIV positive (9.1%). Of these, 187 (58.8%) were diagnosed (had previously received a positive HIV test result and were aware of their status) and 131 (41.2%) were undiagnosed (had previously tested negative or never tested and were not aware of their positive status). There were no significant differences in undiagnosed infection between the 5 cities (London ' 44.1%, Brighton ' 33.3%. Manchester ' 36.7%, Glasgow ' 48.1%, Edinburgh ' 36.4%, p=0.56). 44.9% of undiagnosed men had their most recent HIV test in the 12 months prior to the survey, and only 18.9% had never tested. Unprotected anal intercourse (UAI) with partners of unknown or discordant HIV status was reported by 31 men with undiagnosed infection (27.2%). A further 13 who reported not having unknown/discordant partners, did report UAI, which, as they were unaware of their own HIV positive status, could have been discordant. This increased the proportion reporting UAI with partners of unknown or discordant HIV status to 38.6% (compared with 24.1% among HIV negative men). When compared with HIV negative men in multivariate logistic regression, the likelihood of undiagnosed HIV infection was higher among men aged 26 years or over, men who had an HIV test in the last year, and those reporting UAI with more than one partner, or having had an STI, in the previous year. While the general pattern was for increased odds of undiagnosed infection among men who had had an HIV test or an STI in the previous year, the odds were decreased among men who reported both (OR=0.36, 95% CI 0.16-0.83).
Conclusions: This is the first study to examine the factors associated with undiagnosed HIV infection among gay men in the UK. Most of the men with undiagnosed HIV infection had previously tested HIV negative and still thought they were negative. With high levels of sexual risk behaviour, these incorrect assumptions of HIV status are of public health concern and illustrate the need for a multidimensional

approach to HIV prevention. Relying on having had a past negative HIV test result alone can clearly be ineffective. Health promotion should advocate more frequent, regular, six-monthly HIV testing, while promoting the consistent use of condoms as the best prevention strategy.

O-062 AN INCREASE IN NEWLY DIAGNOSED HIV INFECTIONS REPORTED AMONG MEN WHO HAVE SEX WITH MEN (MSM) IN EUROPE IMPLICATIONS FOR A EUROPEAN PUBLIC HEALTH STRATEGY

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Introduction: In Europe, men who have sex with men (MSM) have been severely affected by the HIV epidemic. The analysis of HIV surveillance data in this population is needed to support the establishment of a public health strategy at the European level.
Methods: HIV/AIDS surveillance data in the WHO European Region are collected annually from national correspondents by the EuroHIV project. We present HIV surveillance data for MSM for the period 2000-2005 in 30 European countries: the 27 countries of European Union (EU) and three from the European Free Trade Area (EFTA). Newly diagnosed cases of HIV infection were reported in either aggregate or individual format from 26 countries (national data unavailable from Austria, Estonia, Italy and Spain). Results of reported HIV serosurveys, including behavioural data, undertaken among MSM recruited either in STI clinics (8 studies) or community settings (12 studies) were also collected and analysed by setting. HIV status was self reported in 10 studies (3 in STI clinics and 7 in community settings).
Results: In 2005, 7,325 newly diagnosed HIV infections were reported among MSM. In men aged 15-64, the average reported rate of newly diagnosed HIV infections was 55.4 per million men and the national reported rates varied from 1.3 (Romania) to 137 (United Kingdom). MSM represented the majority of newly diagnosed cases of HIV in 2005 in four countries: Czech Republic, Germany, Hungary and Slovenia but represented less than 10% of cases in Latvia and Poland. Between 2000 and 2005, 20 of the 23 countries with consistent HIV reporting systems reported increases in the number of newly diagnosed cases among MSM. Among the 17 countries reporting individual data, the median age at HIV diagnosis did not change (35 years in 2000 and 2005), but the proportion of MSM presenting with AIDS defining illness at the time of HIV diagnosis declined from 25% in 2000 to 12% in 2005. HIV prevalence in studies undertaken in community settings ranged between 10-18% in countries of western Europe, except in Ireland (5%), and <5% in central Europe. HIV prevalence was generally higher among MSM attending STI clinics, particularly among those diagnosed with a sexually transmitted infection, and ranged from 11 to 55%. High levels of recent high risk sexual behaviour were reported in all reported community surveys of MSM, although the data were scarce and indicators inconsistent.
Conclusions: The burden of new HIV diagnoses among MSM has increased in most countries, and most markedly in some central European countries. However, the increase in reported HIV diagnoses may, in part, be due to increased HIV testing among MSM as suggested by the decreased proportion of MSM who are diagnosed at a late stage of HIV infection. Increased burden of new HIV cases, high levels of risk behaviour and contrasting prevalence of HIV in MSM in Europe underlines the need for a European-wide strategy for HIV prevention among MSM. This strategy should be supported by HIV surveillance data including more behavioural surveillance in which a core set of standardised indicators are monitored.

O-063 PREDICTION OF HIV SEROCONVERSION AMONG MEN WHO HAVE SEX WITH MEN

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Objectives: To construct and validate a multivariable model predictive of HIV seroconversion among men who have sex with men (MSM) to guide the employment of targeted HIV testing and prevention interventions.
Methods: One thousand four hundred and forty-two MSM STD Clinic patients seen between 2001 and 2006, HIV seronegative at their first visit with at least one subsequent HIV test, were included in a Cox proportional hazards model for the development of an HIV seroconversion index.
Results: Fifty men acquired HIV over a median of 1.7 years of follow-up (range: 32 days - 6.8 years). HIV incidence was 1.62% (95% confidence interval [CI]: 1.20, 2.14). From eight potential predictors entered into a statistical selection procedure, significant factors included gonococcal infection, methamphetamine use, sex with an injection drug user, and a history or present diagnosis of syphilis. Unprotected receptive anal sex with a partner of any HIV status and unprotected insertive anal sex with a partner of unknown or positive HIV status were also added to the model. The model correctly predicted 78% (95% CI: 76, 81) of incident HIV infection over 1 year. In a validation set of 2081 MSM enrolled in a behavioral intervention trial, correct prediction was 67% (95% CI: 65, 69). Three risk groups were defined by the seroconversion index: 37% were classified as low-risk (incidence = 1.20%), 59% as intermediate-risk (incidence = 2.56%), and 4% as high-risk (incidence = 9.68%; log-rank P<0.0001). Dividing the validation set using a cut-point between the low-risk and intermediate-risk groups was associated with a sensitivity of 81%, a specificity of 40%, and a positive predictive value of 3%. Two additional models are presented: one with a simplified scoring scheme and one using only those four factors selected statistically. The simplified model performs with comparable predictive capacity in both the training and validation samples. The statistical model is more specific in the training sample but discriminates poorly between those who do and do not seroconvert in the validation sample.
Conclusions: A new risk score developed using demographic, behavioral, and clinical information routinely collected during clinical encounters at an STD clinic was predictive of HIV seroconversion over 1 year. This score may prove useful for the concentration of prevention efforts, including counseling interventions and targeted HIV testing to identify acute HIV infection, among MSM in publicly-funded, high-volume testing sites.

O-064 HIV AND ITS RELATIONSHIP TO ORPHANING AND POVERTY IN YOUNG RURAL ZIMBABWEANS? RESULTS FROM THE REGAI DZIVE SHIRI POPULATION BASED SURVEY

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Objectives: Regai Dzive Shiri (RDS) is a community randomized trial of an adolescent HIV prevention intervention being conducted in rural Zimbabwe. Results from the baseline survey (2003), and information from qualitative research suggested that orphaning, lack of education, and economic status were all factors putting young rural Zimbabweans at increased risk of HIV. In 2006 we conducted a population based survey (PBS) of 18-21 year olds in the study area to explore these potential sources of vulnerability in greater depth.
Methods: The PBS was an anonymous, house-to-house survey of a representative sample of 18-21 year olds living in the 30 study communities. Each participant gave written informed consent, completed an interviewer administered ques-

tionnaire, and provided a saliva sample which was tested for HIV antibodies. The questionnaire collected demographic data, plus asset-based and visual indicator data used to create socio-economic status scores. Data were analysed using Stata 9 and associations with HIV assessed using logistic regression generalised estimating equations to take into account clustering at community level.

Results: 3960 individuals were recruited (92% of eligible; 58% male; mean age 19 years). Overall HIV prevalence was 5.4% (95% CI: 4.7-6.1). Table 1 presents characteristics of PBS participants. Over 80% of those who had lost a parent were orphaned before 18yo. Amongst women there was a strong linear association between HIV risk and age (19yo adjusted OR=2.5; 20yo AOR=3.6; 21yo AOR=5.1; ptest for trend<0.001). For both sexes there was evidence that risk decreased with level of schooling, and that marriage was associated with increased risk; (ptest for trend<0.05). Orphanhood appeared associated with increased risk of HIV with male orphans at 1.8 (95% CI: 1.1-2.9) times greater risk than male non-orphans. In females the effect of orphanhood was dependent on marital status. Unmarried female orphans were at 3.4 (95% CI: 2.1-5.5) times greater risk than unmarried non-orphans, but once married orphanhood had little effect. There was also evidence on univariate analysis of a linear association between risk of HIV and SES level (using the scale based on affordability of essentials and ownership of assets); the OR for the highest wealth group being 0.3 (95% CI: 0.2-0.6) for females; 0.4 (95% CI: 0.2-0.8) for males (ptest for trend<0.05); although this association was weakened slightly after adjusting for covariates (females AOR=0.5 [95% CI: 0.3-1.0]; male AOR=0.5 [95% CI: 0.2-1.1]). There was further evidence of increased risk associated with the indicator 'Did an adult skip a meal in the last week to ensure enough food for children?' (Female AOR=2.0 [95% CI: 1.4-2.7]; Male AOR=1.7 [95% CI: 0.9-3.3]).

Conclusions: Results of this survey demonstrate that the causes of vulnerability, postulated prior to the survey, do appear to influence vulnerability of young rural Zimbabweans to HIV. There is further evidence that orphaning increases the risk profile of individuals and that young married women with lower levels of education are particularly vulnerable. Further analyses are being undertaken to explore in detail the influence of economic status on vulnerability but evidence thus far indicates greater risk in those who are poorer.

Table 1: Characteristics of PBS participants (n=3960)

Characteristic	Males (n=2309)	Females (n=1651)
HIV % (95% CI)	3.3% (2.5-4.3%)	8.3% (7.0-9.6%)
Education % completing ≥ F3	80%	73%
Married (%)	3.6%	32.3%
Lost one or both parents	47.7%	44.9%

O-065 RETHINKING HIV IN CHINA DETECTION OF ACUTE AND ESTABLISHED HIV INFECTION IN STI CLINICS

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Objectives: HIV has spread throughout China, and to some degree has penetrated the general heterosexual population in some regions. The current study was undertaken to detect subjects with acute and established HIV infections in a sample of STI clinics in Southwestern China.

Methods: A cross-sectional survey in which 11,467 STI clinic attendees were tested for syphilis, acute and established HIV was conducted in eight cities in Guangxi Autonomous Region (Guangxi). These clinics were selected by population probability sampling and specific demographic characteristics.

Results: The HIV seroprevalence was 1.1% among all STI clinic attendees who participated, and HIV infection was more prevalent at public STI clinics. Five acute (pre-seroconversion) HIV infections were detected that would have been missed using traditional detection methods. Multivariate analysis showed that HIV infection was independently related to unmarried status (95% CI 1.4-2.9), syphilis infection (95% CI 1.0-4.4), drug use (95% CI 10-76), entertainment work (95% CI 1.4-11.6), less education (95% CI 1.3-25) and residence in City A (95% CI 1.7-58).

Conclusions: HIV prevalence in Chinese STI clinics is significantly greater than the general population, and subjects were identified who would be missed by conventional targeted surveillance. China's nationwide system of public STI clinics, reaching down to the township and neighborhood level, should be utilized immediately for HIV detection, treatment and prevention programs.

O-066 OVER FIFTY: PEOPLE LIVING WITH DIAGNOSED HIV IN LONDON AGED 50 YEARS OR MORE

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Objective: As a result of improvements in treatments over the last ten years, there has been a steady increase in the number of people living with diagnosed HIV in the UK who are over the age of fifty. This paper examines some of the social, economic and clinical characteristics of people living with diagnosed HIV in London, paying particular attention to those under and over the age of fifty. The analysis focuses on gay men (mostly white) and black African heterosexual men and women, the two groups most affected by HIV in the UK

Methods: The majority of people diagnosed with HIV in the UK receive their clinical care in NHS outpatient clinics. Consequently an NHS clinic sample is broadly representative of all those living with diagnosed HIV. Patients with HIV infection attending NHS outpatient clinics in north east London between June 2004-June 2005 were invited to participate in the study; those who agreed to participate completed a confidential, self-administered questionnaire. The questionnaire sought information on a number of social, economic and clinical variables including age, ethnicity, sexual orientation, employment, treatments and CD4 cell count.

Results: During the study period, 2680 patients with HIV attended the outpatient clinics in the six participating hospitals of whom 2299 were eligible for the study and 1687 completed a questionnaire (response rate 73% of eligible patients). Of the 1687 respondents (median age 38 years), 480 were black African heterosex-

ual women, 224 black African heterosexual men and 758 gay or bisexual men (646 white, 112 ethnic minority). Just over ten percent of the whole sample (184/1687, 10.9%) were aged 50 years or above at the time of the survey; gay men 13.1% (99/758), black African heterosexual men 8.5% (19/224), black African heterosexual women 6.9% (33/480) ($p<0.01$). Forty percent of the over 50s were diagnosed with HIV in their 50s (40.3%, 71/176, data missing for 8 respondents), 44.9%, (79/176) between 40-49 years of age, and 26 (14.8%) under the age of 40. While there was no significant association between age and current CD4 count, older people were more likely to report a lower CD4 count at diagnosis (20-29 years, median CD4 count at diagnosis, 350 cells/mm3; 30-39, 270; 40-49, 230; 50+, 210; $p<0.01$). Older people were also more likely to be on HAART; this differential remained significant after controlling for CD4 count at diagnosis and number of years since diagnosis (e.g. gay men, adjusted odds ratio 1.05, 95% CI 1.01, 1.09, $p=0.01$). There were no significant differences between younger and older people in their level of education, whether they had disclosed their HIV status to others and whether they had experienced HIV-related discrimination.

Conclusion: In this study of people living with diagnosed HIV in London, just over ten percent were over the age of 50. Nearly half the over 50s were diagnosed in their 50s highlighting that this group does not solely comprise an ageing cohort of people diagnosed with HIV in their 30s and 40s.

ORAL SESSION: SYPHILIS AND TREPONEMA PALLIDUM

O-067 CLUSTER INVESTIGATIONS OF SOCIAL CONTACTS OF PERSONS WITH SYPHILIS, UNITED STATES, JANUARY 2004-JUNE 2006

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Background and Objectives: Published analyses have shown that 'cluster investigations'--expanding syphilis partner investigations to include other persons from their social network (suspects and associates)--can identify a substantial number of infected persons. The performance measures established for U.S. STD control programs in 2004 include two measures related to cluster investigations. We reviewed reporting on these measures to assess completeness of reporting, validity, and the number of persons tested and infections detected using this method.

Methods: Performance measures were collected for 4 six-month intervals beginning January 2004 and ending June 2006. Reports were routinely reviewed by CDC and entered into a database. Suspects are persons that syphilis patients name because they might be: symptomatic, partners of other infected persons, or otherwise considered to benefit from an STD exam. Associates are persons with the same characteristics who were named by non-infected persons. The cluster investigation measures report the number of suspects and associates: 1) tested and 2) treated for infection discovered during cluster investigations of persons with primary and secondary (P&S) syphilis, and the number of P&S cases reported. We reviewed data reported to CDC. Programs reporting unusually high numbers were asked to verify their data. Analysis was limited to programs that reported at least 10 P&S cases in one or more 6-month period.

Results: 47 project areas reported at least 10 syphilis cases in one or more of the four 6-month intervals, and are included in the analysis. 8 programs did not report for the first interval and 6 missed reporting in a subsequent interval, and two programs could not distinguish named suspects from persons screened at named venues, so their reports were excluded. The most frequent errors were counting cases identified by screening in venues named by cases and counting persons with negative syphilis tests who were treated presumptively. After correcting the data, during two years, the programs reported a total of 13,235 cases of primary and secondary (P&S) syphilis. 2162 persons (16.3 per 100 cases of P&S) were tested as part of cluster investigations and 200 were found to be infected and treated (9.3% of persons tested, 1.5 per 100 cases of P&S). In a 6-month interval, the mean number identified and treated by a program was 1.2 and nearly half of the programs identified no new cases by testing suspects or associates; there were 20 intervals when a program reported identifying more than 3. There were no significant trends over the 4 time intervals in the number of syphilis cases, suspects and associates tested, or newly identified and treated.

Conclusions: Over the past 2 years, cluster investigations identified few infected persons in the U.S. We cannot determine the impact of cluster investigations on individual outbreaks, however, the small number of infections identified suggests that cluster investigations did not contributed substantially to STD control in the U.S.

O-068 PRIMARY AND SECONDARY SYPHILIS AMONG MEN WHO HAVE SEX WITH MEN IN THE UNITED STATES, 2005

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Objectives: Until April 2005, national data were not collected on the sex of sex partners of persons reported with syphilis in the United States. The objective of this analysis is to describe for the first time in multiple states characteristics of persons with primary and secondary (P&S) syphilis by sex and sex of partners.

Methods: Syphilis is a notifiable condition in all U.S. states and reported weekly to the Centers for Disease Control and Prevention. The following case report data from 2005 were used: demographic information, sex of partners, report source, and P&S stages of syphilis. States were included if the codings for sex of partner were 'male,' 'female,' or 'both male and female' in at least 80% of the male cases reported. P-values were calculated when appropriate and considered statistically significant if <0.05.

Results: Of the 6,834 P&S syphilis cases reported in the United States from April 1 to December 31, 2005, the sex of partners was available for 80% or more of men with P&S syphilis in 24 states: 7 from the West, 5 from the Midwest, 6 from the Northeast, and 6 from the South. The 3,260 cases from these 24 states accounted for 49% (511/1,035) of all female and 47% (2,749/5,798) of all male P&S syphilis cases reported. Excluding 280 men whose sex of partners was unknown, 2,980 persons had P&S syphilis: 511 (17%) were women, 620 (21%) were heterosexual men, and 1,849 (62%) were MSM. Of these MSM, 1,695 (92%) reported only male partners, and 154 (8%) reported both male and female partners. Of the 1,849 MSM, 869 (47%) were from the West, 446 (24%) were from the South, 309 (17%) were from the Northeast, and 225 (12%) were from the Midwest; the majority of women and heterosexual men was from the South (56% and 55%, respectively). The majority of MSM cases reported from the West, Midwest, and Northeast was in Whites (56%, 68%, and 54%, respectively); MSM cases from the South had similar proportions of Blacks (42%) and Whites (41%). MSM cases were more frequently reported from private providers (33%) than cases among women and heterosexual men, who were more frequently reported from STD clinics (31% and 43%, respectively). MSM cases were also more frequently reported from HIV counseling and testing sites (11%), compared to women and heterosexual men (0.2% and 1.6% , respectively). Among diagnosed and reported cases of P&S syphilis, women and MSM were less likely than heterosexual men to have primary syphilis (18% vs 44%, $p<0.0001$ and 24% vs 44%, $p<0.0001$, respectively).

Conclusions: In 2005, the majority of persons with P&S syphilis in the United States was among MSM, most of whom were from the West and South. Private and public providers should conduct thorough risk assessments and physical exams, especially for patients who are MSM or women. Providers and public health programs should know the sex of partners of patients with syphilis to inform and apply the necessary clinical and public health interventions. John Beltrami (hzb3@cdc.gov)

O-069 DEGREE OF IMMUNOSUPPRESSION AND RELAPSE OF SYPHILIS IN HIV-INFECTED PATIENTS

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Objectives: HIV and syphilis co-infected patients are at increased risk of relapse following therapy for syphilis. Whether relapse is due to treatment failure or reinfection is often difficult to ascertain. Our goal was to determine whether the degree of immunosuppression, as measured by CD4 cell count, HIV-1 RNA, and highly active antiretroviral (HAART) use was associated with relapse.
Methods: We assessed incident syphilis episodes between 1995 and 2006 in a large urban HIV clinical cohort in which comprehensive demographic, clinical and therapeutic data were collected longitudinally. Staging and treatment of syphilis were based on established CDC criteria. We defined syphilis relapse as: (group1) lack of a four-fold drop in RPR titers 365 days or more after therapy if pre-treatment RPR > 4 or (group2) a four-fold increase in RPR titers 30 or more days following therapy or (group 3) clinical symptoms consistent with syphilis irrespective of RPR titers. All non-treponemal serologies were confirmed using the FTA-ABS. We excluded patients with primary syphilis and negative serological titers at the time of treatment. We used Cox Proportional Hazards models with intra-subject clustering to adjust for confounders and repeated measures. Hazards Ratios (HR) and robust 95% confidence intervals (CI) are reported.
Results: 180 subjects met inclusion criteria [33% female, 88% Black, mean age 38.6 years, median initial CD4 cell count 280 cells/ml and HIV-RNA 18,191 copies/ml, respectively; 61.4% received highly active antiretroviral therapy (HAART) at least 6 months during follow-up, 17% were virologically undetectable at initial visit (<400 copies/ml)] and contributed 231 incident cases of syphilis [62 (26.8%) primary, secondary or early latent syphilis (ES), 128 (55.4%) late latent/unknown duration (LL), and 41(17.7%) neurosyphilis (NS); 43.7% reported a previous history of syphilis]. Mean number of RPR serologies was 4.1 (median 4.0); mean duration of follow-up was 4.3 years (median 3.5). A total of 71(30.7%) relapses were documented [26 (36.6%) group 1, 44 (62.0%) group 2, and 1 (1.4%) group 3]. Median time to relapse was 546 days from date of treatment. Significant predictors of relapse are summarized in table 1. These predictors were unchanged when stratifying by relapse type (group 1 vs. group 2).
Conclusions: In this cohort of HIV-infected patients, there was a high syphilis relapse rate. Since enhanced therapy is not currently recommended, co-infected patients-particularly those with high baseline RPR titers, late latent infection, low baseline CD4 counts, declining CD4 counts, and those not receiving HAART or azithromycin prophylaxis should be the target of consistent and aggressive follow-up.

	Adjusted* HR [95% CI]
Pre-treatment RPR titer	
Syphilis Stage	
Pre-treatment CD4 cell count (cells/ml)	
>50% decline in CD4 from baseline vs. no change or increase	
Any HAART use >6 months	
Any azithromycin use	

O-070 A POPULATION BASED STUDY OF SYPHILIS REINFECTION IN BRITISH COLUMBIA, CANADA OVER A DECADE

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Objective: Although multiple recurrences of infectious syphilis is a marker of high risk behavior, little is known about the characteristics of individuals most likely to become repeatedly infected with syphilis. In this study, we describe the rate of distribution of reinfection cases in British Columbia, where a syphilis epidemic has been ongoing since 1997, and investigate the differences in socio-demographic and behavioral characteristics between those who are re-infected and those who have been infected only once.
Methods: In British Columbia, all syphilis cases are reported to the BC Centre for Disease Control. We reviewed all cases of primary, secondary, and early latent syphilis that were recorded in the STI surveillance database from 1995 to 2005. Individuals were divided into two study groups: 1) those who had only one new diagnosis of infectious syphilis and 2) those who had two or more new diagnoses of infectious syphilis. A syphilis re-infection was defined as a four fold rise in RPR titre after completed treatment regimen and/or a newly diagnosed lesion with a positive darkfield or DFA-TP in the context of a clinical history that was consistent with risk for re-infection. Each re-infection was reviewed and confirmed by one physician with over thirty years of clinical expertise in syphilis. Bivariate comparisons were performed between groups in terms of age, sex, ethnicity, sexual orientation and drug use behavior using Chi square analysis for categorical variables and Student's t-test for continuous variables. Univariate Cox regression analysis was used to estimate the relative risk (RR) of becoming re-infected with syphilis.
Results: During the study period, a total of 1641 infectious syphilis cases were diagnosed among 1534 individuals. Among these 1534 individuals, 91 (6%) patients were infected more than once. The crude incidence of re-infections is 5.9% (95% CI: 4.8%, 7.2%) and the incidence density is 1.74 per 100 person-years. Out of 91 cases, 77 (85%) patients were infected two times, 12 (13%) three times and 2 (2%) four times. The median time between infections was 1.3 years (1st reinfection; IQR: 0.7-2.2 years) and 1.7 years (2nd reinfection; IQR: 1.0 -2.5 years). The proportion of syphilis cases per year that were re-infections has increased over time (Figure 1). Table 1 displays the crude RR of reinfection. Individuals who are homosexual/bisexual, aboriginal, or injection drug users are at higher risk of becoming repeatedly infected with syphilis. Number of sexual partners showed a dose-response relationship. Compared to subjects with no or single partner, patients with high number of sexual partners had higher risk: 2-20 partners (crude RR: 2.25, 95% CI: 0.95, 5.32) and 20 plus partners (crude RR: 4.40, 95% CI: 1.81, 10.71).
Conclusion: This study identifies several important socio-demographic and behavioral characteristics associated with syphilis reinfection in a large population based cohort. Further investigations into the cause of differences are required to inform appropriate interventions for individuals at high risk of reinfection.

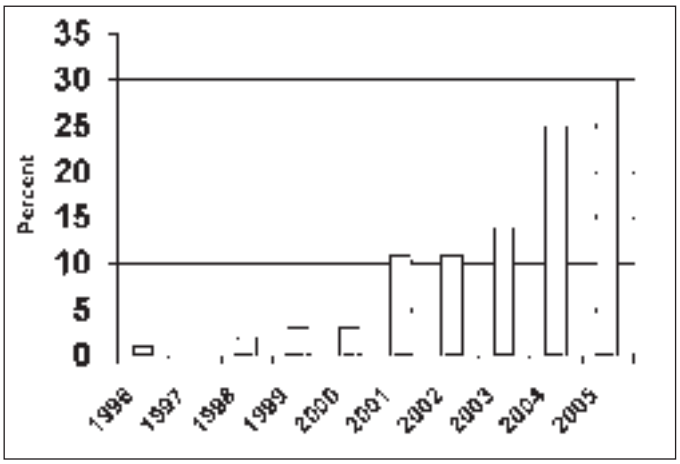

Figure 1: Proportion of Cases of Syphilis Reinfections

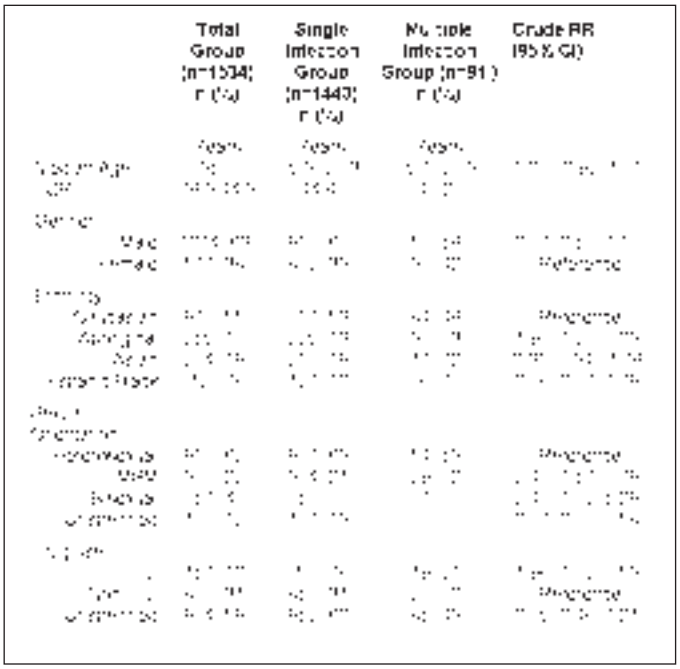

Figure 2: Crude RR of Having Multiple Syphilis Infections

O-071 THE GLOBAL BURDEN OF CONGENITAL SYPHILIS VERSUS CHILDHOOD HIV INFECTION, 2006

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Objectives: To describe the comparative morbidity of congenital syphilis versus perinatally acquired HIV infection worldwide. The prevention of the mother-to-child transmission of HIV infection is a global priority. There are targeted vertical programs increasingly being deployed to identify and treat pregnant HIV-infected women and their newborns to prevent perinatal HIV acquisition. Yet, more newborn morbidity and mortality may be due to congenital syphilis, a preventable disease. Maternal syphilis infection can be readily identified with a point-of-care rapid whole blood assay and single dose penicillin treatment is highly effective in preventing congenital syphilis. Recently, WHO has launched efforts to eliminate congenital syphilis.

Methods: We compared reported HIV cases in children age < 15 years from UNAIDS data sources in 2006 with global estimates of congenital syphilis. We estimated the number of congenital syphilis cases worldwide from reports of regional and national syphilis seroprevalence studies in pregnant women and assumed a range of transmission rates from 49% to 75% in untreated maternal infection with a non-treponemal syphilis titer greater or equal to 1:8 based. We reduced those estimates by 27% based on the distribution of maternal syphilis titers and the proportion that were greater than or equal to 1:8.

Results: In 2006 there was an estimated 530,000 cases of HIV infection in children less than 15 year of age whereas in that same year there was an estimated 728,000 to 1.57 million cases of congenital syphilis. The majority of cases of HIV infection in persons less than 15 years of age were in sub-Saharan Africa. The highest proportion of congenital syphilis is in the Americas.

Conclusions: The burden of congenital syphilis is substantially greater than that of perinatal HIV infection and the geographic distribution of the burden of those diseases is different. Efforts to integrate maternal syphilis screening and treatment into currently expanding mother-to-child prevention of HIV transmission programs in sub-Saharan Africa are urgently needed. Other strategies to reach women in the Americas may have to be developed.

O-072 EARLY COMPARTMENTALIZATION OF CSF T. PALLIDUM

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Background: Treponema pallidum subsp. pallidum, the etiological agent of venereal syphilis, causes neurological disease in some, but not all, patients with syphilis. This phenomenon may be due to the host immune response that may be able to clear organisms from the central nervous system (CNS) or may be related to the neuroinvasive capacity of a given T. pallidum strain. We isolated paired cerebrospinal fluid (CSF) and blood T. pallidum strains from 10 individuals with early syphilis to examine potential molecular differences between neuroinvasive and systemic organisms.

Methods: Paired CSF and blood samples were obtained from 10 subjects with early syphilis (1 primary, 8 secondary, 1 early latent). Eight subjects were HIV-infected. The median serum RPR was 1:128. CSF and blood were inoculated into rabbits for isolation of T. pallidum strains. RNA was isolated from these organisms, and mRNA for each of the 12 T. pallidum repeat protein (tpr) genes was quantitated by realtime RT-PCR. A 1200 bp portion of the tprK gene was amplified from each strain and sequenced. The level of strain diversity based on tprK sequences was determined using the Shannon diversity index as calculated in BioEdit, and migration of organisms between CSF and blood was estimated by applying the Slatkin-Maddison analysis method to the tprK sequences.

Results: mRNA was detectable for each of the twelve tprs in all CSF and blood isolates. In 7 subjects, mRNA concentrations for the 12 tpr genes were nearly equal in CSF vs blood isolates (r2 values 0.80-0.98). In contrast, in 3 subjects, the corresponding mRNA concentrations for each tpr differed in CSF vs blood isolates (r2 values 0.23-0.48). In most, but not all, instances the CSF mRNA concentration of each tpr was higher in CSF. tprK sequence diversity of CSF-, but not blood-derived T. pallidum was lowest for the three strains with differential mRNA values, and the migration value was low in these strains. Higher migration of organisms between CSF and blood was seen for strains from subjects in whom CSF and blood mRNA concentrations were nearly equal (p=0.008) and in whom CSF diversity was greatest (p=0.02).

Conclusions: These data are consistent with a model in which CSF organisms are more homogenous and compartmentalized early following CSF invasion. This phenomenon may be a result of initial seeding of the CSF by a low number of treponemes either as a random event or because a subpopulation of organisms within the infecting strain is neuroinvasive. As infection progresses to neurosyphilis, CSF organisms become more diverse as they intermingle with blood organisms, probably due to increased inflammation and concomitant loss of integrity of the blood-brain barrier.

ORAL SESSION: CHLAMYDIA AND GONORRHEA

O-073 TRENDS IN GONORRHEA INCIDENCE, CHLAMYDIA PREVALENCE, AND RATES OF PELVIC INFLAMMATORY DISEASE AND ECTOPIC PREGNANCY IN WASHINGTON STATE, 1992-2005

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Objectives: Public health surveillance documented a decline in chlamydia test positivity concurrent with the institution of public health chlamydial screening programs in the late 1980s, and more recently have documented a rise in positivity. However, these data have not consistently been adjusted for changes in tested populations or the testing technology employed. We sought to define trends in and the prevalence of chlamydial infection in a sentinel population of women in Washington State from 1988-2005, adjusting for characteristics of the population screened and test type. In addition, we assessed the association between rates of pelvic inflammatory disease (PID) and ectopic pregnancy (EP) and adjusted chlamydia positivity and gonorrhea incidence rates in Washington State from 1992-2005.
Methods: We used logisitic regression to calculate the adjusted chlamydia positivity among women ages 15-24 tested in Infertility Prevention Project clinics from 1988 to 2005, adjusting for age, race, type of clinic attended, and test type. We calculated the annual incidence of gonorrhea among women using case report data, and of PID and ectopic pregnancy using data from the Comprehensive Hospital Reporting System (CHARS). A simple linear regression analysis compared the relative contribution of chlamydia positivity (adjusted to mean age, race, clinic type, and test type) and gonorrhea incidence to trends in PID and EP. To account for time required to develop ectopic pregnancy, gonorrhea incidence and chlamydia positivity from three years earlier were used in the model for that endpoint. Reported regression coefficients (RC) represent the change in the outcome rate for a 1 standard deviation change in chlamydia positivity or gonorrhea incidence.
Results: Adjusted chlamydia positivity (13.9%) was 34% higher than crude chlamydia positivity (10.3%) in 1988 when screening through the Infertility Prevention Project was implemented. Declines in both crude and adjusted positivity occurred from 1988-1997, to roughly 4.5% in 1997. Both measures of positivity began increasing in 1997. In 2005, the crude and adjusted positivity estimates among the 43,533 women tested were 6.6% and 6.4%, respectively. Both gonorrhea incidence and adjusted chlamydia positivity were highly significant predictors of PID (chlamydia RC=0.057, p<.02; gonorrhea RC=0.079, p<0.0001) and EP (chlamydia RC=1.71, p<0.0001; gonorrhea RC=1.71, p<0.0001) rates in univariate analyses. Because of high collinearity between chlamydia positivity and gonorrhea incidence over the study period, we were unable to assess which predictor had a greater impact on PID and EP rates over time.
Conclusions: The initial steep decline and recent smaller increases observed in crude chlamydia positivity over time remain after adjusting for test type and patient characteristics. Reasons for the increases observed in chlamydia positivity in recent years are unclear. While we were unable to compare the relative contributions of chlamydia positivity and gonorrhea incidence to declining rates of EP and PID, both were associated with both outcomes in this ecologic analysis, consistent with the causative role these infections play in PID and EP.

O-074 BEYOND RACE/ETHNICITY: POSITIVITY OF CHLAMYDIA TRACHOMATIS AMONG WOMEN ATTENDING REGION 10 FAMILY PLANNING CLINICS IN THE U.S., 1997-2005 BY INDIVIDUAL RISKS AND AREA-BASED SOCIOECONOMIC MEASURES

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Objectives: The Region 10 Chlamydia Project provides screening for C. trachomatis (CT) and treatment to women at 150 family planning clinics. Our objectives were to: 1) assess trends in CT and risk factors associated with infection among women aged 15-24 years attending these clinics from 1997-2005, and 2) explore race/ethnic CT differences in the context of area-based socioeconomic measures (ABSM).
Methods: CT positivity was calculated by demographics, behavioral risks (new, symptomatic, or multiple partners), and clinical findings for 611,732 tests among women aged 15-24 years from 1997-2005. ABSM were generated from U.S. Census 2000 ZIP code tabulation areas and matched to test records via client ZIP codes. CT positivity was assessed for categorized ABSM, including: population density, median household income, race/ethnic minority, and educational attainment. Multivariate models were used to assess differences and temporal trends in CT positivity for the total sample and each race/ethnic group.
Results: Of tests performed, 47% were from clients 15-19 years old and 76% from non-Hispanic (NH) Whites. Overall CT positivity was 5.3%. NH Blacks had the highest prevalence (10.1%), followed by American Indian/Alaskan Natives (AI/AN) (9.8%), Asian/Pacific Islanders (API) (7.4%), Hispanics (6.0%), and NH Whites (4.7%). Significant (p<0.001) individual-level risk factors for CT included visit year (OR=1.04), age < 20 years (OR=1.32), race (Black: OR=1.75; AI/AN: OR=1.62; API: OR=1.33), Hispanic ethnicity (OR=1.18), CT infection past year (OR=1.65), diagnosis by NAAT (OR=1.30), any reported behavioral risk (OR=1.88), and clinical findings (cervicitis or pelvic inflammatory disease diagnoses) (OR=3.14). ABSM significantly associated with CT included: rural residence (OR=0.89) and areas with: >20% adult population without high school diploma (OR=1.08), >20% minority race population (OR=1.06), and >20% Hispanic ethnic population (OR=1.08). Median household income was not associated. From 1997-2005, the proportion of women reporting any risk behaviors declined significantly from 25.0% to 21.3%. The proportion with clinical findings also fell (7.2% to 5.2%). Women reporting CT in the past year rose from 2.6% (1997) to 4.8% (2005). Fewer women age <20 were screened (1997: 48.8%, 2005: 40.3%). Race/ethnic distributions remained stable. NAAT volume increased from 12.4% (1997) to 59.7% (2005). Annual positivity increased 45% (4.0% to 5.8%). In race/ethnic-specific results, positivity over the 9 years was stable for Blacks, AI/ANs and Hispanics; API and NH White positivity increased annually (visit year OR=1.04 and 1.05, respectively).
Conclusions: Known risk factors for chlamydia, including sexual behaviors, clinical findings, and younger age decreased over time. Reported CT history and use of NAATs increased. Estimated CT positivity continued to increase annually even after adjusting for changing risk factors and increased use of NAATs. Areal measures of population demographics and socioeconomic status (SES) were associated with CT, independent of patient measures. CT positivity varied by race/ethnicity over time, increasing for NH Whites and APIs, but not for other minorities. Race/ethnic differences remain after accounting for behavior, CT history, clinical findings, and areal SES indicators. dfine@jba-cht.com

O-075 DISTRIBUTION OF CHLAMYDIA TRACHOMATIS (CT) GENOTYPES FROM RECTAL AND OROPHARYNGEAL INFECTIONS IN THE STUDY TO UNDERSTAND THE NATURAL HISTORY OF HIV/AIDS IN THE ERA OF EFFECTIVE THERAPY ('SUN' STUDY)

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Objectives: To determine the distribution of CT genotypes among CT-infected participants in the SUN Study.

Methods: The SUN Study is an on-going multiyear prospective observational cohort study of HIV-infected adults. Participants are screened for sexually transmitted diseases every 6 months. Specimens include swabs of the rectum and oropharynx, which have been tested for CT using the GenProbe Aptima Combo 2 assay. For specimens that test positive for CT, DNA has been extracted and purified using the QIAmp Viral RNA Mini Kit (Qiagen). The ompA gene was then amplified by a nested PCR and products were sequenced using the CEQ8000 (Beckman Coulter) followed by analysis with Vector NT. Genotypes were determined by comparison to known genotypes as identified through a BLAST search.

Results: Among 778 specimens from 445 persons included in this analysis, the prevalences of rectal and oropharyngeal CT infections were 5.8% (45/778) and 1.5% (12/778) respectively. Six different genotype classes were detected from 44 rectal specimens and 8 oropharyngeal specimens; a genotype could not be determined from 6 rectal and 4 oropharyngeal specimens and 1 rectal specimen was not tested. Among rectal specimens, genotype D was most common (41.6%) followed by E (15.2%) and J (13.0%). The remaining genotypes, F, G and Ja, were detected in fewer than 8% of infections. Of the 8 typeable oropharyngeal infections, three each were genotype D and E, one was G and one was J. Concomitant rectal and oropharyngeal infections were detected in 4 individuals, of whom three persons had different genotypes in the rectum and oropharynx while the ompA sequence from the rectum of the remaining concomitant infection could not be determined. In two persons, specimens from the same anatomic site (in one case the rectum and in the other case the oropharynx) were positive at sequential 6-month visits, and in another person rectal infections were positive at two visits separated by an intervening visit where no CT infection was detected. In all three cases, the same genotype was detected in each pair of positive specimens.

Conclusions: In this study, CT genotypes D, E and J/Ja predominated among rectal CT infections. The low number of oropharyngeal CT infections restricted meaningful interpretation. Individuals with concomitant rectal and oropharyngeal CT infections had different genotypes at these anatomic sites, whereas persistent or repeat CT infections at the same anatomic site were caused by the same genotype. Additional research is needed to evaluate whether these effects result from differences in sexual behavior (e.g., multiple partners or partner selection sorted by anatomic site for sexual contact in the case of concomitant discordant infections versus reinfection from a single partner in the case of repeat infections) or from differences in stimulation of the common mucosal immune system (e.g., lack of adequate immune response following natural infection due to low CD4 cell count or anatomic differences in local immune response).

O-076 A CHLAMYDIA TRACHOMATIS VARIANT NOT DETECTED BY PLASMID-BASED NUCLEIC ACID AMPLIFICATION TESTS

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Objective: To describe a patient with non-gonococcal urethritis (NGU) caused by a new Chlamydia trachomatis (CT) variant which was undetected by plasmid-based nucleic acid amplification tests (NAAT) but positive with non-plasmid based tests. Single dose azithromycin did not clear the initial infection.

Introduction: A CT variant was recently identified in Sweden with a 377-bp deletion in the cryptic plasmid region targeted by two NAATs: the Abbott M2000 Plasmid PCR and the Roche Amplicor CT/NG PCR test. The variant strain was detectable by BD ProbeTec because the deletion did not affect the target region of this test. In December 2006, we observed a case of chlamydial infection in which the responsible CT strain generated false negative results with all plasmid-based NAATs but positive for all PCR tests targeting the omp1 gene. This variant is thus different from that detected in Sweden

Case report: A 28-year-old heterosexual African man attended complaining of micturition pain of 3-weeks' duration. He had urethral discharge, microscopic examination of which indicated NGU. Culture for Neisseria gonorrhoeae, PCR test for Mycoplasma genitalium and CT SDA (BD Bioscience) with a first catch urine (FCU) sample were negative. During the initial visit, the patient was recruited to a study evaluating the immune-based Chlamydia Rapid Test (CRT; Diagnostics for the Real World, Sunnyvale, CA). The FCU was positive with the CRT but was negative with the Amplicor CT/NG PCR-based test. To examine whether the CRT result was a false positive, two TaqMan PCR assays were performed to detect the CT major outer membrane protein gene (omp1) and the cryptic plasmid. The sample was positive for omp1 but negative for the plasmid. Two additional NAATs for omp1 (RealArt CT) PCR Kit, Artus, Hamburg, Germany, and a research PCR assay) performed in different laboratories also yielded positive results. Chlamydia RNA amplification tests (Aptima Combo 2, GenProbe, San Diego, CA, and an in-house University of Cambridge nucleic acid sequence'based amplification [NASBA] test) also established the presence of CT 16S-RNA. The patient was treated as for NGU with azithromycin 1g stat during his initial visit. 6 weeks later, he reported initial improvement but complained of a mild dysuria and urethral discharge that had been present for 1 week post-treatment. He also had protected intercourse with another partner 4 weeks previously. Examination revealed a mucoid urethral discharge, microscopic examination of which again indicated NGU. NAATs using the CT plasmid as the target (SDA, Amplicor CT/NG PCR, and TaqMan PCR) were again negative, but the Taqman PCR test for omp1 remained positive. He was retreated for NGU with doxycycline 200 mg daily for 1 week with good response

Conclusion: It is important to recognise the existence of undetected CT infections caused by a variant strain especially in settings where plasmid-based NAATs are the method of choice for diagnosis. However, until additional data becomes available, this report remains an isolated case and should not form the basis of judgment of performance of the various NAAT assay systems. The efficacy of single dose azithromycin may need further evaluation.

O-077 A NEW RAPID TEST FOR CHLAMYDIA USING NON-INVASIVE VAGINAL SWABS FOR POINT-OF-CARE (POC) TESTING

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Objectives: To evaluate the performance of a new POC test for Chlamydia (CRT) using self-collected vaginal swabs (SCVS) in different clinical settings. Organism load was measured and CRT performance was compared in self-collected vs. physician- collected vaginal swabs.

Methods: The performance of the CRT was evaluated in 1349 eligible female participants attending a young people's sexual health centre (site 1, 4.3% symptomatic) and two genito-urinary medicine (GUM) clinics (sites 2 & 3, 65% symptomatic). Study participants were recruited based on the following criteria: 16 years and older, not on antibiotics, not menstruating and can understand the forms. Two types of specimens were collected - vaginal swab and urine: two SCVS and a urine specimen at site 1, and one SCVS, one clinician-collected vaginal swab and a urine specimen at the GUM clinics. All the vaginal swabs (except the extra SCVS from site 1, which were analysed for organism load by quantitative PCR) were tested by CRT on-site and the urine specimens were tested by an independent laboratory using Roche Amplicor_ CT/NG polymerase chain reaction (PCR). Discordant samples, 20 concordant positives and 100 concordant negatives were tested by a reference laboratory (STBRL, HPA) using an alternate NAAT (TMA, Gen-Probe). At sites 2 and 3, CRT performance in SCVS was also compared to the test-of-record NAAT (SDA, Becton Dickinson) in endocervical swabs. A user study was conducted to determine acceptability of the SCVS procedure and preference compared to urine.

Results: The CT prevalence by PCR was 8.4%, 9.4% and 6.0% at sites 1, 2 and 3, respectively (Table 1). Against urine PCR, the sensitivity and specificity of the CRT were 83.5% and 98.9%, respectively (PPV 85.8%, NPV 98.5%). CRT performance between sites or between clinician-collected vs. SVCS was not significantly different. Compared to the test-of-record SDA in endocervical swabs, sensitivity and specificity of CRT was 81.6% and 98.3% respectively. Organism load of PCR-positive vaginal swabs from site 1 ranged from 2.78 - 9.04 (log10) plasmids/swab. Not surprisingly, CRT signal strength correlated with the organism load of these samples (r=0.6435, p<0.0001). Ninety-six per cent (96%) of participants felt comfortable taking their own vaginal swabs. Given a choice between SCVS and urine sample, 41% preferred the former, 37% preferred the latter and 22% indicated no preference.

Conclusions: Two proprietary technologies (signal amplification system and improved sample extraction chemistry) enable the CRT to overcome two important barriers of rapid tests for antigen detection: low sensitivity and signal inhibition by samples such as vaginal fluid. The CRT is thus able to employ a simple-to-collect non-invasive sample type and yet achieve a high level of sensitivity relative to currently available rapid tests. The CRT is easy to perform, does not require instruments, cold-chain storage or highly-trained technical personnel. Results from this study indicate that the CRT can be useful in settings where NAATs are not readily available or affordable. In addition, the use of this simple, rapid and relatively sensitive POC test could provide an additional tool to increase CT screening coverage even for certain settings in developed countries.

Table 1. Performance of the CRT against PCR in a young people's sexual health centre (Site 1) and genitourinary medicine clinics (Sites 2 & 3) in the UK.

			% Sensitivity		% Specificity	
Site	No. of samples	Prevalence %	[illegible]	[illegible]	[illegible]	[illegible]
1	564	8.4 [illegible]	83.3 [illegible]	85.4 [illegible]	98.8 [illegible]	99.0 [illegible]
2	394	9.4 [illegible]	81.5 [illegible]	81.5 [illegible]	98.0 [illegible]	98.0 [illegible]
3	391	6.0 [illegible]	83.3 [illegible]	83.3 [illegible]	98.6 [illegible]	98.6 [illegible]
Total	1349	8.2 [illegible]	82.7 [illegible]	83.5 [illegible]	98.0 [1224/1238]	98.8 [1224/1238]

O-078 RECURRENT CHLAMYDIAL INFECTIONS AMONG YOUNG WOMEN IN RURAL AND URBAN COMMUNITIES

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Objectives: Observe epidemiologic patterns of recurrent chlamydial infections and health disparities in rural versus urban settings.

Methods: A cross-sectional study was conducted on 60,000 randomly selected women less than 25 years of age who attended family planning, STD and prenatal clinics in eight Southeastern states between 1999 and 2000. Clients were diagnosed with C. trachomatis by Gen-Probe Pace_ 2 (Gen-Probe, Inc., San Diego, CA) and classified as a recurrent or persistent chlamydia case if a subsequent chlamydia test was positive 30 days after an initial positive chlamydia test . Using the client's zip code, we used a commercial software, CensusCD , to classify urban areas if a zip code had at least 55% urban population and a rural area with at least 45% rural population. The distance from the client's residence to the clinic was calculated in miles using ZipFind software (Bridger System, 2002). Univariate analysis and logistic regression were utilized to evaluate the relationship between recurrent chlamydial infection and age, race, distance, pregnancy status and history of gonococcal infections .

Results: The median age was 19 years (range 10-24 years), and the race distribution consisted of 26,456 Caucasians (44%), 20,620 African Americans (34%), and 12,924 other (22%). Of the 6,640 (11.1%) women initially infected with chlamydia, 842 (12.7%) were reinfected during the study period. The percent of recurrence in rural and urban areas was 13.6% and 12% respectively. The initial chlamydia prevalence among African Americans and Caucasians was 18.7% and 6.7% respectively. Among African Americans in rural and urban areas, the percent of recurrence was 18.7% and 13.9%, respectively, vs. 8.2% and 10.4% among Caucasians. Overall, 16- to 19-year-old women were more likely to be reinfected than 20- to 24 year old women. In both rural and urban areas, African Americans were more likely to be reinfected than Caucasians (OR=2.26, P <.001 and OR=1.34, P < .05; respectively). Among African Americans, rural clients were more likely to be reinfected than urban clients (OR=1.34; P < .001). The median distance between clinics and residences of reinfected clients in rural and urban areas was 6.4 miles and 3.3 miles respectively. Rural clients who traveled a greater distance to the clinic were more likely to be reinfected (OR=1.24; P < .01). Women who were currently pregnant were less likely to have a recurrent chlamydial infection (OR=0.74; P < .01), independent of rural versus urban setting. Women who had a history of gonococcal infections were more likely to have a recurrent chlamydial infection (OR=1.44; P < .01), independent of rural versus urban setting.

Conclusion: Overall, rural clients were more likely to have a recurrent chlamydia infection. The predictors for recurrent chlamydial infections were younger age, African American race, distance traveled to the clinic, and history of gonococcal infection. The distance traveled to the clinic raises an important issue of access to care and the utilization of STD services, and interventions addressing access to chlamydia screening will likely be important in reducing health disparities in rural environments.

ORAL SESSION: ADOLESCENTS AND YOUNG ADULTS

O-079 SEXUALITY EDUCATION AND GONORRHEA RATES

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Objective: To test the associations between state-level sex educational policies and state gonorrhea rates over time.
Methods: 48 states with data fell into one of three abstinence education groups: no mandated abstinence coverage (n = 18 states), mandated abstinence coverage (n = 7), and mandated stress upon abstinence (n = 23), based on records published by the Alan Guttmacher Institute. Contraception coverage fell into two categories: none mandated (n = 33), and mandated coverage (n = 15). We then compared gonorrhea rates from national surveillance reports (2001-2005) across state by contraception and abstinence policy. We compared overall rates by state, and also stratified among the following age ranges: 15-19, 20-24, and 35-39 years.
Results: For all years combined, states with no mandated abstinence coverage had the lowest gonorrhea rates (mean rate = 67.2 cases per 100,000 people); states with policies stressing abstinence had the highest gonorrhea rates (mean rate = 128.3), and states with mandated abstinence coverage fell in the middle (mean rate = 111.4) (p = .015). For all groups combined, gonorrhea rates declined by 9.1% from 109.6 to 99.6 cases per 100,000 people to between 2001-2005 (p<0.001). States covering, but not stressing, abstinence saw a 25% decline (from 129.0 cases per 100,000 people to 96.7) (p = .005). Gonorrhea rates did not vary significantly by contraception education coverage policy. Results were replicated for all age ranges at similar strengths of effect.
Conclusions: Within limits of ecological comparisons, there appears to be no evidence that stressing abstinence results in subsequent declines in gonorrhea. Coverage of abstinence (rather than stressing abstinence) may help reduce gonorrhea in states with high gonorrhea rates. However, because declines over time (where seen) were not limited to gonorrhea rates in teenagers and young adults, effects may simply not be related to school-based sex education. mhogben@cdc.gov

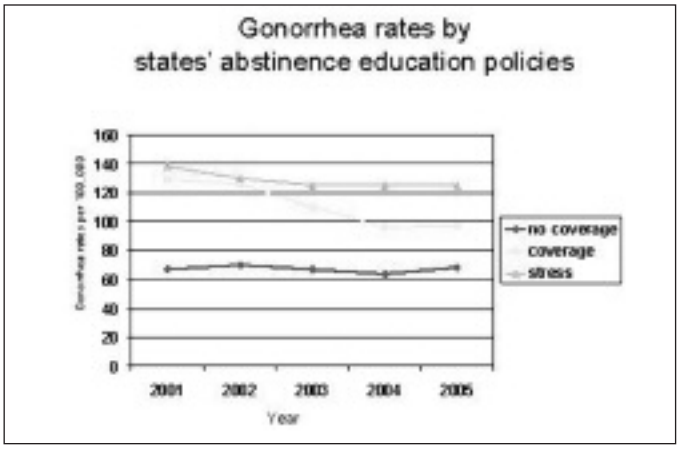

Figure 1: GC rates by education policy

O-080 TRENDS IN NUMBER OF SEX PARTNERS AMONG FEMALE ADOLESCENTS AND ADULTS IN THE UNITED STATES: 1995 AND 2002

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Objectives: To compare national data on the lifetime and recent number of sex partners of female adolescents and adults in the United States (U.S.) in 1995 and 2002.
Methods: In 1995 and 2002, the National Survey of Family Growth (NSFG) was conducted in the U.S. Both samples obtained nationally representative data of females aged 15-44 years living in U.S. households and had a 79% response rate. The sample sizes were 10847 women in 1995 and 7643 women in 2002. Both surveys included specific questions on sexual risk behaviors. SUDAAN was used for data analyses to account for the complex sampling procedures used by the NSFG. Data were weighted to represent the female U.S. population at that time. The 2002 sample included more Hispanic (Latina) and fewer White (non-Hispanic) women (p=.007) and more never married and fewer married women (p=.003).
Results: Overall, 10.1% (1995) and 10.2% (2002) of the women had two or more partners in the past year (p=.83) and 3.9% (1995) and 4.1% (2002) had three or more partners in the past year (p=.66). The number of partners in the past year did not differ over time by race/ethnicity, age or marital status; however, among Black (non-Hispanic) women there was a decrease in two or more recent partners from 18.8% in 1995 to 14.8% in 2002 (p=.01) and in three or more recent partners from 7.2% in 1995 to 4.9% in 2002 (p=.03). Among sexually-active women, there was an increasing trend in number of lifetime sex partners. In 1995, 37.0% of women reported five or more lifetime sex partners as compared to 41.4% in 2002 (p=.0005). Specifically, more non-Hispanic White and Black women had five or more lifetime sex partners in 2002 as compared to 1995. There was no difference in the percentage of 5 or more lifetime sex partners for adolescents (15-19 years) and young adults (20-24 years); however, there was a significant increase for women age 25-44 years from 39.4% in 1995 to 44.7% in 2002 (p=.0001). The percentage who reported 10 or more lifetime partners increased from 15.0% in 1995 to 16.8% in 2002 (p=.04). Non-Hispanic White women had a significant increase in 10 or more partners from 16.1% in 1995 to 19.1% in 2002 (p=.01); however, there was no difference for Hispanic (Latina) and non-Hispanic Black women. In 2002, women who were formerly but not currently married had the highest reports of 5 or more (62.7%) and 10 or more (31.3%) lifetime sex partners.
Conclusions: There was no change in recent sexual behavior from 1995 to 2002 with the exception of a decreasing trend for multiple partners in the past year for non-Hispanic Black women. However, the percentage of women in the U.S. who are at risk for STIs as a result of a higher number of lifetime sex partners has increased.

O-081 DISPARITIES IN CHLAMYDIA AND GONORRHEA TESTING AMONG YOUNG WOMEN PRESENTING FOR ROUTINE HEALTHCARE

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Objective: Investigate whether differences exist in annual testing for chlamydia (CT) and gonorrhea (GC) by age, race/ethnicity, and insurance status among young women presenting for routine healthcare.
Methods: Retrospective cohort study. We extracted data for young women 14'24 years old between 1995 and 2005 from a large urban electronic medical record system (N=13,099). For each woman, we identified the earliest evidence of sexual activity (pregnancy test; pregnancy-related/pelvic/pap exam procedure code; STI diagnosis) and extracted data from subsequent routine non-pregnancy-related outpatient visits (N=20,124) and all GC/CT tests from outpatient, inpatient, and ER

settings. The outcome variable was likelihood of receiving a GC or CT test within the last year. Visits for 1 year following each GC/CT test were excluded in order to focus on routine visits at which a test was indicated. Logistic regression with generalized estimating equations analysis to adjust for multiple observations per subject assessed differences in age, race/ethnicity, and insurance status (private, public, public pending, self-pay, and other) associated with odds of an annual STI test being done (visit-level analysis). These analyses were adjusted for neighborhood poverty, clinic type, year of visit, substance use, mental illness, high utilization (more than 1 visit in the last 6 months), and prior positive STI at each visit. Stratified analyses were performed by race/ethnicity, insurance status, and visits following high utilization or a pregnancy.

Results: An annual GC/CT test was done among 82% of young women at routine non-pregnancy-related visits. In bivariate analyses, Latinas (93%) and women with pending public or self-pay insurance (92% and 88%, respectively) were more likely to be annually tested. Women with private insurance (73%) were less likely to be annually tested. In adjusted analyses, the odds of a GC/CT test being done at a routine visit were lower among young women aged 14-15 (0.68; 95% CI 0.58, 0.80), 16-17 (0.87; 95% CI 0.75, 1.00), and 23-24 (0.80; 95% CI 0.67, 0.95) years, compared to women aged 18-19 years. The odds of testing were higher among Latinas (1.86; 95% CI 1.49, 2.33) but lower among black women (0.83; 95% CI 0.75, 0.93), compared to white women. The odds of testing were higher among women with public (1.25; 95% CI 1.10, 1.42), public pending (1.85; 95% CI 1.48, 2.31), and self-pay (1.39; 95% CI 1.09, 1.77) insurance, compared to women with private insurance. In analyses stratified by race/ethnicity, age differences were most pronounced among black women, and differences by insurance status persisted. Differences in testing by race/ethnicity persisted in analyses restricted to visits with public insurance, those with no more than 1 visit in the previous 6 months, or visits following a pregnancy.

Conclusions: Despite recommendations for annual testing, 18% of sexually active young women do not receive testing for GC/CT at routine health care visits. Within this single, integrated care system, differential testing patterns by age, race/ethnicity, and insurance status suggest providers differentially screen young women who present for routine care and may indicate one mechanism by which racial and socioeconomic disparities in STI are generated.

O-082 REPEAT DETECTION OF INCIDENT HPV INFECTIONS IN NEWLY SEXUALLY ACTIVE YOUNG WOMEN

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Objectives: To evaluate patterns and correlates of repeatedly-detected incident HPV infections in newly sexually active young women.

Methods: Between 2000 and 2006, 18-22 year old female university students were recruited prior or close to their sexual debut and followed every four months. PCR-based testing of cervical and vulvovaginal swab samples was performed using PGMY09/PGMY11 primers and a linear array for 37 HPV types. Using midpoints between study visits, the Kaplan-Meier method was used to estimate the time from the first incident type-specific HPV infection (positive cervical or vulvovaginal sample) to the first negative type-specific HPV test (negative in both samples). Women could contribute multiple type-specific HPV infections if they tested positive for multiple HPV types at the time of their first incident HPV test. Logistic regression was used to compare incident infections that were repeatedly detected at the next two follow-up visits to incident infections that were not detected at either of the next two follow-up visits. Robust variance estimates were used to account for correlation within subjects. Variables considered as correlates of repeat detection included: number of concurrent HPV types detected at the time of incident detection, site of incident detection (cervical and vulvovaginal versus one site only), and HPV risk category (oncogenic versus non-oncogenic HPV type).

Results: 70 women with 127 incident type-specific HPV infections were followed for a mean of 25.7 (SD± 14.8) months. The median time to the first negative test was 8.3 (95% CI:6.6-10.8) months. Of 92 incident type-specific HPV infections that became undetectable before the last follow-up visit, 21(22.8%) were re-detected at a subsequent visit (with a median of 8.8 [range: 6.2 to 39.8] months between positive tests separated by at least one intercurrent negative). Logistic regression analyses included 86 incident type-specific HPV infections that were repeatedly detected at the next two follow-up visits and twelve incident infections that were not detected at either of the next two follow-up visits. Detection of oncogenic HPV types was not significantly associated with repeat detection. Higher numbers of concurrently-detected HPV types at the time of incident detection were associated with an increased likelihood of repeat detection (OR per concurrent infection=1.5, 95% CI: 1.00-2.2). All 58 incident infections that were detected in both cervical and vulvovaginal samples were repeatedly detected at the next two follow-up visits, whereas 12 of 40 incident infections that were detected at one site only were not detected at either of the next two follow-up visits ($p<.01$).

Conclusions: Among newly sexually active young women, those who initially acquire multiple HPV infections are more likely to have persistent infections over the first eight months than those who initially acquire a single HPV infection. The observed association between initial detection in both cervical and vulvovaginal samples and repeat detection may reflect a positive association between higher viral levels in initial infections and early persistence.

O-083 DOES COMPREHENSIVE SEX EDUCATION INCREASE THE LIKELIHOOD THAT U.S. TEENS WILL ENGAGE IN SEXUAL ACTIVITY?

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Objective: There is considerable debate about the effect of sexual education on initiation of sexual activity, teen pregnancy and risk for sexually transmitted disease. The objective of this study was to quantify the sexual health risks of heterosexual, non-married adolescents in the United States who received formal abstinence-only and comprehensive sexual education, compared to those who received no formal sexual education.

Methods: We conducted a secondary data analysis of the Center for Disease Control's Cycle 6 (2002) National Survey of Family Growth (NSFG), using weighted multiple logistic regression analyses to generate population-based estimates. The sample was restricted to heterosexual, never-married adolescents, ages 15-19, reporting on formal sexual education received before their first sexual intercourse (n=1,731). Teens were classified as having received either no formal sex education, formal sex education about 'saying no to sex' (abstinence-only education), or formal sex education consisting of information about both 'saying no to sex' and birth control (comprehensive education). Three self-reported outcomes were assessed: ever engaged in vaginal sex, teen pregnancy, and previous STD diagnosis.

Results: Roughly ten percent (9.5 %) of adolescents reported having received no formal sex education, while 23.8% had received abstinence-only education and 66.7% had received comprehensive sex education, consistent with previous analyses of NSFG data. Adjusting for other independent predictors of engaging in vaginal sex (age, gender, race, family-unit intactness and talking to parents about sex education topics), neither abstinence-only nor comprehensive sex education significantly reduced the odds of a teen becoming sexually active (e.g., engaging in vaginal sex; OR=0.86 (95% CI 0.52-1.42), p=0.56 and OR=0.71 (0.49-1.04), p=0.08 respectively). Similarly, neither abstinence-only nor comprehensive sex education significantly reduced the likelihood of an STD diagnosis (OR=1.08 (0.36-3.28), p=0.89 and OR=1.20 (0.43-3.35), p=0.73 respectively) adjusting for age, gender, race, family intactness and talking to parents about STDs. However, adolescents who received comprehensive sex education had significantly

decreased odds for teen pregnancy (OR=0.39 (0.22-0.69), p=0.001) compared to those who received no formal sexual education, while the adolescents who received abstinence-only education did not (OR=0.76, (0.34-1.67), p=0.49), after adjusting for age, gender, race, household income, family unit intactness, metropolitan residence and talking to parents.

Conclusions: Most adolescents received some type of formal sexual education, the majority of which was comprehensive sex education. Teaching about birth control was not associated with increased risk of adolescent sexual activity or STD. Adolescents who received comprehensive sex education had a lower risk of teen pregnancy whereas adolescents who received abstinence-only education did not. Therefore, policies that support the most informative, comprehensive, and medically accurate curricula should be implemented on both state and federal levels.

O-084 OUTREACH-BASED STI TESTING ACCESSES A HIGHER-RISK SUBGROUP OF HOMELESS YOUTH THAN CLINIC-BASED TESTING

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Objective: Homeless youth suffer from disproportionate rates of STI/HIV. The highest risk youth are not found in clinics, but on the street. Street START is a collaborative project of non-profit, governmental, and academic partners to determine the feasibility and acceptability of street outreach-based testing and treatment for CT/GC for homeless youth in San Francisco.

Methods: Urine-based STI testing was offered during outreach sessions. We collected behavioral risk data using self-administered brief street interviews on PDAs. STI-positive youth were located and offered field-delivered therapy and patient-delivered partner therapy. We collected comparison data from the two primary clinics serving homeless youth in San Francisco.

Results: We recruited 184 street-based and 98 clinic-based youth. Street-recruited youth were more likely than clinic-based youth to be male (70% vs. 35%, p<.0001), white (67% vs. 46%, p<.001) and older (22.3 vs. 19, p<.0001). Street-recruited youth were more likely to have been unstably housed in the past two nights (82% vs. 21%, p<.0001). Street recruited youth were more likely than clinic youth to have engaged in anal sex (35% vs. 20%, p<.01) and less likely to have engaged in vaginal sex (64% vs. 83%, p<.001) in the prior 3 months. Street recruited youth and clinic-based youth were equally likely to report ever having sex with men and to have used a condom at last anal or vaginal intercourse. Street-recruited youth had more sex partners in the past 3 months (5.2% vs. 2.3%, p<.01) and were more likely to have risky partners, including IDU sex partners (62% vs. 12%, p<.0001) or partners perceived to be HIV-positive (27% vs. 4%, p<.0001). Street recruited youth were more likely to have ever engaged in survival sex (39% vs. 11%, p<.0001) or to have ever injected drugs (52% vs. 4%, p<.0001). There was no statistical difference in prior STI testing or STI rates in the two groups. All outreach-tested STI-positive youth have been treated.

Conclusions: Our results suggest that outreach-based testing is accessing a higher-risk subgroup of youth relative to clinic-based testing. Outreach-recruited youth who test positive for GC or CT can be successfully tracked and treated. Unexpectedly, street youth and clinic-based youth were equally likely to have received prior STI testing, perhaps reflecting the density of services and research directed at this population in San Francisco.

ORAL SESSION: HEALTH SERVICES AND POLICY II

O-085 WHAT CAN COMMERCIAL HEALTH PLANS DO TO IMPROVE THEIR HEDIS CHLAMYDIA TRACHOMATIS SCREENING RATES?

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Objective: To identify specific practices initiated and sustained by commercial health plans to increase screening rates for Chlamydia trachomatis (Ct) among sexually active women under age 26.

Methods: Using National Committee for Quality Assurance (NCQA) Quality Compass data, health plans reporting Health Plan Employer Data and Information Set (HEDIS) Ct rates were analyzed to identify those with 1) significantly improved and 2) sustained higher screening rates. Plans were subsequently categorized into plan type (network, mixed model, independent practice association), enrollment (overall enrollment and enrollment of >1000 women ages 15 to 26 years), NCQA accreditation status, and geographic location. A nationally representative sample of eight health plans that had increased Ct screening rates by 26% to 36% from 2003-2005, and nine health plans that had maintained Ct screening rates in the top two quartiles of all plans in 2005 (31.5% or more of eligible women screened) was developed. Representatives of each health plan including directors of quality improvement, directors of clinical operations, and HEDIS managers were interviewed to identify successful interventions.

Results: Successful efforts to increase Ct screening focused on one or more of three major factors: physician practices, patient behavior and data collection. Provider interventions included monitoring screening rates by individual providers, shifting responsibility for reminders from providers to patients, hosting a dinner for doctors to inform them about Ct screening recommendations, reminders about Ct screening in annual provider newsletters, and linking Ct screening with Pap smears, particularly in plans with Pay-for-Performance for Pap smears. Patient interventions focused on provision of 'birthday card' reminders, women's health report cards, brochures, and wallet cards. Data collection improvements concentrated on initiation of Logical Observation Identifiers Names and Codes and use of a single lab vendor. Health plans report that they face competing resource demands for quality improvement initiatives that address NCQA, employer and member concerns. Raising Ct screening rates are not the highest priority for many health plans, but representatives consistently reported that including the Ct HEDIS measure in NCQA's accreditation set would raise its priority.

Conclusions: Health plans have implemented a range of economical, feasible strategies to increase Ct screening rates; evidence demonstrates that a multifaceted approach provides more robust results. A 'Best Practices' guidance document that provides specific details of activities and samples of patient and provider educational materials and tools will be disseminated nationally Email: cwalsh@cdc.gov

O-086 ADHERENCE TO REGIONAL CHLAMYDIA SCREENING CRITERIA AND OPPORTUNITIES TO INCREASE SCREENING COVERAGE FOR WOMEN IN FAMILY PLANNING AND STD CLINICS: DATA FROM THE REGION II INFERTILITY PREVENTION PROJECT

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Objectives: The goal of the Region II Infertility Prevention Project (IPP) is to decrease the prevalence of chlamydial infections and sequelae through targeted screening. The purpose of this study was to estimate adherence to regional minimum screening criteria, defined as all women under age 25 attending FP clinics for an initial or annual (i.e. pelvic) exam, and all women under age 30 attending

STD clinics. Based on 2005 IPP regional prevalence monitoring data, chlamydia positivity for age-eligible clients screened was 5.6% in Family Planning (FP) and 11.7% in Sexually Transmitted Disease (STD) clinics.

Methods: Client medical records were analyzed for 164 FP and 36 STD clinics in four project areas: New Jersey, New York City, New York State, and Puerto Rico. A random sample of 2,723 FP and 1,763 STD eligible client records was selected for the year 2005, where 'eligible' referred to clients meeting regional criteria. Records that did not meet the age criteria were excluded from analysis. The expected proportion screened per criteria was set at 85% in FP and 90% in STD clinics. Each client's age and whether a chlamydia test was performed were recorded. Where no test was performed, the reason was noted.

Results: In 2005, 37.9% of tests in FP and 30.7% of tests in STD clinics reported to the Region II IPP for females were outside criteria. Overall, 86.0% (2,343/2,723) of females in FP (95%CI: 84.7%-87.3%; range 47.4%-98.8% by project area) and 74.4% (1,312/1,763) of females in STD clinics (95%CI: 72.4%-76.5%; range 51.7%-88.8% by project area) who met the minimum criteria were screened. Among those not screened in FP (n=380), common reasons included 'client refused' (27.1%), 'no new risk' (10.8%), and 'not sexually active' (10.5%). In STD clinics, common reasons for not testing (n=451) were 'tested or treated in the past 30 days' (25.3%), and 'other reason for visit' (25.3%), including emergency contraception and HIV testing services. By excluding records for clients where the reason for no chlamydia test was reported as 'no new risk', 'not sexually active', 'tested or treated in the past 30 days', or 'referred for treatment', the percent of eligible clients screened rose to 89.6% (2,343/2,614) in FP (95%CI: 88.4%-90.8%) and 83.2% (1,312/1,576) in STD (95%CI: 81.4%-85.0%).

Conclusions: Adherence to Region II IPP minimum chlamydia screening criteria is high overall, but lower than expected in STD clinics and variable by project area. This analysis did not examine screening among limited service FP clients (e.g. pregnancy test only). Screening coverage may be increased by educating FP providers on strategies for increasing clients' acceptance of testing. Urine-based testing may facilitate expanded screening of females who do not undergo a pelvic exam, and should be considered for STD clients receiving only emergency contraception or HIV testing. Redirecting resources used to screen older women not at risk could facilitate expanded screening of young women. The sampling methodology utilized in this study will inform future efforts to assess adherence to screening criteria and screening coverage.

Estimated Adherence to Regional Minimum Chlamydia Screening Criteria for Females, by Provider Type, Region II Infertility Prevention Project (IPP), CY2005

Provider Type	Regional Minimum Screening Criteria	# of Sites	Sample Size	Observed Percent Screened (95%CI)	Range (by Project Area)	Expected Percent Screened
Family Planning	< age 25 years for initial or annual exam	164	2,723	86.0% (84.7%-87.3%)	47.4%, 98.8%	85%
STD	< age 30 years	36	1,763	74.4% (72.4%-76.5%)	51.7% 88.8%	90%

0-087 COST-EFFECTIVENESS OF INCORPORATING TREATMENT FOR HERPES SIMPLEX VIRUS TYPE-2 IN TO THE SYNDROMIC ALGORITHM FOR GENITAL ULCER DISEASE

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Background: Syndromic management of genital ulcer disease (GUD) has traditionally relied on targeting Haemophilus ducreyi (HD) and Treponema pallidum (TP). However, recent evidence from sub-Saharan Africa suggests that the proportion of GUD due to HD and TP has decreased whereas the proportion due to Herpes simplex virus type-2 (HSV-2) has increased. In 2003, WHO revised its syndromic GUD algorithm to include HSV-2 treatment for all patients presenting with appropriate symptoms or clinical signs, and incorporated a threshold HSV-2 prevalence above which all patients were treated for HSV-2 (Figure). This analysis investigates the cost-effectiveness of the new algorithm to determine when it outperforms the 1994 WHO algorithm that only targeted HD and TP, and explores at what HSV-2 ulcer prevalence it becomes cost-effective to treat all ulcers for HSV-2.

Methods: Using data from the literature, a model was used to estimate the impact (ulcers correctly treated) and cost-effectiveness (cost per ulcer correctly treated) of the 1994 and 2003 WHO algorithms. Modelled costs included treatment and counselling costs, while infrastructure costs were assumed to be constant for both algorithms. Drug costs were obtained from the International Drug Price Indicator Guide and expressed in 2005 US$. The model was used to determine when it becomes cost-effective to treat some or all GUD patients for HSV-2 in scenarios with different GUD aetiologies and varying accuracy of the symptom/sign used to diagnose HSV-2 ulcers.

Results: The table summarises our results. Except when the prevalence of HD/TP was high (>40%), and the HSV-2 prevalence was relatively low (<30%), the 2003 algorithm achieved much greater impact than the 1994 algorithm because of the HSV-2 cases treated. Indeed, unless HSV-2 treatment costs were >$2 per patient, this increased impact is achieved at a low cost per additional ulcer treated, and at high HSV-2 prevalences (>60%) the overall cost-effectiveness of the 2003 algorithm is likely to be superior. For the 2003 algorithm, greater impact was achieved if GUD patients were treated for HSV-2 in both algorithm arms, and the additional cost per extra ulcer treated was reduced if the HSV-2 prevalence was high and/or the HSV-2 treatment cost or the sensitivity of the symptom/sign used to diagnose HSV-2 ulcers were low. For example, for a low prevalence of HD (10%) and TP (5%), cheap generic HSV-2 treatment ($0.53 per episode), and moderate performance of the symptom/sign being used to determine HSV-2 (sensitivity 40%, specificity 80%), it would be more cost-effective to treat HSV-2 in both arms of the algorithm if the proportion of GUD attributable to HSV-2 prevalence was >45%, i.e. in situations increasingly encountered in Africa. In contrast, the HSV-2 prevalence threshold would be 25% if the sensitivity and specificity were 30% and 65%; and would be 69% if HSV-2 treatment cost $0.81.

Conclusions: Including HSV-2 treatment into the GUD algorithm can be a cost-effective strategy for substantially increasing the impact of syndromic GUD management. It is essential that resource-constrained countries have access to cheap acyclovir, and that GUD algorithms are tailored to each epidemiological setting.

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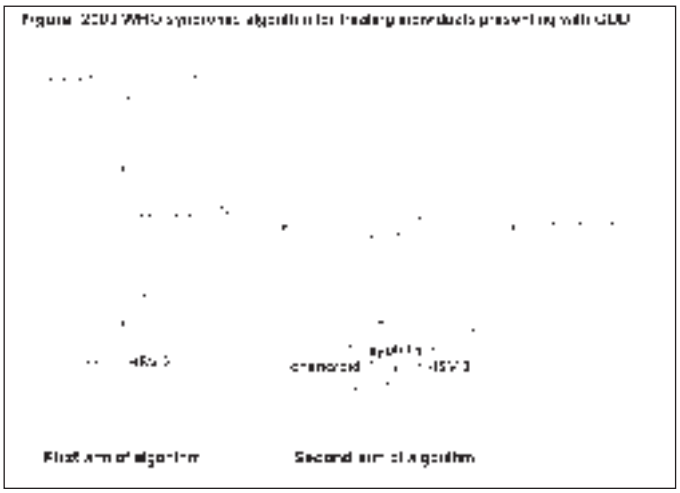

Table

O-088 THE PROGRAM COST AND COST-EFFECTIVENESS OF SCREENING MEN FOR CHLAMYDIA TO PREVENT PID IN WOMEN: FINDINGS FROM A LARGE-SCALE U.S. STUDY

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Objectives: To determine the cost of screening men for chlamydia in different venues and to estimate the impact on women and the cost-effectiveness of male screening compared to alternative uses of the resources under a variety of assumptions.
Methods: As part of a male screening study, we collected time data to determine the cost of screening men in venues including juvenile and adult detention, school clinics, community-based organizations, and drug treatment centers. Staff also determined the cost to perform health-department-provided partner notification (PN). We used these data to determine a program cost per male screened. Using study data on partner numbers, we constructed a compartmental dynamic transmission model to estimate the impact of screening men for a period of 5 years on a) their female sex partners and b) community prevalence for both men and women. We assumed a population of 100,000 individuals, evenly divided between men and women, with 35% of women screened annually at baseline. Males and females were classified as susceptible (uninfected), exposed (incubating), infected (symptomatic or asymptomatic), or suffering sequelae (pelvic inflammatory disease (PID) or epididymitis) and were categorized into low- and high-rate of partner change groups based on the number of partners in the last year. The proportion of the population in each group was based on a national survey and the literature: 95% of men and 98% of women were in the low change-rate groups. We assumed that the male screening program would screen 1% of all men annually (drawn from relatively high-risk venues). Screening men with PN to find female partners was compared to: screening women only with no PN to find male partners; screening women with PN; screening men with no PN; and expanding screening for women using funds that would otherwise be used to screen men. The primary outcome was cases of PID averted. All costs were expressed in 2006 U.S. dollars and future costs and outcomes were discounted by 3% per year.
Results: Of the men screened, 17% were from the high change-rate group. At a baseline cost per specimen collected of $21.44, screening high-risk men with PN prevented more PID and was less costly than expanded screening for women compared to the baseline program of screening 35% of women in the population, but the net health care system cost between the two alternatives differed by less than 0.5%. Screening women with PN and screening men with no PN were not cost-effective. These results were sensitive to modeling assumptions, including per-act transmissibility, duration of infection, and degree of assortative mixing between groups. The program cost per man tested ranged from a low of $21.44 for detention screening to $50.00 for screening at a community-based organization (these costs include test kits and labor). PN cost $12.20 per index patient interviewed and approximately $40.00 per partner for whom notification was attempted.
Conclusions: High-risk men were screened at a relatively low program cost in the study. Modeling estimates suggest screening of high-risk men could be a viable tool in chlamydia control.

O-089 STD PREVENTION SCIENCE IN SOCIAL CONTEXT: BRIDGING SCIENCE AND POLICY

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Objectives: Identify ways to protect the integrity of STD prevention science in a societal context necessarily defined by the values of its members.
Methods: Science policy literature was reviewed to identify current trends in thinking about the relationship between science and policy. Using these findings as a reference point, recently identified STD prevention strategies - male circumcision (MC) and Human Papillomavirus (HPV) vaccine - were reviewed to identify challenges and recommendations for achieving positive science policy outcomes.
Results: Literature reveals that both scientists and policymakers aim to benefit society, but differences in their cultural norms often create disparity between results/recommendations of scientific inquiry and what is actually done with them (i.e., policy/practice). Specifically: (a) Scientific inquiry sets out to be objective (i.e., devoid of values) with the expectation that results can have a direct benefit to society through policies and programs; (b) Policy is developed within a political context which is by nature driven by [non-objective] societal values; (c) Scientists assume that more science leads to more societal benefit; (d) Though policymakers use science to help instruct development of resolutions to problems, values play a significant role in how they interpret science and what new research they support. The disparity is most debated in peer-reviewed literature and popular media around global climate-related studies and their disconnect with subsequent policies (e.g., greenhouse emissions have not been reduced despite scientific imper-

atives to do so). Landmark STD-related science related to HPV and MC recently entered the world of policymaking. Not yet fully part of the STD-prevention toolkit, scientists tout the importance of MC in high HIV incidence areas where MC rates are low. Yet-to-be-developed policies to implement such recommendations will be influenced by contextual issues such as availability of safe, affordable health care requiring resource allocation by policymakers. The scientific imperative for MC will also face conflict with values related to cultural norms such as fear of loss of manhood that MC represents. Science behind HPV vaccines, supported by the Advisory Committee for Immunization Practice (ACIP), recommends widespread vaccination for young teenage girls. Yet decisions about implementation are encumbered by values that influence policymakers (e.g., fear of disinhibition in teens, mistrust of the science, compulsory vs. voluntary vaccination or opt-in vs. opt-out vaccination policies). Unanswered scientific questions like potential long-term side effects also impact how policymakers respond to ACIP recommendations. Other STD-prevention science (e.g., condom efficacy, abstinence-only programs) has faced similar conflicts.
Conclusions: Science cannot address values that may run counter to scientific findings. Policy cannot be created without the influence of values. Yet both science and policymaking play important roles in improving STD prevention. Both acquisition of new knowledge and understanding how that knowledge is used in context play roles in improvement of STD prevention. Scientists should carefully consider contextual issues before framing science-based recommendations. Though inseparable from values, policymakers should guard against distorting interpretation of scientific findings to achieve a particular outcome. Neither past, current, nor future STD prevention science is sufficient alone to ensure sound policy or successful programs.

O-090 ACUTE HIV, STD CO-INFECTION, AND ACUTE RETROVIRAL SYMPTOMS INSIGHT INTO TESTING BEHAVIOR AND IMPLICATIONS FOR PUBLIC HEALTH

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Objectives: Acute HIV infection (AHI) represents the earliest possible time point for clinical and public health intervention to diagnose HIV and prevent transmission. However, little is known about the reasons for testing among individuals detected early in HIV infection. Our objective was to understand if co-infection with STDs or the presence of acute retroviral symptoms might act as a cue for AHI testing.
Methods: Since 2002, all publicly funded HIV testing sites in North Carolina have retested all HIV antibody EIA (-) specimens for HIV RNA using specimen pooling through North Carolina's Screening and Tracing Active Transmission Program (STAT). Testing form data, acute retroviral symptoms, and STD data are prospectively collected for acute clients.
Results: Between 11/1/2002 and 10/31/2006, 79 clients with acute HIV infection were identified. Of these, most (75%) were male and Black (65%). An STD diagnosis was made in 23 (30%) clients'in 9 (39%) cases the diagnosis was gonorrhea and in 5 cases trichomoniasis (22%). The median age was 28.5 years (range: 16-56). Thirty-six of the 79 clients (46%) identified through the STAT program presented at STD clinics, representing 57% of the clients who were diagnosed with a concurrent STD infection. About half of acutely infected clients (39 of 79, or 49%) presented with one or more acute retroviral symptoms at the time of testing; however, a total of 48 patients experienced symptoms either at testing or before (61%). This was similar for acutely infected persons tested at STD versus non-STD testing sites, but did differ non-statistically by the presence of an STD co-infection ' 68% of clients without an STD experienced symptoms at or before testing compared to 52% of those with an STD (p=0.19). Of those with symptoms, the most common were fever (69%), GI symptoms (67%), fatigue (44%), and sore throat (44%). Forty (51%) acutely infected clients presented with 2 or more symptoms at or before testing, and 33 (42%) presented with 3 or more symptoms. The median plasma viral load was higher for symptomatic (242,275 cp/ml) vs. asymptomatic clients (67,236 cp/ml; p=0.18), but did not differ by the presence of an STD co-infection (151,357 cp/ml among those with an STD vs. 199,066 cp/ml with no STD). Only 20 clients (25%) did not have an STD co-infection or symptoms at or before testing.
Conclusions: In North Carolina, most (75%) with AHI are co-infected with an STD or experienced symptoms at or before testing. These factors may have prompted HIV testing and may also play a role in the viral load variation present at the time of screening. Targeting AHI testing to this group may be a realistic option in resource-constrained settings. Further research is needed to elucidate these findings as well as understand the testing behavior of individuals without either symptoms and symptomatic STDs.

ORAL SESSION: ANTIMICROBIAL RESISTANCE IN HIV / STD

O-091 ANTIBIOTIC RESISTANCE IN CANADIAN NEISSERIA GONORRHOEAE STRAINS (2001-2005)

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Objectives: To monitor the trends and characteristics of Neisseria gonorrhoeae resistant strains in Canada.
Methods: N. gonorrhoeae strains were obtained from provincial public health and reference laboratories across Canada. MICs were determined by agar dilution for penicillin, spectinomycin, tetracycline, erythromycin, ceftriaxone, ciprofloxacin, cefixime, and azithromycin. Additional testing of the strain's auxotype, and plasmid profile were also determined.
Results: Between 2001-2005, 28035 strains of N. gonorrhoeae were tested by laboratories across Canada. Of these, 4447 resistant strains were forwarded to the National Microbiology Laboratory. During this period, an increase in ciprofloxacin resistant strains, cipR, (MIC value >= 1.0 mg/L) was observed. In 2001, only 109 strains, or 2.4% of the strains tested nationally (n=4498) were found to be resistant to ciprofloxacin. This rate increased to 6.2% (n=4018) in 2004, and by 2005 the number of cipR strains increased to 569 accounting for 15.7% (n=3619) of the year's total. Chromosomal mediated resistant strains to such antibiotics as penicillin, tetracycline and erythromycin also increased although the trend is less drastic. Strains with duo resistance to tetracycline and erythromycin have seen a rate increase from 2.6% in 2001 to 6.8% in 2005. The rate of chromosomal mediated resistant N. gonorrhoeae (CMRNG), strains that are resistant to penicillin, tetracycline and erythromycin, have also increased from 3.8% in 2001 to 6.1% in 2005. Contrary to chromosomal resistance, rates for plasmid mediated strains were declining. The rate of penicillinase producing N. gonorrhoeae (PPNG) and tetracycline resistant N. gonorrhoeae (TRNG) have decreased from 5.2% and 5.9%, respectively, in 2001, to 1.1% and 2.8%, respectively, in 2005. However, not all provincial laboratories determine MICs of penicillin, tetracycline, or erythromycin and therefore the resistance rates for these antibiotics by themselves or in conjunction with each other may be under reported. The two third generation cephalosporins tested by our laboratory, ceftriaxone and cefixime, have been experiencing an increase in MICs. Five strains were found to have either reduced susceptibility or borderline reduced susceptibility to cefixime. These were all resistant to one or more other antimicrobials.
Conclusion: Ciprofloxacin resistance in N. gonorrhoeae within Canada has increased to a level where ciprofloxacin is no longer an option for treatment. The treatments now available are spectinomycin or the third generation cephalosporins, such as ceftriaxone and cefixime. Our current surveillance system needs improve-

ment for capturing resistance of antimicrobials not used in Canada. In addition to possible under reporting of certain resistant strains, we are unable to ascertain the trends of strains in the general population that are below the threshold of a resistant interpretation. A sentinel surveillance system to collect representative strains should be considered as more laboratories are shifting to nucleic acid based diagnosis.

O-092 MOLECULAR ANALYSIS OF CIPROFLOXACIN-RESISTANT NEISSERIA GONORRHOEAE ISOLATES FROM MEN WHO HAVE SEX WITH MEN IN MASSACHUSETTS

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Objectives: To determine the genetic relatedness of isolates of ciprofloxacin-resistant (CipR) Neisseria gonorrhoeae collected from men who have sex with men (MSM) from 12 clinics in Massachusetts between January, 2003 and December, 2004.
Methods: Gonococcal isolates collected from MSM were initially screened for their antimicrobial susceptibility patterns at the Massachusetts State STD Laboratory. Those found to be resistant to ciprofloxacin (MIC > 1.0 ug/ml) were then shipped to CDC where resistance was confirmed by agar plate dilution susceptibility testing. The isolates were then genetically characterized by NG-MAST which assigns an isolate a sequence type (ST) which in turn is the product of combining the por type and the tpbB type. The isolates were also characterized by Lip molecular subtyping.
Results: The relative prevalence of ciprofloxacin resistant N. gonorrhoeae strains isolated in Massachusetts in 2003 and 2004 was 13.5% and 23.1% respectively. The vast majority of cases (>80%) in both years were gonococci isolated from MSM. A total of 104 CipR gonococcal isolates were collected from MSM in Massachusetts from January 13, 2003 through December 29, 2004. NG-MAST molecular analysis of the isolates demonstrated the presence of 22 different ST. The predominant type was ST757 which was observed in 60 isolates (57.7%) while the second most common type was ST1351 which was present in just 7 isolates (6.7%). The remaining 20 STs were represented by between 1 to 6 isolates with 12 STs only being observed in a single isolate. The STs were then further characterized by Lip sub-typing which was able to further discriminate additional subgroups among ST 757. Of the 60 isolates with ST757, 38 were Lip 17c, 20 were 16b, 1was 18b and 1 was 19d. In contrast, all isolates of ST1351 were Lip 17c. Molecular analysis also revealed temporal genetic changes within por types and tpbB types that resulted in the assignment of new STs. For example ST757, ST 1435, ST 225, and ST437 all have tbpB type 4 but have por types 262, 923, 4, and 14 respectively. por types 262 and 923 differ by a single base change at position 358 while por types 4 and 14 differ by a single base change at position 368. On the other hand, we have also observed large changes in a por or tbpB type. ST757/Lip17c and ST1351/Lip17c share the same Lip type and por type 262 but have different tbpB types (4 and 52) which differ by greater than 50%.
Conclusion: In this study we have shown that the vast majority of ciprofloxacin-resistant N. gonorrhoeae strains in Massachusetts are isolated from MSM. We have observed that among this population there is a predominant molecular type, ST757, and that we have identified both point mutation and large substitutional temporal genetic variations among the isolates collected during the two year period.

O-093 HIV-1 DRUG RESISTANCE SURVEILLANCE IN SEATTLE, WA INCLUDING MULTI-CLASS DRUG RESISTANCE AND A CLUSTER OF FOUR INDIVIDUALS WITH HIGHLY RELATED HIGHLY RESISTANT VIRUS

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Objectives: To monitor the prevalence and correlates of transmitted drug resistance, including HIV strains of potential public health significance, antiretroviral (ARV) resistance surveillance is conducted by the Center for Disease Control and Prevention's Variant, Atypical, and Resistant HIV Surveillance (VARHS) project in Seattle, WA.
Methods: Eligible individuals are ARV na_ve, Washington residents, and recently diagnosed with HIV infection. VARHS started in 2003 and currently includes about half of people newly diagnosed with HIV-1 and reported to Public Health. VARHS sends leftover sera from eligible individuals for consensus genotyping, and gathers results of genotypes done in routine clinical practice. Multi-class drug resistant virus (MDR) is defined as high-level resistance to one or more drug in each of two or more ARV drug classes (PI=protease inhibitors; NRTI=nucleoside reverse transcriptase inhibitors; NNRTI=non-NRTI). Individuals with MDR HIV, including ARV na_ve recently HIV-1 diagnosed individuals from additional surveillance projects, were compared to those without MDR HIV by Chi square analyses.
Results: Genotype results were available for 304 people. 11% have high-level drug resistance mutations. We found no significant changes over time in trend analyses using VARHS data and additional surveillance projects. NNRTI resistance was detected in 9% of subjects; NRTI and PI resistance both were prevalent in 3% of subjects. MDR was also present in 3%, including 8 with mutations conferring resistance to all three classes and 5 with high-level resistance mutations to ARVs in all 3 classes. Relative to those without MDR, those with MDR tended to be older (31% versus 15% age 45+ years, p=.06), and were more likely to be men who had sex with men (MSM, 87% versus 67%, p=.04). In 01/07, we identified four people infected with genetically similar, 98-99% homologous, MDR with mutations conferring resistance to all PIs, all NNRTIs and most NRTIs. Three of the four had evidence of recent HIV-1 infection at the time of their diagnosis. All four are MSM, have a history of methamphetamine use, and reported sex with multiple, mostly anonymous sex partners. Partner counseling and referral services (PCRS) are ongoing and to date all identified partners either are not infected with HIV-1, or HIV-1 infected with a phylogentically unrelated virus.
Conclusions: MDR transmissions are occurring in Seattle, especially in older individuals and MSM; both are probably markers of highly-treated partners. Public Health has asked medical providers to conduct ARV resistance testing early in infection and to report MDR detected in treatment-na_ve patients to better monitor transmission of resistant HIV. Expansion of VARHS activities to additional laboratories is planned to approach a population-based coverage of resistance surveillance. Additional surveillance of the impact of methamphetamine use on HIV transmission and MDR-HIV transmission is needed. As surveillance for MDR becomes more comprehensive, it is likely we will detect more highly resistant transmissions and potentially more related clusters; currently neither is very common.

O-094 CHARACTERIZATION OF HIGH-LEVEL MULTIDRUG RESISTANT NEISSERIA GONORRHOEAE ASSOCIATED WITH THERAPY FAILURE

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Objectives: Characterization of three pharyngeal gonococcal isolates recovered from a Seattle man who failed therapy with cefpodoxime, 400 mg and azithromycin, 1 gram. These isolates were compared to five macrolide-resistant isolates and the prevalence of gonococcal macrolide resistance was determined in Seattle during 2005-2006.
Methods: Isolates from the treatment failure patient and five other macrolide resistant isolates, defined as erythromycin MIC > 8 ug/m and included four from the US and one from Uruguay, were characterized by agar dilution susceptibility tests and pulse field gel electrophoresis (PFGE). Susceptibility tests were also performed on a time-weighted random sample of isolates from 45% of cases reported in Seattle during 2005-2006. Amino acid (aa) changes to their mtrR gene, the presence of the adenine (A) deletion in the 13 bp mtrR promoter, or a 153 bp insertion sequence between the mtrR/mtrC promoter and mtrC gene and the presence of acquired macrolide rRNA methylases (erm genes) and a macrolide efflux gene mef(A) were determined. Mating experiments were conducted to assess the ability to transfer resistance determinants to selected recipients.
Results: Isolates from the patient who failed therapy were resistant to erythromycin (256 ug/ml), azithromycin (Az 8-16 ug/ml), ciprofloxacin (MIC, 16 ug/ml), with decreased susceptibility to ceftriaxone (0.06 ug/ml) and cefpodoxime (0.25 ug/ml). The PFGE patterns of theses isolates were indistinguishable from each other using two enzymes. The three treatment failure isolates, one other US and the Uruguay isolate had the A deletion, and the same aa change at position 105 in the mtrR gene. The remaining three resistant isolates had truncated mtrR genes. All macrolide resistant isolates carried one to three acquired macrolide resistance genes, including erm(B), erm(F), and/or a mef(A). These genes could be transferred to N. gonorrhoeae, Haemophilus influenzae or Enterococcus faecalis recipients and the resultant macrolide resistant transconjugants (erythromycin MIC > 8 ug/ml) indicating that the acquired macrolide resistance genes were on conjugative elements in the original N. gonorrhoeae strains. During 2005-2006, 29.1% of all isolates were resistant to erythromycin (MIC >2 ug/ml); however only the isolates from this treatment failure patient and one other patient had erythromycin MIC >4 ug/ml. Erythromycin resistance was more frequently identified in isolates from men who have sex with men than from heterosexual men and women (P<0.001).
Conclusions: Therapy failure in one patient was associated with multidrug resistance gonococci. Characterization of theses macrolide resistant isolates suggested that multiple mechanisms may contribute to macrolide resistance which could further lessen therapeutic choices.

O-095 EVALUATION OF AZITHROMYCIN RESISTANCE IN T. PALLIDUM ISOLATES FROM MADAGASCAR

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Objectives: The macrolide antibiotic azithromycin has been used successfully to treat primary and secondary syphilis (N Engl J Med 2005; 353:1236'44) and has the advantage of being effective with a single oral dose. However, therapeutic failures have been reported in association with resistance to this antibiotic conferred by a mutation (A2058G) in the 23S rRNA gene (N Engl J Med 2004; 351:154'8). The prevalence of strains with this mutation varies by geographical area, and azithromycin is not recommended for syphilis treatment in regions with known high prevalence (e.g. west coast of the United States). We are conducting a large, multinational Phase III randomized controlled trial to evaluate the effectiveness of azithromycin for treatment of early syphilis in other geographical regions. Our randomized controlled trial of azithromycin is now fully enrolled, and will evaluate clinically and serologically (RPR and TPPA) the equivalence of azithromycin in healthy, HIV-negative adult volunteers 18 to 55 years old with primary, secondary or early latent syphilis compared with benzathine penicillin treatment.
Methods: Swab samples were obtained from ulcer lesions (chancres) or condylomata from patients in three cities in Madagascar (Antananarivo, Tamatave, Mahajanga) where 78% of study subjects have been enrolled. The presence or absence of the A2058G mutation was determined by nested PCR amplification of one 23S rDNA region, followed by restriction digestion of the amplicon.
Results: T. pallidum DNA could be detected from 108 of 146 specimens received and as measured by amplification of the Tpn47 gene. The average age of participants was 22.7 (range 18-45) years. Specimens were obtained from 87 males (72 with primary and 14 with secondary syphilis) and 21 females (16 with primary and 5 with secondary syphilis). Of 103 samples examined to date, the A2058G mutation was observed in none (0%).
Conclusions: The apparent absence of molecular evidence of azithromycin resistance in T. pallidum in Madagascar is encouraging, and also sets the baseline for continued surveillance in the study communities.

ORAL SESSION: HSV / HIV INTERACTIONS

O-096 HERPES SIMPLEX VIRUS SUPPRESSIVE TREATMENT DECREASES PLASMA HIV-1 VIRAL LOAD IN HSV-2/HIV-1 CO-INFECTED WOMEN: A RANDOMIZED, PLACEBO-CONTROLLED, CROSS-OVER TRIAL

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Objective: Herpes simplex virus type 2 (HSV-2) is a common co-infection among persons with HIV-1. Observational studies have found significant associations between HSV-2 reactivation and higher HIV-1 plasma viral loads, suggesting that HSV-2 may increase HIV-1 infectiousness and accelerate disease progression. Our objective was to assess whether HSV-2 suppressive therapy can reduce HIV-1 plasma levels among HSV-2/HIV-1 co-infected women.
Methods: We conducted a randomized, placebo-controlled, cross-over trial of HSV-2 suppressive therapy using valacyclovir 500 mg orally twice daily among 20 HSV-2/HIV-1 co-infected women in Lima, Peru who had CD4 counts >200 cells/μL and were not on antiretroviral therapy. Participants were randomly assigned to receive valacyclovir or placebo for 8 weeks, then after a 2 week washout period, to receive the alternative regimen for an additional 8 weeks. Plasma for HIV-1 viral load measurement was collected weekly. Linear mixed-effects analysis was used to assess the effect of valacyclovir compared to placebo on quantitative HIV-1 plasma levels.
Results: Median age was 28 years (range 21 to 47). At enrollment, median CD4 count was 372 cells/μL (range 229 to 850) and median HIV-1 plasma viral load was 4.65 log10 copies/ml (range 2.57 to 5.88). Plasma HIV-1 levels were greater than the limit of detection (60 copies/ml) at 313 of 318 follow-up visits (98.4%). Average HIV-1 plasma viral load was significantly lower during the valacyclovir arm compared with the placebo arm (4.35 vs. 4.61 log10 copies/ml, p<0.0001; difference -0.26 log10 copies/ml, 95% confidence interval -0.33 to -0.19). Analyses of the effect of valacyclovir on cervical HIV-1 shedding are underway.

Conclusions: In this proof-of-concept study, daily valacyclovir therapy for HSV-2 suppression significantly reduced HIV-1 plasma viral concentrations among HSV-2/HIV-1 co-infected women. HSV-2 suppressive therapy may have the potential to reduce HIV-1 transmission and slow disease progression.

O-097 HSV-2 CONCORDANCE AMONG AFRICAN HIV DISCORDANT COUPLES

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Objective: HSV-2 infection is associated with ~ 3-fold increased risk of HIV-1 acquisition, increased systemic and genital tract HIV levels and HIV transmission. Limited data are available on risk factors for HSV-2 concordance and HIV discordance in African populations. We analyzed factors related to HSV-2 seropositivity in HIV-uninfected partners, whose partners are co-infected with HIV-1 and HSV-2.
Methods: 2,939 HIV-discordant couples, in which the HIV-infected (index) partners are HSV-2 seropositive with CD4>250 cells/mm3, were enrolled in an HSV-2 suppression trial to prevent HIV transmission at 14 sites in 7 African countries. Clinical & behavioral data, HSV-2 and HIV testing were conducted at enrolment. Focus HSV-2 EIA index values >3.5 were considered positive and <3.5 negative. Univariate & multivariate logistic regression analyses were performed.
Results: Of 2,939 HIV-uninfected (partner) participants 1,974 (67%) were male, 53% of whom were circumcised. Overall 1,716 (58%) of HIV-negative partners were HSV-2 seropositive; 56% male and 44% female. Risk factors for HSV-2 infection were female gender (aOR 4.83, p<0.0001), recent history of genital sores (aOR 2.40, p<0.0001), genital ulcers on physical examination (OR 2.52, p= 0.029), age in years (aOR 1.04, p<0.0001), years living together (aOR=1.02, p=0.034) and number of children together (aOR 1.09, p=0.0001). Circumcision was not associated with HSV-2 seropositivity among the HIV-uninfected male partners (OR 0.88, p=0.15) and circumcision status of HIV-infected male partners was not associated with the HSV-2 serostatus of the HIV-uninfected female partners (OR 1.03, p=0.87).
Conclusions: Two-thirds of African HIV discordant couples enrolled in a trial of HSV-2 suppression in HIV-1/HSV-2 co-infected persons were HSV-2 seroconcordant. Independent predictors of HSV-2 seropositivity in HIV-uninfected partners in a partnership with an HIV-1/HSV-2 infected person were older age, female gender, years living together, number of children together & recent history and current presentation with genital sores. These factors may indicate cumulative sexual exposure to HSV-2. Contrary to an earlier finding in this cohort, circumcision does not appear to reduce HSV-2 susceptibility in men. Circumcision status of HIV-infected men was also not predictive of HSV-2 infection in the female partner.

O-098 THE EFFECT OF HIV-1 AND HIGHLY ACTIVE ANTIRETROVIRAL THERAPY (HAART) ON GENITAL HERPES SIMPLEX VIRUS TYPE 2 (HSV-2) INFECTION: A PROSPECTIVE STUDY IN AFRICAN WOMEN

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Background: There is little data on the natural history of herpes simplex virus type-2 (HSV-2) with or without HIV in Africa, and the effect of highly active antiretroviral therapy (HAART) on clinical and subclinical HSV-2 disease is unknown.
Methods: We conducted a prospective study of consenting HSV-2 seropositive women in Bobo-Dioulasso, Burkina Faso, belonging to three groups: (1) 22 HIV-uninfected women; (2) 30 HIV-1 infected women taking HAART (for a median duration of 20.3 weeks); and (3) 68 HIV-1 infected women not eligible for HAART. No woman was eligible for HSV antiviral treatment at enrolment. HIV seropositive women were participants in the placebo arms of two randomised controlled trials of herpes suppressive therapy among HSV-2/HIV-1 co-infected women. Participants were followed over 24 weeks with collection of cervico-vaginal lavages every 2 weeks for the detection and quantitation of genital HSV-2 DNA using real time PCR; genital ulcer (GU) swabs were collected to detect HSV-2 DNA by PCR; and HIV-1 plasma viral loads were evaluated at monthly intervals. The detection of GU, the detection and frequency of genital HSV-2 DNA were assessed between groups using both per-woman and per-visit analyses, while quantity of HSV-2 DNA was compared using a per-visit analysis only. Determinants of genital HSV-2 shedding among HIV-infected women were assessed through the use of Poisson regression models using generalised estimating equations.
Results: Among HIV+ women, 6.7% and 95.6% in groups 2 and 3 had detectable plasma HIV-1, with mean plasma HIV-1 RNA (log10 copies/mL) of 3.6 (95%CI 3.0 to 7.3) and 4.8 (95%CI 4.6 to 5.0), respectively; median CD4 count was 231 cells/µL (IQR 185-341) and 435 cells/µL (IQR 319-627), respectively. Five (22.7%), 10 (33.0%) and 29 (42.6%) women in groups 1, 2 and 3, experienced at least one GU episode over the 24-week period (P=0.1). GU occurred on 1.9%, 3.1% and 7.2% of visits in the three groups (P=0.02); lesional HSV-2 DNA was detected in 50% (1/2), 37.5% (3/8) and 51.9% (14/27) of GU swabs collected in the three groups. Cervico-vaginal HSV-2 DNA was detected at least once in 45.5%, 63.3% and 67.6% of women (P=0.1); and on 4.3%, 9.7% and 15.5% of visits in the three groups (P<0.001). When detected, the mean quantity of HSV-2 DNA was comparable in the three groups (~4.6 log10 copies/mL). Amongst HIV-infected women, cervico-vaginal HSV-2 DNA detection was significantly increased among women not taking HAART and a CD4 count <500 cells/µL (adjusted risk ratio [aRR]=1.70, P=0.04), and during GU episodes (aRR=3.03, P<0.001); and HSV-2 DNA was less frequently detected among women >34 years (aRR=0.65, P=0.05), and those practising vaginal douching (aRR=0.60, P=0.02).
Conclusions: Clinical and subclinical HSV-2 recurrences occur more frequently among HIV-infected women. HAART appears to reduce the frequency and severity of genital herpes manifestations, indicating that immune recovery and HIV virological control influence HSV-2 natural history, but not completely since women taking HAART still experience higher rates of reactivations than HIV-uninfected women. These findings may have implications for the control of both HSV-2 and HIV in Africa.

O-099 A RANDOMIZED CONTROLLED TRIAL IN TANZANIA TO ASSESS THE IMPACT OF HSV-2 SUPPRESSIVE THERAPY ON GENITAL HIV VIRAL LOAD AMONG HSV-2 AND HIV-1 SEROPOSITIVE WOMEN

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Objectives: New strategies are needed to control HIV in Africa. Two recent randomized controlled trials have shown an impact of Herpes simplex virus (HSV) suppressive therapy on HIV-1 genital and plasma viral load over 3 months. We aimed to determine the impact of HSV suppressive therapy on HIV-1 genital and plasma viral load over 12 months. We will present data on the prevalence of genital HIV-1 RNA and HSV DNA at enrolment and the impact of suppressive therapy on the prevalence of HIV and HSV genital shedding, and genital ulcer disease at 6 months.

Methods: A randomized, double-blind, placebo-controlled trial of acyclovir (ACV) suppressive treatment (400 mg BD) was conducted among dually HIV-seropositive, HSV-2 seropositive women in northern Tanzania. Women working in bars, guesthouses and other similar facilities were followed through mobile clinics every 3 months for up to 30 months and given risk-reduction counseling, provided with condoms, health checks, syndromic STI care and offered VCT. Cervico-vaginal lavages (CVLs) and plasma blood samples were collected every 6 months. The primary analysis is modified intention-to-treat, where pregnant women are withdrawn from treatment and censored at pregnancy diagnosis.
Results: 383 HIV seropositive women were enrolled over two phases and randomized to ACV (400mg BD) or placebo. The median age of enrolled women was 28 years. 84% of the participants were followed-up at 12 months. 24 (7.5%) of these had been withdrawn from study tablets because of pregnancy-related reasons. Follow-up at 6 months was 87%. Only 2.1% of these participants had been withdrawn from study tablets for pregnancy-related reasons. The mean PVL at baseline was 4.50 (±1.07) log copies/ml. HIV-1 RNA and HSV DNA were detectable in 53% and 14% of the CVLs, respectively, at enrolment.
Conclusions: The prevalence of cervico-vaginal HIV RNA and HSV DNA was high at enrolment. Data on prevalence of HIV and HSV genital shedding at 6 months by arm will be presented. This trial will provide unique data on the longer-term impact of HSV suppressive therapy on HIV-1 genital viral load and frequency of clinical and subclinical recurrence of genital herpes.

O-100 A RANDOMISED CONTROLLED TRIAL TO DETERMINE THE IMPACT OF HSV-2 SUPPRESSIVE THERAPY ON HIV INCIDENCE IN HSV-2 SEROPOSITIVE WOMEN IN TANZANIA

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Objectives: HSV-2 infection is an important risk factor for HIV acquisition. Control of HSV-2 may be an important new strategy for HIV prevention in sub-Saharan Africa. Several recent randomized controlled trials have shown an impact of Herpes simplex virus (HSV) suppressive therapy on HIV-1 plasma and genital viral load. A trial in Tanzania is being conducted to determine the impact of suppressive therapy on HIV incidence among women at high risk of infection.
Methods: A randomized, double-blind, placebo-controlled trial of acyclovir (ACV) suppressive treatment (400 mg BD) is being conducted among initially HIV-seronegative, HSV-2 seropositive women in northern Tanzania. Female bar, guesthouse and other similar facility workers were randomized and followed through mobile clinics every 3 months for 12 to 30 months depending on date of enrolment. Participants were provided with free syndromic STI care, risk reduction counseling, condoms, routine health checks, and were offered VCT. Follow-up will end in April 2007. The primary analysis is a modified intention-to-treat analysis, where women are withdrawn from treatment and censored at pregnancy diagnosis.
Results: 820 HIV-negative women were enrolled over three phases and randomized to aciclovir 400mg b.d. or placebo. 24% were bar or guesthouse workers and 53% were local food handlers. Attendance at 30 months for the first phase of women enrolled was 76%. To date, 25% have been withdrawn from study tablets, mainly because of pregnancy. At the 6, 12, 24 and 30 month visits, 79%, 72%, 59% and 54% of women, respectively, attended and were on study tablets. Of those, >75% of tablets had been taken in the preceding 3 months by 76%, 81%, 84% and 80% of women, respectively. Overall, 81% have taken >75% of their study tablets. To date there have been 47 seroconversions, corresponding to an overall HIV incidence rate of 4.4 per 100/py.
Conclusions: The impact of suppressive therapy on HIV incidence up to 30 months follow-up will be presented. Attendance to 30 months has been good. Pregnancy is the main reason for withdrawal from study tablets.

O-101 HERPES SIMPLEX VIRUS TYPE 2 (HSV-2) REACTIVATIONS AND HIV-1 REPLICATION: FINDINGS FROM THE LONGITUDINAL BASELINE PHASE OF A RANDOMISED CONTROLLED TRIAL IN WEST AFRICAN WOMEN

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Background: Our randomised-controlled trial of valacyclovir 1.0g daily among HIV-1/HSV-2 co-infected women in Burkina Faso (ANRS1285 study) was the first to demonstrate the impact of suppressing HSV reactivations in decreasing HIV-1 replication at both the genital and plasma levels, opening a promising avenue for HIV prevention. The aim of this study was to further characterise the relationships between HSV-2 clinical or subclinical reactivations and levels of genital and plasma HIV-1 RNA according to levels of immunosuppression in the pre-randomisation phase of the study. This might help better define the place of HSV control strategies for HIV prevention.
Methods: The longitudinal pre-randomisation phase of the Burkina trial consisted of 6 visits on alternate weeks over a 3-month period. Women with antibodies to HSV-2 and HIV-1 and not eligible for HAART or HSV suppressive therapy were enrolled. CD4 count was measured at enrolment (FACScan). Cervico-vaginal lavages enriched with cervical swabs were collected at each visit for HIV-1 RNA and HSV-2 DNA quantitation using real-time PCR. Quantitation of plasma HIV-1 RNA using real-time PCR was done at monthly intervals. Detection, frequency and mean levels of genital and plasma HIV-1 RNA were compared according to women's experience of genital HSV-2 DNA shedding at least once; and according to women's presentation of at least one GUD episode, using . Results were stratified by CD4 count category (200-500 cells/µL and >500 cells/µL at study entry).
Results: 136 dually infected women with a median CD4 count of 446 cells/µL were enrolled and included in this analysis. Overall, 84.6% women had genital HIV-1 RNA detected at least once during the 6 pre-randomisation visits. Women who experienced at least one episode of genital ulcer disease (GUD) or HSV-2 genital shedding had a higher risk of genital HIV-1 RNA detection during the phase (risk ratio [RR]=1.23, 95%CI: 1.09 to 1.37; and RR=1.17, 95%CI: 1.01 to 1.34, respectively). Furthermore, the presence of genital HSV-2 was associated with higher levels of genital HIV-1 RNA during genital HIV-1 shedding episodes. Plasma HIV-1 RNA levels were increased among women who experienced GUD (+0.48 log10 copies/mL, 95%CI: 0.14 to 0.82 log10 copies/mL) or HSV-2 DNA shedding (+0.51 log10 copies/mL, 95%CI: 0.20 to 0.80 log10 copies/mL). Overall, the association between increased genital or plasma HIV-1 RNA and HSV-2 DNA shedding or GUD was observed at all levels of CD4 counts, although they were significantly higher for women with CD4 count >500 cells/µL compared to women with CD4 200-500 cells/µL.
Conclusions: Presence of HSV-2 genital shedding, irrespective of occurrence of GUD, is associated with increased levels of HIV-1 replication in genital and systemic compartments. The associations were stronger among women with higher CD4 counts, suggesting that the benefit of HSV suppressive therapy might be greater if started in the early stages of HIV disease. These findings may have relevance for the design of HSV/HIV control strategies.

ORAL SESSION: PREVENTION / INTERVENTIONS II

0-102 REDUCING VAGINAL INFECTIONS IN WOMEN AT RISK FOR HIV-1: RESULTS FROM A RANDOMIZED TRIAL

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Objectives: Vaginal infections including bacterial vaginosis (BV), vaginal candidiasis, and trichomoniasis have been associated with increased HIV-1 risk. Control of these conditions could provide an important HIV-1 prevention strategy. We conducted a randomized, double-blind, placebo-controlled trial to evaluate the efficacy of monthly periodic presumptive treatment (PPT) for reducing the rates of vaginal infections in HIV-1-seronegative female sex workers (FSWs) in Mombasa, Kenya.

Methods: Between May 2003 and November 2005, 378 HIV-1-seronegative FSWs were screened, of whom 310 (82%) were enrolled and randomly assigned to receive either the intervention regimen (metronidazole 2 grams plus fluconazole 150 mg) or matching placebos as monthly directly observed therapy (DOT). Women with symptomatic genital tract infections were provided with syndromic management according to WHO guidelines. Risk reduction education and free condoms were provided at all visits. The primary study endpoints were the incidence rates of BV, vaginal candidiasis, T. vaginalis infection, Lactobacillus colonization, and H2O2 producing Lactobacillus colonization.

Results: Of the 310 women enrolled, 303 (98%) returned for at least one follow-up visit, 151 in the treatment arm and 152 in the placebo arm (p = 0.7). The median follow-up time was 12.2 months in the treatment arm and 12.4 months in the placebo arm (p = 0.3). Women were considered to be lost to follow-up if they were >6 weeks late for a scheduled visit. Using Kaplan-Meier analysis, follow-up was 79% in the treatment arm and 85% in the placebo arm at 12 months. Study drug was dispensed as DOT during monthly visits. Thus, a woman was defined as non-adherent if she was >2 weeks late for a scheduled follow-up visit. Median adherence was 92% (interquartile range [IQR] 83%-100%) in the treatment arm and 92% (IQR 83%-100%) in the placebo arm (p = 0.8). Baseline characteristics of the intervention and control groups were well-matched, with no statistically significant differences in any of the demographic, behavioral, clinical, or laboratory covariates. Compared to control participants, women receiving the intervention had significantly lower rates of BV and higher rates of colonization with Lactobacillus (Table). There were also statistical trends suggesting lower rates of vaginal candidiasis and trichomoniasis in intervention women compared to controls. HIV-1 seroconversion occurred in five women in the treatment arm and seven women in the placebo arm (hazard ratio [HR] 0.6, 95% confidence interval [CI] 0.2-2.3). This trial was not powered to demonstrate significant differences in HIV-1 rates between the intervention arms. There were no severe adverse events. The incidence of nausea was 23.7/100 person-years in the treatment arm and 13.7/100 person-years in the placebo arm (HR 1.7, 95% CI 1.0-2.9, p = 0.05). There were no significant differences between the randomization groups in the rates of other side effects.

Conclusions: This trial demonstrated the efficacy of PPT for reducing BV and promoting normal vaginal flora. Vaginal health interventions have the potential to provide simple, inexpensive, female-controlled interventions to reduce the risk of HIV-1 infection in women.

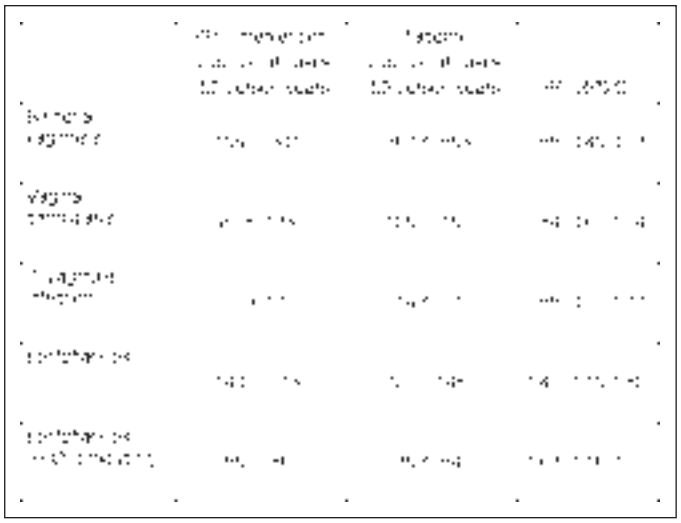

Figure 1: Vaginal Infections and Lactobacillus Colonization

0-103 IMPACT OF NEW PERIODIC PRESUMPTIVE THERAPY SERVICES ON STI SYNDROMES AND INFECTIONS IN HIGH RISK WOMEN LIVING WITHIN SOUTH AFRICAN MINING COMMUNITIES

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Objectives: To determine the prevalence of selected sexually transmitted syndromes and infections (STIs) at baseline and subsequent 2 and 5 month follow-up visits in the setting of the initiation of an enhanced STI service delivery incorporating periodic presumptive therapy (PPT).

Methods: This was a prospective study of a cohort of women at high risk of STIs (WAHR). WAHR were recruited to mobile clinics by trained peer educators over a 24 month period (2004-2006). The project operated in the Carletonville, Westonaria and Bekkerdal areas of Gauteng; none of these regions were previously exposed to PPT programmes. STI management involved health education, condom promotion, syndromic management for those with symptomatic STIs and monthly PPT for all WAHR with Azithromycin 1g as a single oral dose. WAHR were asked to return monthly to the vans for 5 further consecutive visits. Following acquisition of informed consent, demographic and clinical data were collected by nurse-administered questionnaire. STI tests were performed at the 2 month and 5 month visits. Endocervical swabs were tested for Neisseria gonorrhoeae and Chlamydia trachomatis by PCR (Cobas Amplicor, Roche). In those women with genital ulcer disease (GUD), a swab was also taken to detect the presence of Treponema pallidum, Haemophilus ducreyi and herpes simplex virus by real-time PCR on a Rotorgene 3000 platform (Corbett Diagnostics). Data were entered in Epi-Info, cleaned and then analysed. A Chi-squared test for trends assessed changes in STI prevalence at the 5% significance level. The study was approved by the Human Research Ethics Committee of the University of the Witwatersrand.

Results: 476 WAHR were recruited during the study; 281 (59%) of these women returned for the 2 month visit and 194 (40%) returned for the 5 month visit. Most WAHR were nationals of either South Africa (78%) or Lesotho (17%), had a mean age of 33 years and lived locally. At enrolment, 354/476 (74%) WAHR had STI syndromes diagnosed; 343 (72%) had vaginal discharges (VDS), 38 (8%) had GUD and 19 (4%) had genital warts. There was an 82% reduction in the prevalence of STI syndromes at 2 months and a further 18% reduction at 5 months (p<0.0001). Women living with their spouse were less likely to have an STI syndrome compared to women living alone (OR = 0.38, 95% CI 0.19-0.74). Condom use at last sex

increased from 58% at initial visit to over 90% at the 5 month visit. The prevalence of chlamydial infection at baseline, 2 month and 5 month was 8.4%, 3.8% and 3.8% respectively. Likewise, the prevalence of gonorrhoea at baseline 2 month and 5 month was 7.4%, 4.5% and 3.2%. These decreases in prevalence were significant for both chlamydial (p = 0.007) and gonococcal infections (p = 0.02). Too few ulcers were detected at baseline and follow up visits for statistical analysis.
Conclusions: The study demonstrated an impact of enhanced STI services, incorporating a PPT component, on both the prevalence of clinical STI syndromes and laboratory-detected gonococcal and chlamydial infections in WAHR living in areas without former PPT programmes.

O-104 PUBLIC HEALTH GUIDANCE DISSEMINATION VIA THE INTERNET: EXPEDITED PARTNER THERAPY

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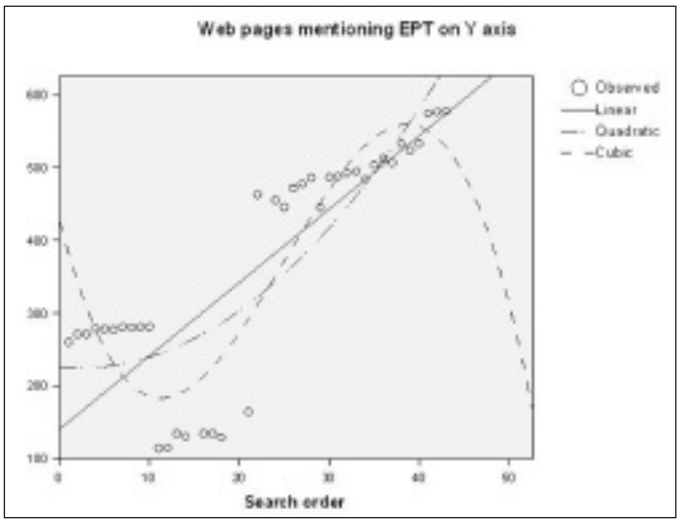
Objectives: Web-based publication of reports and guidance are becoming more common. Of interest is whether such publication results in greater awareness of the published documents. Moreover, given existing evidence that web-based health information is frequently of dubious provenance and quality, we are interested in whether web-only publication of an official document would dominate subsequent awareness. Specifically, we evaluated the profile of a Centers for Disease Control and Prevention (CDC) technical report and guidance document about expedited partner therapy (EPT) for sexually transmitted diseases posted on the internet. We anticipated an increase in the number of web pages citing EPT subsequent to the publication of guidance, rising to an asymptote.
Methods: Web pages mentioning EPT served as our operational measure of EPT awareness. We searched for web pages mentioning 'expedited partner therapy' or one of its equivalent monikers: patient-delivered partner therapy, patient-delivered therapy, patient-delivered partner medication, or patient-delivered medication. Searches contained each term in quotes to deliver only pages containing the exact term, and we also conducted a final search for pages containing any of the above terms. We searched terms daily for two weeks subsequent to the publication of the report and weekly thereafter for eight months (N searches = 43). Of all the web pages yielded by the search for any term, we assessed whether the first 50 contained scientific or programmatic information, whether the links worked, and whether they mentioned the 2006 CDC review and guidance. Analyses were conducted regressing number of web pages revealed (outcome) onto date of search (predictor) as the primary analysis. We used initial linear models to test for overall increases in web pages mentioning terms, followed by testing for curvilinear models with shapes representing asymptotes.
Results: Following the release of the report in February 2006, we saw increases in the number of web pages citing EPT, from 260 per search on the date of publication to an average of 548 mentions during September. The linear trend alone was statistically significant, R2 = 0.67, p<.001. A subsequent model fitting high-order terms to represent curvilinear relationships demonstrated an asymptotic effect, with R2 rising to 0.82, p<.001. We found similar results using PDPT as the search term, R2 = 0.61 (linear) and 0.88 (asymptote), both p<.001. For all terms combined, R2 = 0.74 (linear) and 0.84 (asymptote), both p<.001. Of the 50 websites examined weekly, the majority contained science or public health program content (M = 47.3). We found very few non-working links over time (M = 0.8 per search). The CDC guidance document became the first link in any search for EPT or for all terms by April.
Conclusions: Web publication of public health guidance provides an inexpensive medium for dissemination that results in increased awareness and a distinguishable profile from other web-based health publications. Tracing web pages is a feasible evaluation strategy for tracking the dissemination of such guidance. Matthew Hogben mhogben@cdc.gov



O-105 USING MATHEMATICAL MODELLING TO ESTIMATE THE IMPACT OF PPT ON THE TRANSMISSION OF DIFFERENT STIS AND HIV AMONGST FSWS AND THEIR CLIENTS

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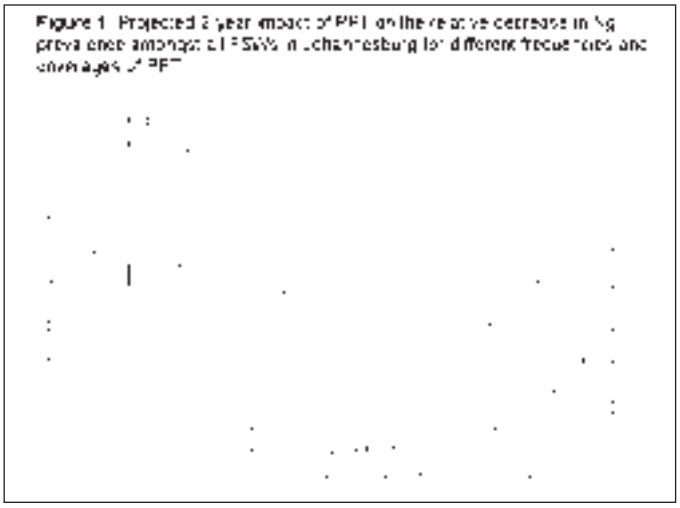
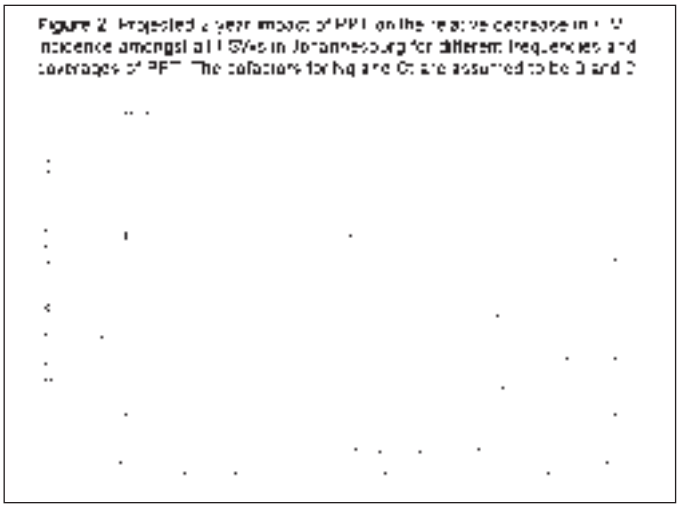
Background/Objectives: The prevalence of STIs can be high amongst female sex workers (FSWs). In settings with insufficient STI treatment services, and because many STIs are asymptomatic, periodic presumptive treatment (PPT) has been used to quickly reduce the prevalence of Neisseria gonorrhoeae (Ng) and Chlamydial trachomatis (Ct). Although many studies have observed significant reductions in the prevalence of these STIs, none have shown any reduction in HIV transmission. This analysis uses mathematical modeling to explore the impact on STI/HIV transmission of different PPT interventions in FSW populations with varying STI/HIV prevalences.
Methods: A mathematical model of the transmission of Ng, Ct and HIV amongst FSWs and their clients was developed. The model split FSWs into those reached by the PPT intervention and those that are not. The model was first fit to epidemiological data from a PPT intervention in Johannesburg (South Africa, FSW prevalence of Ng=15%, Ct=15%, HIV=60%), and was used to estimate the impact of different coverages and frequencies of PPT. The sensitivity of the projections to the multiplicative Ng/Ct cofactors for HIV transmission (Ng cofactor=2-3, Ct cofactor=1.5-2), the underlying level of STI treatment, and the client frequency per FSW was analysed. The impact of exit strategies was explored. Lastly, impact projections were also made for two other lower HIV prevalence settings that have undertaken PPT - Cotonou (Benin, FSW prevalence of Ng=22%, Ct=5%, HIV~40%) and Laos (FSW prevalence of Ng=15%, Ct=26%, HIV~1%).
Results: PPT interventions can easily achieve substantial decreases in Ng/Ct prevalence amongst FSWs reached by the intervention. However, although it is harder to achieve similar impact in all FSWs, a 50% reduction in Ng/Ct prevalence could still be achieved in Johannesburg with 25% coverage and a PPT frequency of once a month (Figure 1). Increasing PPT frequency improves impact until it reaches ~0.5-1 doses per month, whereas improving coverage increases impact until Ng/Ct prevalence becomes negligible. The resulting impact on HIV incidence has the same patterns, but is reduced (Figure 2), takes longer (90% of impact is achieved after 5 years amongst all FSWs), and is dependent on the assumed Ng/Ct

cofactors. In addition, for Johannesburg the impact of PPT on HIV incidence increases and then plateaus with increasing client frequency per FSW or reductions in the underlying STI treatment. For Cotonou, the model projections broadly coincide with Johannesburg, whereas the projections for Laos suggest that greater impact can be achieved in early HIV epidemics amongst FSWs with lower sexual activity. Lastly, unless condom use or STI treatment increases during the intervention, the impact of PPT quickly rebounds when the intervention is stopped.

Conclusions: Only if sufficient coverage is achieved, and intervention follow-up is for over two years, can a PPT intervention substantially decrease the HIV incidence in settings where existing STI treatment activities are insufficient. However, to maintain the impact resulting from PPT, it is important that the underlying level of STI treatment and/or condom use is increased. Lastly, more impact will be achieved if STIs with a higher cofactor than Ng/Ct are targeted.





0-106 INFORMATION AND COMMUNICATION TECHNOLOGIES FOR HIV/STI

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Objectives: Review the literature on the use of information and communication technologies (ICT) for HIV/STI surveillance, screening, diagnosis, partner notification, prevention, treatment adherence, clinical management, provider training, and research support in both developed and resource-constrained settings.

Methods: We conducted a systematic literature review of English-, Spanish-, and Portuguese-language publications and conference proceedings in databases such as MEDLINE (from 1966 - June 2006), the Cochrane Library Database (up to Issue 2, 2006), LILACS (the Latin American and Caribbean Health Science Literature Database) (1982 to June 2006), as well as the Google search engine. Additional articles were identified from references of relevant articles, reviews, and from experts in the field.

Results: The largest body of literature is for audio computer-assisted self-interviews (ACASI); a 2004 systematic literature review showed only 3/24 studies outside US. More recent literature, however, reports ACASI use in a number of developing countries. ACASI advantages include more complete though not always less socially desirable-biased data, and lower costs than paper data entry. The Internet is used by at-risk populations for sex and HIV/STI information seeking as well as by health departments/researchers/NGOs to solicit HIV/STI screening (e.g., iwantthekit.org), partner-notification (e.g., InSPOT), encourage serosorting/strategic positioning (e.g., Manhunt.com), provide online counseling sessions and behavioral/social support interventions (e.g., CHESS, blogs) and education/advocacy (e.g., The Body). In developing country settings the Internet has been used to collect risk behavior information among men who have sex with men (e.g., in China and Peru) and to assess interest in Web-based risk reduction interventions. HIV treatment adherence using cell phone reminders, electronic pillboxes, PDAs, and other computerized counseling tools are being tested in Africa (e.g., Phones for Health, a 10-nation PEPFAR initiative with Voxiva); several phone counseling studies in the US have had mixed results. In resource-constrained settings, cell phones increasingly are being used to collect surveillance/other data (e.g., Cell-PREVEN) and deliver treatment adherence/other interventions. Advantages of this device include existing delivery infrastructure in many countries and decreasing price in phone/usage costs, thereby increasing availability even in low-income countries. Electronic health records for HIV management are used in the US (e.g., C-NICS) and developing countries (e.g., AMRS, OpenMRS). Inclusion of computerized clinical reminders in these systems has been shown to improve provider adherence with recommended practice guidelines. Provider training is facilitated by e-learning approaches such as teleconsultation, self-study continuing education modules, and webconferencing; and for disseminating intervention models (e.g., Kelly et al. '04). Ensuring security and confidentiality of patient data when using ICT approaches for HIV/STI must continuously be addressed before and during implementation. Costs of ICT development, implementation, and sustainability also are key issues to consider, especially when weighing scarce resource allocation.

Conclusion(s): While a variety of ICT tools are in various stages of use for HIV/STI, relatively few areas have accumulated a critical mass of evidence-based data about the most effective approaches. Nonetheless, some of that evidence is compelling, and the potential for future uses appears to be large. Appropriately utilized technologies may improve HIV/STI screening, prevention, treatment adherence, surveillance, and care.

0-107 RESULTS OF A RANDOMIZED CONTROLLED TRIAL OF A SITE-BASED HIV PREVENTION PROGRAM IN KINGSTON, JAMAICA

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Objectives: In 2003, A Priorities for Local AIDS Control Efforts (PLACE) survey identified over 400 public sites in Kingston where persons meet new sexual partners. People attending these sites had higher rates of new and concurrent sexual partnerships than persons in the general population. The Ministry of Health developed and piloted a site-based prevention program that could be tailored for use at sites

as diverse as commercial sex sites, outdoor socializing sites, fast food restaurants, bars, and nightclubs. The PLACE intervention model is a multi-level strategy that includes interventions to change the physical environment, groups socializing at the site, and individuals. The objective of this study is to determine whether the site-based PLACE prevention intervention could increase condom use among persons with new or multiple sex partners.

Methods: 147 sites were grouped into 50 geographic clusters, which were randomized to receive or not receive PLACE interventions delivered by 51 trained outreach workers from the Ministry of Health between January and October 2006. Follow-up surveys with site patrons were conducted between November 2006 and January 2007 to estimate the proportion of patrons with recent new or concurrent partnerships and inconsistent condom use. Inconsistent condom use was defined using answers to questions about condom use with the two most recent partners asked by interviewers at sites but answered privately by respondents on cards put into sealed envelopes.

Results: Characteristics of sites and patrons were similar for most variables at intervention and control sites both at baseline and follow-up. 1,383 men and 1,475 women were interviewed onsite at follow-up. There were no differences between intervention and control groups in the proportions of men (36% and 33%) and women (20%) who reported new or multiple partnerships in the past year and inconsistent condom use. In spite of sustained efforts by outreach workers, implementation of intervention components proved very difficult. Ten of 75 (13.3%) intervention sites provided no or minimal access. At follow-up, only 5% of respondents at intervention sites (4% control) reported exposure to 5 or more prevention components, and 27% (17% control) to between one and four. Approximately half of patrons reported that they usually socialized at a site different from the interview.

Conclusion: An intent-to-treat analysis did not show any program effect. This is probably due to the difficulty in implementing the intervention, the extent of patron mixing among intervention and control sites, the intensity of national education campaigns and evidence of other interventions at control sites. Introducing HIV outreach testing in intervention sites facilitated a significant expansion of HIV testing nationally. Further analysis is needed to determine whether the intervention was successful in particular types of sites and among certain sub-groups of the population.

ORAL SESSION: EMERGING BIOMEDICAL INTERVENTIONS: VACCINES AND MICROBICIDES

O-108 NICOTIANA-BASED PROTEIN MICROBICIDES FOR PREVENTING SEXUAL TRANSMISSION OF HSV AND HIV

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Objective: With the annual incidence of sexually transmitted infections (STIs) at epidemic levels worldwide, there is a clear need for more effective methods of preventing transmission. Because of their potency, versatility, and specificity, anti-STI monoclonal antibodies (Mabs) are appealing as a candidate microbicide. However, traditional manufacturing systems can not address the large scale and low cost necessary for a protein microbicide to be used by millions of people on a regular basis.

Methods: The magnifection transient expression system (Icon Genetics GmbH) is a fast, scalable and economical approach to high-level production of Mabs (and other proteins) in Nicotiana benthamiana (Mabs-N). With the aim of developing safe and effective microbicides that prevent the sexual transmission of herpes simplex virus (HSV) and human immunodeficiency virus (HIV), Mabs HSV8 and PRO140 (Progenics, Inc.; Tarrytown, NY) were produced using the magnifection system. HSV8 is a neutralizing human IgG1 against glycoprotein D of HSV previously shown to prevent vaginal transmission of genital herpes infection in mice. PRO140 (an anti-CCR5 antibody) is an inhibitor that blocks HIV's use of CCR5 as a co-receptor for viral entry. PRO140 is minimally susceptible to HIV variants due to the critical nature of this receptor in transmission. Mammalian cell-culture derived PRO140 is currently in clinical development as an HIV therapeutic.

Results: Using the magnifection transient system we have been able to achieve levels of HSV8-N up to 780 _g/g fresh leaf weight (FLW) or 1-1.5 g/sq meter FLW under scaleable conditions. HSV8-N was shown to be equivalent to mammalian cell culture derived HSV8 (CHO cells) by glycoprotein D binding ELISA, HSV neutralization assay (IC90 = 9.2 ug/ml) and in vivo protection of mice against vaginal HSV transmission. Sixteen vector constructs of PRO140 were tested by infiltrating Nicotiana benthamiana plants. PRO140-N expression (up to170 _g/g FLW) varied 50-fold depending upon the constant region and the elements of the deconstructed viral vectors. The PRO140-N antibody is correctly assembled and is currently being evaluated for HIV neutralizing activity.

Conclusions: Two anti-STI human Mabs have been produced in Nicotiana using the magnifection system. Now that a large scale, cost effective manufacturing system is in place, the safety (symptoms, colposcopy, pro-inflammatory cytokines) of the PRO140-N/HSV8-N microbicide can be evaluated in a Phase 0 safety trial in 2008. Vaginal residence time and ex vivo neutralization of HSV and HIV will be secondary objectives in this clinical trial.

O-109 HIGH SUSTAINED EFFICACY OF A QUADRIVALENT HPV (TYPES 6/11/16/18) L1 VIRUS-LIKE PARTICLE (VLP) VACCINE AGAINST VAGINAL AND VULVAR CONDYLOMA: A COMBINED ANALYSIS

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Background: A quadrivalent HPV types 6, 11, 16, 18 vaccine (Gardasil/Silgard, Merck and Co., Inc) has been licensed in over 50 countries for the prevention of cervical cancer and genital warts, as well as vulvar and vaginal pre-cancerous lesions. Here we present updated post-licensure data (3 years of follow-up) on the vaccine's effectiveness against vulvar and vaginal condyloma using the combined Phase IIb/III clinical database.

Methods: 18,150 women (16-26 yrs) from the Americas, Europe and Asia were enrolled and vaccinated in 1 of 3 trials. Subjects were randomized to either quadrivalent HPV (types 6, 11, 16, 18) L1 VLP vaccine or placebo. For all trials, vaccination occurred at day 1, and months 2 and 6. Comprehensive anogenital examination was performed at day 1 and at 6'12 month intervals thereafter for a maximum of 48 months. Biopsies were collected for potential HPV-related diagnoses, plus those of unknown etiology and were HPV-typed. A blinded pathology panel read histology slides for endpoint determination (consensus diagnosis of vulvar or vaginal condyloma). Analyses were done per protocol (PP) (subjects received 3 doses, had no major protocol violations, were HPV 6, 11, 16 or 18 seronegative at Day 1 and HPV 6, 11, 16 or 18 DNA negative Day 1 through month 7) and modified intention to treat (MITT) (received at least 1 dose and were HPV 6, 11, 16 or 18 negative at Day 1 by serology and DNA). Endpoint counts began after Month 7 and Day 30 in the PP and MITT analyses, respectively.

Results: A total of 7,899 vaccine and 7,900 placebo recipients (87% of vaccinated subjects) were eligible for the PP analysis. In the PP analysis, the vaccine was 100% effective (95% CI: 72'100%; 15 cases placebo vs 0 cases vaccine) in preventing HPV 6, 11, 16 or 18-related vaginal condyloma and 99% effective in preventing HPV 6, 11, 16 or 18-related vulvar condyloma (95% CI: 95'100%; 155 cases placebo vs 2 cases vaccine). A total of 8,760 vaccine and 8,787 placebo recipients (97% of vaccinated subjects) were eligible for the MITT analysis. In the MITT analysis, there were 215 histologically confirmed cases of HPV 6, 11, 16 or 18-related vulvar/vaginal condyloma in the placebo group (incidence of 0.9/100 person-years-at-risk) and 10 cases in the vaccine group (95% efficacy; 95% CI: 91'98%).

Conclusions: Among women who were na_ve to HPV 6, 11, 16 or 18 at enrollment, a high incidence of HPV 6, 11, 16 or 18-related condyloma was observed, as evidenced by the placebo arm of this study. Quadrivalent HPV VLP vaccine prevented HPV 6, 11, 16 or 18-related condyloma for at least 3 years post-immunization. Prophylactic vaccination is expected to greatly reduce the morbidity and health care costs associated with this disease.

O-110 IMMUNOGENICITY AND PROTECTIVE EFFICACY OF PLASMID DNA VACCINES ENCODING HSV-2 TEGUMENT PROTEINS IN A MURINE INTRAVAGINAL CHALLENGE MODEL

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Objectives: HSV-specific CD8 T-cells localize to HSV-infected ganglia in mice and humans. IFN-gamma secretion is an important effector mechanism. HSV-2-specific CD8 T-cells are enriched in human genital herpes lesions, correlate with viral clearance, and persistently monitor sensory nerve endings in genital skin after clearance of infectious virus. The HSV-2 tegument proteins encoded by genes UL46, UL47, and UL49 are recognized by human CD8 T-cells in the context of prevalent HLA alleles. CD8-stimulating tegument vaccines are therefore candidates as HSV-2 immunotherapeutics. We initiated studies by testing immunogenicity and protection in an acute lethality model.
Methods: Balb/c mice were immunized intramuscularly with plasmid DNA (pDNA) vaccines encoding consensus sequence HSV-2 UL46, UL47, and UL49 proteins, or an avirulent live HSV-2 strain. Antibody and T-cell responses were monitored by ELISA and splenocyte IFN-gamma ELISPOT, respectively. ELISPOT reactivity was decoded to CD4 vs CD8 and minimal peptide epitopes. For challenge, progestin pretreated mice were infected vaginally with virulent HSV-2 and followed for clinical symptoms and survival. HSV-2 DNA titers were measured by PCR of vaginal swabs.
Results: Each tegument vaccine generated specific CD8 T-cell responses and antibody responses. Responses to these newly discovered epitopes were also stimulated by vaginal infection with an attenuated live HSV-2. CD4 responses were detected for UL46 and UL49. Partial, non-sterilizing protection was observed in the group immunized with UL47 pDNA vaccine.
Conclusions: HSV-2 tegument proteins are broadly immunogenic in Balb/c mice when administered as pDNA vaccines or presented in the context of viral infection. A monovalent UL47 tegument vaccine has clinical activity in an acute lethality model. These results provide a rationale for further studies of mono- or polyvalent HSV-2 tegument vaccines in therapeutic model systems. David Koelle: viralimm@u.washington.edu

O-111 QUANTITATIVE EVALUATION OF THE MECHANSIM OF IMMUNOMODULATION AFFORDED BY TLR AGONIST APPLICATION UTILIZING POLARIZED MULTILAYER HUMAN VAGINAL EPITHELIAL CULTURES

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Objectives: Currently, there is a need for improved preventative or therapeutic compounds for treatment of sexually transmitted infections (STI). Toll-like receptor (TLR) agonist microbicides prime the innate immune system and have shown promising results in STI prevention and treatment when vaginally-applied in animal models. Unfortunately, the mechanisms of action are not fully understood. Therefore, a polarized, multilayer human vaginal epithelium model was developed to test the hypothesis that immunomodulating microbicides could transiently activate TLR, elaborating cytokines that recruit immune cells creating an STI-resistant environment. The model also accommodates study of common vaginal flora including Lactobacillus jensenii to address the impact of commensals on microbicide efficacy.
Methods: Triplicate cultures of immortalized vaginal epithelial cells (IVEC) were treated with selected TLR agonists or vehicle controls. At selected times after application cytometric-bead arrays were performed to quantify cytokine secretion. RNA harvested from treated cells was subjected to quantitative real-time RT-PCR to address potential changes in TLR expression profiles. TLR agonist-induced recruitment of immune cells was quantified in transwell cultures loaded with 1x106 IVEC and assessed for polarized, multilayer formation by daily monitoring of transepithelial electrical resistance (TEER) and by confocal imaging. Transepithelial migration of immune cells was evaluated by addition of human neutrophils to basal cell surfaces 18h after agonist application and was quantified by counting neutrophils on the apical culture surface 4h later. For selected studies, the impact of the vaginal commensal Lactobacillus jensenii was assessed similarly.
Results: Polarized, multilayer human vaginal epithelium was achieved and confirmed by significant ($p<0.01$) increases in TEER values 7-9d post seeding and by confocal visualization of a 10-12 cell layer thick epithelium. TLRs 2, 3, 5 and 6 were found to be expressed at the highest levels in a panel of IVEC so agonists targeting these TLR were evaluated. In parallel cultures treated with selected agonists, significant ($p<0.01$) induction of differential, agonist-specific cytokine profiles were observed without alteration of TLR RNA levels. In general, Th1 cytokines were significantly elaborated transiently relative to vehicle-treated cultures ($p<0.05$). In polarized, multilayer IVEC cultures significant transepithelial neutrophil migration ($p<0.05$) was observed following TLR agonist application. SiRNA knock-downs of the IVEC showed that cytokine elaboration and immune cell recruitment was TLR specific. Lactobacillus jensenii colonized the cultures without negatively impacting the IVEC allowing for evaluation of potential bacterial influence on microbicide efficacy.
Conclusions: Utilizing our novel IVEC and the multilayer, polarized cultures we have evaluated the mechanism of action and potential for immunotoxicity of a relevant panel of TLR agonists. Many of these agonists have been tested in animal models producing STI resistant environments that can then be confirmed in the human culture system. Collectively, the results indicate that the replenishable nature of the IVEC will provide a reproducible model for evaluating microbicides as well as the impact of commensal flora, seminal fluid and over-the-counter vaginally-applied products on the efficacy of microbicides. The model also will allow for the screening and prioritization of synthetic TLR agonists for preclinical microbicide testing.

O-112 MULTIFACETED HUMAN PAPILLOMAVIRUS VACCINATION STRATEGIES IN CALIFORNIA: ACHIEVING THE PROMISE, AVOIDING THE PITFALLS

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Objectives: In 2006, a quadrivalent human papillomavirus (HPV) vaccine was licensed and recommended for females 9 to 26 years of age. Much work is needed to understand the practical considerations involved in designing and implementing cervical cancer and HPV prevention programs that include vaccination. Collaborative objectives included identifying challenges to widespread HPV vaccine coverage, developing strategies to address those challenges, and providing statewide leadership and coordination for optimizing cost-effective vaccination programs.
Methods: A California Department of Health Services workgroup consisting of sexual and reproductive health, immunization, and cancer control programs was convened in 2005. In addition to internal strategic planning, the group engaged the

medical community, advocacy organizations, local government, and health service and industry partners. After identifying obstacles and resources, the multidisciplinary advisory group developed an action plan to create and evaluate interventions, using strategies that are responsive to changing priorities and new developments.

Results: Identified challenges included vaccine funding gaps, statutory limits to adolescent consent, lack of access among populations at highest risk for cervical cancer, provider knowledge gaps, and public misperceptions. Our provider interventions, to improve knowledge and ability to counsel patients, and to recommend vaccination when appropriate, have included an informational webcast, widespread distribution of clinical resources, and a dedicated website. Collaborations with health service and professional organizations have focused on developing cost-effective policies that ensure high coverage among those most likely to benefit. The advisory group has provided technical assistance to partner organizations that are considering legislative action to address funding gaps and improve access among adolescents. Public education efforts have capitalized on media attention surrounding awareness campaigns: Pre-Teen Vaccine Week and Cervical Cancer Prevention Month. To ensure appropriate public demand, the workgroup is conducting formative research to optimize health education messages, particularly for racial/ethnic and immigrant populations who have poor access to cervical cancer screening. Evidence-based public education efforts focus on countering misconceptions and avoiding unintended consequences (e.g., increase in sexual risk behavior, reduction in Pap-seeking). To date, vaccine uptake has been higher than anticipated. Within the first three months of the initiation of the Vaccine For Children (VFC) program in California, more than 120,000 doses have been distributed to providers serving low-income children. Private sector purchase started in June 2006 and serves an estimated 40 percent of the vaccine target population in the state. Outreach to non-traditional vaccinators (e.g., women's health providers, pharmacists) is expected to further improve access. Finally, improved surveillance methods for monitoring vaccine usage, disease and behavioral outcomes, and knowledge and attitudes are under development.

Conclusions: The unique challenges of implementing an HPV vaccination program require an ongoing statewide collaborative effort to engage and coordinate a wide variety of stakeholders. Our work reinforces the effective role that state health departments have in supporting the introduction of HPV vaccines within the context of current U.S. health systems. Unified efforts in developing materials reinforce consistent messaging and expand distribution and outreach to a wide variety of provider and consumer constituencies. Email: Hbauer@dhs.ca.gov

O-113 USE OF CYCLIC PEPTIDE LOOPS AS IMMUNOGENS FOR ELICITING CROSS-REACTIVE SURFACE-BINDING ANTIBODIES AGAINST NESSERIA GONORRHOEAE PORIN

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Objective: Our long-term goal is to generate antibodies (Abs) specific for gonococcal porin that are effective in preventing gonorrhea when applied vaginally. Here we report the use of cyclic peptides to mimic surface-exposed porin loops and the testing of Abs against these loops for binding to the gonococcal surface and recognition of strains that express different porins as assessed by variable region (VR) typing and sequence analysis.

Methods: Female BALB/c mice were immunized with cyclic peptides (24-32 amino acids) that correspond to the first (P1A-1) or fifth (P1A-5) porin loop of P1A strain FA19 or the fifth (P1B-5), sixth (P1A-6), or seventh (P1A-7) porin loop of P1B strain FA1090. Serum was tested for reactivity to the peptides by enzyme-linked immunosorbent assay and for the recognition of homologous and heterologous porins by western blot. The capacity of P1A-1-specific Abs to bind the gonococcal surface was evaluated by fluorescent antibody staining and a semi-quantitative immunoblot assay in which whole gonococci were bound to filters and incubated with serial dilutions of the antisera followed by a labeled secondary antibody.

Results: Immunization with P1A-1FA19, but not P1A-5FA19 elicited high titer Abs that recognized FA19 porin as well as denatured porins expressed by strains of the same or different VR type. Sequence analysis predicted that the porins of the heterologous VR types differed from the P1A-1FA19 sequence by 4-6 amino acids. Surface-binding assays did not show the same specificity in that P1A-1FA19 -specific Abs bound strongly to the surface of strain FA19 and a strain of a distinctly different VR type, but weakly or not at all to two strains that express porins with a loop 1 sequence that is similar (only 2 amino acid differences) to that of strain FA19. With regard to P1B peptides, immunization of mice with P1B-5 and P1B-7, but not P1B-6 elicited high titer Abs that recognized the porin of the homologous strain (FA1090) and two other P1B strains (MS11, F62) by western blot. P1B-7 antisera also recognized the porin of several P1A strains.

Conclusions: The use of cyclic peptides to mimic the surface-exposed loops of gonococcal porin was successful for the first, but not the fifth loop of P1A strains. While P1A-1-specific Abs were cross-reactive with several heterologous P1A porins under denaturing conditions, they bound the surface of only some gonococcal strains. The inability of P1A-1-specific Abs to bind the surface of gonococci that express porins with only slightly different loop 1 sequences suggests sequence differences in the other loops may cause conformational differences that influence the accessibility of loop 1 to Abs. The surface-binding potential of Abs to the 5th and 7th porin loop of P1B is still under evaluation; however, at this time, the broad cross-reactivity of P1B-7-specific Abs suggests targeting the seventh P1B loop may be effective against both P1A and P1B strains. ajerse@usuhs.mil

ORAL SESSION: BEHAVIORAL DETERMINANTS OF STD/HIV TRANSMISSION

O-114 HIV AND STI RISKS IN DEVELOPING COUNTRIES - BASELINE DATA FROM PROJECT ACCEPT

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Objectives: Achieving significant and lasting reductions in HIV-1 incidence in countries devastated by the HIV/AIDS epidemic requires evidence-based approaches to prevention that mobilize entire communities, rather than just focusing on individuals. NIMH Project Accept, a randomized controlled Phase III community cluster trial, will determine the efficacy of a behavioral intervention with an HIV incidence endpoint in the developing world. The intervention seeks to promote behaviors that help people maintain health, including promoting HIV voluntary counseling and testing (VCT), while shifting community norms to reduce sexual risk behaviors and attitudes that lead to HIV transmission. By decreasing barriers to seeking testing, stimulating a large segment of the community to test, and providing rapid testing with same-day results, we hope to diminish HIV stigma and discrimination.

Methods: This Cooperative Agreement with the NIMH consists of USA-based universities with host universities and research groups. After extensive ethnographic preparatory work, we established community mobilization and support systems to

promote effective coping for those diagnosed with HIV. A total of 48 communities (10 in Tanzania [Kisarawe District], 8 in Zimbabwe [Mutoko District], 16 in South Africa [8 in Vulindlela in KwaZulu Natal and 8 dense urban communities in Soweto] and 14 in Thailand [Chiang Mai Province]) were initially mapped and data gathered by which pairs of communities could be matched with confidence. The communities were of size 7,500-18,000 population. The anticipated population aged 18-32 years was the project target, the peak age group for HIV incidence, so we required sufficient number of young adults in each community. Communities were randomized pair-wise to receive either a community-based HIV mobilization and education, mobile VCT and post-test support intervention or standard clinic-based VCT, generally provided at a government facility. Baseline data (55% female) were collected (n=2588-2990 per site) in 2005 from community residents using a random sampling approach, applying a common instrument conducted by trained interviewers in local languages at each site. Enumeration rates were between 92.0% (Vulindlela) and 99.1% (Thailand), and individual response rates varied from 83.6% (Soweto) to 93.6% (Tanzania). Quality assurance procedures in the field included field review of all interviews and a random 10% call-back within two weeks.

Results: Overall, there were low rates of condom use (5.3-38.0% consistent users) and varying histories of VCT (8.7% in Zimbabwe, 41.5% in Thailand), where the majority paid for testing and/or transportation to test (42.0-64.4%), almost all (94.3-100%) reported they received test results, and most (84.3-92.6%) disclosed results. Illicit drug use was also quite varied by site (4.9% in Tanzania to 18.3% in Thailand). Knowledge of ARVs varied widely (28.7-71.6%), though the minority knew someone taking ARVs. HIV-related stigma and discrimination were commonly noted by many survey respondents, and the overall community rates showed high levels of negative attitudes.

Conclussion: Intervention activities have been underway since January 2006. The final evaluation will be completed by December 2010, when we will determine the prevalence of recent HIV infection in each community to evaluate the effectiveness of the intervention in reducing stigma and in diminishing HIV infections.

O-115 DIVORCE AND SEXUAL RISK AMONG US WOMEN: FINDINGS FROM THE NSFG

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Objectives: Research has indicated that divorce is associated with increases in risky health behavior including alcohol consumption and cigarette smoking. Little is known, however about the impact of divorce on sexual risk behavior. Data indicates relatively high rates of STIs among mid-life women, many of whom may be transitioning sexual relationships after a divorce. The purpose of these analyses is to compare the sexual risk of divorced women with their married and never married counterparts using nationally representative sample of U.S. women.

Methods: Data from 5,081 women interviewed from March 2002 to March 2003 as part of the National Survey of Family Growth (NSFG) were analyzed according to marital status. The NSFG is a nationally-representative household survey with a response rate of 79% and includes over-samples of Hispanics, and Blacks (African American). Interviews were conducted in English and Spanish. For these analyses, divorced women were compared to currently married and never married women in terms of recent and lifetime sex partners, condom use at last vaginal sex, and other sexual risk behaviors.

Results: Overall, 18.2% of the women were currently divorced, 53.8% were currently married, and 28.0% were never married. African-American women were more likely to be divorced (19.7%) than Whites (16.0%) and Hispanic women (16.2%) ($p<.001$). Women aged 25-29 were less likely to be divorced (8.3%) than women age 30-34 (15.6%), age 35-39 (18.2%), and age 40-44 (21.8%) ($p<.001$). In terms of sexual risk, never married women were less likely than divorced women to have to trade sex for drugs or money in the past year (2.4% vs 5.6%: OR =.42, CI=.24,.74) and were more likely to have used a condom at last vaginal sex (37.8% vs 24.1%: OR=1.92, CI=1.46,2.52). Controlling for age and race, never married women were less likely than divorced women to have had multiple partners in the last 12 months (OR=.44, CI=.33,.57) and to have 5 or more (OR=.62, CI=.47,.82) and 10 or more (OR=.69, CI=.55,.87) lifetime sex partners. Married women were consistently at lower sexual risk than both divorced and never married women (many results will be presented in broader format).

Conclusion: Perhaps as a result of economic hardship or psychological stress, divorced women are more likely to engage in exchange sex, have multiple partners, and not use condoms than married and never married women. There is a compelling need for interventions to reduce STI risk behavior among divorced women.

O-116 HETEROSEXUAL ANAL AND ORAL SEX IN THE UNITED STATES: RESULTS FROM A NATIONAL STUDY

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Objectives: Heterosexual anal and oral sex is related to the acquisition of STIs including HIV. Anal sex has been associated with human papillomavirus (HPV) and anal cancer. Little is known about these behaviors among the general population in the United States (U.S.). The purpose of this study was to examine the prevalence of these behaviors and associated demographic and behavioral correlates.

Methods: From March 2002 to March 2003, the National Survey of Family Growth (NSFG), a nationally-representative household survey, was conducted in the U.S. The sample included 12,571 men and women age 15 to 44 years (79% response rate) and contained over-samples of Hispanics, Blacks and adolescents. Interviews were conducted in English and Spanish. Questions focused on heterosexual anal and oral sex were collected via audio computer-assisted self-interview (ACASI).

Results: Thirty-four percent of men and thirty percent women 15-44 years old have ever had heterosexual anal sex, and three-quarters have ever had oral sex. Among adolescents, 10.9% of females and 11.2% of males have had heterosexual anal sex. In separate multiple logistic regression models for men and women, we found that having ever had anal sex was associated with White race, age of 20-44 years, and having had a non-monogamous sex partner in the past year. White race, age of 20-44 years, being married and having higher numbers of lifetime sex partners were related to having ever given oral sex in both men and women. Giving oral sex was also correlated with having a non-monogamous sex partner in the last 12 months in men. Ever receiving oral sex was associated with White race and having a non-monogamous sex partner in the last 12 months in men and women.

Conclusions: With the current evolution of domestic HIV and STI epidemics, tracking the prevalence of heterosexual anal and oral sex on a more frequent basis (e.g., annually) may be beneficial. More information is needed about the frequency in which these behaviors are currently practiced.

O-117 UNPROTECTED SEX IN HIV-INFECTED WOMEN IN UGANDA AND ZIMBABWE: SHORT- AND LONG-TERM COMPARISONS WITH PRE-DIAGNOSIS BEHAVIOR

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Objectives: Recent HIV prevention initiatives focus on 'positive prevention' ' targeting and supporting HIV-infected individuals to modify their behavior and consequently reduce future transmission. However, despite the widespread promotion of male condoms to those living with HIV, no studies have systematically, prospectively measured condom use before and after HIV diagnosis. We examined whether notification of HIV-positive status, together with risk reduction counseling and provision of free male condoms, was sufficient motivation for African women to decrease their unprotected sexual activity both a short and longer period after HIV diagnosis.

Methods: We analyzed data collected during a prospective cohort study among women in Zimbabwe and Uganda (Hormonal Contraception and the Risk of HIV Acquisition (HC-HIV) Study). We used zero-inflated negative binomial models to examine changes in the number and proportion of unprotected sex acts in a typical month. Among women who became HIV-infected during HC-HIV, we selected one visit two to six months before HIV diagnosis and paired it with a visit two to six months after diagnosis (short-term analysis) or 12-16 months after diagnosis (long-term analysis). To track secular changes in condom use, we also included visits spanning the same timeframes from a subset of randomly-selected uninfected women.

Results: Short- and long-term findings were similar. We therefore present only long-term results, conducted among 151 HIV-positive women and 650 uninfected comparison participants. After diagnosis, the number of HIV-infected women who reported any sex acts in a typical month decreased slightly (from 95% to 91%, p=0.14). The proportion of HIV-infected women reporting any unprotected acts declined more substantially (from 74% to 56%, p<0.01). In adjusted multivariable models, HIV-infected women were twice as likely to report no unprotected sex after diagnosis compared to pre-diagnosis behavior (odds ratio (OR): 2.17, 95% confidence interval (CI): 1.23 to 3.82); uninfected participants were somewhat less likely to report no unprotected sex (OR: 0.82, 95% CI: 0.65 to 1.04). Among those reporting any unprotected acts, HIV-infected women significantly reduced the number of unprotected sex acts in a typical month by 38% (95% CI: -16% to -55%) compared to pre-diagnosis behavior. However, HIV-positive women reported virtually no reduction in the proportion of unprotected acts in a typical month (7% reduction, 95% CI: -18% to +6%) after HIV diagnosis. Uninfected women reported little change in the number (2% increase, 95% CI: -8% to +12%) or proportion of unprotected acts (5% increase, 95% CI: +1% to +9%) over the same time period.

Conclusions: Reductions in the absolute number of sex acts and the number of unprotected acts reported by HIV-infected women are encouraging, because for those in serodiscordant couples, each protected act is a potential transmission averted. However, more than half of HIV-positive women still engaged in unprotected sex more than a year after HIV diagnosis. The lack of changes in condom use among uninfected women, despite repeated risk reduction counseling and provision of free condoms, suggests that alternative prevention interventions are needed for this population. Counseling messages should instill that consistent condom use is necessary for prevention of HIV transmission.

O-118 ALCOHOL'S EFFECTS ON HIV-RELATED JUDGMENTS AND BEHAVIORAL SKILLS IN THE LABORATORY

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Objectives: The goal of the proposed research is to reduce the incidence of sexual acquisition of HIV among young adults by delineating the mechanisms through which alcohol affects HIV-related behavioral skills. Survey research suggests that young adults are not behaviorally skilled at negotiating safer sex, and alcohol consumption may further impair these behavioral skills. Although previous studies have contributed valuable information about alcohol's relationship to HIV risk-taking, there is a paucity of experimental research involving actual behavioral responses during social interactions. The proposed study utilizes experimental methods in order to investigate alcohol's effects on young adults' sexual decision-making and safer-sex negotiation skills during a face-to-face role-pay with an opposite-sex actor. Because this is an innovative approach, this study also tests the feasibility of using dyad interactions to investigate alcohol's impairment of safer-sex negotiation skills.

Methods: Participants were 75 women who were single, social drinkers, ages 21 to 35 (Mean age = 25.6 years, SD = 4.7) recruited from the metro area of San Antonio, TX. The sample was entirely Latina. Participants were randomly assigned to either the no alcohol or alcohol condition (approximately 4 drinks depending on participant weight), then engaged in a face-to-face role played condom negotiation with a male actor. After the role-play, participants completed measures of HIV-relevant risk appraisal and sexual decision-making. The interactions also were video recorded and coded for efficacy of safer-sex negotiation behavioral skills.

Results: Results indicated that overall, on a scale ranging from 1 (not at all) to 7 (extremely), participants found the role-play interaction realistic and natural (means = 4.67, 4.86, SDs = 1.76, 1.80 respectively), and indicated that they found the study interesting, worthwhile, educational, and important (means = 4.41 to 4.63, SDs = 0.63 to 0.90). Further, participants reported that their behavior and responses during the study were extremely accurate and honest (means = 6.34, 6.71, SDs = 0.93, 0.51 respectively). Participants also reported that they understood the procedures very well and were extremely comfortable with everything that happened during the study (means = 6.25, 6.70, SDs = 1.25, 0.54 respectively). Preliminary ANOVA analyses found that compared to sober participants, intoxicated women (mean BAC = 0.073, SD = 0.01) reported that they were significantly more interested in having sex with their role-play partner, would feel less worried if a condom was not used, and would consider unprotected sex less irresponsible, F's (1,74) = 4.77, 4.20, 5.49, p's < .05. Intoxicated participants also foresaw potential positive consequences of sex with their role-play partner as significantly more likely, F (1,74) = 8.02, p < .01, and were less likely to endorse direct condom negotiation strategies, as compared to sober participants, F (1,74) = 7.68, p < .01.

Conclusions: These preliminary analyses support the feasibility of using dyad interactions to investigate alcohol's impairment of safer-sex negotiation skills. The study results hold implications for theories of alcohol's role in risk taking, and tailoring of prevention programs that focus on alcohol's involvement in HIV transmission.

O-119 WHO PAYS FOR SEX IN PERU? SEXUAL BEHAVIOURS IN A NATION-WIDE POPULATION-BASED SURVEY OF URBAN YOUNG ADULTS

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Objectives: STI/HIV epidemics are intimately related to partner exchange rates and the characteristics of high risk groups'such as sex workers and their clients'that represent important targets of STIs/HIV prevention programs. Many studies have highlighted characteristics of commercial sex and commercial sex workers, but there is scarce information regarding men who pay for sex, especially in Latin America. Our objective is to examine the epidemiology and trends in prevalence of reported heterosexual commercial sex by men in 2002 and 2006 using data collected through a survey of sexual behaviors and STD/HIV prevalence in young adult population from 20 cities in Peru.
Methods: A population based survey was performed in 2002 and 2006. 18 to 29 years old men from randomly selected households completed a face-to-face demographic questionnaire, and a self-administered questionnaire for sensitive sexual behavior questions. 5881 participants completed both questionnaires using standard paper formats in 2002, and 6,376 completed the questionnaires using a CASI format in PDA in 2006.
Results: 4871 (82.8%) of men interviewed in 2002 reported being sexually active compared to 5238 (82.2%) in 2006. The proportion of men who reported paying women for sex ever in their lives was 45.4% in 2002 and 37% in 2006 ($p<0.001$), but there is no change in the prevalence of men reporting commercial sex in the past 12 months comparing both years (23% vs. 21.9% for 2002 and 2006, $p=0.22$) or reporting payment for sex with any of the last three sex partners (7.8% vs. 7.4% for 2002 and 2006 $p=0.49$) Men who reported paying women for sex in the previous year were more likely to be older (24-29 vs. 18-23, $p=0.002$), had a sexual debut before age 16 ($p<0.001$), have lower education ($p<0.001$), be employed ($p<0.001$), had been a truck driver ($p=0.01$) and had served in the military ($p=0.001$). Reported urethral discharge at the moment of the interview and history of urethral discharge or genital ulcers were also more frequent in clients of sex workers. Paying women for sex in the previous 12 months was associated with increased number of sexual partners ($p<0.001$), having new partners in the last year ($p<0.001$) and having had sex with men ever or in the last year ($p<0.001$).
Conclusions: These population based studies show that a significant proportion of men in Peru pay women for sex. It also shows that these men are more likely to be involved in other high risk behaviors like a high number of sex partners and sex with other men and they also have a higher prevalence of STIs. In conclusion, men who pay for sex are a substantial group who are at increased risk of acquiring and transmitting STIs (and HIV) and should be a target of health promotion campaigns.

POSTER SESSION: ADOLESCENTS AND YOUNG ADULTS

P-001 EVALUATING THE TREND OF SEXUAL ABUSE IN FEMALE ADOLESCENTS IN ASSOCIATION WITH STIS/HIV IN LAGOS NIGERIA

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Background: Adolescents sexual activity exists throughout the world, yet the extent to which it is nonconsensual is only recently being assessed. Sexual abuse, rape, sex trafficking, psychological abuse, sexual harassment, economic exchange for sex and incest are a group of sexual violence young people are especially at risk of which has a devastating and long- lasting consequences in their reproductive health. The incidence of this sexual exploitation and it's association with STIs amongst female adolescents was investigated.
Methods: One thousand five hundred adolescents were recruited from five different colleges with different economical status. Data was derived from focused group discussions and individual interviews. Structured questionnaire covering sociodemographic data, the frequency of different sexual activities, economic exchange for sex, rape, sexual harassment, psychological trauma, incest, knowledge of STI/HIV, knowledge of HIV status, acquisition of STIs/HIV, knowledge and use of condom, harmful traditional practices such as forced early marriage and female genital cutting were evaluated.
Results: Of 1500 respondents, 20% were married, 80% single. The age range was between 15-25 years old. 30% had had anal sex, 20% involved in oral sex, 5% acknowledged being raped, 1.5% sexually abused, 30% sexually harassed, 25% had exchanged sex for money. 1.8% had been involved in incest. 1.5% of rape episode was officially reported. 80% have knowledge of STI/HIV, 40% had acquired STI at one time or the other. 98% have knowledge of condoms, 10% uses condom consistently. 2% know their HIV status, 76% would want to know if given the opportunity. 5% had been forced into early marriage while 10% had had genital cuttings.
Conclusions: Women are more vulnerable than men to violence and abuse at all stages of life. In order to protect family names from the public only 1.5% of rape episode was officially reported. The harsh reality they faced was intimidation by the police and indifference from the state while the perpetrators did not face any justice. The psychological trauma and the risk of acquiring STI/HIV which the victims of sexual abuse face cannot be overemphasized. An association was found between sexual abuse and sexually transmitted infections $p=0.05$.

P-002 LESSONS LEARNED FROM SCHOOL-BASED STD SCREENING IN INDIAN COUNTRY

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Objective: To describe experiences and lessons learned in implementing school-based chlamydia and gonorrhea screening in Indian Country.
Methods: We revised existing guidelines published by ETR Associates for school-based STD screening to meet the unique needs of schools located in Indian Country. In developing the guidelines, a variety of schools serving American Indian/Alaska Native students were approached to collaborate as pilot sites. We worked with interested schools to develop and implement STD screening projects.
Results: We initiated discussions with 6 schools in Indian Country to serve as pilot sites. The majority were in the southwest (3), publicly-funded (5), and on a reservation (5). To-date, screening has been successfully implemented at 1 site, is underway in 3 sites, and was delayed indefinitely at 2 sites. Positivity rates at the site where screening was implemented was 5% for chlamydia (4% for males; 6% for females) and 0% for gonorrhea.

Conclusions: Initiating school-based STD screening in Indian Country is very challenging, but not impossible. Facilitating factors include early buy-in and explicit support from the school administration and tribe, a clearly identified 'champion' to promote the project within the tribe, health care staff trusted by the students and staff, formation of a multi-disciplinary ad hoc workgroup to guide the process, and focusing on healthy decision-making in adolescence. Barriers at the 2 sites where the screening project did not go forward included the lack of a champion at the tribal level and a failure to secure explicit tribal approval.

P-003 HSV-2 ANTIBODY DETECTION USING ELISA IN LONGITUDINAL SERUM SPECIMENS FROM CONGOLESE YOUTH: AN INCONVENIENT TRUTH

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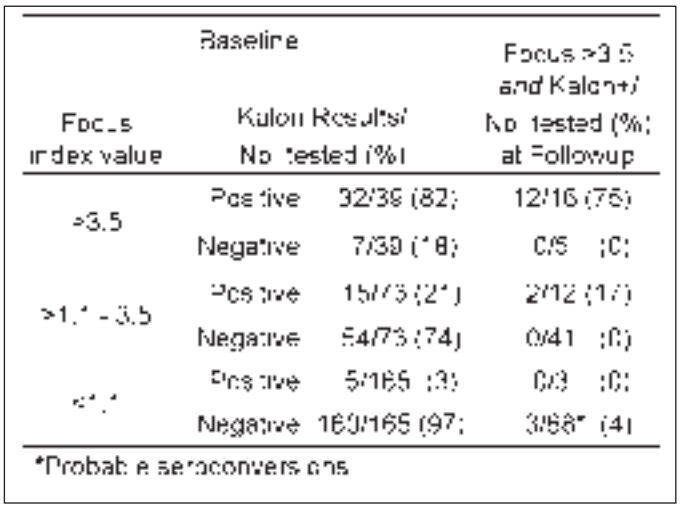
Objective: Western blot, the 'gold standard' for detecting HSV-2 type-specific antibodies, is expensive, labor-intensive, and interpretation is operator dependent. ELISA tests are quicker, more affordable and appropriate for resource-constrained settings. HerpeSelect ELISA (Focus Technologies) has been used widely for detection of HSV-2-specific antibodies. However, recent studies demonstrated unacceptable specificity in sera from some African populations. One can increase test specificity by raising the Focus index value to define a positive result. An alternative is to use a more specific test to confirm initial Focus positives. In this study, we explored the relationships between Focus index values and reactivity with Kalon HSV-2 ELISA (Kalon Biological) in longitudinal sera from youth in the Democratic Republic of Congo.
Methods: Sera were from 656 youth (14-19 years) in Kinshasa who participated in a trial to promote HIV risk reduction. Blood was collected at baseline, 3- and 6-month follow-up visits. Focus and Kalon tests were performed according to manufacturers' instructions. Baseline sera were screened with Focus. All available Focus-positive (97%) or equivocal (93%) sera at baseline and a random subset (27%) of negatives were tested using Kalon. From subjects with baseline Focus and Kalon results, we tested serum from the first available follow-up visit (128 at 3 months, 20 at 6 months) with both tests. To increase specificity in the absence of Western blot, we defined reference positives (RP) as Focus index >3.5 and positive by Kalon. Reference negatives (RN) had Focus index <3.5 or a negative Kalon result.
Results: At baseline, 512 (78%) sera tested Focus negative, 29 (4%) equivocal and 115 (18%) positive. Among 277 baseline sera tested by Kalon, 1 Focus-negative sample (<1%) was Kalon-positive. 23/27 (85%) Focus-equivocal sera were Kalon-negative. Of 112 Focus-positive sera (index >1.1), 4% were equivocal by Kalon, 42% were positive, 54% were negative. The table shows Kalon results stratified by Focus index value and the distribution of RP. Compared to RP, 71% (95%CI 62-80) of all Focus positives at baseline and 67% (95%CI 55-78) at first follow-up were false positives (FP). With confirmatory Kalon testing, 32% (95%CI 20-46) of concordant positives at baseline and 9% (95% CI 3-28) at first follow-up were FP. Increasing the Focus cutoff to 3.5, 18% (95%CI 9-33) of positives at baseline and 9% (95%CI 3-28) at first follow-up were FP. With Kalon testing alone, 38% (95%CI 26-52) of positives at baseline and 13% (95%CI 5-32) at first follow-up were FP. Among 19 baseline RP with follow-up results, 4 (21%) were negative at the next study visit. Five baseline RN were RP at first follow-up; 3/5 were concordant negative at baseline, and 2/5 were Focus low positive/Kalon positive.
Conclusions: Kalon confirmation of initial Focus positives decreased FP detection compared to RP. Still fewer FP were detected with a Focus cutoff index of 3.5. The substantial proportion of baseline RP sera that were negative at first follow-up visit demonstrates inadequate reliability of HSV-2 ELISAs in this population, even with a more stringent ELISA reference standard. Western blot testing remains necessary to define true positives.



Focus index value	Baseline Kalon Results/ No. tested (%)		Focus >3.5 and Kalon+/ No. tested (%) at Follow-up
>3.5	Positive	32/39 (82)	12/16 (75)
	Negative	7/39 (18)	0/5 (0)
>1.1 - 3.5	Positive	15/73 (21)	2/12 (17)
	Negative	54/73 (74)	0/41 (0)
≤1.1	Positive	5/165 (3)	0/3 (0)
	Negative	160/165 (97)	3/58* (4)

*Probable seroconversions

Figure 1: ELISA Performance for HSV-2 Antibody Detection

P-004 PSYCHOSOCIAL DETERMINANTS OF STI RISK AMONG STREET-INVOLVED YOUTH

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Objectives: Rates of sexually transmitted infections and HIV are often driven by particularly high rates of transmission in vulnerable segments of the population, such as street involved youth, men who have sex with men, and injection drug users. Understanding more about the determinants of risk and transmission patterns within these groups is important in designing, implementing, and evaluating prevention programmes that encourage a reduction in risk-taking activities and, consequently, STI and HIV infections.
Methods: Winnipeg, a mid-sized Canadian city of approximately 750,000, located in central Canada was one of the sites of a national repeated cross-sectional STI surveillance study among street-involved youth designed, coordinated, and funded by the Public Health Agency of Canada. Winnipeg participated in three phases of this surveillance study, with youth recruited by snowball sampling in 1999, 2001, and 2003/04. These analyses explore changes between study phases in the descriptive and social epidemiology of STI/HIV risk among street-involved youth in a Canadian city. Using one phase of data, the predictive strength of an STI risk model incorporating personal, behavioural, and environmental factors was assessed using structural equation modelling.
Results: A large proportion of youth (>40%) had either a current or a past STI. Indicators of STI risk among street youth included having multiple sex partners, both sequential and concurrent, involvement in sex trade work, and inconsistent condom use. Assessment of an STI risk model found that self-esteem, perception of risk, abuse history, parent-child relationship, alcohol use, and illicit drug use explained a significant portion of the variance in STI risk, as defined by condom use, number of sexual partners, use of used injection drug equipment, and past and current infection with both bacterial and viral STI.
Conclusion: Traditionally, STI risk has been determined by condom use and rate of partner change. This study demonstrates that in additional to these proximal factors, distal determinants of risk are important and should be considered as part of a comprehensive prevention framework. Using structural equation modelling, the theory that STI transmission among a high-risk population can be framed as a result of a combination of personal, interpersonal, and behavioural constructs, each of which may present opportunities for targeted prevention and control efforts, was supported.

P-005 IMPROVING CHLAMYDIAL SCREENING IN TEENS: RESULTS FROM A RANDOMIZED CONTROL TRIAL INTERVENTION IN URGENT CARE

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Objectives: To evaluate an intervention to increase CT screening among 14-18yo sexually active teens in HMO during pediatric urgent care visits. Chlamydia trachomatis (CT) is the most common reportable bacterial infection in teen girls. Most infections are asymptomatic and if untreated can lead to PID, ectopic pregnancy and infertility. Despite at least annual screening recommendations for sexually active adolescents, little progress is being made ' most recent data shows only 32% are screened. A major barrier is that most (1/2-2/3) teens in any given year are never seen for a preventive health visit, where CT screening is more routine. Interventions are therefore needed to reach teens at their point of contact with the health care system ' urgent care.
Methods: In a randomized control trial of 10 pediatric clinics, five clinics received the systems-intervention where a team of providers and clinic staff at each clinic established CT screening guidelines for urgent care. These teams were given a toolkit that had been used successfully in our prior well-care intervention, they met monthly to review protocols, screening rates and problem-solve barriers. Controls received an informational lecture on the importance of CT screening and were given the same toolkit. Monthly CT screening rates between January 2005 and June 2006 were evaluated.
Results: Preliminary data indicate that improvements in CT screening rates among females in the intervention clinics were greater than improvements in the controls (+8.8% and '3.0% respectively). This difference approached significance p=.058 (95% C.I. -.24098-.00498). Two of the five intervention clinics have not adopted systems changes proven to be successful at the other clinics. With these two clinics excluded, mean improvement for the intervention clinics was 14% (with a 32% screening rate prior to the intervention compared to 47% at post-intervention). There were no significant improvements for males.
Conclusions: Though our intervention improved CT screening rates for girls, improvements were modest and not readily adopted by all clinics. Also, screening rates prior to the intervention were higher than expected at all clinics due to significant pressure to increase CT screening in this HMO stemming from our earlier work. Thus more dramatic improvements were difficult. Regardless, significant barriers to screening in urgent care remain. Delivery mechanism of future interventions in urgent care need to minimize the amount of time clinicians and staff use to establish confidentiality, collect sexual histories, urine specimens and confidential contact numbers in the event the test is positive. New strategies to provide basic information about CT and how to prevent CT other STIs and pregnancy are greatly needed especially since most teens are never seen for preventive care in a given year. It is necessary to pursue interventions to increase screening in urgent care in order to reach the majority of at-risk teens who would likely remain undetected.

P-006 ENHANCED SURVEILLANCE OF CANADIAN STREET YOUTH PHASE V (2005-2006): STI SNAPSHOT

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Objective: To report on the overall prevalence of sexually transmitted infections (STI) in Canadian Street Youth from the 2005-2006 phase of data collection and to examine any gender and age differences in STI rates. To report on the proportion of street youth who reported previous STI.
Methods: The Enhanced Surveillance of Canadian Street Youth (E-SYS) is a repeated cross-sectional survey that has been carried out since 1999 to monitor STI prevalence and examine associated behaviours and risk determinants. Street youth (SY) aged 15-24 years inclusive, who were able to speak either French or English and had been absent from their parent's/caregivers' residence for at least three consecutive nights, were recruited from drop-in centres and through outreach in 7 cities across Canada using a snowball approach.
Results: This analysis is based on 1353 youth from the 2005-06 data collection phase, who provided blood and/or urine samples for STI testing and responded to the questionnaire. Prevalence of chlamydia (CT) was 9.9% (males 8.9%, females 11.4%, NS). Prevalence of gonorrhea (GC) was 1.3% (males 0.8%, females 2.1%, p=0.04). Prevalence of infectious syphilis (positive for RPR and FTA-ABS) was 0.3% (males 0.14%, females 0.7%, NS). There were no significant differences in STI prevalence in younger SY (15-19 years) than in older SY (20-24 years). Close to 25% of respondents reported having being previously diagnosed with an STI; of those who reported previous STI, 65% reported a previous CT infection, 24% reported having a previous GC infection and 1.8% reported previous syphilis infection.
Conclusions: SY are particularly vulnerable to infection with STIs. Female SY may be at higher risk for STI infection than males, however in our data, this was only significant in the case of GC. Further analysis examining associations between these infections, other blood borne pathogens including HIV, additional demographics, risk behaviours (e.g. drug use, sex trade) and other health determinants (e.g. abuse, level of education) will help in targeting appropriate prevention and control measures in this population.

P-007 CHLAMYDIA AND GONORRHEA SCREENING AND PREVALENCE AMONG HIGH SCHOOL STUDENTS RECOVERING FROM THE EFFECTS OF HURRICANE KATRINA

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Objectives: Natural disasters may disrupt public health and clinical care infrastructures and may lead to health consequences that include the spread of communicable diseases. In a community damaged and recovering from the devastating effects of Hurricane Katrina, we determined the feasibility of restoring chlamydia and gonorrhea screening services among high school students and the prevalence of these sexually transmitted infections (STI) among participating students. GenProbe collaborated with Region 6 Infertility Prevention Project to provide funding for chlamydia and gonorrhea screening in Charter high schools. We compared the observed prevalence against males and females average background prevalences of respectively 7.6% (95% CI: 6.4%-8.2%) and 14.3% (95% CI: 12.7%-16.1%) for chlamydia and of respectively 1.4% (95% CI: 0.9%-2.1%) and 3.6% (95% CI: 2.8%-4.7%) for gonorrhea, prevalence rates documented during 8 years of school-based testing before the hurricane.
Methods: During the 2006-2007 school year, 845 students were enrolled in one of the two public high schools currently operating in a community that was previously served by three public high schools before Hurricane Katrina. Consent for participation was obtained for 356 students (42.1%), 22 students (2.6%) returned a consent form stating that they or their parents did not want them to participate in the screening, and the 467 remaining students (55.2%) never returned their consent form. Screening was conducted at school during regular class hours from November 29, 2006 through January 25, 2007. During that time, students who had returned consent forms indicating permission to participate provided urine specimens that were tested for chlamydia and gonorrhea, using nucleic acid amplification tests, regardless of sexual activity. Students testing positive were treated with 1g oral azithromycin for chlamydia and 500mg oral ciprofloxacin for gonorrhea at school by a nurse/physician who directly observed the administration of therapy. Students treated were advised to refer their sex partners to the city STD clinic for treatment and STI evaluation.

Results: During the testing period, 333 students provided urine specimens (93.5% of those who had consent and 39.4% of the school population), including 180 males and 153 females. Among males, 20 (11.1%, 95% CI: 7.1%-16.9%) tested positive for chlamydia and 6 (3.3%, 95% CI: 1.4%-7.4%) tested positive for gonorrhea. Among females, 27 (17.6%, 95% CI: 12.1%-24.8%) tested positive for chlamydia and 11 (7.2%, 95% CI: 3.8%-12.8%) tested positive for gonorrhea. Of all students infected (n=55), 54 (98.1%) received appropriate treatment at school and one refused treatment. No infected student denied sexual activity at the time of treatment and all who were treated did so upon learning about their test results.
Conclusions: In this period of rebuilding after the devastation caused by Hurricane Katrina, screening among public high school students returning in their affected community remains feasible and acceptable. Preliminary indications suggest that the prevalence of chlamydia and gonorrhea is at least as high as that recorded before the storm. This experience indicates that redoubled efforts should be put into STI screening programs as soon as possible following natural disasters in order to prevent resurgent infection incidence rates. e-mail: mnsuam@lsuhsc.edu

P-008 SEXUALLY TRANSMITTED INFECTIONS AMONG CALIFORNIA YOUTH: ESTIMATED INCIDENCE AND COST, 2005

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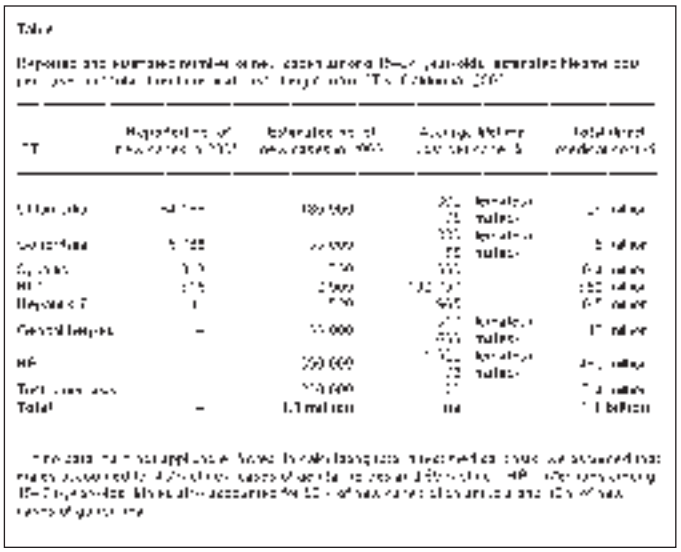
Objectives: Young persons aged 15 to 24 years acquire more than half of all new sexually transmitted infections (STIs) every year. STIs can have considerable and long-lasting impact on the health and quality of life of individuals, in the form of infertility, ectopic pregnancies, cancer, and increased vulnerability to HIV. Despite the progress over the last decade in screening for and detecting STIs, especially among young people, major obstacles remain to accurately monitoring the incidence and prevalence of STIs. In addition to STI morbidity, the burden of STIs also is reflected in the economic costs associated with these infections. These costs comprise direct, indirect, and intangible costs. National estimates of incidence and cost of STIs among young people have limited value for states' and counties' policy, program, and budgetary decisions, as different states have different population profiles for STI risk. The purpose of our analysis was to estimate the incidence and the cost of STIs among young people aged 15 to 24 years for California and each of its 58 counties.
Methods: On the basis of the methods developed by colleagues at the Centers for Disease Control and Prevention, we estimated the statewide number of new cases of eight major STIs among young people in California: chlamydia, gonorrhea, syphilis, genital herpes, human papillomavirus (HPV), hepatitis B, trichomoniasis, and HIV. We then used the estimated number of new cases and previously published national cost-per-case estimates for each STI to calculate the economic burden of youth STIs in California. Furthermore, we extrapolated the statewide estimates to the county level using a multiplier based on the number of reported gonorrhea, chlamydia, and AIDS cases in each county.
Results: An estimated 1.1 million new cases of STIs occurred among young people in California in the year 2005, with a direct medical cost of $1.1 billion. HIV and HPV accounted for 93% of this cost. In addition, the indirect cost of chlamydia among young women and HIV among young people added an additional $2.5 billion to this burden. The county-level estimates were grouped into social-geographic regions consisting of contiguous groups of counties organized by geographic and demographic proximity to illustrate regional variability in estimates across California.
Conclusions: The analysis showed that the number of reported cases of newly acquired STIs in California in 2005 considerably underestimates the true incidence of STIs for that year. In addition, the analysis showed that the cost of treating acute infections and their sequelae can be considerable. Although the incidence and cost estimates obtained are approximate estimates and are subject to limitations, they provide a starting point for the first comprehensive appraisal of the costs of STIs among young people in California and for the allocation of this economic burden among counties and regions of the state. With this new information, state and county policymakers will be better able to assess the sufficiency of current investments to prevent STIs among young people. In addition, our methods provide a model that could be adapted by other states and jurisdictions.


Total — 1.1 million

P-009 HIGH PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS AMONG YOUNG DRUG USERS IN AMSTERDAM: TEMPORAL TRENDS

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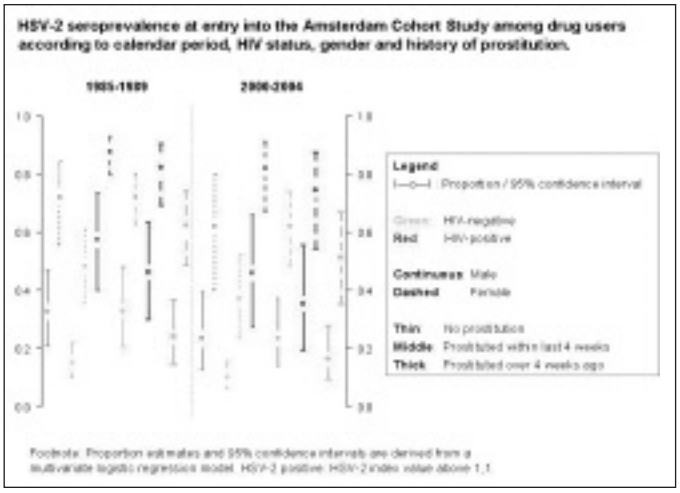
Objectives: Use of different types of drugs, especially crack cocaine, are associated with increased levels of sexual risk behavior and STI. In order to get more insight in the potential role of young drug users in the transmission of STI, we studied risk behavior and STI prevalence in the Amsterdam Cohort Studies (ACS) and measured whether there was a change over time.
Methods: The study population comprised young (18-30 years) injecting and non-injecting drug users (YDU) participating in the ACS either in 1985-1989 (n=431) or 2000-2004 (N=171). They all reported whether they had a history of gonorrhea, genital herpes and syphilis at entry. In addition, the presence of herpes simplex virus type-2 (HSV-2) antibodies was assessed at entry using the HerpeSelect 2 enzyme-linked immunosorbent assay IgG (Focus). To study time trends and factors associated with STI we used multivariate logistic regression.
Results: Of the YDU recruited in 1985-1989, 45% was male compared with 73% among those recruited in 2000-2004. A strong statistically significant decrease in the prevalence of STI and HSV-2 antibodies was observed between the two time periods; from 47% to 14% and from 49% to 22%, respectively. In 1985-1989, prevalence of gonorrhea was 40% (174/431), of syphilis 11% (48/431) and of genital herpes 10% (41/431). In 2000-2004 these prevalences were 10% (17/171), 2% (4/171) and 1% (2/171), respectively. The decrease of STI between the time periods was not explained by substantial differences in type of drug use: while heroin was mainly used in 1985-1989 (36% compared with 9%), cocaine was mainly used in 2000-2004 (40% compared with 7%). Differences in gender, mean number of paying sexual partners per month and HIV status did not fully explain the decrease in STI prevalence over time. After adjustment for these variables, in 1985-1989 the estimated STI prevalence ranged from 22% for HIV-negative

males who reported no prostitution to 79% for HIV-positive females with 60 or more sexual clients a month. Similarly, in 2000-2004, the estimated STI prevalence ranged from 9% to 50%, respectively. Comparable results were obtained for HSV-2 seroprevalence (see figure).

Conclusions: A profound decline in prevalence of STI is observed between the periods 1985-1989 and 2000-2004 among young drug users in Amsterdam. This decline was partly due to differences in behavior over calendar time. Harm reduction measures which include sexual and injecting risk counseling, may have contributed to this decline. Nevertheless, STI prevalence remains high and is comparable with prevalences reported for men who have sex with men (data not shown). Therefore, regular screening on STI for (young) drug users remains necessary. Website: www.amsterdamcohortstudies.org



P-010 THE MENTAL HEALTH BURDEN IN ADOLESCENTS MAY IMPACT ON HIV RISK IN RURAL ZIMBABWE

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Objectives: This study examined causes of vulnerability to HIV and HSV2 among young people in rural Zimbabwe.

Methods: 1495 young people aged 16-21 (45% female) from 12 rural communities were surveyed as part of an on-going trial. Respondents self-completed a questionnaire; biological specimens of blood and urine were provided and tested for HIV-1, HSV2 and pregnancy. Questions included a locally validated mental health scale which identifies common mental disorders, data on mobility, sexual behaviour, and a standardized self esteem inventory. The 14-item mental health scale classifies cases of common mental disorders (CMD) as those scoring 8 and above (>11 were considered severe). Biomarkers of vulnerability were defined as any new HIV infection (since 2003), and/or HSV2 infection, and/or pregnancy. Sexual vulnerability was defined as those with a biomarker or self reported sexual activity. Data were analyzed using Stata 9 and associations assessed using logistic regression generalized estimating equations to take account of clustering at community level.

Results: 2.3% (95% CI: 1.1-3.4%) of women and 0.4% (95% CI: 0.0-0.8%) of men were HIV positive. 14.4% (95% CI: 11.7-17.0%) of women vs. 15.1% (95% CI: 12.7-17.6%) of men either had a biomarker or self-report of sexual activity. Of note, 51.7% of young people were classified as CMD cases; half of which were severe. 10.1% said they had felt like committing suicide in the previous week. Comparisons between CMD cases and non-cases indicated that CMD appeared to be associated with being stigmatized (72% vs. 34%), having to work more than others (37% vs. 17%), and being given less food (17% vs. 6%) (all p<0.001). CMD cases also had lower self-esteem based on responses to five questions (p<0.001), and were more likely to have moved in the last 5 years (27% vs. 19%; p<0.001). 18% of CMD cases vs. 10% of non-cases reported sexually activity (p<0.0001). Cases were also more likely to report forced sex or rape (7% vs. 3%; p<0.0001). Reported alcohol/drug use was higher among CMD cases (38% vs. 27%, p<0.0001). After adjusting for co-variates, being a CMD case was also associated with biomarker and/or self report of sexual activity (OR=2.0; 95% CI 1.3-3.2), with those that were severe cases apparently at greater risk (OR=2.7; 95% CI: 1.7-4.4). Many of those factors associated with being a CMD case were also associated with sexual vulnerability. Those exposed to drugs or alcohol were 3 times more likely to have a marker to sexual vulnerability than those who had never tried them (95% CI: 2.6-3.6). Increased vulnerability was also seen in those who reported sexual abuse (OR=8.8; 95% CI: 5.0-15.4), who moved in the last 5 years (OR=1.9; 95% CI: 1.4-2.5), or who perceived themselves at risk of HIV (OR=2.8; 95% CI: 2.2-3.7).

Conclusion: Mental health disorders were very common in this population and were associated with many of those factors that also increase sexual vulnerability; CMD cases were twice as likely to be sexually vulnerable. Given this very high burden which remains largely unrecognized, and its associations, further exploration around CMD is required.

P-011 WHO SHOULD BE SCREENED FOR STDS? ANALYSIS OF RISK MARKERS FOR GONORRHEA AND CHLAMYDIAL INFECTION INCIDENCE DURING FOUR YEARS OF HIGH SCHOOL SCREENING

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Objectives: 1. Describe the factors associated with duration of time from an initial test to having a positive test within the high school program.. 2. Identify characteristics of adolescents who are more likely to need retesting for Chlamydia and Gonorrhea after baseline testing.

Background: Since 2003, the Sexually Transmitted Disease (STD) Control Program of the Philadelphia Department of Public Health (PDPH) has offered annual, voluntary urine-based Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (GC) screening in Philadelphia public high schools (HS). Students with a positive screen test were followed for treatment. We explored factors associated with time to event (i.e., positive screen test) within the program.

Methods: Inclusion criteria for this analysis included being a Philadelphia resident, aged 12-20 years with >1 screening test in four consecutive school years of screening in the HS program from January 2003 to June 2006. Proportional hazards modeling was used to determine the association between disease incidence and the following factors: gender, self-identified race/ethnicity, reported home ZIP code morbidity rate, baseline diagnosis and school type.

Results: Of more than 14,500 students included, 47% were female, averaging 17 years of age; 75% of the students had two screening tests, 21% had three screening tests, and the remaining 4% had four or five screening tests. Initial results indicate 4.2% positivity at any screening event. Mean time between screening tests was 401 days (SD: 163 days). Students with an initial positive CT or GC screen were at 3 times higher rate of another positive at re-screen compared to students with an initial negative screen (adjusted hazard ratio (AHR): 3.14, 95% confidence interval (CI): 2.51-3.94). Students dually infected with CT and GC at initial screen had a higher rate of another positive at re-screen compared to students with an initial negative screen (AHR: 5.62, 95% CI: 2.56-12.31). Females were also found to have more than double the rate of males of re-screening positive (AHR: 2.30, 95% CI: 1.96-2.69). Race/ethnicity, home ZIP code morbidity, school type at retest and an initial positive test were associated with duration to a positive second test within the HS program. Analyses show that initial positive test is the strongest predictor of infection risk.

Conclusions: Results suggest that active re-screening of all students with a prior positive STD screening test result would increase the number of students found with a STD infection. By reaching adolescents that would most benefit from a targeted re-screening program, overall morbidity in the adolescent population may decrease.

P-012 DEPRESSION AND STI AMONG YOUNG ADULTS IN THE US, WITH A FOCUS ON YOUTH HEADING TOWARDS INCARCERATION

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Objectives: Incarceration is strongly associated with sexually transmitted infection (STI). Mental illness may be a modifiable risk factor of STI among youth on a trajectory towards incarceration. We measured associations between depression and STI, investigating differences by arrest history.
Methods: We conducted analyses among a sub-sample of 11,594 male and female participants of the National Longitudinal Study of Adolescent Health with measures taken during Wave I (1995: early adolescence) and Wave III (2001-2002: late adolescence/young adulthood). Stratifying analyses by Wave III arrest history, we used multivariable logistic regression to estimate adjusted odds ratios (aORs) and 95% confidence intervals (95% CIs) for the associations between Wave III biologically-confirmed infection with Chlamydia trachomatis, Neisseria gonorrhea or Trichomonas vaginalis, and two depression measures: severity of Wave III depression symptom levels (very high, an indicator of major depressive disorder (MDD)); high; moderate; or low) and MDD timing and persistence (Waves I and III (chronic MDD); Wave III only (recent MDD); Wave I only (prior MDD); or neither Wave I nor III (no MDD history)).
Results: Depression was associated with Wave III STI. Particularly strong associations were observed among those with prior arrest history by Wave III. STI prevalence was higher among those with Wave III MDD versus Wave III high, moderate, or low depression levels (prior arrest: 13.6% versus 7.9%. 6.0%, 7.1%; no prior arrest: 7.8% versus 5.9%, 6.8%, 5.3%). Wave III MDD was associated with STI, compared with low depression levels, when adjusting for gender and age (prior arrest: aOR: 1.9, 95% CI: 1.0-3.8; no prior arrest: aOR: 1.4., 95% CI: 1.1-1.9), but associations diminished when additionally adjusting for race, socio-economic indicators, substance abuse, and baseline sexual behavior (prior arrest: aOR: 1.2, 95% CI: 0.5-2.7; no prior arrest: aOR: 1.0, 95% CI: 0.8-1.5). Among those with prior arrest history, STI was much higher among those with chronic MDD (16.7%) and recent MDD (12.0%) than with prior MDD (5.3%) or no MDD history (7.3%). Among those with no prior arrest, STI prevalence was slightly higher among those with chronic, recent, or prior MDD (7.4%, 7.7%, 7.1%) than with no MDD history (5.7%). STI was associated with chronic and recent MDD, compared with no MDD history, when adjusting for age and gender (prior arrest: aOR: 2.6, 95% CI: 1.0-6.3 for chronic MDD, aOR: 1.6, 95% CI: 0.8-3.3 for recent MDD; no prior arrest: aOR: 1.4., 95% CI: 0.9-2.0 for chronic MDD, aOR: 1.3, 95% CI: 0.9-2.0 for recent MDD). Among the previously arrested, when additionally adjusting for race, socio-economic indicators, substance abuse, and baseline sexual behavior, the aOR for the association between STI and chronic MDD was 1.8, 95% CI: 0.7-4.6. All other associations between STI and MDD diminished in fully-adjusted models.
Conclusions: Improved detection and treatment of MDD among young adolescents may reduce chronic depression and subsequent STI in later adolescence/young adulthood, particularly in communities with high arrest and incarceration rates. Depression screening and STI prevention delivered through the criminal justice system would reach a population with particular need for these programs.

POSTER SESSION: BEHAVIORAL DETERMINANTS I

P-013 MECHANISMS OF MORAL DISENGAGEMENT IN HIV TRANSMISSION RISK BEHAVIOR: AN APPLICATION OF BANDURAS THEORY

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While most individuals who transmit HIV to others are unaware of their infection, significant numbers of individuals who know their HIV status continue to engage in transmission risk behavior, i.e., unprotected sex with partners who are HIV-negative or of unknown HIV status. The present talk will apply Albert Bandura's theory of moral disengagement to transmission risk behavior by considering each of the mechanisms for disengagement described by the theory and briefly reviewing evidence from the literature to support its operation in transmission risk. These include moral justification; euphemistic labeling; advantageous comparison; displacement and diffusion of responsibility; disregard or distortion of consequences; dehumanization, and attribution of blame. Methods for avoiding stigmatization of HIV-positive individuals in this context will be discussed.

P-014 PROGRAMMATIC ISSUES IN DELIVERING TARGETED STI SERVICES THROUGH THE PUBLIC SECTOR IN THE GREATER MEKONG REGION

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Objective: To review the delivery of targeted STI services to both female sex workers (FSWs) and other high-risk groups through the public sector in the Greater Mekong region.
Methods: Data was obtained through a Medline search and from experience working with the National STI units of the Ministries of Health of Cambodia, Laos and Vietnam from mid 2002-2005 as part of the Community Action for Preventing HIV/AIDS project funded by the Japan Fund for Poverty Reduction and managed by the Asian Development Bank.
Results: High STI rates that justify targeted interventions have been reported recently amongst FSW in Cambodia, Laos and Vietnam. Such interventions will need to take into account the different patterns of sex work in the three countries. In Cambodia there are large numbers of brothel-based FSWs that are covered by the 100% condom use programme. However, this pattern is changing as more brothels are closed by the authorities. In Laos, services targeted towards reducing the burden of HIV/STI in FSW/service women are probably best delivered through NGO-led clinics. In Vietnam, commune based district health centres would appear to offer better services for FSW than STI clinics. Male clients of FSW are an important group to target but reaching such a heterogeneous population is difficult. Provision of quality STI drugs to those places where men present with STI symptoms should be a priority.
Discussion: The optimal way to manage STIs in FSWs is still unclear in this region. Clinical and laboratory specialists are keen to promote laboratory tests for STIs but there is an over reliance on direct staining techniques. In areas with high STI prevalences, periodic presumptive treatment could offer an effective option to reduce STI levels in high-risk groups until syndromic management algorithms are evaluated for local use. Social patterns of sex work are changing continually and will require close monitoring in the future so that services can be adapted to these changes.

P-015 A RESEARCH STUDY ON STDS AMONG HIGH RISK MEN IN A.P. STATE

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BOSS & CIPCA (CBO), TIRUPATI, India

Objectives: The number of people infected with STD's is a growing problem and poses a serious threat to families and communities in Andhra Pradesh State of India today. From 2001 ' 2006 we have conducted a research study in four districts (Chittoor, Nellore, Kadapa and Ananthpur) in A.P. State. The study aimed at establishing baseline information about the percentage of STD's among men at high risk of STD's/HIV infections, to identify their sexual habits, practices, partners to design proper STD's prevention, care and treatment programmes.
Methods: A field based study was under taken. The subjects were selected from different catchment areas through our on going programmes for men at high risk like MSM's and male sex workers. 1. Men at high risk were identified in the region. 2. After pre-test counseling urethral and blood specimens were collected and examined for the presence of STD's/HIV and other infections, and provided post-test counseling and feasible treatment.
Results: A total of 5314 men at risk were selected for the study. Majority of them were single 78% (4145) and unmarried. Their ages ranged from 14-35 years. Out of them, 227 had Neisserria Gonorrhea, 312 had Chlamydia trachomatis, 214 had syphilis, 379 had HIV infection, 29 had genital warts, 37 had Hepatitis B and C, 119 suffered with fungal infections and scabies. The usual sex habits were conventional but along with this 46% and 30% practiced oral and anal sex respectively. About sex partners 48% had male partners 28% had female partners and the remaining percent were bisexuals and they did not use condoms during their last sexual contact. Common reasons for non-usage of condom were, dislike condoms, no knowledge about condoms, and non availability of condoms. 32% of the subjects had a history of STD's in the past one year, 15% relied on self medication, 55% consulted physician and remaining did not approach any one for treatment. Most of the infected men at risk used feasible treatment and counseling facilities of our centers.
Conclusion: There was a low proportion of STD's among males at high risk in the area in contrast to their risky sexual habits, non-usage of condoms and poor STD's management and treatment. However, factors such as having sex with men, having sex with female sex workers and incidence of STD's have been strongly associated with HIV sero conversion in the area. Hence this calls for concern and attention to the young men. Information, Education and Communication (IEC) materials should be developed specially for men at high risk with a call for action regarding proper and immediate STD's and infections treatment availability and usage of condoms.

P-016 WHAT PEOPLE WANT TO KNOW ABOUT SEXUALLY TRANSMITTED INFECTIONS: OBSERVATIONAL SURVEY DATA FROM ASHAS STI RESOURCE CENTER

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Objectives: The American Social Health Association (ASHA) operates the STI Resource Center (STIRC), a project that provides information, support, materials and referrals to individuals across the United States and abroad who have questions and concerns about sexually transmitted infections. The experience of the STIRC in addressing inquiries from its clients may be instructive to professionals, educators, researchers and policy makers. The objectives are to profile callers to the STIRC and identify topics about which callers have the greatest need for education and counseling.
Method: The STIRC answered 12,455 calls between March 1, 2006 and December 31, 2006. Of these, 1,941 callers were randomly surveyed and resulting data were quantitatively analyzed.
Results: All adult age groups were represented with most (25%) of callers falling between the ages of 18 and 24. The location of callers spanned a wide spectrum with representation from all 50 US states with most coming from California (11%), New York (10%), North Carolina (9%), Florida (7%), and Texas (5%). Fifty-eight percent identified as being White, 26% African-American, 9% Hispanic, and 3% Multiracial. Sixty-five percent were female. Thirty-eight percent found the STI service through the Internet, 18% through a telephone book, and 17% through written material. Regarding the highest year of school completed, 26% of callers had surpassed high school while 34% had graduated from college. Specific to household income, 19% had income below $25,000, 29% between $25,000 and $45,000, 17% between $45,000 and $65,000, and 18% above $65,000. The first STI discussed on a call was HSV (60%), HPV (15%), HIV/AIDS (6%), and Chlamydia (5%). Similarly, the most common STIs discussed throughout the duration of a call were HSV (64%), HPV (19%), Chlamydia (9%) and HIV/AIDS (9%). Topics discussed for each STI included transmission, symptoms, prevention, risk reduction, testing and psychosocial issues. Specific concerns most often expressed included being newly diagnosed with an STI (32%), contracting an STI (27%), transmission to a partner (15%), current symptoms (15%), possible infidelity (7%) and communication with their health care provider (6%). Forty-four percent of callers had been medically diagnosed with an STI while 18% of callers' partners had been diagnosed with an STI.
Conclusions: STIRC call activity indicates that individuals across all socioeconomic groups have numerous questions and concerns on multiple issues surrounding sexually transmitted infections. Strategies for increasing access to accurate STI information, including topics such as prevention and risk reduction, is warranted and programs offering such information should be implemented for use by all populations. Any program, facility or health care professional assisting sexually active populations should consider the importance of offering appropriate materials, resources and referrals related to all sexually transmitted infections. Mitch Herndon: mitchherndon@ashastd.org

P-017 TREND OF BARRIER OF PREVENTING THE SEXUALLY TRANSMITTED INFECTIONS (STIS)

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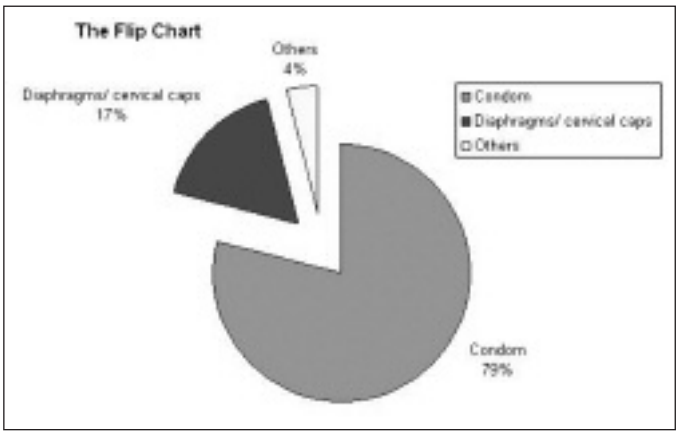
Method: The research voluntarily conducted in community research base on part of data collected from sample of age brackets (16-26) 500 people form the behaviour in the era of trend of Barrier of Preventing the sexual transmitted infections (STIs). The study applied simple graphically methods analysis to show the trend. These first lines of guard against (STIs) HIV/AIDS and we have different types of Preventing the sexually transmitted infections (STIs), Condom, Diaphragms/ cervical caps and spermicides, but among these prevention male condom have long been a supporting, easier for the Men and Women to uses programmes.
Result: However, study has been raised about the effectiveness uses male of Condoms as a greater percentage 79% Diaphragm/cervical caps 17% while others 4%means to prevent sexually transmitted infections (STIs), including HIV.
Conclusion: that male condoms, is easier to any other barrier uses to prevent the STIs and HIV/AIDs, when used easier and consistently, are effective for preventing HIV infection in women and men and gonorrhoea in men



P-018 YOUNG AFRICAN-AMERICAN MEN HAVING SEX WITH MULTIPLE PARTNERS ARE MORE LIKELY TO USE CONDOMS INCORRECTLY

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Objective: Young African American men experience exceptionally high risk of HIV acquisition thus improved precision in prevention research (particularly studies involving condom use) for this population is important. This study tested the research hypothesis that men engaging in sex with multiple partners would be significantly than those having sex with 2 or fewer partners to report errors that compromise the protective value of condoms.
Methods: Recruitment (N = 271) occurred in a publicly-funded STD clinic located in a metropolitan area of the Southern U.S. All men were clinically diagnosed with a STI. Men completed a self-reported questionnaire (using a 3-month recall period) with the option of hearing the questions via a CD-recording. Men reporting condom use with men were excluded from the analysis leaving an analytic sample of 264 men.
Results: Frequency of unprotected penetrative sex did not vary as a function of multiple partnerships (P=.25). About one-half of the men (48.5%) reporting penetrative sex with 3 or more women during the recall period. Compared to the remainder indicating sex with just 1 or 2 partners, these men were significantly more likely to report: 1) not using condoms from start to finish of sex (P=.005); 2) that condoms slipped off during sex or withdrawal (P=.04); and 3) that condoms broke during sex (P=.03). A summative measure that captured frequency of these errors indicated that men with 3 or more partners reported significantly greater numbers of errors than the counterparts with fewer partners (P=.001).
Conclusions: Young African American men, newly diagnosed with an STD, may be more prone to 'fatal' errors in condom use if they have sex with 3 or more partners in a 3-month period (i.e., about one per month). These men may benefit from, clinic-based, targeted counseling and education designed to foster their improved quality of condom use with multiple sex partners.

P-019 STI-RELATED, INDIVIDUAL & RELATIONSHIP INFLUENCES ON SEX AFTER SHORT, TRANSITIONAL AND MEDIUM PERIODS OF SEXUAL ABSTINENCE

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Objective: STI prevention for young women can be difficult because sex itself is intermittent, occurring after days, weeks or months of abstinence. We examined STI-related, individual and relationship factors associated with the end of different durations of abstinence.
Methods: 379 14-17 year old women (>90% African American) were recruited from clinics, interviewed quarterly, and completed daily diaries for 3 month periods twice a year, for up to 4.5 years. We tested for C. trachomatis, N. gonorrhoeae, and T. vaginalis quarterly. An 'abstinence period,' the unit of analysis, was defined as consecutive days of no vaginal sex, ended with a diary report of sex, or was censored by a missing diary or the start/end of a diary period. Frailty models with random subject effect (hazard models controlling for multiple observations from each participant) estimated the effect of covariates on the length of an abstinence period. Individual covariates included daily positive and negative mood (3 items each, range 3-15, _=0.81 and 0.76), and daily sexual interest (1 item, range 1-5). Relationship covariates included daily partner support (4 items, range 0-4, _=0.85), and quarterly relationship quality (6 items, range 6-24, _=0.91). STIs were diagnosed in the quarterly visit prior to the abstinence period. Short (<17days), transitional (17d-39d), and medium (40d-112d) duration abstinence periods were identified from the cumulative hazard plot, and examined separately.
Results: 379 participants reported 9616 abstinence periods (mean 34.4 days, SE = 0.58). The slope of the cumulative hazard plot showed a higher than average rate of resuming sex during days 1-17, a transition period, then a lower than average rate of resuming sex during days 40-112. The end of a short period was associated with age, STI, individual and relationship factors. Each year in age increased the hazard of ending a short period by 8% (p<.001), an STI decreased the hazard 9% (p=.051), each unit increase in sexual interest increased the hazard 14% (p<.001), each unit increase in positive mood increased the hazard 3% (p<.001) and in negative mood decreased the hazard 2% (p<.001), each unit increase in partner support increased the hazard 15% (p<.001), and each unit increase in relationship quality increased the hazard 2% (p<.001). Compared to short periods, transitional periods showed similar associations with age, sexual interest, negative mood and relationship factors; positive mood showed no effect; and STI INCREASED the hazard of ending a transitional period by 52% (p<.01). Compared to short and transitional periods, medium periods showed a greater influence of age (increased hazard 32%, p<.001), sexual interest (increased hazard 51%, p<.001), and relationship quality (increased hazard 11%, p<.05); Mood and STI were not significant.
Conclusions: Recent STIs were a deterrent to sex for short periods; for transition periods, this association flipped, and STIs increased the likelihood of sex. This may represent initial relationship turmoil after STIs, followed by 'making-up.' While mood influenced the decision to have sex after shorter periods, sexual interest and relationships remained influential across different length periods. Results suggest that counseling can be tailored to recent patterns of sexual activity.

P-020 CONTRACEPTIVE USE AND SEXUALLY TRANSMITTED DISEASES AMONG SEX WORKERS IN GOA INDIA

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Objectives: Lack of contraceptive use can increase the risk of unwanted pregnancies and abortions. If female sex workers (FSWs) do not use contraceptives, they have high risk of unwanted pregnancies and abortion due to multiplicity of sexual partners. Besides, sexually transmitted diseases (STDs) can have various ill-effects during pregnancy and childbirth including stillbirth, low birth weight, conjunctivitis, neurologic damage etc. Thus STDs/HIV can increase maternal and child morbidity and mortality. This study aims to examine factors associated with contraceptive use among Sex Workers (SWs) in Goa, India and describes the prevalence of STDs in that population.
Methods: SWs were recruited (12/2004-12/2005) using respondent driven sampling (RDS), a variant of chain-sampling where the probability of recruitment can be calculated. Participants completed interviewer-administered questionnaire.

Self taken vaginal swabs were tested for trichomonas(InPouch), gonorrhoea and chlamydia (Amplicor PCR, Roche). Dry bloodspots were tested for TPHA (Rapid-Syphicheck, Tulip Diagnostics), HIV(Virinostika II+0, Labsystems, Murex) and HSV-2(Focus technologies) antibodies. Logistic regression was undertaken to ascertain factors associated with contraceptive use using SPSS 14.0.

Results: Sub-sample of 260 SWs was analysed. Median age was 28(IQR: 23-35). Majority were Hindus (71%) and from Karnataka (73%) or Goa (12.2%), were illiterate (80%), married/separated/had regular male partner (74%) and worked independently (90%). Regarding contraception: 35% used none, 54% were sterilised, and 10.8% used reversible contraceptives (5.3% using condoms). Abortion history was reported by 26% SW. STDs detected were: Chlamydia (8%), Gonorrhoea and Trichomonas (10%), TPHA (30%), HSV-2 (54%) and HIV (23.5%). Factors associated with contraceptive use were current age [relative to age group <=25 years, for 26-35 years adjOR=3.16, 95%CI(1.43; 6.97); for over 35 years adjOR=3.69, 95%CI(1.48; 9.18)]; lack of freedom to quit trade [adjOR=0.32, 95%CI(0.11; 0.89)]; lack of freedom to spend money [adjOR=0.49, 95%CI(0.24; 0.99)], literacy [adjOR=0.27, 95%CI(0.12; 0.57)] and HIV positive status [adjOR= 0.41, 95%CI (0.20; 0.86)].

Conclusions: 1. Low contraceptive use and high reliance on abortions among SWs in the backdrop of STDs/HIV reported, raises concerns about maternal and abortion related morbidity and mortality. 2. Lack of decision-making power of SWs appears to affect their reproductive health choices. 3. Data from this study supports previous research conducted among sex workers that suggests that efforts to create an enabling environment to empower the SWs need to be strengthened. 4. Greater integration of contraceptive and maternal services with HIV prevention activities and strengthening of STD/HIV treatment and care services for SWs is required.

P-021 CORRELATES OF POSITIVE HSV-2 RESULTS AMONG PATIENTS PRESENTING FOR GENITAL HERPES TESTING

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Objectives: Identify correlates of positive HSV-2 results among people volunteering to be tested for HSV-2.

Methodology: Cross-sectional study conducted from May 2005'January 2007 at an urban STD clinic and college campus. Participants were sexually active, over age 18, and had not been previously diagno sed with genital herpes (N=482). Participants completed a self-administered survey including a 5-item scale assessing fear of herpes (á=.83) after which they underwent HSV-2 antibody testing (Fisher Sure-Vue HSV-2 Kit).

Results: 26.1% tested positive for HSV-2. African-Americans were more likely to test positive than Caucasians (P=.0001) as were older participants (defined as age 24 or more; P=.0001), women (P=0001), and participants from the STD clinic (P=.0001). Participants who tested positive had lower fear of herpes than those who tested negative (P=.0001); additionally, they had fewer partners (P=.020), were more likely to be in a married or partnered relationship (P=.008), to be experiencing symptoms at time of testing (P=.0001), and to believe that they were already infected with herpes (P=.003). Condom use was not associated with positive HSV-2 results (P=.689), nor was unprotected oral sex (P=.097) or avoiding sex because of concern about STDs (P=.067). In multivariate logistic regression, six variables retained significance: age (P=.006), clinic recruitment location (P=.006), low fear of herpes (P=.002), race (P=.011), gender (P=.008), and symptoms at time of testing (P=.0001).

Conclusions: Findings suggest that women and African-Americans are a population at risk for HSV-2. Interestingly, participants who were older or had a low fear of herpes were at higher risk for HSV-2.

P-022 CORRELATES OF RECENT ENGAGEMENT IN UNPROTECTED ORAL SEX AMONG PATIENTS PRESENTING FOR GENITAL HERPES TESTING

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Objectives: To identify correlates of recently engaging in unprotected oral sex (UOS) among people volunteering to be tested for HSV-2.

Methodology: A cross sectional study conducted from May 2005 ' January 2007 at an urban STD clinic and an urban college campus. Participants were sexually active, over the age of 18, and had not been previously diagnosed with genital herpes (N=301). Participants completed a self-administered survey including a 5-item scale assessing fear of herpes (_=.83) after which they underwent HSV-2 antibody testing (Fisher Sure-Vue HSV-2 Kit).

Results: 81.4% reported engaging in UOS in the last three months; 18.6% reported using condoms for oral sex at least once in this time period. Caucasians were significantly more likely to recently engage in UOS than African-Americans (P=.0001) as were younger participants (defined as age 23 or less; P=.001), participants from the college campus (P=.0001), and people testing positive for HSV-2 (P=.02). Participants who used condoms for penile-vaginal sex were more likely to use condoms for oral sex (P=.0001). Partner relationship status was not associated with UOS (P=.86), nor was gender (P=.57), number of partners (P=.44), or fear of herpes (P=.24). In multivariate logistic regression, only three variables retained significance: race (P=.0001), condom use with penile-vaginal sex (P=.0001), and age (P=.001).

Conclusions: Among asymptomatic people willing to be tested for HSV-2, findings suggest that younger people and Caucasians may be at risk for UOS. Also, among this population, those not using condoms for penile-vaginal sex may be more likely to engage in UOS.

P-023 DIFFERENCES BETWEEN ASYMPTOMATIC AND SYMPTOMATIC STD CLINIC PATIENTS PRESENTING FOR HSV-2 TESTING

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Objectives: Whether people who experience symptoms for genital herpes are more likely to practice safer sex behavior has not been well investigated. Similarly, the association between fear of genital herpes and experiencing symptoms has not been thoroughly examined. Thus, the purpose of this study was to identify differences between asymptomatic and symptomatic patients attending an urban sexually transmitted disease (STD) clinic.

Methodology: A cross sectional study conducted from January 2006 ' January 2007 at an urban STD clinic. Participants were sexually active, over the age of 18, and had not been previously diagnosed with genital herpes. Participants completed a self-administered survey addressing sexual behaviors after which they underwent HSV-2 antibody testing (Fisher Sure-Vue HSV-2 Kit).

Results: Of 378 invited to participate, none declined. Mean age was 29.9 years (sd=11.2). 45.6% were Caucasian, 54.4% were African-American, 41.2% were female, and 58.8% were male. 20.4% self-reported having symptoms they thought to be genital herpes, and 79.6% self-reported having no such symptoms. Among symptomatic participants, mean age was 31.6 (sd = 10.7), 35.5% were Caucasian, 63.5% were African-American, 51.9% were female, and 48.1% were male. Among asymptomatic participants, the mean age was 29.5 (sd = 11.3), 48.1% were Caucasian, 51.9% were African-American, 38.2% were female, and 61.8% were male. Symptomatic patients were significantly more likely to test positive for HSV-2 than asymptomatic patients (P = .0001). Symptomatic patients had less negative or fearful feelings about genital herpes than asymptomatic patients (P = .001) as measured by a 5-item scale that achieved adequate reliability (_=.83).

Symptomatic and asymptomatic patients did not differ in the context of protective sexual behaviors, such as number of partners (P = .35) and condom use (P = .38). ***Conclusions:*** Findings suggest that experiencing symptoms for genital herpes may not be associated with increased sexual protective behavior and that people who are asymptomatic may actually have greater fear of herpes.

P-024 KNOWLEDGE, ATTITUDES, AND BEHAVIORS RELATED TO HUMAN PAPILLOMAVIRUS INFECTION AMONG RURAL, ECONOMICALLY DISADVANTAGED WOMEN

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Objective: To explore knowledge and educational needs of women regarding abnormal Pap test results and genital HPV infection
Methods: Women, aged 18-64, in rural SC completed a telephone interview. Eligibility criteria were: ages18-64 years, English speaking, no cognitive impairments, had received an abnormal Pap result and been tested for HPV DNA within the previous 120 days and been informed of results. Clinic protocol in place prior to the study was reflexive HPV DNA testing for all Pap test results showing Atypical Squamous Cells of Undetermined Significance (ASCUS) or higher. Clinic staff recruited women and obtained consent for interviews.
Results: Of 265 women who provided consent, 78% (n=206) completed the interview. Participants had a mean age of 40.8 years; 67% were African American, 29% Caucasian, 4% of some other race. Educational levels were: 40% <than high school, 31% high school graduates, 29% had college/technical school training. Even though 100% had received an abnormal Pap test result and 36% tested HPV+ within the past 120 days, only 85% self-reported an abnormal result with the past 5 years; 24% self-reported HPV positivity; 52% had ever heard of HPV. The 108 women who had ever heard of HPV answered true, false, or don't know to 17 statements about HPV. At least 75% answered correctly to 5 of the items, while <50% responded correctly to 10 of the items. Fifty women who self-reported HPV positivity indicated level of agreement to 8 attitudinal items. More than half agreed or strongly agreed to: 'I don't want others to know I have HPV' (62%); 'I want to help others with HPV' (94%); 'Having HPV made me more aware of my health' (66%); 'I feel ashamed of having HPV' (52%); 'I feel like there are a lot of other women with HPV' (92%). Among all 206 respondents, mean number of male sex partners in the past 12 months was 1.2 (SD=0.98). Most (72.3%, n=149) reported currently having a 'main' sex partner and of those, 98.7% the 'main' partner was the only partner. The mean number of lifetime male sex partners was 7.1 (SD=11.10). Among the 50 women who self-reported HPV positivity, 78% (n=39) reported currently having a main sex partner. Of those, 97% reported the 'main' partner was the only partner. Of the 39 women who self-reported HPV positivity and had a main sex partner, 74% (n=29) had told the partner they have HPV; 66% (n=19) reported that having HPV had not changed their relationship with their main sex partner. Since telling their partner, 52% (n=15) have not used condoms.
Conclusions: Participants exhibited knowledge gaps regarding HPV infection and more than half expressed shame or desire not to reveal HPV positivity. Most women reported one sex partner in the previous year. Half of those who had a main sex partner and self-reported HPV positivity have used condoms since telling partner of HPV status.

P-025 COMPETING DESIRES & DUPLICITOUS IDENITITES: THE SOCIAL DYNAMICS WHICH ENABLE RISKY SEXUAL BEHAVIOUR AMONG MEN WHO HAVE SEX WITH MEN IN SHENZHEN, CHINA

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Objectives: To explore the social dynamics of risky homosexual behaviour in the complex risk environment of Shenzhen. Shenzhen, which borders Hong Kong, has been the fastest growing city in China for the past thirty years, and one of the most rapidly evolving in the world. A fishing village 30 years ago, Shenzhen is now home to nearly 20 million people, two-thirds of whom are unregistered migrants and unable to access free health and social services. The anonymity offered in this individualist migrant culture has made the city highly appealing to stigmatised men who have sex with men (MSM) from across China. Recently, Shenzhen has experienced disproportionately steep rises in HIV/STI incidence among this group of men. The escalating epidemic among MSM in China is particularly concerning as Chinese MSM appear to have a poor understanding of HIV/STI transmission, have complex sexual networks, use condoms inconsistently and perceive themselves to be at low risk.
Methods: A qualitative study of a community sample of 42 MSM and male sex workers conducted in 2005/2006. A phenomenological approach to analysis was applied.
Results: The men in this study were living within a complex risk context characterised by: • A relatively high-risk migrant environment offering little support; • Culturally-embedded discrimination against MSM, resulting in undeveloped, and unstable identities among these men; • A shifting, virtual MSM community characterised by 'weak ties' and held together by high-risk social norms.Men's risk behaviour was enacted within this context. Social structures and discourses governed access to alternative behavioural pathways. On one hand, men struggled to maintain their 'moral' identity through quelling their perceptions of risk and distancing themselves from those felt to be 'at risk'. On the other, men sought to engage the desires of their 'liberated' selves, adopting fatalistic attitudes towards risk-taking as necessary. Men reported complex sexual networks which included women and transactional partners. Male partners (including transactional partners) were often found via the Internet. The male sex industry in Shenzhen is characterised by a buy-sell circuit where men sell sex to buy sex; in that men reported both buying and selling sex. Relationship parameters are complex and many transactional partnerships are considered to be 'regular relationships' in which condom use may be neglected. Relationship dynamics in China preclude discussion of personal issues even in sexual situations, making discussion of condom use difficult.
Conclusions: This study provides evidence for the development of a 'socially situated' theory of risk. The men in this study faced a complex array of risks and stigma arising from their migration environment and their taboo sexual desires which limited their agency in mitigating their risk. Implications for public health practice will be discussed.

P-026 SPOUSAL SEXUAL VIOLENCE AND POVERTY ARE RISK FACTORS FOR SEXUALLY TRANSMITTED INFECTIONS IN WOMEN: A LONGITUDINAL STUDY OF WOMEN IN GOA, INDIA

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Objectives: There are few population-based longitudinal studies of incident sexually transmitted infections (STI) in developing countries. The aim of our study was to assess factors associated with incident STI in a population-based sample of women from Goa, India.

Methods: The study population were 3000 women aged 18-50 years, attending a primary health centre catchment area in Goa, India. Participants were seen at baseline, 6 and 12 months, and urine samples and vaginal swabs collected for diagnosis of STI. The main outcome measures were incident infection with Chlamydia (CT), gonorrhoea (NG) or trichomoniasis (TV), at 6 and 12 months after recruitment. Chlamydia and gonorrhoea were detected with commercial PCR from urine samples, and trichomoniasis from the InPouch TV culture kit.
Results: 2494 (83%) of women consented to participate. A total of 64 women had an incident STI over the 12 month follow-up period (incidence 1.8% in the first 6 months, and 1.4% in the second six months). Of these, 21 had incident CT, 21 had incident NG, 19 had incident TV, 3 dual NG/CT). Women who are married were at high risk for incident STI (odds ratio=4.12, 95% confidence interval 1.5-11.6). Incident STI were detected in 9.8% (5/51) of women reporting forced sex but no concern about their husband's extra-marital affair, in 6.7% (1/15) of women reporting no forced sex but concern about their husband's affairs, and in 11.0% (8/73) of widowed, divorced or separated women. Incident STI was also associated with low socio-economic status, and concurrent bacterial vaginosis.
Conclusions: This longitudinal study suggests that women are being infected by their spouses, with highest risk among those facing sexual violence. This highlights the vulnerabilities of socially disadvantaged married women to STIs, and the need for health care professionals treating sexually transmitted diseases to be aware that violence is a significant risk factor and, if possible, ensure that patients are screened for any violence, and provided with the necessary support. The results also stress the importance of effectively diagnosing and treating men with STIs and promoting safer sex within marriage, as this may prove to be an effective control strategy for the general population.

P-027 RISK BEHAVIORS AND SEXUALLY TRANSMITTED INFECTIONS IN MEN WHO HAVE SEX WITH MEN IN THE UNITED STATES RESULTS FROM NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY 1999-2004

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Objectives: To estimate the prevalence of men who had sex with men (MSM) in the US, and to describe sexual risk behaviors and prevalence of selected sexually transmitted infections (STIs) in this group.
Methods: As part of the National Health and Nutrition Examination Surveys (NHANES) during 1999-2004, a questionnaire about sexual and drug use behaviors was administered to men aged 18 to 59 using audio computer assisted self-interview. Serum samples were collected and tested for antibodies to herpes simplex virus type 2 (HSV-2), and HIV.
Results: A total of 4,271 men aged 18-59 were interviewed during NHANES 1999-2004. MSM, defined as those who had one or more male sex partners in lifetime, was reported by 4.6% (95% CI 3.7-5.6) of men. The prevalence of MSM did not differ by race-ethnicity or foreign born status, but differed by age and education level. The prevalence of MSM was highest in men aged 30-39 (6.4%) and lowest in those 18-29 (2.3%). The prevalence of MSM increased with education levels: 2.7% in those with <high school, 3.0% in those with high school, 6.0% in those with more than high school education (p=0.001; only men 20 years of age or older were included in this analysis). The percentage of men who reported first sex at age 14 years or younger was higher in MSM compared with non-MSM (35.4% versus 18.9%, p=0.002). The median number of lifetime sex partner reported by MSM was 19.1 (mean =44.6). The prevalence of HSV-2 was 21.0% in MSM, compared to 12.1% in non-MSM (p=0.02). The prevalence of HIV was 0.7% in all men aged 18-59, but was 8.5% in MSM, and only 0.3% in non-MSM (p=0.02).
Conclusion: This national representative survey confirms data from clinic or venue-based studies showing high risk behaviors and high burden of STIs in MSM. In the MSM population, high rates of STIs will likely be sustained given the high prevalence of risky sexual behaviors in this population.

P-028 ACCEPTABILITY OF SELF-COLLECTED VAGINAL SWABS FOR CHLAMYDIA RESCREENING

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Objective: Repeat chlamydial infection is common, especially in adolescents and young women. CDC guidelines recommend rescreening for chlamydia three to five months after initial treatment; however compliance with routine rescreening is generally low. The purpose of this analysis was to assess the acceptability of home-based, self-collected vaginal swabs as an alternative to clinic-based rescreening among women participating in a randomized trial who were randomized to the home collection group.
Methods: Study participants were recruited from STD and family planning clinics from four cities in three states. A vaginal swab test kit was mailed to women three months after their initial chlamydia diagnosis. The kit contained instructions on how to collect a vaginal specimen at home and mail the swab to the laboratory A follow-up questionnaire was included in the kit asking about difficulties using the swab and whether women preferred the self-collected swab compared to clinic-based rescreening. The proportions of women who preferred the self-collected vaginal swab to the clinic visit and women who experienced difficulties using the home test kit were analyzed by clinic type, age, education level and race/ethnicity.
Results: Of the 119 participants who returned a swab to the laboratory to date, 109 (92%) completed a follow-up questionnaire. Ages ranged from 16 to 42 years, mean 22 years. Overall, 88% of respondents were non-Hispanic blacks and 9% were non-Hispanic whites. Three-quarters had at least a high school education and 34% were currently not working. Among 109 women who returned questionnaires, 70% preferred testing at home using a self-collected vaginal swab compared to retesting in a clinic. Another 12% preferred testing in the clinic and 14% had no preference. There were no statistically significant differences in testing preference by clinic type, education level or race/ethnicity. Nearly all women (99%) reported no difficulty using the swab. Overall, 94% of the women reported they would test themselves more for Chlamydia in the future if vaginal swabs were free of charge.
Conclusions: Self-collected vaginal swabs for Chlamydia rescreening represent an acceptable alternative to clinic-based screening among women participating in this study. These results likely represent an overestimate of acceptability because they are based on women who returned swabs. Nonetheless, home-based rescreening provides a convenient approach that was preferred by the majority of women. Free home-based testing may be used to facilitate rescreening for chlamydia in women attending STD and family planning clinics.

P-029 ARE FEMALE SEX WORKERS MORE LIKELY TO REPORT SEXUAL DIFFICULTIES THAN NON-SEX WORKERS?

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Objective: No studies have been undertaken on the prevalence of sexual difficulties among sex workers. Our objective was to assess whether female sex workers are more likely to report sexual difficulties with their private, non-paying partners than non-sex workers.
Methods: Women attending Melbourne Sexual Health Centre, a large urban sexual health clinic in Melbourne, Australia, were asked to complete a self-administered anonymous questionnaire about their sexual behaviour. Questions included whether they experienced any sexual difficulties with private partners, were distressed with their sex life, about their physical pleasure and emotional satisfac-

tion with sex and overall satisfaction with life. Women reporting sex work were asked to respond about their private non-paying sexual partners only. Women were stratified in the analysis as either sex workers or non-sex workers.

Results: During the study period 346 female clients were triaged into MSHC of whom 271 (78%) agreed to participate in the study. Of these, 93 (33%) had engaged in sex work during the last 12 months and 178 (67%) had not. Demographic characteristics, sexual behaviours, prevalence of painful sex, orgasmic difficulty, vaginal dryness, performance anxiety, emotional satisfaction and physical pleasure with sex and overall life satisfaction among sex workers and non-sex workers were similar. Sex workers were more likely to experience sexual disinterest (OR 1.9, 95% CI 1.1, 3.2) and less likely to report being distressed about their sex life (OR=0.3, 95%CI: 0.1, 0.5).

Conclusion: This is the only study the authors are aware of to have examined the prevalence of sexual difficulties among sex workers. We found that the prevalence of sexual difficulties, other than interest in and distress about sex was similar between sex workers and non-sex workers. Sex workers were equally emotionally satisfied with sex and reported similar levels of physical pleasure.

P-030 THE ROLE OF PERSONAL RESPONSIBILITY IN HIV TRANSMISSION RISK BEHAVIOR

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For a person to become infected sexually with HIV, that person's sex partner must be infected. While most individuals who transmit HIV to others are unaware of their infection, significant numbers of individuals who know their HIV status continue to engage in high-transmission risk behavior. This talk will review the growing evidence for the important role of personal responsibility in avoidance of transmission risk behavior by HIV-positive individuals. Evidence, both qualitative and quantitative, will be presented for the operation of personal responsibility in HIV status disclosure and in sexual transmission risk behavior. This review will include two mediation analyses of intervention studies designed to reduce transmission risk behavior, as well as a brief discussion of how this construct has been addressed in successful interventions for HIV-positive people. Implications for further refinement of such interventions will be discussed

P-031 HEALTH-SEEKING BEHAVIOUR FOR SEXUALLY TRANSMITTED INFECTIONS AMONG OUT-OF-SCHOOL ADOLESCENTS IN ILORIN, NIGERIA

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Objectives: To determine the prevalence of STI symptoms and describe health-seeking behaviour for STIs among out-of-school adolescents

Methods: We studied 253 adolescents (184 girls, 69 boys) using pre-tested semi-structured questionnaires administered by trained interviewers. The tool sought information on sociodemographic characteristics, sexual behaviour and history of STI symptoms. Data was analysed using chi-square and regression analysis.

Results: Knowledge of STIs was significantly higher among female ($p < 0.001$) and older respondents ($p = 0.012$). Majority (69.2%) were sexually experienced though only about a third used effective protection at last sexual intercourse. About half (50.2%) of respondents had history of STI symptoms and this was significantly higher among older respondents ($p = 0.015$). Among symptomatic respondents, 71.7% reported genital itching while 50.4% had abnormal genital discharge, both significantly higher among females. Painful urination was reported by 48.9% of female and 32.4% of male respondents. Other symptoms were also reported among both sexes and include pain and swelling around the genital (25.2%), blisters around the genital (17.3%) and sores on the genital (14.2%). Over half (52.0%) of symptomatic respondents did not treat their symptoms mostly because they were not aware that it could indicate an STI and among those who did, only a few (11.1%) patronized standard health facilities. Among respondents who took action, traditional medicine was used by 14.2%, 11.8% applied self-medication and 7.9% patronized patent medicine vendors to obtain treatment for their symptoms. No respondent had ever visited a health facility for counselling or information on STI prevention.

Conclusion: Some 50.2% of respondents had history of STI symptoms and occurence was not different by gender but was significantly associated with history of sexual experience and recent sexual activity. Lack of knowledge, risky sexual behaviour and poor utilization of health services are contributory to the high prevalence of STI symptoms among out-of-school adolescents. Correspondence: monehinj@yahoo.com

P-032 CLIENTS OF INDOOR FEMALE SEX WORKERS (FSW) IN BRITISH COLUMBIA (BC), CANADA: HETEROGENEITY IN PATRONAGE PATTERNS AND IMPLICATIONS FOR STI PROPAGATION THROUGH SEXUAL NETWORKS

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Objectives: To: (a) determine whether a categorization of 'higher risk' clients (HRC) of indoor FSW was feasible; (b) determine if HRC occupied important sociometric positions in sexual networks of the commercial sex industry; and (c) estimate whether HRC were more likely to be HIV and STI infected.

Methods: In-person structured interviews elicited proxy data from FSW on up to 10 of their most recent clients. Data included detailed physical descriptions, the number and frequency of sexual contact, the types of sex acts, condom use, whether the clients had second-order partners (e.g., wives, girlfriends, other FSW), and whether they patronized other sex establishments. Relational and attribute data were graphed using Pajek_ and Netdraw_. Network prominence and cohesive subgroups were analysed using UCINET_. Bivariate relationships between risk category and variables of interest were analyzed using non parametric cross-tabulation (Chi-square and Fisher's Exact Test) and Mann Whitney U Test for categorical and continuous data, respectively.

Results: Between 06/04 and 02/06, 49 FSW from seven indoor sex establishments in four cities in BC were interviewed, eliciting proxy data for 205 clients. Two types of patronage patterns defined HRC: 'house regulars', or men who had sex with all or most of the workers at a sex establishment, and men who created sexual bridges through patronization of more than one establishment. HRC (n=111) were significantly more central by mean degree (11.6 vs. 1.8), information (0.72 vs. 0.51), eigenvector (0.032 vs. 0.003), and betweenness (2308 vs. 261) centrality measures (all p=0.00). HRC were more likely to be members of the 2-core (74% vs. 20%, $p<0.001$) and a 3-clique (21% vs. 1%, <0.001), and to be cut vertices (79% vs. 46%, $p<0.001$). All of the proxy-reported HIV (1.8% vs. 0.0%, p=0.5) and STI (7.2% vs. 0.0%, p=0.01) were in HRC. Fifty-nine percent and 39% (p=0.07) of HRC and non-HRC, respectively, created sexual bridges between the commercial sex industry and the general population (e.g., wives and girlfriends).

Conclusions: We concluded that it was possible to identify theoretically HRC from the network perspective using simple data collection and categorization approaches. HRC occupy prominent network positions and may play a key role in terms of introducing and spreading infection throughout the network, as well as creating transmission pathways between different establishments and to the gen-

eral population. Promoting 100% condom use with all sexual partners of FSW, particularly with 'regulars' or clients whom FSW feel they know well, must be underscored. Furthermore, providing educational messages to clients that promote minimizing concurrent FSW or sex establishment patronage may fragment the sexual network. (valencia.remple@bccdc.ca)

P-033 A NEED TO INTERVENE? SEXUAL RISK BEHAVIORS OF AFRICAN AMERICAN CO-EDS IN THE U.S.

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Objective: Nearly 20 million cases of sexually transmitted infections (STIs) are reported annually, half of which are among youth ages 15-24. Of these youth, African American females suffer an inordinate amount yielding one of the dominant health disparities in the United States. Even though African American women are one of the fastest growing segments of the U.S. population diagnosed with HIV and AIDS related illness is the leading cause of death for black women ages 25-44 years, few studies have focused on African American female college students as a target for STI prevention intervention. We assessed the sexual risk behaviors of African American females attending a university in the southern United States.
Methods: African American females living in a college dormitory were surveyed via anonymous self-administered questionnaire about their behavior as it relates to sexual risk. Participants received a $15 cash incentive for their participation.
Results: Of the 89 participants surveyed (94% recruitment rate), all were unmarried female African American first year college students (mean age=18.5 years). Regarding knowledge of STIs, most (more than 98%) had heard of the majority of STIs and were aware of the modes of STI transmission. The least known STIs were HPV and trichomoniasis (75.3% and 41.6% respectively had ever heard of these infections). Nearly 80% of the sample had had sex at least once in their lives (mean number of lifetime sexual partners=4.7) with 91.4% having had vaginal, 58.6% having had oral, and 15.7% having had anal sex (non-mutually exclusive). Just over sixty percent of those who were sexually experienced were currently sexually active (sex within the previous two months). Of the currently sexually active, 83.9% had a main partner and 30% had not used a condom the last time they had sex with this partner. When asked to estimate STI risk, 21.4% thought that their friends were at high risk; 5.6% responded that their partners were at high risk; and 3.3% thought they personally were at high risk. Forty percent of the sample had never been tested for an STI; of the sexually active, 12.5% had a previous STI diagnosis. Nearly 30% of those who had never been tested indicated that their reason was because they felt they were not at risk.
Conclusion: Although many African American college women are aware of STIs and STI prevention methods, many continue to engage in risky sexual practices, possibly due to their perceptions of low risk among themselves and their sexual partners. Given the alarming STI and HIV prevalence rates and the racial disparities among this population, STI prevention efforts must recognize African American female college students as a particularly vulnerable group, and thus a priority target group for intervention studies.

P-034 WORKING WITH PEERS TO DEVELOP AN HIV/STI INTERVENTION FOR ASIAN INDOOR COMMERCIAL SEX WORKERS IN VANCOUVER, CANADA

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Objectives: In Canada, indoor commercial sex venues, such as massage parlours and escort agencies, operate under the guise of legitimate business. Many indoor sex workers are Asian, who are at high risk due to low HIV/STI knowledge, social norms of sexual behaviour, financial need, and other sociocultural factors. Due to their relative invisibility, they are hard to reach and are often overlooked by service agencies, healthcare professionals, advocacy groups, and researchers. Novel approaches are required to access indoor Asian commercial sex workers to provide health and social services. Recruiting and training 'peers' (women with sex work experience) is considered a culturally- and contextually-sensitive approach to developing HIV prevention programs.
Methods: The Asian Society for the Intervention of AIDS (ASIA), in partnership with researchers from the University of British Columbia, conducted a community consultation to identify preliminary education and service needs within the community and to inform the development of a model of access. A peer health educator (PHE) training program was developed to train and employ ex-FSW on HIV/STI education, outreach, and research methods. PHE teams visit indoor sex establishments and provide culture-and language-specific HIV education, condoms, referrals, and support services.
Results: Over the course to the project, 10 peers were recruited, trained, and employed as PHE. Peer outreach teams have visited 51 sex establishments, and have been allowed ongoing access to 37 (73%). Peers experienced challenges including relapse into street drug use, health problems, and other chaotic life situations. Several peers have relied heavily on the project staff for emotional support, counseling, court accompaniment, financial assistance, and referral to social and legal services. Nonetheless, team morale and commitment to the project remains high. Some peers have returned to school, obtained other mainstream jobs, become mentors to new peers, and many have stabilized their life situations.
Conclusions: Engaging the target community in the development, implementation, and evaluation of a service program is critical to ensure acceptability and cultural and contextual appropriateness. This approach has enabled ASIA to develop a best practices model to decrease the spread of HIV/STI as well as gaining an understanding of conditions of vulnerability of Asian female sex workers.

P-035 YOU L.E.A.D. THE WAY: RESULTS OF AN STI PREVENTION PROGRAM FOR YOUNG AFRICAN-AMERICAN COLLEGE-AGE FEMALES IN THE U.S.

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Objective: Given that African-American females are one of the fastest growing segments of the population diagnosed with HIV and that racial disparities similarly continue to exist for other sexually transmitted infections (STIs), intervention programs should focus on preventing STI/HIV risk among this population. Of particular interest should be to intervene with young audiences before risk behaviors become habitual or difficult to modify. As such, the authors piloted an STI prevention intervention with African-American female college students using the Popular Opinion Leader Model. The main goal of this project was to successfully train natural community peer leaders to communicate messages about STI prevention via informal conversations to other young African-American college age females attending a university in the southern U.S.
Methods: African-American freshman females attending and residing on the campus of a university located in the city center of a southern state in the U.S. were recruited to participate in the study. Baseline and 2-month follow-up data were collected via anonymous self-administered surveys. Prevention messages were based on knowing the signs and symptoms of STIs, using condoms, getting tested for STIs, being sexually responsible, and respecting oneself. Descriptive statistics are reported with baseline and follow-up values compared and analyzed using chi-square statistics.
Results: Of 89 participants who completed the baseline assessment, 68 (76.4%) completed the 2-month follow-up survey. When asked their knowledge of STIs, more participants at follow-up compared to baseline were aware of trichomoniasis (60.0% vs. 41.2% respectively; p=0.000), pubic lice (85.7% vs. 82.4% respectively; p=0.010), and HPV (83.6% vs. 75% respectively; p=0.000). Regarding

sexual behaviors, significantly fewer participants at follow-up reported having sex in the previous 2 months compared to baseline (65.5% vs. 76.4% respectively; p=0.001) and birth control use was significantly greater at follow-up compared to baseline (75.5% vs. 62.3% respectively; p=0.000). Although few participants overall reported using alcohol before sex, at baseline 89.8% never used alcohol before sex compared to 93.9% at follow-up (p=0.003). All participants reported never using drugs before sex at both baseline and follow-up. Significantly more participants at follow-up reported being tested for an STI compared to baseline (66.2% vs. 58.8; p=0.000). Regarding exposure to the intervention, 89.7% of the sample recognized the project logo; 55.9% of the sample reported someone talking to them about the project, with many (42.6%) indicating that this number averaged between two and five persons; and nearly a third (30.9%) subsequently spoke with others about the project. When asked their opinion about the effectiveness of the project in disseminating sexual health information to young African-American college females, 64.7% indicated that they thought it was effective or very effective.
Conclusion: Results from this pilot study are modest, yet promising. Improvements in STI knowledge, awareness, and sexual risk behavior are possible and may be strengthened over a longer period of time and with a larger sample. Likewise, innovative intervention methods and culturally sensitive approaches are welcomed by the target audience. Given the persistence of racial disparities in STIs/HIV in the U.S., further research on African-American young women is warranted.

P-036 HEALTH CARE SEEKING BEHAVIOUR IN MEN WITH GENITAL HERPETIC ULCERS IN DURBAN, SOUTH AFRICA

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Objectives: To investigate health care seeking behaviour in men attending a STI clinic with genital ulcers confirmed positive for herpes simplex type 2 by polymerase chain reaction (PCR).
Methods: PCR tests were undertaken on material obtained from consecutive men presenting with genital ulcers to the main Durban STI clinic between Jan-Mar 2004. Serological tests for HSV-2 and HIV antibodies were done. Information on symptoms and their duration was collected using a structured questionnaire administered by two interviewers in a face to face interview.
Results: 87 cases of PCR confirmed genital herpes were identified. Of these 47 (54%) were repeat attenders at the clinic, 65 (75%) reported genital ulcers as a spontaneous complaint and an additional 11 (13%) on direct questioning. No ulcers were reported by 11 (13%) despite their presence being confirmed by an examining physician. HIV antibodies were detected in 70 (80%). Delay before attendance recorded for 68 men was: 0-3 days (24%), 4-7 days (47%), 8-14 days (12%), 15-30 days (12%), >30 days (6%). Only 4 cases presented within 48 hours of symptoms developing. HSV-2 antibodies were not detected in 11/68, 6 of whom presented after 0-3 days and 5 after 4-7 days.
Discussion: Optimal management of genital herpes is difficult in this setting. Cases were managed using the standard syndromic management that provides treatment for syphilis and chancroid but not for genital herpes. Even if anti-herpetic agents were available, the delay in attendance identified here would suggest their use would have little impact on symptoms other than in those with long standing ulcers probably associated with HIV. A strong case can be made for an intensive herpes education programme at the individual level with provision of patient-initiated short-course treatment although a formal evaluation of this strategy is indicated before implementation.

P-037 PREVALENCE OF HIV, CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE, AND RISK FACTORS FOR SEXUALLY TRANSMITTED INFECTIONS AMONG IMMIGRANT FEMALE SEX WORKERS IN CATALONIA, SPAIN

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Objectives: To determine the prevalence of HIV, Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (NG) among immigrant female sex workers (FSW) according to their geographical area of origin, and identify possible risk factors associated with CT and NG.
Methods: Cross-sectional study of FSW in Catalonia in 2005 as part of HIV/STI Surveillance System. Information on sociodemographic characteristics, work conditions, use of alcohol and drugs, sexual practices and the use of social and healthcare services was obtained by means of a structured and anonymous questionnaire. The reference period was six months. Oral fluid and urine samples were collected to determine the prevalence of HIV and CT/NG, respectively. Data were analyzed through multivariate logistic regression models.
Results: 357 women were studied; 36.4% from Eastern Europe, 34.5% from Latin America, and 29.1% from Africa. Women from Eastern Europe were the youngest (mean age: 25 years) and a higher proportion of them had been in Catalonia for less than one year (46.2%). Most of women reported they had always used condoms during vaginal intercourse with clients (96.9%) and only 7.8% during vaginal intercourse with a steady partner. No differences were observed by geographical origin. Overall CT and NG prevalences were 5.9% (95%CI: 3.7-8.9) and 0.6% (95%CI: 0.1-2.0), respectively, without significant differences by geographical origin. Three African women were HIV-positive (overall HIV prevalence was 0.8%, 95%CI: 0.2-2.4). In multivariate analysis adjusted by geographical origin, the risk of CT/NG was greater in women aged 20 or under (OR: 5.2) and in women who had not used a condom consistently with clients during sexual intercourse (OR: 5.22).
Conclusions: The prevalence of sexually transmitted infections (STI) among FSW in Catalonia was lower than in other European countries. Even though the prevalence of HIV was only 0.8%, it could increase in the future, given the high vulnerability of these women, in particular women from Eastern Europe. Although most women have protected sex with clients, insisting on consistent use of condoms is still a preventive strategy that should continue not only with clients but also with steady partners. Early diagnosis and treatment is an essential component of STI control programmes and if possible, sexual partners of an infected person should be notified of their exposure to the infection and encouraged to seek treatment. It is necessary to continue with the work carried out by NGOs (harm reduction programs, outreach programs, safe sex workshops) as well as to facilitate the access to health centres, especially for the youngest women.

P-038 BEHAVIORS ASSOCIATED WITH HIV/STI RISK AND VULNERABILITY IN A POPULATION BASED SAMPLE OF YOUNG WOMEN IN VITORIA BRAZIL

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Objective: To describe risks for sexual and bloodborne infections in a population based sample of young women in Vitória, Brazil.
Methods: From March to December 2006, women aged 18 to 29 years were recruited in a single stage, population based, door-to-door, and cross-sectional survey. The study benefited from a recently completed, comprehensive census of the

target population. Participating women were systematically interviewed regarding sociodemographic, health, sexual risk and blood exposures.
Results: Within 1,225 contacted dwellings, 1,200 eligible women were identified and 1,029 enrolled (85.75%). The median age of the participants was 23 (interquartile range [IQR] 20-26) years; 32.2% had up to eight years of education and 42.7% were married or was living together. Median of family income was US$ 310 (IQR US$174 ' US$652); 79.4% of women reported being sexually active, and 83.7% had only one partner in the last six months. Less than one third (30%) reported using a condom at last sexual intercourse. Few women reported commercial sex work (1%), injection drug use (0.3%) or a history of blood transfusion (3%). Overall, 10.8% of sexually active women reported a history of STI and 62.3% had already been tested for HIV. Symptoms reported were vaginal discharge (32.6%); pelvic pain (20.3%); dysuria (9.6%); genital warts (2.3%) and genital ulcers (1.4%).
Conclusions: Population-based data are needed for appropriate targeting and planning of primary and secondary disease prevention. These results show the necessity of implementing programs aimed at preventing transmission of STI in Young women. Correspondence: espinosa@ndi.ufes.br

P-039 GENITAL HYGIENE PRACTICES AMONG FISHERMEN ALONG THE BEACHES ON LAKE VICTORIA, KISUMU DISTRICT, KENYA

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Objective: To examine the relationship between genital hygiene practices and specific sexually transmitted infections (STIs) among fishermen (FM) along the beaches of lake Victoria Kisumu District, Kenya.
Methods: Of the 32 beaches in Kisumu District Kenya, using proportional to size sampling we interviewed 250 men from 18 beaches. The participants had an average age of 28.69 years. 72.8 % had basic primary, 25.2 % secondary while 2 % had higher than secondary education. 69.6 % were married with 32 % having more than 2 wives and 1.2 % were widowed. The average monthly income is approximately US $ 80. Consenting participants were interviewed and information obtained on overall hygiene behaviours, genital hygiene practices aside from normal bathing routines, and genital hygiene before and after sex, in addition to demographic, ecological and economic details.
Results: Responding to questions on hygiene, 20 % frequently (5 or more times per week) had a bath and approximately 31% changed underwear daily. A few of these fishermen reported ever having washed their genitalia before (26%) and after (37%) sexual intercourse, but regular washing of genitalia was less frequent at 20% before and 29% after sexual intercourse of those who reported the practice. In a multivariate analysis that included, genital washing before and after sexual intercourse, and frequency of bathing, having a bath only once a week or less was associated with increased likelihood of being diagnosed with HSV-2 OR=1.47 (95% CI 1.22, 1.78) or syphilis. OR=1.65 (95%CI 1.40, 3.10).
Conclusion: Poor observation of genital hygiene among fishermen is associated with greater likelihood of epithelial STIs like syphilis and HSV-2. Email: eomondi @kemri-ucsf.org

P-040 FACTORS ASSOCIATED WITH RETURNING TO COLLECT STI/HIV TEST RESULTS IN A POPULATION-BASED HIV/AIDS SURVEY IN KISUMU MUNICIPALITY

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Objective: To establish factors associated with participant's return to collect STI/HIV test results in a population based survey in Kisumu, Kenya.
Methods: We conducted a cross-sectional survey in 40 clusters within Kisumu Municipality to investigate the association between Antiretroviral therapy (ART)-related knowledge, beliefs and sexual behaviors. We enumerated and mapped all households within each cluster and sampled every fourth household. Eligibility criteria included men and women aged 15-49 who had slept in the households the night prior to study participation. After informed consent/assent, we obtained blood samples for HIV and HSV2 serology from all participants, and from women self-collected vaginal swabs for Trichomonas vaginalis in pouch culture. Participants were issued with a card with a random number, a date and place where to obtain their results and treatment if warranted. They were also asked to give a password, which was entered into the link log to ensure the security of their results. One-way fare to travel to obtain results at a central location was provided with the provision of return fare at the collection point. Results were available approximately 1-2 weeks after specimen collection. Consultation with participants indicated a preference for collection of results from a central location as opposed to a location within their neighborhood.
Results: Off the 1677 participants enrolled in the study, 43.2% came back for their results. About half (54%) of the participants were women and the majority (77%) were of Luo ethnicity. Over half (54%) had completed basic education. Approximately 55% were unemployed and 63% had been married. Those aged over 25 years old OR 1.6 (95% CI; 1.3, 1.9), widowed OR 4.23 (95% CI; 1.54, 12.11), high school students (OR 1.2 95% CI 1.0, 1.5) and those who had never been tested for HIV OR 1.3 (95% CI 1.1, 1.8) were more likely to return to collect results. Those who were homemakers OR 0.69 (95% CI; 0.52, 0.09), college students OR 0.78 (95% CI; 0.49, 0.09) and on internship OR 0.56 (95% CI; 0.32, 0.98) were less likely to return for results.
Conclusion: Socio-demographic factors influence return to collect results and may delay treatment or referral for care. When rapid testing is not available, it is important to determine how to optimize provision of results to facilitate appropriate counseling and referrals to care. Email contact: zkwena@kemri-ucsf.org

P-041 SELF-REPORTED STI INFECTION AND CARE-SEEKING BEHAVIOR OF FISHERMEN A LONG LAKE VICTORIA IN KISUMU DISTRICT KENYA

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Objective: To investigate self-reported STI infection and care-seeking behavior of fishermen
Methods: In a cross-sectional study among Fishermen in Kisumu District, we selected participants from 18 of the 32 beaches using a proportional to size sampling method based on the number of registered boats on each beach. From the boats selected on each beach, we randomly selected 4 crewmembers from each boat to give the sample of 250 fishermen. Participants who consented were provided with a standard self-administered questionnaire (SAQ) with no identifiers to complete privately and drop into a ballot box. Participants requested clarification when needed. The SAQ sought information on demographics, circumcision status, and detailed STI history and care-seeking behavior including the number of times contracted STI, if they sought treatment and the type of treatment sought. In addi-

tion, a blood sample was drawn for HIV, Herpes Simplex Virus type 2 (HSV2) and syphilis serology; a urine specimen for Gonorrhea, Chlamydia and leucocyte esterase testing, and two genital swabs for Human Papiloma Virus (HPV). Appropriate pre- and post-test counseling and treatment was provided.

Results: Of the 250 men who completed the SAQ, 11% reported being circumcised with a total of 49.2% overall reporting previous diagnosis of an STI. From a list of STI provided, previous STI reported included Gonorrhea (23.4%) and Syphilis (12.3%) HPV/genital warts (12.2%), HSV2 (5.6%), Chlamydia trachomatis (3.2%) and 2.0% reported having been diagnosed with all the listed STIs. When eliciting symptoms, a third (37.3%) reported a discharge from the penis and of these a third (36.0%) sought treatment within a day after the onset. A quarter (26.1%) reported a history of an open ulcer or sore and of these a quarter (26.2%) sought treatment within a day of onset. The majority (33.0%) of those with urethral discharge sought treatment from private hospitals, 31% went to public hospitals, 19.6% used traditional herbs and 9.9% never sought any treatment. A quarter (26.3%) of those with symptoms of open sore or ulcer sought treatment in public hospitals, 18.8% in private hospitals, 10% bought drugs from pharmacies, 16.3% used traditional herbs and 25% never sought any treatment. The men who did not seek treatment for urethral discharge or a genital ulcer were more likely to report a repeat episode of the same ($p<0.05$).

Conclusion: Half the fishermen reported previous suspected STIs with treatment largely sought from private care providers or herbal remedies. Fishermen who did not seek care were more likely to report repeat episodes of similar STI. An intervention to encourage prompt treatment from appropriate institutions is warranted. Email contact: zkwena@kemri-ucsf.org

P-042 SEXUALLY TRANSMITTED INFECTIONS AND METHAMPHETAMINE USE IN YOUNG THAI ADULTS

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Objectives: Sexual risks have been associated with stimulant use, especially methamphetamine (MA) and ecstasy, among MSM and among women using crack cocaine in developed countries. The impact of MA on sexual risk and STI in developing country settings, especially where HIV infection is prevalent, has not been widely explored.

Methods: We conducted a baseline cross-sectional study within a two-arm randomized peer outreach network trial conducted in Chiang Mai Province, Thailand. The trial is comparing the efficacy of a peer educator network-oriented intervention with a life skills curriculum in reducing the MA harms among Thai youth. The sample includes 658 screened 18-25 year old participants who were sexually active with STI *Results:* 516 index participants and their 142 network members (41 drug, 43 sex, and 58 sex and drug network members) recruited between April 2005 and June 2006. Participants provided drug and sexual risk histories and specimens for a battery of standard laboratory assays for STIs.

Results: Risk behaviors were common and differed by gender. Men reported more sexual partners than women (73.7% and 33.6%, respectively reporting 2+ annual sexual partners, $p<0.001$). Condom use at last sex was low and more likely to be reported by men (33.6% vs 16.4%; $p<0.001$). The majority used MA at least weekly, and men were more frequent users than women (16.9% vs 13.1%; $p<0.01$). Men also reported more frequent drunkenness in the past 30 days (22.5% vs 9.3%; $p=<0.001$). Men were also more likely to report having been arrested in the past year (44.1% vs 20.1%; $p<0.001$). Overall, 38% of participants had at least one laboratory confirmed STI. Chlamydia was the most prevalent STI (22%), followed by HSV (9%), HBV (8%), gonorrhea (6%), HCV (2%), and T. vaginalis (0.2%). No cases of syphilis were detected. 568 participants volunteered for HIV testing of whom 6 (1%) tested positive. STIs were more prevalent in women than men (43.0% vs. 35.6%; $p=0.07$), significantly so for HSV (12.7% vs. 6.9%; $p<0.05$) and Chlamydia (29.4% vs. 18.5%; $p<0.01$). Men were significantly more likely to test positive for HBV (11.0% vs. 3.4%; $p<0.01$). Among women, those who were older, had more heterosexual partners in the last 12 months, and had a younger age at sexual debut were significantly more likely to have a prevalent STI. Among men, older age and more heterosexual partners in the last 12 months were significantly associated with prevalent STIs. Men who used a condom during their last sex act were one-third less likely to have a prevalent STI than men who did not use a condom. The odds of having a prevalent STI were doubled among those men whose networks included one or more individuals with whom they both used drugs and had sex, compared with men whose sexual and drug networks were entirely distinct..

Conclusions: Thai young adults who use MA have high levels of sexual risk. To have a substantial impact on the STI epidemic in Thailand, STI prevention and control programs must focus on this high-risk population. dcelenta@jhsph.edu

P-043 PREDICTORS OF UNPROTECTED SEX AMONG YOUNG ADULTS

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Objectives: Studies have consistently documented an association between sexual compulsivity (SC) and a participation in high risk sexual behaviors following an HIV diagnosis however much of the existing work has focused on clinical samples, such as sex offenders, self-identified 'sex addicts', and men-who-have-sex-with-men (MSM). A noticeable void in research investigating the phenomenon among non-clinical heterosexual populations exists. The purpose of this study was to determine whether sexual compulsivity is a significant predictor of unprotected vaginal and anal intercourse in a non-clinical young adult sample.

Methods: Data were collected from undergraduate students in the United States using convenience sampling methods (N = 390). Measures included a comprehensive sexual behavior questionnaire and the Compulsive Sexual Behavior Inventory (CSBI), a 24 item scale with response options ranging from 'never' to 'very frequently', designed to assess levels of SC. An example of an item from the CSBI is 'Have you felt unable to control your sexual behavior?' Data analyses included descriptive and inferential statistical techniques to assess sample and scale characteristics. In order to assess the extent to which the CSBI has the ability to explain unprotected sexual behavior above demographic variables including, gender, age, ethnicity, relationship status (sexual exclusivity), and sexual orientation a forward stepwise logistic regression analysis was conducted by gender. For women, models were constructed for unprotected vaginal (no vs. yes) and unprotected anal receptive intercourse (yes vs. no) occurring within the past 3 months. For men, models were constructed for unprotected vaginal insertive (no vs. yes), unprotected anal insertive (no vs. yes) and unprotected anal receptive intercourse (no vs. yes) occurring within the past 3 months.

Results: Forty-seven percent of the women in the sample reported being the receptive partner unprotected vaginal intercourse (n = 134) and 8% reported unprotected receptive anal intercourse (n = 22). Forty-one percent (n = 48) of men indicated that they had been the insertive partner in unprotected vaginal sex, 12% (n = 14) the insertive partner in unprotect anal sex, and 3% (n = 4) the receptive partner in unprotected anal sex. The CSBI was found to be a significant predictor of unprotected vaginal receptive intercourse in women (B = 1.28, SE = .44, Wald = 8.47, p<.001, Exp (B) = .279) and unprotected anal receptive intercourse (B = 2.41, SE = .22, Wald = 117.271, p<.001, Exp (B) = .090). For men, the CSBI was found to be a significant predictor of unprotected anal insertive intercourse (B = 1.73, SE = .82, Wald = 4.48, p = .034, Exp (B) = 1.77) but was not found to significantly predict unprotected vaginal insertive or anal receptive sex.

Conclusions: The findings suggest that sexual compulsivity may serve as a factor influencing unprotected sexual behavior among young adults. Screening for SC may be an important tool for identifying persons at risk for HIV and STI transmission. In addition, understanding the relationship between SC and unprotected intercourse may be important for the development and implementation of HIV/STI prevention and intervention efforts.

P-044 SEXUAL AND HEALTH PRACTICES OF BOLIVIAN FEMALE SEX WORKERS: A SURVEY IN SIX CITIES

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Objectives: Current data is scarce regarding the sexual and health behaviors of Bolivian female sex workers (FSWs), particularly in terms of their condom use with different types of clients and partners or their hygienic practices. We sought to document the sexual and health practices of FSWs in six Bolivian cities.
Methods: From September to December 2005, female study staff conducted interviewer-administered face-to-face surveys of FSWs aged 18 and over recruited from public STI clinics in the cities of Cochabamba, El Alto, La Paz, Oruro, Santa Cruz, and Sucre. The survey included questions on demographic characteristics, health behaviors and history, and sexual practices with established clients, new clients, and partners.
Results: 1,252 women agreed to respond to the survey. Mean participant age was 27.0 years. 67.6% had completed at least some high school and 24.1% were married or cohabitating. More than half (52.8%) stated that they financially supported three or more other people. Nearly half (47.4%) had been previously diagnosed with an STI. Male condom only was the most commonly used form of birth control (37.5%). The vast majority reported that in the past month, they 'always' used condoms with both established clients (87.1%) and new clients (89.6%). However, of the 813 (64.9%) that had regular partners, just 8.9% always used condoms with them. More than 96% stated they had vaginal sex with established and unknown clients as well as with partners. Dry sex and anal sex were very rare practices with both clients and partners; more than 99% reported that they never had dry sex with any type of client or partner and more than 85% stated they never had anal sex with any clients or partners. The majority reported that they never had oral sex with established clients, unknown clients, or with partners (56.3%, 59.8%, and 59.4%, respectively). Of the 619 (49.4%) that reported using vaginal douches, 35.4% did so daily. Common reasons offered for douching were to clean oneself after sex (76.6%), reduce vaginal odor (79.2%), and to prevent or treat infections (87.2%).
Conclusions: As in other FSW populations, Bolivian FSWs use condoms regularly with clients, but are much less diligent about condom use with their regular partners. Unlike previous studies from other regions of the world, we found that dry sex is extremely rare among Bolivian FSWs. Vaginal douching is a common practice that should be discouraged by future educational efforts.

P-045 BEHAVIORAL INTENTIONS IN SEXUAL PARTNERSHIPS FOLLOWING A DIAGNOSIS OF CHLAMYDIA TRACHOMATIS

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Objectives: Control programs for C. trachomatis are a public health priority, and increased screening has resulted in substantial increases in the number of women diagnosed with this infection. Behavioral intentions in sexual relationships after a C. trachomatis diagnosis, including whether a patient notifies sex partner(s) of the infection and/or continues sexual relationship(s), affect individuals' risk for repeat infections and further transmission in the community. The purpose of the present analyses was to describe behavioral intentions to notify sex partners and continue sexual relationships after a C. trachomatis diagnosis among young women.
Methods: Eligibility criteria for participation in the present study included being a female age 15 or older and receiving care for a positive C. trachomatis diagnosis at one of two participating reproductive health centers. Participants (n=88) completed a survey on a laptop computer using audio computer assisted survey interviewing (A-CASI) technology that took approximately 60 minutes to complete. Participants reported their intentions to notify sex partners of the infection, intentions to continue sexual relationships, and reasons for these intentions for each of their sex partners in the past 3 months (n=129). Generalized estimating equations were used to determine correlates of intentions.
Results: Participants had already or planned to notify 77% of sex partners; correlates were main partnerships and believing the partner was the source of infection. Participants planned to continue 42% of sexual relationships; correlates included longer duration relationships, believing the partner to be monogamous, and higher quality relationships. Intentions to notify partners and continue relationships were statistically independent ($p = 0.13$). Reasons for not planning to notify partners included no perceived need (50%), inability/unwillingness (38%), and fear/discomfort with potential consequences (25%). Reasons for planning to end relationships were often related to the diagnosis (59%).
Conclusions: Behavioral intentions following a C. trachomatis diagnosis and their reasons vary, and the relationship between plans to notify sex partners and plans to continue sex partnerships is complex. Contact with a health care provider at the time of a diagnosis is a window of opportunity during which important prevention counseling should occur, and knowing patients' intentions to notify sex partners and/or continue relationships would enhance the relevance and targeting of efforts to ensure partner treatment. Notably, all identified correlates of plans to notify partners and continue relationships after a diagnosis were characteristics of the partnerships and not of individuals; therefore enhanced focus on the nature and context of unique sexual partnerships could result in reduced the individual and public health consequences of continued transmission.

P-046 WHEN CONDOMS ARENT ENOUGH: IMMIGRANT AND TRAFFICKED FEMALE SEX WORKERS IN ISRAEL DESCRIBE HOW THE REALITIES OF SEX WORK HINDER SAFER SEX

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Objectives: Female sex workers (FSWs) have been identified as a core transmitter group for sexually transmitted infections (STIs). Interventions have largely focused on improving STI and condom use knowledge and increasing condom use. However, social and structural factors may impact FSWs' ability to implement protective measures. These can include real or threatened client violence, unexpected condom removal, restricted condom supply, economic pressure for transactional sex without condoms, and employer violence and intimidation. Trafficked FSWs are particularly at risk given their illegal status and both trafficked and migrant FSWs are vulnerable due to economic disadvantage, language barriers, and lack of social support. We explored factors mediating STI risk among immigrant and trafficked FSWs in Israel.
Methods: We conducted in-depth qualitative interviews in Russian with nine FSWs in Israel recruited from a free STI clinic, a detention center, and Israel's shelter for victims of sex trafficking. All had originated from the former Soviet Union (FSU); six met the UN criteria for being trafficked. Each participated in up to three in-depth interviews that focused on work conditions, bosses, clients, condom use, violence and conflict.
Results: The FSWs reported working in brothels, streets, call girl agencies, private rooms, and private apartments and servicing 1-25 clients daily. All victims of trafficking had worked for a least one boss in Israel. FSWs reported consistent condom use with clients for vaginal sex, however, other risk factors varied by legal and

employment status. Sex trafficking victims worked in settings where employers set policies that valued clientele over women's health (such as oral sex without condoms), in contrast to self employed FSWs who were able to prioritize their health. Women working for bosses frequently did not control their condom supply, although self-employed women also reported buying from suppliers at their work location instead of pharmacies. FSWs frequently described clients who asked not to use condoms, regardless of legal or employment status, although only FSWs working for bosses faced negative consequences from employers for refusing these clients. Self employed FSWs were more likely to report working alongside other FSWs who frequently accepted clients without using condoms for higher compensation. Unexpected condom removal by a client and conflict with clients was experienced by FSWs regardless of work setting, however women working for bosses with security personnel reported more intervention by these personnel during conflict.
Conclusions: The nature and setting of sex work make STI interventions especially challenging in certain environments. Existing interventions tend to focus on improving the STI knowledge and condom use of FSWs while failing to focus on other factors of STI risk including legal status and work setting and how they mediate issues of violence, coercion, client behavior, and underlying structural economic factors. Innovative interventions are needed that address these barriers to FSW's protecting their health.

P-047 SEXUAL AND HIV RISK BEHAVIOURS IN THE GENERAL POPULATION OF SLOVENIA, A LOW HIV PREVALENCE COUNTRY IN CENTRAL EUROPE

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Objectives: To describe sexual behaviour and HIV/STI risk behaviours in Slovenia. Reliable data on patterns of sexual behaviour are needed to inform sexual and reproductive health policies including those for prevention of HIV and STI.
Methods: The first Sexual Lifestyles, Attitudes and Health Survey, a nationally representative cross-sectional survey of the general population aged 18-49 was conducted in 1999-2001. We used stratified two-stage probability sampling of 18-49 year old Slovenians, based on the Central Population Register. Data were collected by a combination of face-to-face interviews and anonymous self-administered questionnaires. Statistical methods for complex survey data were used to account for stratification and two-stage sampling.
Results: We interviewed 849 men and 903 women. Men and women reported relatively few lifetime heterosexual partners (means: 3.2, 1.5), with an increase in younger women, who reported higher numbers than older. Sexual intercourse with a partner of the same gender was uncommon (1.0% of men, 0.9% of women) and only 4.4% of men had ever paid women for sex. In the past 5 years, both men and women reported a median of one heterosexual partner (means: 3.2, 1.5 respectively), concurrent heterosexual partnerships were reported by 24.4% of men and 8.2% of women, heterosexual sex with non-Slovenian partners by 12.6% of men and 12.2% of women, forced sex by 4.8% of women, paid heterosexual sex by 2.6% of men, sex with another man by 0.6% of men, and heterosexual sex with an injecting drug user by 1.2% of men and 1.3% of women. In the past year, 22.7% of men and 9.5% of women formed at least one new heterosexual partnership and 2.8% of women engaged in concurrent heterosexual partnerships. Mean numbers of episodes of heterosexual sex in the previous four weeks were 6.1 for men and 6.0 for women. Since being married or cohabiting implies the availability of a regular sexual partner, the overall frequency of heterosexual intercourse was much higher among these individuals. Consistent and inconsistent condom use was more frequent among men reporting multiple female partners and those not married or cohabiting.
Conclusions: Recent patterns of reported sexual behaviour are consistent with low risk of HIV transmission in Slovenia. Our results will inform Slovenian sexual health policies including HIV prevention, and are particularly valuable, since population-based data on HIV/STI risk behaviour have not previously been available in low HIV prevalence countries of Central Europe.

P-048 ASSESSMENT OF SEXUAL HEALTH RISK BEHAVIOURS AMONG INDOOR SEX WORKERS IN GREATER VANCOUVER

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Objective: Women participating in the sex trade industry are thought to be at high risk for sexually transmitted infections (STI) and HIV. We studied self-reported sexual risk behaviours of indoor sex workers in Greater Vancouver.
Methods: Street Outreach Nurses from the STI/HIV Prevention and Control division of the BCCDC have been administering STI/HIV testing and education services to indoor sex workers in Greater Vancouver since 2003. A total of 100 sex workers working in massage parlours in Greater Vancouver are being invited to participate in a survey to investigate risk behavours and levels of education surrounding sexual health. Surveys are self-administered in English or Chinese in a private room. Participants could also have the survey administered to them by peer outreach workers under the supervision of BC CDC Outreach nurses. Demographic information and sexual risk behaviour information is obtained. Descriptive frequency analysis was conducted using SPSS for Windows.
Results: Between Nov 05-Sep 06, 38 women have been recruited into the study, 13 (42%) of which were Canadian born. Twenty-eight (90%) were between the ages of 21-40 years old and 14 (48%) of the women had been working in massage parlours for <1 year. Seventeen (54%) had completed high school and 11 (35%) had completed college or university. Fourteen (45.2%) state they see an Outreach Nurse when when they have a health concern. The majority (93%) of women have been tested for an STI of HIV at least once in their lives and among these 23 (81%) test every 6 -12 months. Thirty (96%) women state that male condoms are used in their massage parlour, including for oral and/or anal sex. This behaviour is not influence by being offered more money, however, 3 (10%) of participants disclosed that condoms are not used if pressured by a customer. Thirteen (42%) stated they do not use condoms with a partner outside of work. These self-reports of minimal risk behaviour is supported by data stored in BCCDC's STI surveillance database showing a total of 1 new case of chlamydia and syphlis among 160 visits to massage parlour workers in the same time period.
Conclusions: The massage parlours sex workers in this study are accessible for research within the context of an established outreach nursing program. There is high uptake of regular HIV/STI testing and condom use resulting in few infections.

P-049 PSYCHOLOGICAL INFLUENCES ON SEXUAL RISK-TAKING AMONG HIV POSITIVE MSM

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Objectives: To explore psychological elements that influence decision-making related to sexual activity among HIV positive men who have sex with men (MSM). Deeper understanding of such elements may be useful in creating maximally effective counselling prevention interventions for this population.
Methods: A single exploratory focus group discussion was conducted with a convenience sample of HIV positive MSM recruited from the BCCDC STI clinics at STI/HIV Prevention and Control and through snowball sampling. Participants included MSM who could speak English, who were >19 years of age and who self-identified as being HIV positive. A trained group facilitator lead the discussion using

variations of the following question: 'What are some of the issues that you are dealing with in your sex life as an HIV positive gay man?' Audiotapes of the group discussion were transcribed, omitting personal identifiers, and analyzed qualitatively.

Results: Eleven volunteers participated in the focus group discussion. The majority of the men were between 40-59 years old with one man in his thirties and one man in his sixties. The length of time with HIV was self-reported and broken down as follows: < 5 years (2 men); 5-10 years (4 men); 10-15 years (1 man) and 15-20 years (4 men). Participants described the nature of their current relationships and emphasized the thought process related to disclosure their HIV status. Fear of rejection, feelings of isolation or stigmatization influenced their decision-making related to disclosure and ultimately leads to stress, angst and feelings of being traumatized. For some, significant life trauma, such as death of a partner or being newly diagnosed with HIV resulted in loss of hope and eventually lead to increased frequency of unprotected sex. Serosorting was common in this group of men and was perceived to be acting responsibly and reducing risk.

Conclusions: MSM participating in this focus group experienced psychological states that may influence decision making surrounding disclosure of HIV status. Unique psychological needs of HIV positive MSM should be considered in the development of HIV prevention interventions.

P-050 REACHING HIGH-RISK MSM: LESSONS LEARNED FROM AN ONLINE HEPATITIS VACCINATION INTERVENTION

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Objectives: Compared to the general adult population, men who have sex with men (MSM) report higher levels of risk for hepatitis A (HAV) and hepatitis B (HBV) yet inadequate rates of vaccination. The Internet is a valuable communication vehicle to reach MSM who seek partners online and/or access health information online; however, intervention design, launch, and evaluation is in its infancy in terms of rigorous research methodologies and measures. And so, this five-year study was initiated to design, launch, and evaluate an online intervention to increase awareness, knowledge, and intention to receive hepatitis A and B vaccinations among unvaccinated MSM.

Methods: This study consisted of three data collection activities: 1) conducting an online baseline assessment of demographics, healthcare characteristics, knowledge, attitudes, risk behaviors, and hepatitis A and B vaccination status; 2) asking a sample of participants in the first activity to compare and evaluate three prior hepatitis campaigns for MSM; and 3) designing, implementing and evaluating a new online campaign, exclusively for high risk MSM who have not had hepatitis A or B vaccinations.

Results: The three activities were conducted exclusively online. In the first sample, nearly two-thirds were at-risk for hepatitis A, and over one half for hepatitis B (N=968). There were significant differences in demographics, healthcare characteristics, attitudes, knowledge, and behaviors based on whether participants were vaccinated, infected or at-risk. Of the 41 who participated in the second activity, 44% preferred the National Minority AIDS Council campaign compared to 32% Seattle-King county and 28% GayHealth.com. Recommendations for campaign content (based on vaccination stage of change), graphics, and website links were collected. The pilot test results from the third activity confirmed that the newly designed campaign was reaching a high-risk audience (77% unvaccinated for hepatitis A, 72% unvaccinated for hepatitis B, 23% reported 60+ lifetime male partners, and 91% reported finding partners online). The campaign was well received and appeared to increase levels of awareness, knowledge, and intentions to get vaccinated for hepatitis A and hepatitis B.

Conclusions: The campaign was designed iteratively using many formative evaluation strategies, such as cognitive interviews, pilot tests, field tests and electronic surveys. Baseline data from the first activity were used to inform the campaign content and will be useful for future data comparisons. The electronic survey was useful for collecting opinions about campaign content, messages, and media. MSM were unexpectedly enthusiastic about assisting with the creation of the campaign and were instrumental in selecting appropriate wording and graphics. Cognitive interview data from the first and third activities proved invaluable for developing the campaign and the survey and insuring appropriateness. The methods used to design and evaluate this health communication campaign were successful in surveying, interviewing, and ultimately reaching a high-risk, online sample of MSM.

P-051 CHLAMYDIA SCREENING THE LINK BETWEEN EDUCATION AND UPTAKE

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Objectives: 'Does a medical student's placement in Obstetrics and Gynaecology (O&G) prompt them to seek Chlamydia screening?' I wanted to determine medical student attitudes to Chlamydia before and after their O&G module through qualitative and quantitative research. I also sought to investigate whether students chose to get screened as a consequence of their O&G attachment.

Methods: A valid questionnaire was developed using a focus group of seven medical students. The questionnaire asked specific questions regarding attitudes and knowledge about Chlamydia. Students were asked whether they had considered screening and furthermore whether they had actually been tested. Full approval was granted by the university with respects to ethics and research. I administered the questionnaire at the beginning and end of each 8 week O&G student intake. Pre and post questionnaire's were not linked to maintain anonymity. 52 of the 120 students agreed to participate. The intervention was defined as an 8 week teaching and clinical block in O&G which included lectures and small group work as well as experiential clinical learning on the wards.

Results: Qualitative data supported the hypothesis. 'O&G made me completely paranoid about having an STD…I went and had the full check up…I have to say that my attachment was directly responsible for getting myself tested…and also my sister, her boyfriend, and her best friend!' All students had heard of Chlamydia before starting their attachment, and most (94%) knew of some consequences. Only 33.3% had considered screening, and 20.4% had actually been tested. Post attachment 100% knew about the consequences of Chlamydia , with 11% more people considering screening and 3.7% more people being tested. There was a variation in effect between the sexes. No knowledge difference was demonstrated. Of the females, there was an increase of 13% of those considering screening, but this only resulted in 3.4% more girls getting tested. The male students knew less about Chlamydia to begin with, with 15% claiming not to know of any of its consequences. However 100% of male students knew about the consequences by the second questionnaire. The number of male students who had considered screening doubled from 15% to 30.7% by the second questionnaire. No male students had had a Chlamydia test before O&G, but by the second questionnaire 11.5% had sought testing.

Conclusions: Screening for Chlamydia has been implemented nationwide in the UK. However uptake needs to be ensured. Many assume that the key to uptake is effective public education. However research has thus far shown a confused view over the effectiveness of education with respect to uptake of sexual health testing. This study is limited. However it clearly shows that education and 'exposure' to the disease and its consequences through a placement in O&G prompts more students to think about getting themselves screened. Whilst there is an increase in actual uptake of testing, this is not proportional to the increased numbers in those 'considering it.' What can be done to maximise the link between consideration and uptake? karenjhebert@gmail.com

P-052 SEXUAL RISK BEHAVIORS OF MEN REPORTING MAIN SEX PARTNERS

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Objective: To describe the STD risk behaviors of men, both gay (GI) and non-gay identified (NGI), who report having main sex partners.
Methods: A national, online, cross sectional survey of men who have sex with men (n=1001) was conducted April through December 2005. A sub-sample of men who reported having a main sexual partner ('more important to me than any other sexual partner') was selected. Descriptive statistics regarding disclosure, condom use and STD/HIV status were analyzed.
Results: 235 men (24%) reported a main sex partner. 184 (78%) of these men identified as gay. 51 (22%) men were NGI. As expected, more GI men reported their main partners to be male (X2=122.68, p<0.001) than NGI men. 63% of NGI men (32/51) reported a female main partner. GI men were more likely than NGI men to report that their main partner knew they had sex with other partners. (X2=20.704, p<0.001). 67% of NGI men reported that their main partner did not know about their other sex partners. At last sex with main partner, 69% of GI men and 71% of NGI men reported not using a condom. 46.4% of the sample reported anal sex with a male (not main partner) in the past 60 days. 36% of those reported not using a condom at last sex. 30% of GI men and 20% of NGI men have been told they had a viral STD by a health care professional. 11% of GI men and 3% of NGI men reported being told they were HIV positive. 25% of the men with main partners had never been tested for a STD. 12% had never been tested for HIV.
Conclusions: Data suggest that many men with main sexual partners are having sex outside of these relationships regardless of sexual identification. The majority of main partners of NGI men do not know they are having sex with other people. Condoms are not being used regularly with non-main partners. Both main and non-main sexual partners are at risk for STDs and HIV. Topic: Behavioral Science - Sexual Behavior Corresponding author: Rachel Kachur ' rkachur@cdc.gov

P-053 MORE THAN JUST ANAL SEX: THE POTENTIAL FOR STI TRANSMISSION AMONG MEN VISITING SEX ON PREMISES VENUES IN MELBOURNE

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Objective: Sex On Premises Venues (SOPVs), where men have sex with other men, provide an environment where the transmission of sexually transmitted infections (STIs) is potentially enhanced. However, the extent to which SOPVs contribute to STI transmission is unknown. This study aimed to obtain detailed data on the types of sexual practices and frequency of these practices among men who have sex with men (MSM) visiting SOPVs in Melbourne, Australia.
Methods: In a cross-sectional study, MSM visiting 6 Melbourne SOPVs between December 2006 and February 2007 were asked to complete an exit survey on the types of sexual practices and frequency of such practices they had engaged in at that visit. Of 447 men approached, 150 (34%) participated in the study.
Results: The median age of participants was 42.5 years (range 20-79). Among participants who engaged in receptive oral sex (66%) and insertive oral sex (75%), the median number of such acts reported by each man during the visit was 2 (range 1-10) and 2 (range 1-10) respectively. Eleven men (7%) reported receptive oral sex with ejaculation into their mouth with a median of 1 act (range 1-3) per man. Among participants who engaged in receptive anal sex (19%) and insertive anal sex (38%), the median number of such acts per man during the visit was 1 (range 1-4) and 1 (range 1-8) respectively. Eleven men (7%) reported unprotected insertive anal sex with a median of 1 act (range 1-4) per man; 4 (3%) reported unprotected receptive sex. A substantial number of men who did not report any anal sex engaged in practices potentially capable of transmitting infections. Notably, 44 men (29%) reported unprotected rubbing or touching of their penis ('nudging') onto another man's anus without actual anal penetration with a total of 71 other men (median 1 act per man, range 1-10). When specifically asked, 17 (39%) of these men reported that they had not engaged in 'anal sex'. In addition, 32 men (21%) reported being the recipients of 'nudging' with 40 other men. Fourteen (44%) of these men reported not having had any 'anal sex'. Oro-anal sex, whether 'active' or 'passive', was reported by 57 (38%) of men, while 84 (56%) men reported anal penetration using fingers, whether receptive or insertive. A significant minority (11%) of men reported that their ability to have safe sex was compromised by the use of drugs or alcohol. Of note, 58 (39%) men reported having a regular male partner, with whom 23 (40%) had unprotected anal sex. And 13 (9%) reported having a regular female partner, with whom 10 (77%) reportedly had unprotected vaginal or anal sex.
Conclusions: The potential for STI transmission between men visiting Melbourne SOPVs and to their partners outside these venues is high. The contribution of what might be perceived as 'safer' sex practices to the transmission of STIs among MSM may have been underrecognised.

P-054 CORRELATES OF READINESS TO RECEIVE CHLAMYDIA SCREENING AMONG TWO POPULATIONS OF YOUTH

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Objectives: It is estimated that up to 90% of Chlamydia infections are asymptomatic; therefore, most infections will only be detected through routine screening. However, little is known about predictors of adolescent and young adults' intentions to seek routine Chlamydia screening. The goals of this study were to assess young people's knowledge about Chlamydia, preferences for Chlamydia testing venues and methods, attitudes about testing, gender differences among these variables, and their predictive associations with young people's readiness for Chlamydia screening.
Methods: 150 females (mean 18.0yr, SD=1.9yr) and 150 males (mean 18.7yr, SD=2.0yr) were recruited from a National Job Training site, and 150 males (mean 15.5yr, SD=0.9yr) were recruited from a Department of Youth Services (DYS) site. Participants were 35% white, 34% Hispanic, 25% black, and 6% other race/ethnicity. After providing written informed consent, participants completed a 109 item survey consisting of demographic information, beliefs about the effects of a Chlamydia infection, reasons one would want to get tested for Chlamydia, personal and environmental barriers to Chlamydia testing, facilitators of STD testing, willingness to be tested at various venues, a self-efficacy scale including various steps to take to get tested, and several miscellaneous items including questions about past STD testing experiences and testing method preference. The primary outcome variable was an item measuring stage of readiness to receive routine Chlamydia screening. Response choices for this item corresponded to Pre-contemplation, Contemplation, Preparation, and Action. Chi-square analyses were used to test for associations between categorical variables, and logistic regression was used to examine the predictive associations between stage of readiness for Chlamydia screening and several modifiable and non-modifiable variables.
Results: Stage of readiness varied significantly between Job Training (JT) males, JT females, and DYS males, with females being in a higher stage of readiness than males (p<.05). Twenty-seven per cent of JT females were in the Action stage compared with 15% of JT males and 6% of DYS males. Conversely, 6% of JT females were in the Pre-contemplation stage compared with 21% of JT males and 21%

of DYS males. Modifiable variables associated with increasing readiness for Chlamydia screening also differed between groups. Higher stage of screening readiness among DYS males was associated with perceived likelihood of ever having a Chlamydia infection. Higher stage of readiness among JT males was associated with perceived benefit of protecting others through Chlamydia testing, lack of condom use as a risk factor for Chlamydia infection, and perception of an untreated Chlamydia infection as dangerous. Among JT females, higher stage of readiness was associated with a belief that a partner could have a Chlamydia infection and fewer perceived social consequences of Chlamydia testing.
Conclusions: We have identified several gender specific, modifiable variables that could be targeted by interventions to increase young peoples' readiness for routine Chlamydia screening. Given the adverse consequences of undiagnosed and untreated Chlamydia infections in sexually active youth, such interventions hold great promise.

P-055 VAGINAL DOUCHING AND REPRODUCTIVE HEALTH OUTCOMES AMONG A NATIONAL SAMPLE OF ENGLISH SPEAKING HISPANIC WOMEN IN THE U.S.

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Objectives: Vaginal douching is linked with numerous adverse reproductive health outcomes including pelvic inflammatory disease, cervical cancer, pregnancy complications and susceptibility to sexually transmitted diseases. Current literature focuses almost exclusively on vaginal douching behaviors among African American and White women, while little is known about douching among Hispanic women. As the Hispanic population in the U.S. grows, exploring douching among this population is timely. The purpose of the present research is to describe the prevalence and covariates of douching among a national sample of English-speaking Hispanic women and to examine the relationship between douching behavior and sexually transmitted and sexually associated conditions.
Methods: Data were gathered via a random-digit-dial computer-assisted telephone interview (CATI) of US women aged 18-44 (N= 2,604). Descriptive and inferential statistics were used to describe douching behavior and the relationship between douching behavior and reproductive health outcomes among Hispanics (N= 325).
Results: 50.8% of Hispanics reported ever douching and 14.8% reported currently douching at least once monthly. Respondents reported douching most often to cleanse after menses. Very few Hispanic women were aware of the established link between douching and higher rates of infertility and preterm delivery and less than a quarter acknowledged that douching may increase a woman's risk for pelvic inflammatory disease and cervical cancer. Similarly, douching products were seen as beneficial and safe by many women. Women who had ever douched had significantly higher odds of ever having been diagnosed with a yeast infection (OR= 2.47; 95% CI: 1.57, 3.89), bacterial vaginosis (OR=2.30, 95% CI: 1.14, 4.62) or gonorrhea (OR=10.3, 95% CI: 1.30, 81.01). The mean age of sexual initiation among Hispanic women who had ever douched (16.9 years) was significantly lower than that of women who had never douched (18.2 years) (p=<0.0001). Likewise, on average, women who had ever douched had significantly more lifetime sexual partners (5.1 partners) than women who had never douched (3.8 partners) (p=.03). Of the women who currently douched at least once a month at the time of the survey, very few (10.6%) reported having ever seriously thought about stopping douching. Of those few who had ever seriously thought about stopping douching, none were thinking about stopping in the six months following the study.
Conclusions: Results from this study support the conclusion that douching may be associated with negative reproductive health outcomes including sexually transmitted diseases and vaginal infections. Likewise, Hispanic women who had ever douched displayed higher levels of sexual risk such as more lifetime sexual partners and an earlier age at sexual debut than never douchers. The prevalence of douching among this sample of English-speaking Hispanics women is troubling. Interventions to reduce douching in this population should focus on correcting misconceptions and emphasize the association between douching and negative reproductive health outcomes. Further research is needed regarding douching among only Spanish-speaking Hispanics, as their culture and beliefs surrounding douching as well as their douching behaviors may differ in important ways from English-speaking Hispanics.

P-056 METHAMPHETAMINE AND ERECTILE DYSFUNCTION DRUG USE ASSOCIATED WITH CHLAMYDIAL AND GONOCOCCAL INFECTIONS IN HIV-UNINFECTED GAY AND BISEXUAL MEN: SAN FRANCISCO, 2006 - 2007

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Objectives: Methamphetamine use in combination with erectile dysfunction (ED) drug use has been shown to increase the risk for acquiring HIV and syphilis among gay and bisexual men. However, the association between these drugs and the acquisition of chlamydia and gonorrhea is not well characterized. While urethral infections could be directly attributed to the use of ED drugs, we hypothesized there might be an indirect relationship between ED drug use and receptive anal intercourse. Therefore, we examined the association between use of methamphetamine and ED drugs with urethral and rectal chlamydia and gonorrhea among HIV-uninfected gay and bisexual men.
Methods: Data from gay and bisexual men tested for urethral and rectal chlamydia and gonorrhea at San Francisco's municipal STD clinic were reviewed from July 2006 through February 2007. Analysis was restricted to men who reported being HIV-uninfected on the day of testing. Urethral infection was defined as any chlamydial or gonococcal positive test from a urethral swab or urine specimen; rectal infection was defined as any chlamydial or gonococcal positive test from a rectal specimen. Recent (past 3 months) methamphetamine and ED drug use, number of recent (past 3 months) unprotected anal sex partners, age and race were available for 80% of urethral test visits and 82% of rectal test visits. Level of drug use was defined as follows: neither methamphetamine or ED drug use, ED drug use only, methamphetamine use only, and methamphetamine and ED drug use. Logistic regression and multivariable logistic regression were used to calculate odds ratios (OR), adjusted OR (AOR) and 95% confidence intervals (CI) for the separate outcomes of urethral and rectal infection. Models were adjusted for the following covariates: age, race and number of unprotected anal sex partners.
Results: There were 1,717 urethral and 1,205 rectal tests included in this analysis. We found men who reported recent methamphetamine use only were twice as likely to have a rectal infection than were men who did not use methamphetamine or ED drugs (Table). Men were nearly four times more likely to have a rectal infection if they used methamphetamine and ED drugs. Similarly, concurrent methamphetamine and ED drug use increased the likelihood of urethral infection almost four fold compared with non-users. ED drug use alone was not associated with urethral or rectal infection.
Conslusion(s): Methamphetamine use in conjunction with ED drug use was associated with a four-fold increase in likelihood for urethral and rectal infections in HIV-uninfected gay and bisexual men seen at the municipal STD clinic. Methamphetamine use alone was not as strongly associated with these infections. Thus, men using this drug combination are at particularly high risk for acquiring STD infections, including HIV. Clinicians should evaluate both methamphetamine and ED drug use as part of a detailed sexual history in order to adequately test, counsel and refer gay and bisexual men. Reductions in the dual use of methamphetamine and ED drugs might decrease STDs in HIV-uninfected men, and reduce their risk of HIV acquisition.

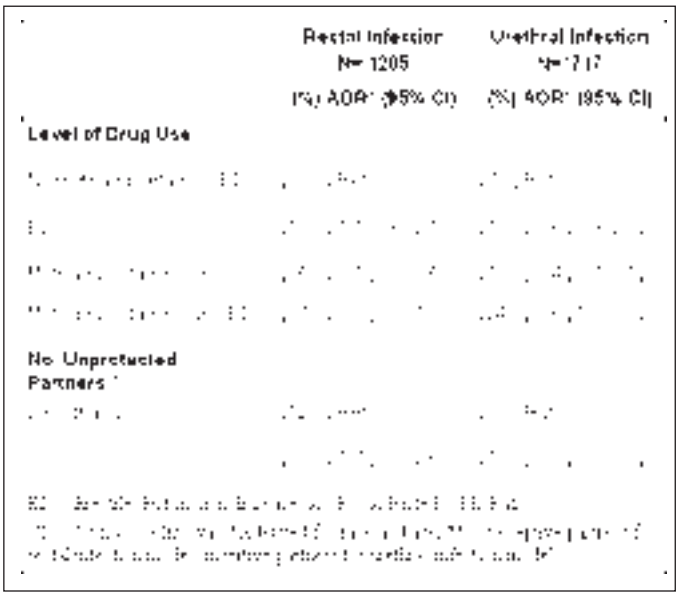

Figure 1: Title. Rectal and Urethral Infections

P-057 PARENTAL CORRELATES OF STD SCREENING AMONG SEXUALLY ACTIVE, FEMALE HIGH SCHOOL STUDENTS

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Objectives: CDC STD treatment guidelines recommend that all sexually active females (ages 15-24) be tested annually for STDs; however, because our knowledge of STD screening rates is based on clinic case reports, we have little information about screening rates and factors contributing to screening in non-clinic settings, including school populations. This study examined rates of screening among sexually active female high school students and explored parental influences on adolescent STD screening, including parental involvement in adolescent health care, parental rules and monitoring regarding friends and dating, and parental communication about protection.
Methods: Students in 12 high schools in Southern California completed in-class surveys as part of the baseline measurement for Project Connect, a multi-level school-based intervention to reduce STDs and pregnancy among adolescents. The current analysis used data from female students who indicated they were sexually experienced (N = 1389). Students were predominantly Latino (76%) and African American (14%). Students' self-reports of ever being screened for an STD was the outcome for this analysis.
Results: In our sample, 27.8% students reported ever being screened for an STD. Controlling for grade, race/ethnicity, and reports of having four or more lifetime sexual partners, multiple logistic regression analyses found: students whose parents took them to their last doctor's visit (AOR = .23; 95% CI = .17 - .31) and whose parents enforce more rules about friends and dating (AOR = .82; 95% CI = .70 - .97) had lower odds of reporting having ever been screened for an STD. Students whose parents have talked with them about the importance of using protection when having sex had higher odds of reporting having ever been screened for an STD (AOR = 1.42; 95% CI = 1.18 ' 1.71).
Conclusions: Relatively few sexually active female high school students are being screened for STDs. It is important to understand the factors contributing to the low screening rates among this group. Research has shown parents to have a positive influence on the sexual behavior of their adolescents, yet these results suggest parents may need to alter their approach. Targeted interventions for parents may help them to deliver effective messages that will both convey their views on adolescent sexual behavior and encourage important STD screening behaviors among sexually active adolescents.

P-058 'BODY EMPOWERMENT' INTERVENTION FOR CRACK-USING WOMEN LEADS TO SIGNIFICANT REDUCTIONS IN SEXUAL RISK-TAKING WITH PRIMARY PARTNER

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Objectives: Drug-using women need effective behavioral interventions to reduce risk of HIV/STD. Women-initiated methods such as the female condom, diaphragm and cervical cap are still underutilized in HIV prevention research and programming, as are multi-method protection messages such as 'hierarchical' counseling approaches, that are flexible, based on sound risk-reduction principles used in other areas of public health, and offer alternative and complementary technologies to fit the difficult context of achieving protection among women at high risk of HIV/STI.
Methods: We conducted a randomized trial of a 'body empowerment' intervention among 198 out-of-treatment, crack-using women recruited from high-risk neighborhoods in Philadelphia. Intervention subjects received five, 3-hr, participatory, peer-led group sessions based on a Freirian model of developing 'critical consciousness', as well as feminist health concepts, that stressed basic body knowledge, women's solidarity, and hierarchical risk reduction with male condom, female condom, diaphragm, cervical cap and spermicides (with a modified message following published results on Nonoxynol-9). Intervention subjects practiced insertion of barrier methods on multiple plastic models of the reproductive organs, and shared experiences regarding their use of these methods with other women at each group meeting. Women interested in diaphragms and cervical caps were referred to a local family planning clinic. Control subjects received enhanced HIV-CT in a one-on-one context, including demonstration and free supplies of male and female condoms. Sexual behavior was captured by audio-CASI and measured at baseline and 12 mo. 12 mo retention was 97%.
Results: Most women were African-American (66%); mean age was 40 yrs. Most women used crack (88%) and over 1/3 injected heroin. 59% of crack users and one-half of heroin users used the substances >1x/day. 80% of women reported sex exchange. 37% tested positive for trichomonas. Participants in both arms reduced sexual risk with primary partner at 12 mo follow-up. Both Intervention (p=.009) and Control (p=.017) arms demonstrated a statistically significant rise in the proportion of male condom- or female condom-protected vaginal sex (baseline to 12 mo: Intervention .07 to .32 and Control .05 to .20). Intervention subjects also reported statistically significant decreases in the frequency of unprotected vaginal sex in prior 6 mo (baseline to 12 mo: Intervention, 47.4 to 28.5 acts and Control, 43.4 to 34.9 acts). In Intervention subjects, the increase in protected vaginal sex was due to increased male condom use; in Controls, a statistically significant rise in female condom use also contributed to increased protection. The frequency of oral and anal sex with primary partner, and vaginal sex with a non-primary partner, when analyzed by arm, either remained constant or decreased.
Conclusions: Participatory multi-session interventions stressing body knowledge, demystification and ownership; women's solidarity; and female barriers like the female condom, diaphragm and cervical cap, can help reduce sexual STI/HIV risk in crack-using women. Both female condom and male condom contribute to risk reduction; both should be included in standard HIV-CT. Counseling on other

female barrier contraceptives can increase women's awareness and of these possible HIV/STI risk reduction agents, and help 'normalize' use of vaginal protection, such as future microbicides.

P-059 ONGOING HIGH-RISK SEXUAL BEHAVIOR, MISREPORTING OF HIV STATUS AND SEROSORTING AMONG PERSONS WITH HIV

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Objectives: To describe ongoing risk behaviors among persons receiving medical care for HIV.
Methods: We surveyed two groups of 200 randomly selected patients in the largest HIV clinic in the Pacific Northwest of the U.S., one group was surveyed in 2005, and another in 2006. Surveys were conducted during 1 week periods during each year, were anonymous and self-administered, and included questions about patients' sexual behavior in the preceding year.
Results: Overall, 397 (83%) of 478 patients offered participation completed a usable survey, of whom 73% were men who have sex with men (MSM). Twenty-seven percent of MSM, 20% of heterosexual men, and 24% of women reported having non-concordant unprotected anal or vaginal intercourse (UAVI) in the preceding year (i.e. UAVI with a partner who was HIV negative or whose HIV status the patient did not know); these percentages with not significantly different. On multivariate analysis, having non-concordant UAVI was significantly associated with using poppers and not always telling partners one's HIV status. Twenty-four percent of MSM reported deciding not to have sex with a potential partner because he was HIV negative, and 31% reported that another man had decided not to have sex with them because they were HIV positive. These experiences were less common among heterosexuals. Across all groups, 22% of patients indicated that they had told a partner they were HIV negative since being diagnosed with HIV. This percentage did not significantly vary by gender or sexual orientation. Compared to persons who reported never misrepresenting their HIV status to a sex partner, participants who misrepresented their HIV status less often reported always telling partners their HIV status (OR 0.37, 95% CI 0.18-0.80), and more often reported that a potential partner had decided not to have sex with them because they were HIV positive (OR 2.2, 95% CI 0.96-5.0). Compared to 2005, more MSM in 2006 reported meeting a sex partner via the Internet (15% vs. 33%, p=0.005), and fewer met partners in a bathhouse (23% vs. 13%, p=0.02); the percentage of MSM reporting non-concordant UAI did not significantly change (46% vs. 35%, p=0.14). Among persons who reported having any sex in the preceding year, 83% indicated that their clinician had asked them about sex.
Conclusions: These findings demonstrate the persistence of high-risk behavior among persons with HIV, and document that some persons with HIV misrepresent their HIV status to sex partners. Among MSM, we observed a rapid increase in the frequency of using the Internet to find sex partners, a decline in the percentage of men having sex in bathhouses, and direct evidence serosorting.

P-060 COPING WITH A DIAGNOSIS OF C TRACHOMATIS OR N GONORRHOEAE: PSYCHOSOCIAL AND BEHAVIORAL CORRELATES

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Objectives: There is a paucity of research outside the realm of HIV examining outcomes associated with a diagnosis of a sexually transmitted infection (STI), particularly as they relate to the stress and coping process. The current study sought to add to the coping literature by examining whether coping responses are elicited from a STI diagnosis and whether active (e.g., problem-focused coping) and passive (e.g., denial, self-blame) coping responses are associated with particular psychological factors and prevention behaviors.
Methods: Baseline and 1-month follow-up data was collected from 259 consenting urban, minority participants recently diagnosed with chlamydia or gonorrhea at clinics in Brooklyn, New York. Regression modeling and multiple analysis of covariance were used to analyze the data.
Results: Eighty-eight percent of participants indicated using at least one active coping strategy a moderate amount to a lot of the time and 46% of participants indicated using at least one passive coping strategy a moderate amount to a lot of the time (see Table 1). In terms of behavioral implications, results indicated that denial-focused coping was associated with having more one-time partners at one month follow-up, _=.61, t(22)=2.61, p<.05 and problem-focused coping was associated with more consistent condom use at one month follow-up (OR=1.31, 95%CI=1.08, 1.60, p<.01). In terms of psychological implications, depression at baseline was correlated with increased use of self-blame as a coping strategy, F(5, 252) = 15.73, p<.01 and increased use of denial-focused coping, F(5, 252) = 2.96, p=.08. Important sex and ethnicity differences were found. For example, among men, those who indicated notifying all of their eligible partners were more likely to seek emotional-support as a coping strategy than those who did not notify all eligible partners at one month follow-up, F(4, 138) = 4.01, p<.05. Among Afro Caribbean participants, lower levels of depression at baseline were associated with greater use of problem-focused coping, F(4, 126) = 6.22, p<.05.
Conclusions: Results from the current study demonstrate that a diagnosis of chlamydia and/or gonorrhea is psychologically meaningful for patients in that the diagnosis elicited some form of coping response among almost all of the participants (an active or passive one or some mixture of both). There are important intervention implications in that, once diagnosed with a STI, psychoeducation regarding effective coping strategies could serve to reduce subsequent sexual risk behavior and improve partner notification efforts. This level of intervention is particularly important among depressed individuals. Results also indicate that coping interventions need to consider gender and race/ethnicity in terms of design. Rebecca.Schwartz@downstate.edu

Table 1

	N (%)
Active Coping*	
Problem focused	190 (73.4)
Planning	153 (59.1)
Emotional support	94 (36.3)
Instrumental support	95 (36.9)
Spirituality	70 (27.0)
Passive Coping*	
Self blame	99 (38.2)
Denial	51 (19.7)
Behavioral disengagement	17 (6.6)

*Coping strategy used a moderate amount to most of the time

Figure 1: Coping Strategy Usage

P-061 CHILDHOOD PHYSICAL AND SEXUAL ABUSE AMONG HOMELESS AND UNSTABLY HOUSED ADULTS LIVING WITH HIV: PREVALENCE AND ASSOCIATED FACTORS

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Objectives: Prevalence and factors associated with childhood physical abuse and childhood sexual abuse (CSA) was examined among HIV'seropositive homeless or unstably housed adults.
Methods: Data were obtained from the Housing and Health Study of homeless or unstably housed adults living in Baltimore, Chicago, and Los Angeles (n = 644). Logistic regression was used to examine demographic, substance use, mental health, and sexual behaviors to identify factors associated with childhood physical abuse and CSA.
Results: The sample was predominantly male (70%), black (78%) and 40 years of age or younger (63%). Fifty-three percent reported childhood physical abuse and 39% reported childhood sexual abuse (CSA). Gender was not associated with differences in rates of childhood physical abuse. Victims of childhood physical abuse were more likely to be a race other than black (AOR = 0.47, 95% CI=0.30, 0.75, $p \leq 0.05$); more likely to report ever exchanging sex for money, drugs, or shelter (AOR = 2.65, 95% CI=1.84, 3.82, $p \leq 0.05$); more likely to report depressive symptoms (AOR = 2.04, 95% CI=1.38, 3.02, $p \leq 0.05$); and more likely to report abusing alcohol during lifetime (AOR = 1.48, 95% CI=1.02, 2.14, $p \leq 0.05$). Victims of CSA were more likely to be female (AOR = 2.90, 95% CI=1.82, 4.62, $p \leq 0.05$); more likely to report ever exchanging sex for money, drugs, or shelter (AOR = 1.88, 95% CI=1.29, 2.74, $p \leq 0.05$); and more likely to report symptoms indicating depression (AOR = 1.66, 95% CI=1.10, 2.52, $p \leq 0.05$).
Conclusion: Prevalence of childhood abuse exceeded that found in other samples of general USA, HIV'seropositive, and homeless populations. Depression and sex exchange appear to be associated with having experienced childhood abuse in the past among homeless or unstably housed persons living with HIV. Other studies have reported that depression and sex exchange are associated with behaviors that increase transmission risk among HIV-seropositive persons. Therefore, the efficacy of HIV prevention efforts may be improved by identifying and addressing long-term health effects of childhood abuse and their behavioral sequelae.

P-062 HETEROSEXUAL ANAL SEX DURING THE YEAR AFTER AN STD CLINIC VISIT

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Objectives: Describe heterosexual anal sex activities among 3 STD clinic populations and identify factors associated with heterosexual anal sex.
Methods: Secondary analysis of data from an STI prevention trial (RESPECT- 2) conducted in 3 public STD clinics. Heterosexual participants described sexual behaviors with up to 3 partners during audio computer-assisted interviews every 3-months for a year. We analyzed anal sex behavior among heterosexual participants and partnerships during each 3-month interval and among heterosexual participants who attended all four 3-month interviews. GEE logistic regression models were used to account for within-participant correlation of repeated measurement and to identify factors associated with anal sex.
Results: 2125 heterosexual participants reported on 5364 3-month intervals including 7249 partnerships. Anal sex was reported during 17.2% (926 intervals) of 5364 intervals. For those 926 intervals, the mean number of anal sex episodes was 4.3 (median, 2); and the mean number of vaginal sex episodes was 39.5 (median, 21). In 268 intervals, participants who had anal sex reported both main and causal partners; they had anal sex with main partner (79.5%), causal partner (33.6%) and both (14.2%). Condom use during anal sex was reported to be consistent (26.3%), inconsistent (7.3%), or not used (66.5%). Among 797 participants who returned for all four follow-up interviews, 308 (38.6%) reported having anal sex. These 308 had anal sex in 1 interval (39.3%), 2 intervals (26.3%), 3 intervals (18.8%), or all 4 intervals (15.6%). The numbers of episodes of anal sex over the year were: once (27%), 2-12 times (57.8%), 13-24 times (11%), or 25 times (4.2%). Over the year, condom use during anal sex was consistent (21.4%), inconsistent (22.1%), and not used (56.5%). Participants reporting anal sex were similar to other participants in terms of age, gender, and race, but were more likely to report having 2 or 3 partners versus one (OR=1.8, $p<0.001$), having anal sex with their main partner versus with their causal partner (OR=1.3, $p<0.05$), having sex 50 times (total of vaginal and anal) versus 1-13 times (OR=4.0, $p<0.001$), and having unprotected vaginal sex versus always using a condom for vaginal sex (OR=1.6, $p<0.001$) during the interval.
Conclusions: Anal sex was commonly practiced among heterosexuals, but is a risk behavior that is often overlooked. Clinician should ask STD clinic heterosexual patients about anal sex, recommend condom use to prevent STD and HIV transmission, and examine and test patients who have had anal sex.

P-063 AGREEMENT IN WOMENS AND MENS REPORTING OF VAGINAL SEX ENCOUNTERS IN THE HITCH COHORT STUDY (HPV INFECTION AND TRANSMISSION AMONG COUPLES THROUGH HETEROSEXUAL ACTIVITY)

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Objective: To investigate agreement in couples' reporting of the number of vaginal intercourse encounters in the context of an STI-transmission study.
Methods: Couples who had recently initiated a sexual relationship were recruited for an ongoing study of human papillomavirus (HPV) transmission. Women aged 18-24 attending a university or junior college in Montreal, Canada and their male partners are eligible. Men and women self-complete separate surveys; these were initially in paper format and then computerized. The survey asks respondents to describe their sexual behavior with their partner since their sexual relationship began. Data from the first 120 couples enrolled as of February 1, 2007 were analyzed. Participants had a choice of response formats for the total number of vaginal intercourse encounters: (1) an approximate number or (2) the frequency per week or per month. If the latter was chosen, the actual number of encounters was estimated by multiplying by the interval between the first intercourse and survey date. Couple agreement in their number of vaginal sex encounters was assessed using the percent discrepancy in the partner reports, calculated as the difference between the woman's and man's report divided by the average between them. A 0% discrepancy indicates perfect agreement for that couple.
Results: Twenty-two percent of participants completed the survey in paper format and the remainder in a computerized format. The majority of couples (98%, 118/120) reported vaginal intercourse for a median of 4.0 months (IQR 2.8-5.3, max 42.1). The mean number of vaginal sex encounters was 86.6 for women (median 60, IQR 36-110, max 525) and 93.4 for men (median 66, IQR 33-122, max 488). The mean difference between the female and male's report was -10.9 (paired t-test NS). Twenty percent (23/118) of couples had perfect agreement in their number of acts of vaginal intercourse encounters. The median percent discrepancy was 34% (mean 47%, IQR 3%-66%, max 200%). Discrepancies increased in magnitude with increasing total number of encounters. The intraclass correlation coefficient for logtransformed number of encounters was 0.868, indicating that 13.2% of the observed variability was due to discrepancies in partners' reports. Survey

format had no statistically significant impact on percent discrepancy. However, participants' choice of response format of the number of intercourse encounters (i.e., an actual number versus a frequency per week or per month) greatly impacted on percent discrepancy. Those couples who chose the same response format had far lesser percent discrepancy (n=88, median 24%) than couples wherein partners chose different response formats (n=25, median 64%, p=0.002 Wilcoxon test).
Conclusions: A critical measure for the study of STI transmission between couples is the actual number of vaginal sex exposures. Even among couples who recently initiated their sexual relationship, there is considerable discrepancy in partners' reports. Discrepancies are lessened in couples with fewer intercourse encounters. Studies of the probability of STI transmission per act of intercourse should take into account this uncertainty in the number of exposures.

P-064 ADOLESCENT COUPLES ACTUAL AND PERCEIVED DESIRES TO USE CONDOMS

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Objectives: The decision to engage in protective behaviors for STDs often involves the joint action of two individuals. Most studies in this area, however, focus solely on individual motivations to engage in such behaviors. An earlier framework suggests that partner-specific intentions for childbearing can be predicted by combining the separate fertility desires of both partners with perceptions of each other's desires. Using this framework, we examined the relationship between condom use desires and the perception of partner desires among adolescent couples. This is a first step towards understanding how the interaction of these constructs within a couple can be translated into condom use intentions. Our objectives were to 1) examine the agreement of condom use desires between partners, 2) examine the agreement between condom use desires and the perception of partner desires, and 3) examine the accuracy of perceptions of partner desire and predictors of accurate perception.
Methods: Adolescents, ages 15-19, and their sexual partners were recruited for a longitudinal study from two public STD clinics in Baltimore City. Participants were interviewed separately on partner-specific sex and drug use behaviors in the previous three months. Both individuals were asked about their own condom use desires and those of their partners. The desire to use condoms was determined by the participant's response of wanting to use condoms at last sex with their partner. The perception of partner's condom use desire was determined by the participant's response that the partner wanted to use condoms at last sex. Information was also collected on condom use at last sex, the frequency of condom use over the previous 3 months, and the intention to use condoms in the subsequent 6 months. This analysis was limited to main partnerships (N=88 couples). We used kappa statistics to assess agreement between partner responses, and multiple logistic regression to identify associations.
Results: Overall agreement of desire to use condoms at last sex between partners was low, k=0.12 (CI: -0.09, 0.33). Among females desiring to use condoms, 54.8% of their partners disagreed. There was substantial agreement between an individual's own desire to use condoms and the perception of their partner's desire, k=0.67 (CI: 0.51, 0.83) and k=0.62 (CI: 0.44, 0.79) for females and males respectively. The accuracy of individual's perceptions of their partner's condom use desire was low, k=0.19 (CI: -0.02, 0.40) for males and k=0.15 (CI: -0.05, 0.36) for females. The lack of desire to use condoms reduced the likelihood of accurately perceiving partner condom use desire, OR=0.22 (0.07, 0.68).
Conclusions: Within adolescent couples, both the agreement of condom use desire and the ability to perceive the condom use desires of partners was low. Additionally, perceptions of partner desire to use condoms were more strongly associated with participants' own desires rather than actual partners' desires. Finally, lacking the desire to use condoms seemed to impede the ability to accurately perceive the partner's desire. It is important to understand how couple-level motivations influence protective behaviors to better inform behavioral change interventions for STDs.

P-065 STD/HIV PREVENTION PRACTICES AMONG PRENATAL CARE CLINICIANS: RISK ASSESSMENT, PREVENTION COUNSELING, AND TESTING

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Objective: To describe the current of practices and associated characteristics of prenatal care clinicians in providing key STD/HIV control services: risk assessment, prevention counseling, and offering screening tests.
Methods: First, we identified the variety of clinical strategies through interviews with randomly selected clinicians, using formal qualitative methods. We then surveyed by mail (with a $50 cash incentive) a stratified, random sample of clinicians who delivered prenatal care in Washington State in 2000: obstetrician-gynecologists (OBG), family physicians (FP), and Certified Nurse Midwives (CNM). Universal Practice was defined by clinician self-report of offering the service 'usually' or 'always' to patients during prenatal care. We identified the characteristics of clinicians and their practices associated with each strategy and with Universal Practice of each service. We tested differences among clinician groups using adjusted Wald chi-square and 95% confidence intervals (CI). We applied forward stepwise logistic regression to determine which characteristics were independently associated with offering each service.
Results: We report on 315 prenatal care clinicians (78% adjusted response rate): 103 OBGs, 106 FPs, and 106 CNMs. Clinician types differed by gender, years in practice, practice setting, and patient population. Almost all clinicians reported having received training in Risk Assessment (98%) and Prevention Counseling (97%) at some time, with CNMs more likely trained in professional school. Clinicians use a wide variety of clinical strategies, but most reported that they provide these services universally to their prenatal patients. Clinicians use 16 strategies for Risk Assessment. Universal Risk Assessment is offered by 82% of clinicians, ranging from CNMs (93%), FPs (83%), to OBs (72%) ($p < .000$). Clinicians use 11 strategies to provide Prevention Counseling. Universal Prevention Counseling is offered by 78% of clinicians, ranging from CNMs (90%), FPs (78%), to OBs (72%) ($p = .002$). For both Risk Assessment and Prevention Counseling, universal practice is associated with being a CNM, female, in practice less than 10 years, and having received related training in professional school. Multivariate analysis documented independent associations only for being female and training in professional school. Clinicians use 12 strategies to offer patients STD and HIV Testing. STD tests are offered universally by 83% (CI 78-88) of clinicians and HIV tests by 89% (CI 85-93), with no significant differences by clinician type.
Conclusions: Most prenatal care clinicians universally provide STD/HIV risk assessment and prevention counseling, and offer testing for STDs and HIV. Different types of clinicians use different clinical strategies, and do so at different rates. Further research should study the related attitudes and beliefs of these clinician groups. This information can guide efforts to increase the provision of these important HIV/STD prevention services to pregnant women.

P-066 SEXUAL AND DRUG-USING HIV RISK BEHAVIORS AMONG INCARCERATED AFRICAN AMERICAN AND WHITE MALES

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Objectives: The higher HIV prevalence in correctional institutions relative to the general population, coupled with the disproportionately high number of African Americans who are HIV-infected and incarcerated, and the scarcity of in-custody risk behavior data, underscores the need to characterize sexual, drug-using, and social contextual HIV risks among incarcerated individuals. An estimated 25 percent of HIV-infected persons in the U.S. pass through a correctional facility each year, providing opportunities for outreach/education, diagnosis, and initiation of treatment. Such interventions have potential to positively impact the health of inmates and also the communities to which they are released.
Methods: An interviewer-administered questionnaire was conducted inside a California state men's prison. The questionnaire addressed sexual and drug-using risk behaviors differentiating between times incarcerated and in the free community. African American/Black and Caucasian/White HIV-infected inmates were randomly selected offered enrollment providing self-identification in either group. In order to protect participant confidentiality and encourage forthright responses, a Certificate of Confidentiality was obtained from the National Institutes of Health.
Results: Forty-three HIV-infected inmates participated, including 25 African Americans and 18 Whites. Overall, 21(49%) reported ever using alcohol while incarcerated. A higher proportion of African Americans reported marijuana use (56 vs. 39%), while Whites were more likely to use methamphetamines (22 vs. 4%) and heroin (33 vs. 8%, p=0.05) while incarcerated. Whites were twice as likely to report a positive Hepatitis C result (59 vs. 29%), consistent with a significantly higher proportion with a history of injection drug use while incarcerated (33 vs. 8%, p=0.05) relative to African Americans. During the past year incarcerated, nine (21%) of participants reported oral or anal sex with a male. Among those reporting a male sexual partner, eight (89%) engaged in anal intercourse. African Americans and Whites were equally likely to test positive at the time of their first HIV test (67%). However, 80 percent of African Americans compared to 39 percent of Whites reported their first HIV-positive test was done in a jail or prison (p=0.006). Among those who first tested positive while incarcerated, three African Americans and one White (19% overall) reported an HIV-negative test prior to their first positive during the same incarceration.
Conclusions: Large percentages of participants in the current study reported sexual and drug-using behaviors while incarcerated. While the majority most likely acquired HIV in the free community, high-risk behaviors, notably anal intercourse with male partners and injection drug use, are occurring. It is not reasonable to assume that all instances of high-risk behavior can be prevented in correctional settings. Therefore, the results of this study may have implications for harm-reduction policies, including in-custody housing assignments and access to condoms. Given that 80 percent of African Americans received their first HIV-positive result in a jail or prison, universal offer of testing upon entry is recommended. Risk behaviors while incarcerated suggest that HIV-testing should also be routinely offered pre-release/parole. Increased knowledge of HIV status among those entering the correctional system may reduce the risk of HIV transmission both during incarceration and following release to the community.

P-067 PARTNER RISK CHARACTERISTICS AND STD OUTCOME OF YOUNG FEMALES IN US STI CLINIC

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Background: Personal risk behaviors do not fully explain sexually transmitted infection (STI) acquisition in some populations.
Objectives: We examined personal and partner characteristics in a clinic-based series of inner-city young women to determine factors associated with increased risk of chlamydia (CT) and gonorrhea (GC) infection.
Methods: From February 2006 to December 2006, we conducted a standardized clinical interview among females age < 25 years seeking STI clinical services from one provider at a Baltimore STD clinic. For patients with repeat visits, we used data from the first visit only. The interview focused on individual sexual risk history as well as age of sex partner (SP) and SP risks, along with standard clinical evaluation for STDs. We examined demographic characteristics, personal risk behaviors, SP risk behaviors, and their association with STI outcome.
Results: There were 236 young females completing the clinical interview and examination. Of these, 92% were African-American with a mean age of 21 (range 15 ' 25), a mean of 1.6 SPs in the past month, and a mean of 11 lifetime SPs (range 0-250). Eight-two percent of females had a past STI history; 30% reported having sex with alcohol or drugs; and 8% reported being a victim of a sexual assault in the past. Forty-one percent reported that at least 1 SP had a history of past incarceration. Overall, 37% of females had confirmed CT and/or GC infection. Personal characteristics of the young women including race, age, recent number of SPs (i.e. past month), lifetime number of partners, and reporting sex with alcohol or drugs were not associated with CT/GC infection. However, SP history of incarceration was associated with CT/GC infection [OR = 1.91, 95% CI (1.11, 3.27), p = 0.026].
Conclusions: Male sex partner characteristics, particularly history of incarceration, may increase STI risk of young women more than any measurable personal risk behaviors. STI prevention interventions focusing on incarcerated or recently incarcerated males may be one approach to reducing impact of STI acquisition on young females.

P-068 CONDOM USE AMONG HIGH RISK HETEROSEXUALS WITH MULTIPLE RELATIONSHIPS IN HOUSTON, TEXAS, 2007

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Objectives: An important sexual risk behavior for heterosexual transmission of HIV is lack of or inconsistent use of condoms in concurrent sexual relationships and/or high rates of partner change. Condom use may be affected by age, type and duration of the sexual relationship, concurrency, and alcohol and drug use. The purpose of this study was to describe the association between these factors and condom use in heterosexuals living in areas of Houston, Texas, USA with high rates of HIV infection.
Methods: We used data from the Houston site of the National HIV Behavioral Surveillance (NHBS) program. Participants were recruited from high risk areas using respondent-driven sampling. They completed a confidential and anonymous survey. Individuals who reported multiple relationships (two or more sex partners) in the past year were analyzed. We examined self-reported condom use at last heterosexual encounter by age, partner type (main or casual), duration of the relationship (in months), concurrency, and alcohol and/or drug use at last sexual encounter. We defined concurrency in two ways: perceived concurrency of partner (four-level scale from partner 'definitely did not' to 'definitely did' have sex with other people) and self-reported concurrent partners. Logistic regression was used for multivariate analysis.

Results: 442 heterosexual participants (65% female, 97% African American) have been enrolled in the study to date. The prevalence of HIV infection was 2.5%. 58% of females and 65% of males reported more than one sexual partner in the past year. Condom use at last sexual encounter was reported in 31% of females and 42% of males with multiple relationships. In multivariate analysis, males with multiple partners were more likely to use condoms if they were younger (OR=1.11, 95% CI 1.04-1.20), if their sexual encounter was with a casual partner (OR=15.46, 95% CI 3.64 ' 65.65), and if they were in a shorter-term relationship (OR=1.28, 95% CI 1.05-1.56). Self-reported concurrency, perceived partner concurrency, and alcohol and/or drug use did not affect the likelihood of condom use in males. Females with multiple partners were more likely to use condoms if their sexual encounter was with a casual partner (OR= 6.03, 95% CI 2.32-15.64) and were less likely to use condoms if drugs and/or alcohol were involved (OR=4.2, 95% CI 1.67-10.00). Age, duration of the relationship, self-reported concurrency, and perceived partner concurrency did not affect the likelihood of condom use in females.

Conclusion: Condom use among heterosexuals who reported more than one partner in the past year was relatively low. Both males and females were significantly more likely to use condoms with their casual partners than their main partners. This suggests that condom use may play a role in compensating for risky sexual behaviors. When alcohol and/or drugs are involved, however, protective decision-making behavior becomes impaired in women and condom use declines. Likewise, men may perceive increased safety in longer-term relationships and less need to use condoms. We believe that qualitative data in conjunction with surveillance data are needed to provide a more-in-depth understanding of condom use among heterosexuals at high risk of HIV infection.

P-069 RISK OF SEXUALLY TRANSMITTED DISEASE ACQUISITION ASSOCIATED WITH SILDENAFIL (VIAGRA) USE IN PRIVATE SECTOR HEALTH SETTINGS, 2001-2003

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Objectives: Numerous studies have demonstrated an association between sildenafil use and sexual risk behavior and sexually transmitted disease (STD) acquisition. Most studies have been cross-sectional, have recruited from high-risk venues, and have consisted primarily of men who have sex with men (MSM). We used a large insurance claims database of United States (US) residents to examine changes in sildenafil use over time, investigate whether the association between sildenafil and STD diagnoses would be confirmed in a broader privately-insured population, and examine how age or geographic location might modify any association between sildenafil and STD diagnoses. Use of a claims database eliminates the need to rely on self-disclosure of either sildenafil use or STD diagnosis.

Methods: We used the MarketScan database, which had approximately 5 million enrollees annually in 2001-2003. We analyzed each year independently. We limited our analysis to men at least 15 years of age who were enrolled for the entire year, who had prescription drug coverage, and had a record of at least one outpatient claim in any given year. The exposed cohort was men who had at least 1 claim for sildenafil at any point during the year. The control cohort was matched at a rate of 2:1 by age group and state of residence. The cases were defined as those having any ICD-9 code for chlamydia, gonorrhea, primary or secondary syphilis, or trichomoniasis during any outpatient encounter.

Results: Sildenafil use significantly increased between 2001 and 2002, from 37,077 men in 2001 to 106,379 men in 2003 (claims per 1 million enrollees ranged from 12,201 to 216,935 claims per 1 million enrollees). The rate of STD claims was low in both the exposed (0.20% or less) and control (0.06% or less) cohorts. Crude relative risk ratios (CRR) were 2.81 in 2001 (95% confidence interval (CI) 1.89-4.17), 2.88 in 2002 (95% CI 2.29-3.64), and 2.83 in 2003 (95% CI 2.26-3.56). Controlling for age range, the CRR was highest for 35-44 year old men (3.62, 95% CI 2.82-6.16). For men 45-59 years old it was 2.48 (95% CI 1.86-3.30) and it was not significant at $p < 0.05$ for men 20-34 years. When modified by region of residence, the CRR was not significant at $p < 0.05$ for the South, but was significant for other regions (e.g., the CRR for residence in the West was 3.52, 95% CI 2.16-5.76).

Conclusions: In crude analysis, sildenafil use was associated with increased relative risk in the low-risk privately-insured population that we studied. The magnitude of association between sildenafil use and STD diagnoses was stronger in middle-aged to older men. The association between sildenafil use and STD diagnoses was weakest in the South, the region of the US with the highest STD prevalence. The database did not contain information on sexual orientation, race, ethnicity, or non-prescription sildenafil use, and we could not analyze undiagnosed asymptomatic STD cases. Causality cannot be determined, but these results show sildenafil use can be used as a marker for STD risk assessment.

P-070 ADOLESCENT SEXUAL PARTNERSHIPS: THE RELATIONSHIP BETWEEN OBJECTIVE AND SUBJECTIVE CHARACTERISTICS AND IMPLICATIONS FOR STI RISK

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Objectives: The nature of sexual partnerships may contribute to risk for STI transmission, and differences between adolescents and non-adolescents may explain the greater STI risk among younger women. Qualitative research suggests that among adolescents, subjective measures of relationships such as degree of commitment, love, and affection are better descriptors of the meaning of a relationship than objective measures such as duration. The purpose of the present analyses was to quantify and compare female adolescent and non-adolescent partnerships on objective and subjective measures, and to relate these measures to condom use.

Methods: Data are from an interview study of women with prevalent chlamydia diagnoses (n=126). Objective measures of sexual partnerships included duration of sexual relationship (<1 month vs. >1 month) and degree of social connection (high vs. low). Degree of social connection was determined using a scale which incorporated responses to 4 questions (e.g. 'Did you meet this partner through close friends?'). Scores ranged from 0 to 4 with higher values indicating higher degree of social connection, with a median split at 2 to classify higher and lower social connection. Subjective measures included type of partnership (main vs. other) and intimacy (a scale created from questions such as 'How committed to this relationship are you?') Adolescent and non-adolescent partnerships were compared on these measures using generalized estimating equations to account for multiple partnerships reported by women.

Results: Compared to non-adolescent partnerships, adolescent partnerships were shorter duration (72% vs. 52% were <1 month, p=0.02) and had a lower social connection (48% vs. 30%, p=0.05), but were more likely to be classified as main partnerships (63% vs. 46%, p=0.03). Among adolescents, degree of social connection was correlated with intimacy (p=0.03); partnership duration was not associated with either subjective measure. Among non-adolescents, both objective measures were significantly associated with both subjective measures (p<0.05 for all). In bivariate analyses, only the subjective measures were marginally associated with condom use among adolescents (intimacy p=0.06, partner type p=0.07). Among non-adolescents, one objective and one subjective measure were associated with condom use (social connection, p=0.06; partner type, p=0.003). In multivariate analyses, intimacy remained significantly correlated with condom use among adolescents; no partner measures remained correlated with condom use among non-adolescents.

Conclusions: Compared to non-adolescent women, adolescent females are more likely to consider their partners 'main' despite shorter durations and less social connection. These data suggest that adolescents assign substantial meaning to their partnerships relatively quickly and perhaps without knowing their partners very well. Furthermore, there were no associations between objective measures and condom use among adolescents, suggesting a subjective decision-making process around condom use. These data suggest that adolescent females make rapid judgments about the nature of their sex partnership which may contribute to higher STI risk.

P-071 ASSESSING THE INFLUENCE OF STI RISK REDUCTION HIERARCHICAL MESSAGES ON USE OF BARRIER METHODS AMONG SEX WORKERS IN DOMINICAN REPUBLIC

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Objective: In Dominican Republic, it is estimated that prevalence of gonorrhea ranges from 2 to 6% and Chlamydia from 9 to 16% in the population of female sex workers. There is scarce research about the behavioral impact of STI risk reduction messages that present a hierarchical array of methods of varying effectiveness levels in vulnerable populations such as sex workers. A prospective trial looked at the effect of broadening women's choice with regard to STI prevention suggests that increasing women's barrier options improves their protective and preventive behavior and does not lead to reduced male condom use. Our objective is to assess how sex workers comprehend and act upon hierarchical STI risk reduction messages.
Methods: We screening and recruited sex workers in two cities of the Dominican Republic. Participants were followed for a period of five months. At the enrollment visit, participants were randomized to either of two groups. Group 1 received all methods of the study (male and female condoms and diaphragm) and hierarchical risk reduction message (HRM) that incorporated the hierarchical use of the three barrier *Methods:* male condom, female condom, and diaphragm. Women assigned to group 2 received female and male condoms with instructions for using female condoms when male condom use cannot be negotiated. In the first follow-up visit women assigned to group 2, received all barrier methods plus the HRM. During monthly follow-up visits the HRM was reinforced, and the participants answered questions about sexual behavior and acceptability of the barrier methods.
Results: 353 women attended screening visit, 38 did not accomplished inclusion criteria and 72 decided not to participate in the study, 243 sex workers were recruited in both cities, 123 were assigned to group 1 and 120 to group 2. There were not significant difference between both groups in acceptability and use of female condoms and diaphragm reported in monthly visits and last visit. More than half of the participants in both groups (group 1 59.8% and group 2 53.9%) reported in last visit they liked best to use female condom, followed by both methods (27.1% and 29.6% respectively) and diaphragm (11.2% and 13.1% respectively). Use of female-controlled methods measure in the last week and last month in monthly visits was not significant different between both groups. We found that women in group 2 used with more frequency male condoms than women in group 1 in the last two visits of our study (visit four: 36.1 vs 46.1% sex relations protected with male condoms during the last month, visit five: 35.9 vs 49.0%; P<.05). In both groups we observed a decrease of unprotected sex relations, in group 1 from 16.8% to 15.0% and in group 2 from 17.2% to 9.6%, P=.010).
Conclusion: HRM is a useful tool to increase protected sex in this population. Acceptability of female-controlled barrier methods was high in both groups. Offering the three barrier methods in the counseling (group 1) increase more the number of protected sex relations than gradually incorporate the use and counseling of barrier methods (group2).

P-072 STD RISK FACTORS IN MIGRANT PATIENTS ATTENDING AT STD CLINICS IN CHINA

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Objective: The rural-to-urban migration trend has been characterized as a major contributor to both HIV and STD transmission in China. In order to effectively prevent and control the STD epidemic in this population, we carried out a survey on HIV/STD risk behaviors among migrant patients in STD clinics.
Methods: Face to face interviews, with a structure questionnaire were conducted among 502 patients STD clinics in Shanghai and Nanjing after an informed consent was obtained. All data were coded and no personal identifiers were collected for confidentiality purposes. The main survey items include demographic information, HIV/AIDS and STD knowledge, and sexual behaviors.
Results: The participants were 38% females. The mean age of them was 28 years old (SD =6). The median period of migration was 3 years (IQR: 2-5). 53% of the participants were married. 41% (204/502) reported history of STDs prior to the study. The univariate analysis identified the following risk factors for STD infection with statistical significance: male (OR 1.69, 95%CI 1.16-2.47), buying sex in males (OR 2.95, 95%CI 1.80-4.83), selling sex for pay (OR 3.78, 95%CI 1.74-8.22), extramarital sex (OR 4.07, 95%CI 2.33-7.11), friends with STDs (OR 2.24, 95%CI 1.35-3.72), alcohol use (OR 1.96, 95%CI 1.31-2.93), drug use (OR3.14, 95%CI 1.49-6.64), multiple sex partners (OR 2.77, 95%CI 1.82-4.20) and pre-marital sex (OR 1.58, 95%CI 1.09-2.28). Exploratory multiple logistic regression analysis identified that friends with STDs (OR 2.41, 95% CI 1.41-4.50, p=0.001), drug use (OR 3.45, 95%CI 1.58-7.53, p=0.002) and pre-marital sex (OR 1.92, 95% CI 1.28-2.88, p=0.001) the significant risk factors for STD infection in the models adjusted for age and gender.
Conclusion: STDs prevalence rate was high in the migrant population in Nanjing and Shanghai. Risk behaviors of STDs in migrants were peer pressure (friends with STDs), substance use (alcohol and drug use), commercial sex activities (buying sex in males and selling sex in females) and pre-marital and extra-marital sex. To reduce STDs in this population, educational activities and behavioral interventions should be carried out and STD/ HIV testing and treatment should be provided regularly in the entertainment establishments where commercial sexual activity takes place. This study had limitations in that the data were only collected in the STD clinic settings. Further study to collecting and analysis data from other settings is needed.

POSTER SESSION: CHANCROID

P-073 HAEMOPHILUS DUCREYI CAUSING CHRONIC SKIN ULCERATION IN CHILDREN ACQUIRED WHILE VISITING SAMOA

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Objectives: Chancroid is a sexually transmitted infection associated with genital ulceration and lymphadenopathy caused by Haemophilus ducreyi. Localised skin infections, in the absence of genital lesions, have not been previously reported. We report three cases of lower limb ulceration in children caused by H. ducreyi and postulate that it may be a previously unrecognised cause of chronic skin ulceration. All three children developed lesions whilst in Samoa or soon after their return to New Zealand.

Methods: The young girls, aged nine, six and five years of age, presented to their general practitioners in New Zealand with non-healings ulcers on their lower limbs. Ulcer exudates were cultured onto tryptic soy agar with 5% sheep blood incubated at 35ºC aerobically, chocolate agar incubated at 35ºC in 5% CO2, colistin-nalidixic acid agar and brain heart infusion-vancomycin-kanomycin agar incubated at 35ºC anaerobically. After 72 hours a tiny gram negative coccobacillus grew on the chocolate agar only. The isolate was weakly oxidase positive and catalase negative. No identification was obtained with the RapID NH (Remel, Lenexa, KS, USA). 16S rDNA polymerase chain reaction (PCR) and sequencing were performed using previously described primers. A BLAST search of the National Center for Biotechnology Information database showed 100% sequence identity with Haemophilus ducreyi strain ATCC33921 (accession number AY513483). None of the three isolates produced beta lactamase. The first child responded to penicillin; the latter two were treated with azthromycin. Previous treatment with flucloxacillin was unsuccessful for all three children. History and examination findings did not support the infection in these children being acquired by sexual contact.
Conclusions: The prevalence of chancroid in the Western Pacific is unknown. It has been reported in Papua New Guinea. Recent surveys of STIs in antenatal populations in Pacific nations have looked at rates of chlamydia, gonorrhoea, syphilis and HIV but did not include chancroid. Chlamydia trachomatis infection was endemic among the pregnant women surveyed but the rates of syphilis were low suggesting rates of STIs causing genital ulceration may be low. These observations warrant further investigation into the aetiology of chronic skin ulcers in children in Samoa, and perhaps other areas of the Pacific.

P-074 A WECA MUTANT OF HAEMOPHILUS DUCREYI IS PARTIALLY ATTENUATED IN ITS ABILITY TO CAUSE PUSTULES IN HUMAN VOLUNTEERS

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Haemophilus ducreyi 35000HP contains homologues of many of the genes required for the synthesis of enterobacterial common antigen (ECA), a cell surface glycolipid produced by enteric organisms. The genes for ECA biosynthesis have not previously been identified in non-enteric microorganisms. The first gene in this pathway is the wecA gene (HD1844), which may encode an enzyme that adds N acetylglucosamine from UDP-GlcNAc to undecaprenyl-P to form Lipid I. The wecA gene from H. ducreyi was expressed in Escherichia coli and complemented an E. coli wecA mutant. An H. ducreyi wecA mutant, (35000HPwecA) was constructed by insertion of a 3.0 kb chloramphenicol resistance cassette into the cloned wecA gene followed by allele exchange. When grown in vitro, 35000HPwecA does not appear to be phenotypically different than its parent, 35000HP. To test whether wecA is required for virulence in humans, five volunteers were experimentally infected with 35000HP and 35000HPwecA. In the first iteration three subjects were infected with fixed doses of 35000HP (104 CFU) at three sites on one arm and doses of 35000HPwecA (68 CFU, 136 CFU and 271 CFU) at three sites on the other arm. Pustules formed at 5 of 9 parent sites. All three sites inoculated with the 271 CFU dose of the mutant formed pustules. However, only 1 of 6 mutant sites inoculated with 68 CFU or 136 CFU formed pustules suggesting that 35000HPwecA was partially attenuated. In the second iteration two subjects were inoculated with similar doses of parent (129 CFU) and mutant (80 CFU) at three sites. Pustules formed at 2 of 6 parent sites and in 0 of 6 mutant sites. Overall, the papule and pustule formation rates for 35000HP and 35000HPwecA were similar for the trial. However, at sites inoculated with similar doses of parent and mutant, pustules developed at 7 of 15 parent sites (46.7%: 95% CI, 23.3% to 70.0%) and at 1 of 12 mutant sites (8.3%, 95% CI, 0.01% to 23.6%) (P=0.013). We conclude that the wecA mutant was partially attenuated in its ability to cause pustules. This is the second report of a partially attenuated mutant in the model.

P-075 INTERACTIONS BETWEEN HAEMOPHILUS DUCREYI AND HUMAN MYELOID DENDRITIC CELLS

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Dendritic cells (DC) are the key antigen presenting cells that lead to successful innate and adaptive immune responses to infection. Microbial pathogens employ multiple strategies to undermine DC function. Haemophilus ducreyi secretes antiphagocytic proteins LspA1 and LspA2, which prevent the uptake of the organism by PMN-like and macrophage-like cell lines in vitro. H. ducreyi also expresses a heat-labile cytolethal distending toxin (CDT) that causes lymphocyte, fibroblast and epithelial cell death in vitro. Previous studies show purified CDT causes apoptosis of DC in vitro. To our knowledge, no studies have examined how myeloid DC interact with live H. ducreyi. DC were characterized from biopsies of pustules in healthy adult volunteers experimentally infected with H. ducreyi by flow cytometry. The ratio of myeloid DC to plasmacytoid DC in pustules was 2.8:1, compared to a peripheral blood ratio of 1:1. We therefore used monocytes from the blood of healthy volunteers to generate myeloid DC to use as surrogates for DC found in infected skin. Myeloid DC infected with H. ducreyi strain 35000HP, a CDT producing strain, remained as viable as uninfected DC for up to 48 hours of incubation with no difference in the number of DC that were apoptotic or necrotic by annexin V-PE and 7-amino-actinomycin D staining. Gentamicin protection and confocal microscopy assays demonstrated DC ingested and killed H. ducreyi, but killing was incomplete as viable organisms were recovered from DC for up to 48 hours. In vitro infection of myeloid DC with live H. ducreyi resulted in partial activation of cell surface markers and secretion of high levels of inflammatory cytokines (IL-6, TNF-_). We conclude that incomplete killing of H. ducreyi by DC may provide a mechanism by which H. ducreyi infects regional lymph nodes. Partial DC activation may be a mechanism by which H. ducreyi avoids establishment of a full Th1 response and a cytokine environment that promotes phagocytosis.

P-076 GROWING DISPARITIES AMONG RACIAL GROUPS: CHLAMYDIA AND AMERICAN INDIAN/ALASKA NATIVE (AI/AN) POPULATIONS

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Background: Across all races and ethnicities, chlamydia (CT) remains the most commonly reported infectious disease in the United States (U.S.). In 2004, 16,741 chlamydia cases were reported among American Indian/Alaskan Natives (AI/AN), up from 15,964 cases in 2003. The 2004 chlamydia rate among AI/AN (705.8 cases per 100,000 population) was 2.2 times higher than U.S. rate (319.6 cases per 100,000 population). The Indian Health Service's (IHS) National STD Program Stop CT Project is focused on screening, and providing treatment for Chlamydia, for at-risk women in Indian Country. The project has 63 participating sites including hospitals, clinics, and community health centers located in 15 states. The CT data collected in the project has not historically been shared with, nor compared to, chlamydia screening data from CDC's National infertility Prevention Project, which also provides Chlamydia screening and treatment services for at-risk women.
Methods: The Indian Health Service's Stop CT Project analyzed CT positivity data from IHS service units and comparing the data in the context of IPP guidance. Numerators are based on the total positive chlamydia tests identified by client residence, and denominators are based on the total number of 15-24 year old females screened. Preliminary Stop CT data represents the first three quarters of 2006 and were compared to 2004 CDC IPP data.
Results: Seven of the ten IPP Regions had Stop CT comparison data. AI/AN females between the ages of 15-24 had higher unadjusted CT positivity rates compared to all other race/ethnicities combined in all seven comparison regions

respectively: Region IV (11.7 vs. 8.4), Region V (8.5 vs. 7.5), Region VI (13.1 vs. 7.4), Region VII (7.7 vs. 5.8), Region VIII (12.4 vs. 6.3), Region IX (12.1 vs. 6.7), and Region X (8.9 vs. 5.9). By aligning data collection and screening evaluation efforts with IPP, the Stop CT Project has nationally and regionally comparable data which enable staff to assess project-level screening effectiveness and better inform local-level priority setting.

Conclusion: AI/AN female populations in Indian Country appear to be disproportionately affected by chlamydia. This initial examination of Stop Chlamydia data supports growing concerns regarding racial disparities among native populations, particularly in certain geographic regions. Continued project monitoring enhanced surveillance and program evaluation are necessary to better understand contributing factors that influencing CT positivty among AI/AN populations.

P-077 BASELINE ASSESSMENT OF CHLAMYDIA REINFECTION IN REGION VIII FAMILY PLANNING CLINICS FOR 2004-2005

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Background: The Public Health Service Region VIII Infertility Prevention Project (IPP) is part of the national IPP. The IPP was funded through the Regional Infertility Prevention Projects legislation, which aims to reduce the costly and destructive sequelae of chlamydia and other sexually transmitted diseases on the reproductive health of women.

Problem Statement: Repeat infection has an elevated risk of PID and other complications when compared with initial infection.

Objective: To determine rates of reinfections among women screened for chlamydia in family planning clinics in Region VIII between 2004 and 2005. To determine if women with greater than one visit and positive chlamydia result has a higher reinfection rate than women with greater than one visit and negative chlamydia result.

Methods: Analysis was conducted on 95,020 tests performed on women from 2004 to 2005 in 6 project areas (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming) in PHS Region VIII. Positivity rates for women with prior positive chlamydia tests were compared to those for women with prior negative tests. Variables in the analysis included: time since prior visit project area where patient was tested. Calculated the rate for women who test for Chlamydia more than once within 3-9 months after their first test for two years. •Negative at their first visit; • Positive at their first visit Calculate the Rate Ratio for women testing more than once.

Results: During the years 2004 and 2005, 13,838 women were tested more than once for chlamydia in Region VIII. The total number of tests of women who were tested more than once in Region VIII during 2004 and 2005 was 34,002. The frequency of repeat chlamydia tests of women in Region VIII ranged from two to nine tests per woman. The average number of repeat chlamydia tests per woman in Region VIII was 2.5 tests. The rate for women who were tested for chlamydia more than once and had a negative chlamydia test result at their first visit was 0.87. The rate for women who were tested more than once for chlamydia and had a positive chlamydia test result at their first visit was 3.55. The chlamydia reinfection rate for women who tested positive for chlamydia at their first visit was 4.06 times higher than the chlamydia reinfection rate in women who tested negative for chalmdyia at their first visit.

Conclusion: Higher rate of chlamydia reinfection with women who have had a previous positive chlamydia test Women with chlamydia reinfections have an elevated risk of PID and other complications. With the establishment of the baseline reinfection rats, monitoring of reinfection will be useful in evaluating Region VIII enhanced partner management strategies, such as the implementation of expedited partner treatment programs.

P-078 TAKE THE SEX OUT OF STI SCREENING! VIEWS OF GPS AND YOUNG WOMEN ON IMPLEMENTING CHLAMYDIA SCREENING IN AUSTRALIA

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Objectives: To determine the attitudes of GPs (family physicians) and young women to chlamydia screening, what systems and education would be required to support chlamydia screening in general practice in Australia and to determine the attitudes of young women to being asked to test for chlamydia when they attend a GP for any reason.

Method: This study comprised in-depth face to face interviews with a randomly selected sample of GPs (N=20) and young women (N=24) in Victoria, Australia. Twelve GPs interviewed were in urban practices, eight were in rural and regional practices. The women interviewed were recruited through 17 general practices across Victoria. Recruiting GPs asked all women aged 16-25 who presented over a 2 day period if they would agree to be interviewed regarding their views on chlamydia screening. The women interviewed were evenly distributed between rural, regional and urban Victoria.

Results: The interviews with women found age-based screening and screening during a sexual health related consultation in general practice were considered acceptable. Trust in their GP was a major factor in accepting testing. They felt chlamydia screening should be offered to all young women rather than targeted at 'high risk' women based on sexual history and they particularly emphasised the importance of normalising chlamydia screening. Women were clear that they did not want to be asked to provide a sexual history as part of being asked to have a chlamydia test. The GPs interviewed strongly support screening women for chlamydia in Australian general practice. GPs felt that sexual health related consultations are the best time to offer chlamydia screening. GPs consider taking a sexual history as a barrier to increased chlamydia testing in their practice. GPs also stated that education for both GPs and the general public is vital and that national screening guidelines are needed. Both GPs and young women thought a formal partner notification system for chlamydia would facilitate a screening program. Both also felt that a large scale public education program, encompassing the high prevalence of chlamydial infection in young people in Australia, the asymptomatic nature of infection and the potential consequences if untreated, will be essential in ensuring the success of a chlamydia screening program in Australia.

Conclusions: Chlamydia screening in Australian general practice will be acceptable to young women and GPs in Australia provided they receive adequate education and support. However, most significantly, women generally did not like discussing how many sexual partners they have had with their GP. This finding has not been widely published in the literature and is worthy of comment. There is considerable evidence suggesting that GPs also regard sexual history taking as a barrier to STI testing in general practice. Chlamydia is an STI and notification and treatment of sexual partners is important. Understanding these concepts promotes young women's acceptance of chlamydia screening. However, is a detailed sexual history really an important precursor to a chlamydia test? Our study suggests that this question warrants further exploration.

P-079 PROVIDER KNOWLEDGE OF CHLAMYDIA REPORTING REQUIREMENTS IN REGION II PREVENTION TRAINING CENTER COURSE ATTENDEES

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Objectives: In New York City, clinical providers are required by law to report select sexually transmitted diseases (STDs), including Chlamydia trachomatis (Ct) which has been reportable to the NYC Department of Health and Mental Hygiene (NYC DOHMH) since 1993. Data from provider reports, which include patient demographics, sex of partner(s), and treatment information, can be used to identify groups at increased risk, establish trends in disease transmission and behaviors, and direct resources for public health intervention. In a 2005 NYC DOHMH survey of NYC providers, only 63% of providers reported knowing Ct was a reportable STD in NYC. The Region II STD/HIV Prevention Training Center (PTC), funded by the US Centers for Disease Control and Prevention, has the mission of addressing the STD educational needs of medical providers through training and resources. The objective of this analysis is to examine PTC provider knowledge about Ct as a reportable disease.
Methods: We analyzed results from pre-course assessments collected from NYC clinical providers such as Doctors of Medicine (MDs), Nurse Practitioners (NPs), and Physician Assistants (PAs) attending PTC adolescent and general courses from 2000 to 2006. The pre-course assessment included a question on reporting requirements for diagnosed Ct infection. We examined the number and proportion of providers aware of the reporting requirement by provider type and course type and then compared results to those of the NYC provider survey.
Results: Overall, 54.9% (141/257) of NYC clinical providers who attended PTC courses demonstrated knowledge that Ct was a reportable disease. PTC course attendees serving adolescents were more likely to know local reporting requirements than providers who did not primarily serve adolescents (78.8%; 26/33), (p=.006). Attendees of adolescent courses were more knowledgeable about NYC reporting laws than attendees of the general courses (66.7%; 42/63) (51.0%; 99/194). Additionally, 80% (4/5) of PAs who attended adolescent courses knew about reporting, compared to 25% of PAs (12/48) who attended the general courses, (p=.01). There is no significant difference between PTC course participants overall and NYC DOHMH survey respondents (p=.24) related to reporting knowledge.
Conclusions: Clinical providers who attended PTC adolescent courses were more likely to know that chlamydia was a reportable disease than providers who attended general PTC courses. Providers who primarily served adolescents in both courses were more likely to be knowledgeable, compared to providers who did not serve adolescents. However, nearly half of all providers did not know that this common disease was reportable. Thus, the PTC should enhance efforts to educate clinicians about reporting requirements, and should focus on groups such as internists, who do not generally provide care to adolescents. The PTC will continue to include STD reporting information in its training curricula. Author: Gowri Nagendra, gnagendr@health.nyc.gov

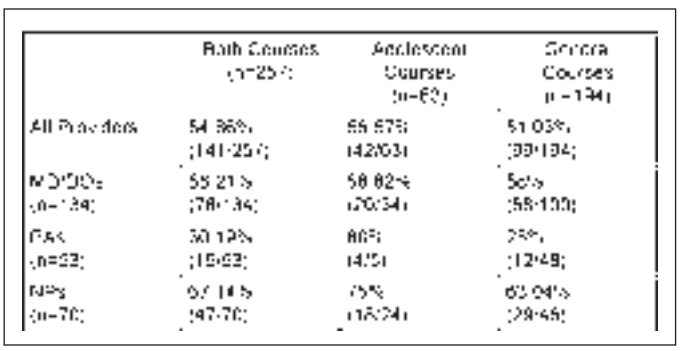

Figure 1: Provider Knowledge of Chlamydia Rep

P-080 'UNCONTESTED POSSESSIONS AND KEY POSITIONS' REACHING YOUNG ADULT MEN THROUGH SPORTING CLUBS FOR CHLAMYDIA TESTING

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Objectives: Although men are increasingly viewed as a 'reservoir' of chlamydia infection, they are largely overlooked in any prevalence studies of sexually transmitted infections (STIs). Yet notifications of bacterial STIs in men have increased dramatically over the last decade in Australia. This project aimed firstly to assess the feasibility of reaching young adult men in rural areas for chlamydia testing and secondly, to measure the prevalence of chlamydia, gonorrhoea and Mycoplasma genitalium and assess the sexual behaviour of young adult men.
Methods: Men aged 16 to 29 years were recruited from football clubs in rural and regional Victoria, Australia. Recruitment took place after training one night. Men completed a questionnaire on their sexual and drug and alcohol risk behaviour and were asked to provide a urine specimen for testing for chlamydia, gonorrhoea and Mycoplasma genitalium. Clubs were provided with dinner and non-alcoholic refreshments, participating men were provided with sexual health information and condoms.
Results: 108 men were recruited from four clubs with over 90% of eligible men participating. Three men were diagnosed with chlamydia - a prevalence of 3.9% (95%CI: 0.8, 11.0). The prevalence of both gonorrhoea and Mycoplasma genitalium was 0% (95%CI: 0.0, 4.7). The men reported a median of six lifetime opposite sex partners with 45% reporting two or more partners in the last 12 months. Condom use was inconsistent.
Conclusion: With over 90% participation, we found that chlamydia testing at football clubs is highly feasible and provides an excellent opportunity to reach young, sexually active men for both research and health promotion/education purposes. Participants were a highly sexually active population, who used condoms inconsistently and had a high prevalence of chlamydia.

P-081 ASSESSING TIMELINESS OF CHLAMYDIA TREATMENT IN STD CONTROL PROGRAMS

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Objectives: The Infertility Prevention Project in state and local STD control programs in the US has emphasized chlamydia screening. Recognizing that interrupting disease transmission and preventing complications requires treating infections, the CDC Division of STD Prevention instituted a performance measure to monitor the percentage of cases of chlamydia treated in family planning clinics within 14 and 30 days of diagnosis. Those percentages submitted by project areas have varied widely, prompting concern about the validity of the data. Our objective was to assess the quality of data measuring timeliness of chlamydia treatment.
Methods: Starting in 2004, 58 project areas receiving CDC funding were required to report on a series of performance measures. 53 project areas reported on timeliness of chlamydia treatment for 2005. Reports for percentage treated within 30 days were examined to identify high ranking and low ranking project areas. Performance measure summaries and comments were analyzed from the grant applications of individual project areas to identify potential problems with the data. Afterward, CDC program consultants and project area staff were interviewed directly to further reveal and characterize specific ways validity was compromised.
Results: 20 project areas reported treatment rates >90%. Seven of these made at least one error affecting the validity of their data. Four omitted cases from the denominator because they did not have documented dates of treatment, leading to falsely high rates. After correct recalculation, these programs' timely treatment

rates dropped from 98% to 78%, 98% to 93%, 95% to 86%, and 94% to 75%. Four project areas reported incorrect data for the measure. For example, the data did not include appropriate clinics, data included ineligible cases or the project area submitted the same data from the previous reporting period. Correct data in these cases was unavailable. Eight project areas reported treatment rates <60%. Six of these made errors affecting the validity of their data. In four project areas, the database which permitted timely treatment rates to be calculated did not include treatment information for a large proportion of the cases. Two project areas had technical problems with querying the database. Both of these errors led to falsely low rates. For example, one project area's internal quality assurance yielded an actual timely treatment rate of 88% when 55% was the rate reported. Correct rates for the other project areas were unknown.

Conclusion: Measurement of time to treatment emphasizes the importance of treating infection, but due to a number of errors invalidating the data, it is difficult to determine how programs are actually performing on this measure. To ensure more reliable data that can be compared and used to inform programmatic activities, an algorithm has been constructed to aid project areas in finding and fixing common errors.

P-082 LYMPHOGRANULOMA VENEREUM (LGV) IN CANADA: RESULTS FROM THE NATIONAL ENHANCED SURVEILLANCE SYSTEM

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Objectives: To review the latest trends and epidemiological data on lymphogranuloma venereum (LGV) in Canada collected though the Public Health Agency of Canada's (PHAC) enhanced LGV surveillance system.

Methods: Following reports of international LGV outbreaks, PHAC working in collaboration with provincial/territorial (P/T) sexually transmitted infection (STI) Directors and the Expert Working Group (EWG) for the Canadian STI Guidelines, initiated a national enhanced surveillance system for LGV in February 2005. An enhanced surveillance protocol, national case definition, and case guide were developed and distributed through the P/T STI Directors to healthcare providers. P/Ts report LGV cases to PHAC who maintain a national database, and report epidemiological summaries to P/Ts on a regular basis.

Results: As of February 1, 2007, 86 cases of LGV have been reported to PHAC: 44 probable and 42 confirmed cases based on the national case definition. All cases are male, ages ranging from 21 to 62, and 35/42 (83%) reported Caucasian ethnicity. The most common presenting symptoms reported were proctitis (48/59, 81.4%), bloody stools (21/38, 55.3%), and inguinal lymphadenopathy (25/53, 47.2%). Most cases reported sexual contact in the 60 days prior to symptom onset (68/76, 89.5%), mostly unprotected (30/40, 75.0%), primarily with male partners (64/65, 98.5%), including anal sex (35/39, 89.7%), oral sex (34/38, 89.5%), fisting (4/34, 11.8%), sharing sex toys (5/27, 18.5%), rectal enema (6/25, 24.0%) and rectal use of crystal methamphetamine (1/24, 4.2%). Sexual contact with a partner with known LGV infection was reported by 9/42 (21.4%) cases. Sexual contact most commonly took place in a bathhouse (34/56, 60.7%), private residence (15/26, 57.7%), or through Internet partnering (10/29, 34.5%). Concurrent infection was commonly reported, with 34/43 (79.1%) co-infected with HIV, 14/47 (29.8%) co-infected with syphilis, 6/25 (24.0%) co-infected with hepatitis B, and 5/34 (14.7%) co-infected with both HIV and hepatitis C. Five Canadian cases may have been acquired while traveling outside Canada; two cases reported sexual contact during travel to areas reporting LGV outbreaks while the remaining three cases reported sex while traveling to non-endemic, non-outbreak areas in the 60 days prior to onset of symptoms.

Conclusions: Enhanced surveillance efforts have identified 86 cases of LGV in Canada as of February 1st, 2007. The epidemic curve indicates ongoing spread of infection among men who have sex with men in Canada. Knowledge transfer activities help to ensure LGV enhanced surveillance data contributes to ongoing and new evidence-based prevention and control activities. Strong partnerships and collaboration within and between levels of government have allowed for the rapid development of this national surveillance system and wide-spread dissemination of the resultant information. For more information, please contact Rhonda Kropp, Rhonda_kropp@phac-aspc.gc.ca

P-083 A REAL-TIME QUADRIPLEX-PCR ASSAY FOR THE DIAGNOSIS OF RECTAL LYMPHOGRANULOMA VENEREUM (LGV) AND NON-LGV CHLAMYDIA TRACHOMATIS INFECTIONS

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Objectives: To develop and evaluate the use of a real-time quadriplex PCR for the diagnosis of lymphogranuloma venereum (LGV) and non-LGV chlamydial infections using rectal swab specimens

Methods: The design of real-time quadriplex PCR assay incorporates a LGV-specific, a non-LGV-specific target sequence, the C. trachomatis plasmid target, and the human RNase P gene as an internal control. The performance of the real-time quadriplex PCR assay was compared to our previously reported real-time duplex PCR assay whose LGV diagnosis was an indirect method and based on exclusion.

Results: A very good agreement (85 of 89 specimens, 95.5%) was found between the two real-time multiplex PCR assays for the detection of C. trachomatis DNA (kappa value = 0.930, 95% CI: 0.863-0.997). Both assays identified 34 LGV, 35 non-LGV C. trachomatis, and 16 negative specimens. Two specimens that tested non-LGV by the real-time duplex PCR; one was found to be a mixed infection, and the other was positive only for plasmid and RNase P targets by the quadriplex PCR. Two additional specimens that had equivocal results for non-LGV by the duplex PCR were also tested positive only for plasmid target and human DNA control by the Quadriplex PCR. In addition, six specimens that tested negative by the duplex PCR assay were found invalid (containing PCR inhibitors or without RNase P DNA) by the quadriplex PCR.

Conclusions: We have developed a real-time quadriplex PCR assay that is capable of diagnosing either LGV, non-LGV, or mixed infections simultaneously in rectal specimens. The assay also contains a supplemental amplification target for the confirmation of C. trachomatis infection as well as a human DNA control for monitoring sample adequacy and PCR inhibition.

P-084 GENDER AND AGE CORRELATES OF CHLAMYDIA PREVALENCE IN ADOLESCENTS AND ADULTS ENTERING CORRECTIONAL FACILITIES, 2002-2004: IMPLICATIONS FOR SCREENING POLICY

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Objectives: To evaluate gender and age correlates of chlamydia prevalence in incarcerated populations.

Methods: We calculated chlamydia prevalence by demographic characteristics from incarcerated women and men entering juvenile and adult correctional facilities in the U.S. from 2002 to 2004.

Results: A total of 256,589 and 160,386 incarcerated persons were screened for chlamydia in 238 juvenile and 139 adult correctional facilities, respectively. Overall chlamydia prevalence was high in juvenile and adult facilities in women and in men (Table). Chlamydia prevalence was substantially higher in women than in men for all ages in juvenile and adult facilities (Table). In juvenile facilities, prevalence did not change in females with increasing age while in males prevalence increased with increasing age (Table). The highest prevalence in juvenile facilities for both women and men was in Blacks (Table). In adult facilities, the prevalence decreased

with increasing age in both sexes (Table). In women in adult facilities the highest prevalence was among Hispanics while in men, it was among Black men. Patterns in prevalence by age did not change after adjustment for race/ethnicity, region, and year of test for juvenile and adult facilities.

Conclusions: Consistent with CDC and US Preventive Services Task Force guidelines all women in juvenile facilities and young women (<= 25 years) in adult facilities should be screened for chlamydia. While the prevalence of chlamydia in men is substantial, the role of screening men for chlamydia has not been delineated. Not only do women suffer most of the health consequences of untreated infection, chlamydia prevalence in women exceeds that of men for every age group. Cost effectiveness analyses show that screening women for chlamydia should take priority.

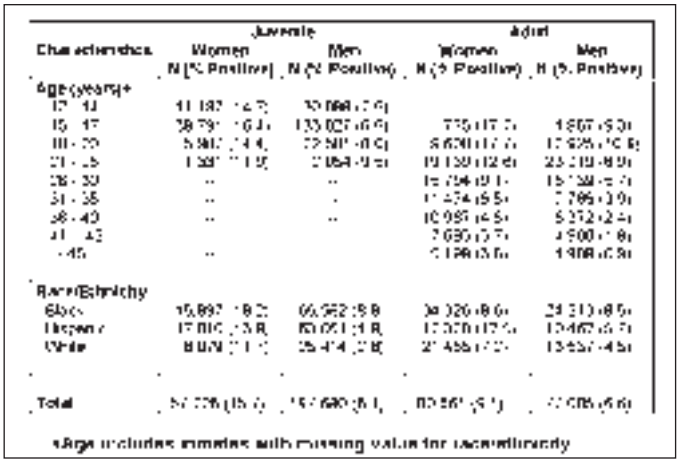

Figure 1: Chlamydia Prevalence in Women and Men Entering Juv

P-085 IDENTIFICATION OF THE SWEDISH MUTATED CHLAMYDIA TRACHOMATIS STRAIN AMONG PATIENTS ATTENDING A DROP-IN STI CLINIC IN STOCKHOLM

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Objectives: A new variant of Chlamydia trachomatis, with a deletion in the cryptic plasmid, was identified in Sweden late 2006. This variant escapes detection in the NAAT-systems from Abbott and Roche which are commonly used in the microbiological laboratories. To estimate the occurrence of this mutant at the major drop-in center for STI's in Stockholm, a study was conducted during 6 weeks January to February 2007. Methods. 1009 consecutive urine specimens were analyzed by the standard method, COBAS TaqMan (Roche), and by Artus (Qiagen) using primers detecting the MOMP-gene. Medical records were checked in retrospect. Results. 607 (60%) men and 402 women participated, median age 28 and 26 years respectively. 116 (11.5%) specimens were positive for Chlamydia: 88 in TaqMan, and 28 in Artus only. 12.7% of the men and 9.5% of the women were positive for Chlamydia, the occurrence of the mutant was 2.6% and 3.0% respectively. Clinical characteristics are in process of being analyzed. Conclusion. The newly identified variant of C. trachomatis constitute 2.8% of all specimens in our study, and 24.1% of all positive specimens. With approx. 15000 specimens from our clinic analyzed annually, it is of importance to routinely diagnose the mutated Chlamydia.

P-088 INCREASING TREND IN CHLAMYDIA TRACHOMATIS: RESULTS FROM THE STI SENTINEL SURVEILLANCE NETWORK AND LABORATORY SURVEILLANCE IN THE NETHERLANDS

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Objective: Chlamydia trachomatis is the most prevalent Sexually Transmitted Infection in the Netherlands and the number of cases seemed to have increased in recent years. The objective of this study is to examine this trend in relation to changes in registration, diagnostic methods, flow of patients or risk behavior or other demographic characteristics.

Methods: Data on Chlamydia trachomatis are obtained from 3 different surveillance systems, e.g. the voluntary STI-registration, STI sentinel surveillance network and laboratory surveillance. The STI registration and the STI sentinel surveillance network include data on new STI consultations at Municipal Health Services (MHS) and STI clinics. Information on both the number of tests and diagnoses was available. Laboratory surveillance contains information on tests and test results with demographic characteristics of six laboratories in the Netherlands. Chlamydia diagnoses are counted based on the following surveillance-diagnosis: 'PCR or DNA hybridization is positive with Chlamydia Trachomatis. A patient with more then one diagnosis in a two month period was counted only once'.

Results: The number of reported cases of Chlamydia trachomatis has increased from 3350 in 2001 to 5139 in 2005. The overall positivity rate was 9.8% of all consultations with a Chlamydia trachomatis test. In women, it increased from 9.2% to 10.3% and in heterosexual men from 9.9% to 10.5%. The increase in positivity rate among heterosexuals was highest in the ages between 15 and 29 years. Among MSM the increase was highest in those of 45 years or older. In the laboratory surveillance, the incidence increased from 1.3 per 100,000 in 2001 to 1.8 per 100,000 in 2005. The total number of tests had increased by 12% in the same period. In addition, the positivity rate increased also from 7.0% tot 9.2% in 2005, especially in tests from outpatient clinics. The use of PCR increased from 74% in 2001 to 79% in 2005. The proportion of Chlamydia trachomatis diagnosed with the PCR increased likewise from 75% to 82%. The positivity rate in tests where the PCR was used increased from 7.9% in 2001 to 10.0% in 2005.

Conclusions: The number of cases of Chlamydia trachomatis has increased since 1981. This increase was partly due to a rise in the number of tests and not by a change in diagnostic methods. Because the positivity rate also increased, a real increase in the number of cases is very likely, particularly in young heterosexual men and women. Continuing surveillance of Chlamydial infection is important to monitor future trends. More information: marion.de.boer@rivm.nl

P-089 HISTORY OF PRIOR CHLAMYDIA TRACHOMATIS (CT) SCREENING AMONG PRIVATELY INSURED U.S. WOMEN RECEIVING A DIAGNOSIS OF PELVIC INFLAMMATORY DISEASE (PID)

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Objectives: To evaluate the association between diagnosis of PID and prior CT screening among a population of young, privately-insured women in the United States using a large insurance claims database of approximately 5 million enrollees. Proactive CT screening has been previously shown in a randomized clinical trial to reduce the incidence of PID among women determined to be at increased risk for infection and multiple professional organizations recommend annual screening for sexually active young women. However, whether opportunistic screening in a general population will yield similar benefits is still uncertain.

Methods: Insurance enrollment and outpatient claims data from Medstat's MarketScan_ Databases from 2001 through 2003 were examined. We used

Current Procedural Terminology (CPT) and International Classification of Disease (ICD-9-CM) codes to identify sexually active women between the ages of 15 and 25 who had continuous insurance coverage and were diagnosed with PID or one of its sequelae (chronic pelvic pain, ectopic pregnancy, and infertility) in 2003. These longitudinal data allowed us to determine who among those with PID had been previously screened for CT in the preceeding two years. We defined screening as having a CPT code for CT screening as outlined in the National Committee for Quality Assurance Health Plan Employer Data and Information Set (HEDIS_) quality performance measure. These cases of PID were then compared to a control group of sexually active women who were not diagnosed with PID to determine differences in screening rates.

Results: Among 80,992 young, sexually active females with continuous insurance coverage during the study period, 2,452 cases of PID were identified and compared with 7,356 randomly selected controls. Cases and controls had statistically similar ages (mean=20.5) with 40% 15-19 years old, 32% 20-22 years old, and 28% 23-25 years old. Overall screening rates increased with age category: 14.3%, 19.3%, and 21.6% respectively. Of the cases, 23.5% (577/2452) had previously been screened compared to 16.1% (1185/7356) of the controls (Odds Ratio [OR] =1.6; 95%CI=1.4-1.8).

Conclusions: Screening rates for CT remain low among privately insured young women and these data, which are lower than published reports of screening coverage, indicate that the recommended practice is far from universal. Young women receiving a diagnosis of PID were 60% more likely to have been previously screened for CT than young women without such a diagnosis. This observed positive association between PID and prior screening could indicate that screening among this population is targeted toward individuals with higher biological or behavioral risk factors or that many screening tests are actually diagnostic tests prompted by clinical symptoms. Despite the limitations of insurance claims data, these findings reflect CT screening and outcomes information for a very large number of women and may be helpful in guiding initiatives aimed at increasing screening in the private sector.

P-090 CHLAMYDIA TESTING IN VICTORIA, AUSTRALIA: TOO OLD AND TOO RICH

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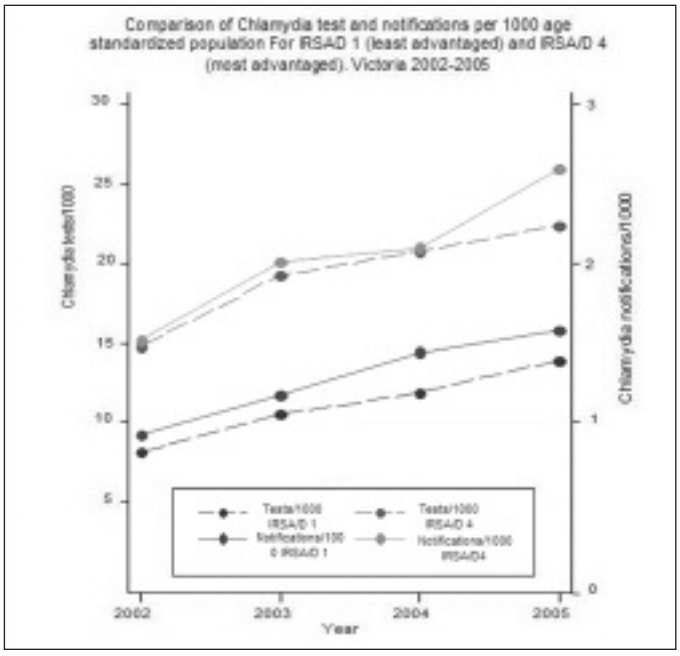
Objectives: To analyse genital chlamydia testing and notification data for the State of Victoria, Australia (estimated resident population, 5,022,000) for the period 2002-2005). To investigate whether chlamydia incidence has increased by examining the correlation between chlamydia testing and notifications rates. To examine the hypothesis that the more socially advantaged areas of Victoria have higher chlamydia testing and notification rates, although socio-economic disadvantage is an accepted risk factor for chlamydia infection.

Methods: Testing and notification data were analysed by age group, gender and local government area (LGA) of residence. Socio-economic disadvantage is assessed by an index of relative socio-economic advantage/disadvantage (IRSA/D) rating. Geographical location and accessibility to health services is assessed by an Accessibility and Remoteness Index of Australia (ARIA) score. Each of the 78 LGAs used in this analysis had an assigned IRSA/D rating and ARIA score. The LGAs were ranked by IRS/AD and grouped into four population weighted quartiles. These were stratified by gender and 5 year age bands. The most advantaged was quartile 4 and the least, quartile 1. Testing and notification data were directly age standardised to the Victorian population. Interaction with access to services was examined using the ARIA score.

Results: There was an 81% increase in Chlamydia notifications over the study period. There was a very strong correlation between testing and chlamydia notification rates, r>0.99, p<0.001. This remained high (r=0.91, p<0.001) when stratified by LGA and also after stratification into quartiles of IRSA/D, by age group and gender (r= 0.91, p<0.001). There was a significant increase in testing and notification each year with each quartile increase in IRSA/D, which remained after controlling for ARIA. This was largely accounted for by higher levels of testing in older age groups. In 2005 testing occurred in 1.35 % of females and 1.46% of males aged 44-49 years living in quartile 1 compared with 0.76% and 0.51% of those living in quartile 4 respectively. The percentages positive did not differ significantly between the quartiles for either sex and were 2.8% (95% CI: 1.7-4.4) and 3.2% (95% CI:1.8-5.7) for females and 10.1% (95% CI: 7.9-12.1) and 7.0% (95% CI:4.3-11.4) for males respectively. This compared with testing of 4.6% of females and 0.94% of males in the 15-19 year age group across the state whose percentage positive was 16.7% (95% CI 15.8-17.6) and 19.6% (95% CI: 17.5-21.9) respectively

Conclusion: The very strong correlation between testing and notification supports the hypothesis that in Victoria the observed 81% increase in Chlamydia notifications is largely due to increased testing rather than a true increase in incidence. This is further supported by this relationship remaining robust when stratified by area of residence, age, gender and quartile of IRSA/D. More Chlamydia testing occurs in more advantaged areas largely among older age groups who are less at risk of infection.



P-091 NO EVIDENCE OF C. TRACHOMATIS PLASMID MUTANTS IN MIDWESTERN UNITED STATES

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Objective: The plasmid mutant strain(s) of C. trachomatis identified in Europe and described by Ripa, et al., may affect the diagnostic sensitivity of nucleic acid amplification tests [NAAT]. These mutants are not detectable using the Roche COBAS Amplicor CT/GC assay [PCR]. However, the mutation does not affect the ability of the GenProbe APTIMA Combo2 assay [AC2] to detect these organisms. To determine whether plasmid mutant strains are present in the US population served by the Indiana University Chlamydia Laboratory, we compared test results obtained by these two diagnostic methods.

Methods: Fresh urine was tested by AC2 and PCR in a prospective analysis of the possible prevalence of plasmid mutants defined as PCR-negative, AC2-positive samples currently in the population. Residual endocervical and urethral culture positive swab samples were pulled from a repository of chlamydial isolates and tested in parallel in a retrospective analysis to look for changes in frequency. Both tests were performed according to the manufacturer's package insert. Technicians performing each assay were blinded to the results of the other assay.
Results: Retrospective testing by PCR and AC2 was performed on 161 isolates collected from June 2005 through January 2007. Three isolates were negative by both NAATs. Of the remaining 158 which were positive by AC2, 157 (99.4%) were also positive by PCR. The single isolate positive by AC2 and negative by PCR was obtained in July, 2005. Prospective testing of 432 freshly collected urine samples identified 96 positive NAAT results. Of these 94 (97.9%) and 84 (87.5%) were positive by AC2 and PCR, respectively. Twelve were AC2-positive, PCR-negative while 2 were AC2-negative, PCR-positive.
Conclusion: The use of the culture positive repository specimen was important since these organisms were viable when taken from the patients and therefore potentially transmissible. These represent strains of interest to public health practitioners. This retrospective analysis of viable organisms collected from June 2005 through January 2007 suggests that the plasmid mutation is not present in the Midwest region of the US. The side-by-side comparison of urine samples was more similar to the conditions under which the mutant strains were initially recognized. The difference in assay performance found for the urine samples is similar to the reported differences in assay sensitivity for AC2 and PCR and does not suggest the presence of plasmid mutants in this population. Although an investigation into the plasmid sequence of those sample that were AC2-positive, PCR-negative has not yet been completed, the fact that few discrepants between the two diagnostic methodologies were found suggests that these mutants are not yet prevalent in this region despite many years of testing predominately with PCR. Side-by-side testing using two platforms is a simple means of monitoring for the potential expansion of this phenomenon in the US and worldwide.

P-092 NO INDICATION OF THE PLASMID DELETED SWEDISH C. TRACHOMATIS VARIANT AMONG STI CLINIC VISITORS IN AMSTERDAM

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Objectives: Recently, T. Ripa reported a Chlamydia trachomatis (CT) variant circulating in Sweden, which is not detected by several commercially available PCR tests.1 Since we use one of these tests (COBAS Amplicor, Roche Molecular Systems, Branchburg, NJ) for urogenital chlamydia diagnostics, we performed a comparative study to assess the prevalence of the plasmid deleted CT variant among sti clinic visitors in Amsterdam.2
Methods: A comparative prospective study using both the COBAS Amplicor test and the Probetec test (Becton Dickinson, Sparks, Maryland); the latter does detect the Swedish variant CT. A PCR-based assay was developed to distinguish the Swedish CT variant from the non-variant. Two primers were selected around the 377 bp deletion in the CT plasmid: Forward swCT: 5'-TCC GGA TAG TGA ATT ATA GAG ACT ATT TAA TC-3' and Reverse swCT: 5'-GGT GTT TGT ACT AGA GGA CTT ACC TCT TC-3' This results in a 475bp PCR fragment for the non CT variant while the Swedish CT variant will generate a 98bp PCR fragment.
Results: A total of 704 samples were collected from 515 participants (152 MSM, 171 heterosexual men and 192 women). Due to missing samples (n=15) and PCR inhibition (n= 2), 17 samples were excluded and 687 samples were eligible for our comparative study. In total, 75 out of 687 samples were positive for CT in the COBAS Amplicor procedure, whereas 63 out of 687 samples were positive in the Probetec procedure. In total, 14 samples showed discrepant results between the two tests, thirteen of these discrepant results being COBAS Amplicor positive but Probetec negative. In one male patient, the urethral swab was Probetec positive and the urine sample COBAS Amplicor negative. When we used this CT positive sample together with 10 other CT positive samples from the study (all COBAS Amplicor and ProbeTec positive) and ran the Swedish CT variant PCR on these samples, all 11 samples showed a 475bp PCR fragment after agarose gel electrophoresis. This indicates that the Swedish CT variant was not the reason for our discrepant result.
Conclusion: Among 515 visitors to our sti clinic in Amsterdam, the Swedish CT variant was not found. In a retrospective study performed in Ireland on 8797 samples, the Swedish variant was not found aswell.3 Recently, the Swedish CT variant has been detected in 2 female visitors of an sti clinic in Oslo.4 These findings indicate that vigilance is required if urogenital CT test procedures that do not detect the Swedish CT variant are used. 1. Euro Surveill. 2006;11(11); 2. Euro Surveill. 2007: 12 (2); 3. Euro Surveill 2007:12 (2); 4. Euro Surveill 2007;12(3);

P-093 CSI-NETHERLANDS: A LARGE SCALE INTERNET-BASED CHLAMYDIA SCREENING IMPLEMENTATION PROGRAM

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Objectives: Chlamydia trachomatis (Ct) is the most prevalent bacterial STI in the Netherlands. Previous research (PILOT Ct) showed that Ct prevalence was highest in high urban areas (3,2%) and low in rural areas (0,6%). It is estimated that 60.000 Ct infections annually occur in the Netherlands and only about 1/3 of these infections are detected and treated. The increase in Ct infections seen in the last 5 years indicates the need for a more active approach. The Ministry of Health (MOH) decided to start a screening program in 3 regions.
Methods: The Chlamydia Screening Implementation (CSI) Project is a large-scale intervention, piloting sustainable, selective, systematic and internet-based Chlamydia screening during 2007-2010. In this 3-year period all 315.000 sexually active 16-29yr citizens of Amsterdam and Rotterdam are invited two times to participate in the screening; in the lower prevalence area S-Limburg only if they match a certain risk-profile. Eligible persons are retrieved from the population registre and receive a letter either from the Public Health Service (PHS) or from their GP. Via the internet site www.chlamydiatest.nl they will be able to get information, do pre-test interviews online, order sampling materials, view instruction video's, get test results and download treatment guidelines for their health provider. Also partner treatment and counselling will be included at the website. The project started in March 2007. The PHS will implement the screening; STI AIDS Netherlands coordinates the project. The screening will be operational from October 2007 onwards. The project is funded by the MOH and ZonMw (the Netherlands Organisation for Health Research and Development).
Results: The large scale design of this programme makes it possible to offer screening to the total eligible population in the region. It provides not only individual benefits (early detection and treatment to prevent complications) but also enables studying the impact of screening on population prevalence.
Conclusion: The results will be leading for the decision whether and how a national roll-out of Ct screening in the Netherlands will be implemented in the near future. In-depth evaluation of this implementation project will be done by the Centre

for Infectious Disease Control Netherlands (RIVM/Cib, see related abstract). * The CSI project group: JEAM van Bergen, DT van Schaik, HM Götz, O de Zwart, JSA Fennema, JAR van den Hoek, CJPA Hoebe, EEHG Brouwers, ELM Op de Coul, IVF van den Broek.

P-094 PREVALENCE OF CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE AMONG FEMALE UNIVERSITY STUDENTS IN NOVOSIBIRSK, RUSSIA

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Objective: Epidemiology of sexually transmitted infections (STIs) is largely based on surveillance data. The aim of the present study was to examine the prevalence of Chlamydia trachomatis and Neisseria gonorrhoeae infections and risk factors for these infections among young women in Novosibirsk, Western Siberia.
Methods: Female university students were invited to undergo free gynecological examination. One hundred students (mean age 20.6 years, range 16-24) voluntarily participated in the study. After a confidential interview, a gynecologic examination was performed with collection of endocervical specimens. A nucleic acid amplification method (APTIMA Combo 2 assay, Gen-Probe Inc, USA) was used for N. gonorrhoeae and C. trachomatis testing.
Results: The prevalence of C. trachomatis infection was 12.0%, and N. gonorrhoeae prevalence was 2.0%. Both N. gonorrhoeae-positive females were also infected with C. trachomatis. Infected women reported younger age at first sexual intercourse (16.1 years vs 17.5 years among non-infected, $p = 0.01$) and a higher number of lifetime sexual partners (6.1 vs 2.8, $p = 0.01$). Other variables (age, new sexual partner, condom use, history of STDs etc.) did not differ between infected and non-infected subjects. Among reported symptoms, vaginal discharge ($p = 0.04$) and intensive menstrual bleeding ($p = 0.04$) were more frequent in infected women, whereas dysmenorrhea, genital pruritus, burning, pain, and dyspareunia were not.
Conclusion: The prevalence rates of C. trachomatis and N. gonorrhoeae infections in young females in Novosibirsk, Russia are higher than those previously published, possibly due to higher sensitivity of the method used in our study. As in other populations, age at first intercourse and the number of lifetime sexual partners had a significant effect on the risk of _ bacterial STIs.

P-095 EVALUATION OF SYNDROMIC MANAGEMENT FOR CHLAMYDIA IN STI CLINICS IN BOLIVIA

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Objective: To better understand the performance of syndromic management for Chlamydia in comparison to PCR-based reference methods.
Method: In a prospective study, participants were recruited from four Centers of Reference in the cities of La Paz, El Alto, Cochabamba and Santa Cruz. These participants received syndromic diagnosis for cervicitis. Reference tests for CT were conducted using CT/NG Amplicor tests by Roche. These tests were analyzed at the National Reference Laboratory (INLASA) in the city of La Paz. The sample size was 1840.
Results: Of the total participants, 26.46% (487) were from Santa Cruz, 23.36% (430) from Cochabamba, 24.5% (450) from el Alto and 25.70% (473) from La Paz. The mean prevalence for Chlamydia in the four ITS clinics, based on the gold standard PCR tests was 12.7%. However, when analyzing the data by department, the highest prevalence was observed in Santa Cruz and El Alto with 14.31% each, followed by Cochabamba with 12.02% and finally La Paz with a prevalence of 11.01%. 233 cases were diagnosed positive for Chlamydia by the gold standard PCR, and 476 were diagnosed positive for cervicitis using syndromic management.
Conclusions: Syndromic management for Chlamydia has low sensitivity (35%) and low specificity (78%). New elements should be incorporated into the current syndromic management protocol to improve its sensitivity such as measurement of vaginal pH, the test for swabs for cervicitis and possibly leucocyte count at > 30 per field. This will have to be considered and evaluated by the Bolivian national program for STI/AIDS for the different levels of care. The correlation in the majority of cases (60%) of Gonorrhea and Chlamydia justifies that in places where there are no laboratory tests for Chlamydia, the observation of intra-cellular diplococcus and leucocytes at > 30 per field in Gram stain should be sufficient to consider administering treatment for Gonorrhea and Chlamydia (given the high correlation), and possibly incorporating a clinical-etiological criterion.

P-096 ABSENCE OF A CHLAMYDIA TRACHOMATIS VARIANT, HARBORING A DELETION IN THE CRYPTIC PLASMID, AMONG CLIENTS OF A STI CLINIC IN MELBOURNE, AUSTRALIA

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Objectives: To determine whether a C. trachomatis (CT) variant, harboring a 377 base pair deletion in the cryptic plasmid nucleotide sequence (recently identified in the Swedish population) is present among clients of a sexual health clinic in Melbourne, Australia. For laboratories using CT assays targeting the region where this mutation occurs, such as those manufactured by Abbott and Roche, vigilance to monitor the presence of such strains in the population is important, especially to avoid a lack of detection (false negative result) and subsequent non-treatment of such infections.
Methods: Seven hundred samples, negative by the Cobas Taqman assay (Roche Molecular Systems), were tested by an in-house real-time PCR assay directing amplification of a 274 bp region of the ompA gene. In addition, 200 CT-positive samples from Melbourne Sexual Health Centre, determined by BDProbeTec™ ET assay (Becton Dickinson), were tested with the Cobas Taqman assay. Discrepant samples from the latter were tested by the ompA assay.
Results: None of the 700 Cobas Taqman negative samples were positive by the ompA gene PCR. In addition, of the 200 BDProbeTec positive samples, 3 tested CT-negative on the Cobas Taqman. These 3 samples were all negative by the ompA gene PCR assay, suggesting that the discrepancies could be due to sample degradation or differential sensitivity of the two assays. All 900 samples are currently being tested by a mutant-specific real-time PCR assay to validate these findings.
Conclusions: We were unable to detect any CT mutants among the attendees of a sexual health clinic in Melbourne. It is possible that this mutant strain has not yet entered circulation in patients attending the Melbourne Sexual Health Centre. However, given the current upsurge in urogenital CT infections, continued surveillance is necessary to ensure timely detection of this mutant should it be introduced into the population.

P-097 PREVALENCE OF LYMPHOGRANULOMA VENEREUM (LGV) INFECTION AMONGST ASYMPTOMATIC MEN WHO HAVE SEX WITH MEN, ONTARIO, CANADA

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Objectives: Lymphogranuloma venereum (LGV) is a sexually transmitted infection (STI) caused by an invasive form of Chlamydia trachomatis, serotypes L1, L2 and L3. LGV emerged in Canada in 2004 and principally affected men who have sex with men (MSM). The role of asymptomatic penile/urethral or rectal LGV infection in the transmission of this disease is unknown. We conducted a cross-sectional study to determine the burden of asymptomatic LGV infection in symptomatic HIV (+) and HIV(-) MSM.

Methods: Two hundred and fifty three men without symptoms of proctitis or prior LGV infection were recruited across the 5 sites in the Toronto area, including an STI clinic, two HIV tertiary care centers, a primary health care center, and a sex club. Urine, rectal swab and serological samples were collected from each participant, and those with a subsequent positive LGV serology submitted a pharyngeal swab. Urine and rectal swabs were tested using commercially-available and omp nucleic acid amplification techniques (NAAT) and serum was tested using microimmunofluoresence (MIF).

Results: The population of men ranged from age 18 to 78 yr (median 43 yr), of which 75% were Caucasian, 91% homosexual and 53% HIV positive. LGV Chlamydia were not detected with NAAT on the rectum, urine or pharyngeal samples, but 20 serological samples (8%) contained significant titres (≥ 1:256) of anti-LGV sera. There was no association between positive serology and current or remote symptoms of LGV. Alternatively, non-LGV Chlamydia was detected in 1 urine (0.4%), 11 rectum (4%) and 1 pharyngeal (0.1%) samples. Only the urethritis patient was symptomatic. HIV status did not differ between those with non-LGV Chlamydia and those without (p = 0.17). Unprotected anopenetrative intercourse was associated with non-LGV Chlamydia (p=0.006) while unprotected anoreceptive intercourse was not (p=0.19).

Conclusions: Despite the dramatic rise in cases of LGV in Canada during our study period and in the months that immediately preceded it, there was no evidence of urethral or rectal LGV in asymptomatic men. Transmission of LGV via penile or rectal contact with asymptomatic men cannot be attributed in this study. Alternatively, there was a high rate of active infection with non-LGV Chlamydia (4%), predominantly in the rectum. Corresponding Author: Jill Tinmouth (jill.tinmouth @sunnbrook.ca).

P-098 EXTENT OF DISEASE PROGRESSION IN CHLAMYDIA TRACHOMATIS INFECTED WOMEN IS DETERMINED BY VARYING LEVELS OF CYTOKINES IN CERVICAL LAVAGES AND PERIPHERAL BLOOD MONONUCLEAR CELLS

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Objectives: Chlamydia trachomatis (CT) causes one of the most prevalent bacterial sexual transmitted infections with a huge magnitude of associated morbidity. C. trachomatis infection induces a complex, well orchestrated network of cytokines, which elevate and dampen various arms of the immune system through positive and negative feedback mechanistic loops. Cross sectional investigations on humans supports the hypothesis that there is a T-helper (TH) 1 versus TH 2 polarization, to chlamydial antigens for either resolution or resistance to infection. There is need for studies on host responses at the site of initial infection which could provide a snapshot view of the model of pathogenesis by which genital C.trachomatis infection progresses from acute to chronic stages, leading to serious sequalae like salpingitis and tubal occlusion.

Methods: 270 women suffering from discharge, erosion, primary and secondary infertility representing progressive stages of disease due to CT infection were enrolled to determine the immune responses at the basal level and on stimulation with a chlamydial Major Outer Membrane Protein antigen. Lymphocyte Proliferative response by cervical cells and peripheral blood mononuclear cells (PBMCs) was studied in CT positive and negative patients. Using a semi-quantitative Reverse Transcriptase-PCR we determined the cytokine mRNA expression levels of IFN-gamma, IL-10, IL-12 and IL-4 in cervical lavages and PBMCs at 6, 12, 24, 48 hours post induction (hpi). We further validated the cytokine expression patterns in the different groups by Elispot for IFN-gamma and IL-10 at 12, 18, 24, 30, 36, 42, 48 hpi. Our next aim was to correlate the cytokine mRNA expressions (IFN-gamma, IL-10) in PBMCs in the presence of serum cHSP60 antibodies in these patients, to determine the extent of disease progression due to C.trachomatis.

Results: Time kinetics for cytokines production in cervical lavages and PBMCs showed that the best response to chlamydial stimulation was 12 hpi at the mRNA level and 18 hpi for cytokine producing cells. Median of proliferative responses were significantly ($P<0.05$) higher in CT positive women than CT negative women. Cervical lavage cells showed marked TH 1 responses in discharge and primary infertility women whereas a TH 2 response dominated in erosion and secondary infertility women. Differential levels of cytokines were significantly correlated across groups ($P<0.001$ for IFN-gamma, IL-10, IL-12; $P<0.01$ for IL-4). Cytokines responses in PBMCs were differentially correlated to levels of chlamydial heat shock protein 60 (cHSP60) antibodies in patients from each group.

Conclusions: Our data sets showed variations in production of key cytokines by cervical lavages at the basal level and upon serovar specific CT induction suggesting that they play a pivotal role in maintaining a differential immunological surveillance milieu in women suffering from various sequalae due to CT. Our results suggest that mucosal immune responses to CT are different from those of PBMCs and are better indicators of the immunopathogenesis and extent of damage caused by this pathogen.email: rishein9@rediffmail.com

P-099 THE COST OF RESCREENING WOMEN FOR CHLAMYDIA USING MAILED SELF-COLLECTED VAGINAL SWABS COMPARED TO RESCREENING IN AN STD CLINIC

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Objectives: Centers for Disease Control and Prevention (CDC) and other organizations recommend that women infected with chlamydia be rescreened approximately 3 months after treatment because repeat infections are common, but return rates for rescreening are low. A randomized trial is underway to determine if using patient self-collected vaginal swabs which are then mailed to the testing laboratory (Home Group) improves rescreening rates compared to that of patients who are given a telephone reminder to visit an STD clinic (Clinic Group). The cost-effectiveness of these two methods will depend on the return rate for each group; these data will be available when the study concludes. Data collected to date make it possible to determine the cost of delivering each intervention.

Methods: Study staff collected time data at enrollment, reminder, and clinic visits. Staff labor time was multiplied by nationally-representative wages plus 25% for benefits to determine labor costs. Staff also measured the time expended to contact patients who declined to enroll in the study and in attempts to contact patients who could not be reached. These costs were combined with costs for mailing supplies, postage, and testing kits and processing to determine the program cost of each intervention. We added 33% to the cost of each intervention to cover unmeasured administrative costs and overhead, such as some data management tasks. No treatment costs were included in this preliminary assessment.
Results: The total program cost was $54 per Home Group patient who was rescreened and $118 per Clinic Group patient who was rescreened ($p < 0.01$). Enrollment cost approximately $13 per patient. Because the time difference between groups was not significant at $p < 0.05$, we estimated the average enrollment time for both groups combined and apportioned time costs for patients who declined to participate in the study or who could not be contacted (based on data current as of 12/31/06). Contacting enrolled patients for the rescreening reminder cost approximately $7 for patients in the Home Group and $3 for patients in the Clinic Group ($p < 0.05$). The cost of the clinic visit for Clinic Group patients who returned to the clinic was $73. The cost of mailing the specimen collection kit, return postage, and test processing for patients in the Home Group who returned swabs was $21. These total cost estimates might be somewhat higher than would be experienced if either intervention were adopted as programmatic practice, because some enrollment costs were attributable to obtaining informed consent and describing the study process. These tasks might have consumed more time than a simple description of the rescreening process that might be provided to patients if either practice were adopted as the standard for a program.
Conclusions: Cost data collected to date suggest that home-collected vaginal swabs may offer a programmatically less costly way to rescreen women for chlamydia.

P-100 MOLECULAR EPIDEMIOLOGY OF CHLAMYDIA TRACHOMATIS INFECTIONS IN CONNECTICUT

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Objectives: Chlamydia trachomatis is the most common bacterial sexually transmitted infection (STI) in the United States. Studies examining the relationship between the infecting chlamydia serovar and demographic characteristics have produced inconsistent results. The purpose of this study was to evaluate the relationship between the infecting C. trachomatis strain, demographic and behavioral characteristics among young women with chlamydia.
Methods: Data are from an ongoing cohort study of women with Chlamydia trachomatis infection in Connecticut. Upon enrollment women completed a confidential survey and provided either a urine sample or self collected vaginal swab specimen. Genomic DNA was extracted, the omp1 gene was PCR amplified using gene specific primers and sequenced. Analyses presented included 54 women for whom we have complete genotype information. Associations were estimated between individual genotype classes B (D, E, and L1), C (H, I, J, and K), and intermediate (F and G) or individual genotypes and demographic and behavioral characteristics.
Results: B class genotypes were the most common (n=24, 44%), followed by C (n=16, 30%) and intermediate (n=14, 26%) classes respectively. The distribution of individual genotypes in order of decreasing frequency was E n=15 (11%), F n=10 (7%), G n=8 (6%), Ia n=7 (5%), J n=7 (5%), G n=4 (3%), K n=2 (2%), and L1 n=1 (1%). Individual genotypes did not differ by age (grouped as less than 19 and over 19 years of age), race (categorized as black vs non-black), previous history of any STI, or previous history of chlamydia. Genotype Ia was associated with a younger age at first intercourse (Fisher's Exact p=0.047). We did not identify differences in the distribution of genotype classes and age. However, black race was protective for infection with B class genotypes (OR 0.3 95% CI 0.98-0.92). Four women were positive for chlamydia despite 7 or more days having elapsed between their taking antibiotics and providing a sample for genotyping. Two of these women were infected with serotype E, 1 carried genotype F, and 1 carried genotype J.
Conclusions: We identified associations between C. trachomatis genotype and both race and age at first intercourse. Molecular methods provide a powerful tool to understand the epidemiology of sexually transmitted infections. Yet, studies that combine molecular epidemiology and traditional epidemiologic methods are rarely conducted. Our small sample size may have limited our ability to detect important associations. However, our results indicate that the relationship between the infecting C. trachomatis genotype, demographic, and behavioral characteristics is complex and that larger studies are warranted.

P-101 AN EVALUATION OF SELF-COLLECTED PENILE SWABS FROM MEN FOR DETECTION OF CHLAMYDIA TRACHOMATIS

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At present, first void urine (FVU) is the only non-invasive sample for men for detection of Chlamydia trachomatis . However urine presents some disadvantages that can affect the sensitivity of the test : variable volume and presence of inhibitors for example. In women, a vaginal swab could replace FVU in screening program. Objectives: to see whether results from self collected penile swabs are at least as sensitive as FVU and to determine whether self-collected penile swabs are a feasible and acceptable alternative to FVU samples.
Methods: In this prospective study 500 men would have been enrolled at our screening center (anonymous and free of charge) in Bordeaux, France, from February to July 2007. A subject first self-collects penile swab using a flocked regular swab and after self-collects urine. The swab is transported dry to the laboratory and transferred into M4RT transport medium (500µl). Both samples are simultaneously tested for C. trachomatis using the PCR assay (Cobas TaqMan CT Test, Roche Diagnostic).
Results: Out of 79 men included at this time, seven have positive samples. Penile swabs and FVU are concordant in four cases and three are discordant, two positive penile swabs versus negative urine, and one positive urine versus negative penile swab.
Conclusion: these preliminary findings indicate that penile swab identified infected patient as well as urine.

P-102 STRUCTURED REVIEW OF THE INCIDENCE OF PELVIC INFLAMMATORY DISEASE IN CHLAMYDIA-INFECTED, UNTREATED WOMEN

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Objectives: Because of the long-term complications of pelvic inflammatory disease (PID), the cost-effectiveness of screening for Chlamydia trachomatis infection depends in part on the incidence of PID in untreated, chlamydia-infected women. We conducted this systematic review of the literature to evaluate the original research assessing the incidence of PID following untreated Chlamydia trachomatis infection. Our goal was to develop from this literature a consensus concerning this incidence.
Methods: We searched EMBASE 1980-October 2006 and Ovid MEDLINE 1966-October 2006 using the following search terms: chlamydia, pelvic inflammatory disease, PID, salpingitis, epidemiologic studies, epidemiology, cost-benefit analysis, clinical trials, mass screening, and primary prevention. We included cost-benefit

studies to determine the sources that they used to estimate the incidence of PID in chlamydia-infected women. We searched the reference lists of reviewed studies for additional publications; used Web of Science to identify papers that cited key studies; and contacted experts for help in identifying pertinent articles. Six prospective cohort studies met our inclusion criteria. Because of the limited number, none was eliminated on the basis of validity.

Results: Two studies assessed women in settings other than STD clinics. One found a PID incidence of 0 (95% CI=0-12%) in 30 women within 1 year; it may not have identified some cases, and 7 subjects spontaneously cleared the chlamydia infection during follow-up. The other study found an incidence of 1.8% (95% CI=0.2%-6.5%) in 2/109 adolescents within 3 months; four additional subjects may have had PID, increasing the incidence to 5.5%. Three studies evaluated women seen in STD clinics or exposed to infected men. A study of 20 women infected with both gonorrhea and chlamydia and treated for gonorrhea reported an incidence of PID of 30% (95% CI=12%-54%) within 50 days; and, in a similar study of 67 women, incidence of PID was 7.5% (95% CI=2.5%-17%) within 3 months. The first study may have had errors in the incidence calculation, and, in both, loss to follow-up may have comprised their validity. In a study of15 partners of men who had nongonococcal urethritis, the PID incidence was 20% (95% CI=4.3%-48%) within four weeks; the precision of this estimate is poor. In a study of the effectiveness of chlamydia screening in high-risk women in a managed care organization, two untreated cohorts were followed prospectively to determine PID incidence. After one year, the incidence was 1.3% (95% CI=0.1%-20%) in 364 women in one group and 5.0% (95% CI=2.0%-11%) in 598 women in the other. These incidence values depend on an estimate of the baseline prevalence of chlamydia and may not be accurate. Therefore, all 6 studies had problems of validity, and most lacked precision because of small sample size.

Conclusions: We could not develop a consensus estimate of the incidence of PID in untreated, chlamydia-infected women because all relevant studies had problems of validity, small sample size, differing follow-up times, and/or they studied subjects who were not representative of the general population. Investigators and clinicians planning chlamydia screening programs need to be cognizant of the inconclusive incidence data.

P-103 SURVEILLANCE OF GENITAL CHLAMYDIA INFECTIONS IN CANADA, 1991 TO 2006

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Objectives: Since becoming a nationally reportable disease in 1991, genital Chlamydia trachomatis has remained the most commonly reported bacterial sexually transmitted infection (STI) in Canada and the rate of infection continues to increase annually. In order to identify and examine the epidemiological trends and to interpret the ongoing rise in infection rates, an analysis of national genital chlamydia surveillance data was conducted.

Methods: All cases of genital C.trachomatis infection reported to the Public Health Agency of Canada between 1991 and 2005 (and 2006 preliminary data) were included in the analysis. Population denominators were based on census estimates provided by Statistics Canada. Rates of infection (per 100,000) were calculated by age, sex and geographical region.

Results: Between 1991 and 1997, the rate of genital chlamydia infections in Canada decreased by 31% (from 164.0/100,000 to a recorded-low of 113.9/100,000). Since 1997, however, an increase of 83% has been observed with a rate of 208.5/100,000 projected for 2006 (based on preliminary data). Although females continue to account for the majority of cases, the proportion of all genital chlamydia infections reported among males has increased from 24.7% in 1991 to 33.7% in 2005. Among both sexes, those 15 to 29 years of age remain the most affected. In 2005, of the 42,695 cases of genital chlamydia reported among females, 31,012 (72.6%) were 15 to 24 years of age; of the 21,686 cases reported among males, 13,022 (60.0%) were 20 to 29 years of age. Calculated age- and sex-specific rates for 2005 mirror this trend with the highest rates of infection occurring among females 20 to 24 and 15 to 19 years of age (1490.1/100,000 and 1403.5/100,000, respectively), followed by males 20 to 24 years of age (716.2 per 100,000). Geographically, the northern territories of Canada have consistently reported the highest rates of infection. Despite representing only 3.1% of the total number of genital chlamydia infections reported in Canada, the rate of infection reported by the northern territories in 2005 (1948.2/100,000) was nearly 10-times higher than the national rate of 199.5/100,000.

Conclusions: The rate of genital C.trachomatis infections in Canada has increased steadily since 1997 and is projected to reach a record high in 2006. Adolescents and young adults, particularly females, consistently account for the majority of cases ' however, the proportion of cases reported among males continues to increase annually. In fact, between 1997 and 2005, the greatest increase in genital chlamydia rates was observed among males 40 years of age and older. This change may be due to an increase in the number of males being tested for chlamydia following the introduction of urine-based diagnostic methods. Alarmingly high rates of genital chlamydia infection persist in Canada's northern territories and therefore further analysis of surveillance data for this region, as well as targeted epidemiological studies are recommended in order to better guide STI education and prevention efforts in this population.

P-104 DIAGNOSIS AND EPIDEMIOLOGY OF A NEW DELETION VARIANT OF CHLAMYDIA TRACHOMATIS IN ONE COUNTY OF SWEDEN

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Introduction: During 2006 a deletion variant of Ct was detected in Sweden by Ripa & Nilsson (1). The new variant (nvCt) could not be detected by some of the commercial tests on the market targeting the Ct plasmid. It was found that nvCt had a deletion within the target area Cobas Amplicor (Roche) and m2000 (Abbott). After sequencing an in-house PCR was developed where the primers spanned the deletion. A specific identification could thus be obtained between the wild type and the nvCt.

Results: For routine diagnosis of Ct the m2000 (Abbott) was introduced under 2006. About 75,000 samples are tested a year. During the autumn 2006 the nvCt was first described. It was soon detected in our county too and several strains were isolated in cell culture. Retesting of samples negative by m2000 with a discriminatory PCR has been adopted and the results of the first 300 positive samples of the nvCt are presented. The overall proportion of nvCt has been 25% of all positive samples. In a comparison with Aptima Combo 2 (GenProbe) reported elsewhere the proportion was 33% in a selected group of samples. Stratification of the nvCt according to gender and age reflected faithfully the distribution of the wild type suggesting a complete penetration of our population. Archive material from 2000 of 87 samples positive in cell culture did not reveal any nvCt. The nvCt and the wild type are being compared for symptoms. One eye infection caused by the nvCt in an infant has been detected. Abdominal fluid from 25 cases of PID collected during the last three years has been tested for the nvCt. Twelve samples were positive for Ct but no nvCt was found.

Conclusions: A new variant of Ct has recently appeared in Sweden with a deletion of 377bps just downstream of the BamHI cleavage site of the cryptic plasmid. This deletion contains the target for both the Cobas Amplicor (Roche) and m2000 (Abbott) kits. Therefore these two tests can not in their present form detect the new variant. At present the new variant is widely spread in our population and accounts for 25% of the positive samples. Archival material suggests that the nvCt was not present or at least very uncommon during the year 2000. The distribution of the nvCt is quite similar to that of the wild type. Data on the clinical manifestations are

still rhapsodic but will soon be available. A biological change has made Ct undetectable by certain commercial diagnostic tests. Although plasmid-free Ct variants have been reported they do not seem to establish endemic circulation. This nvCt is certainly capable of epidemic spread. 1. Ripa T, Nilsson P. A variant of Chlamydia trachomatis with deletion in cryptic plasmid: implications for use of PCR diagnostic tests. Euro Surveill 2006;11(11):E061109.2. Available from: http://www.eurosurveillance.org/ew/2006/061109.asp#2.

P-105 NATIONAL CHLAMYDIA SCREENING PROGRAMME (NCSP) IN ENGLAND: MANAGEMENT OF POSITIVES AND PARTNERS OUTSIDE OF TRADITIONAL GENITOURINARY MEDICINE (GUM) CLINICS

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Objectives: Chlamydia trachomatis is a prevalent infection in England, with serious sequelae in both women and men if left untreated. Since a high proportion of infections are asymptomatic, screening programmes have evolved to detect persons infected. The Department of Health (England) introduced the National Chlamydia Screening Programme (NCSP) in April 2003 following pilot exercises exploring the feasibility and acceptability of opportunistic screening. Effective management of screen positives and their partners is an essential component of the programme by reducing the risk of reinfection and reinforcing sexual health education messages. This presentation will describe the progress to date.
Methods: The NCSP offers screening to sexually active men and women under 25s in a range of health and non-health care settings outside of genitourinary medicine (GUM) clinics. Protocols for management of positives and their partners are based on the national standards and guidelines from British Association of Sexual Health and HIV (BASHH) and Society of Sexual Health Advisors (SSHA). Local chlamydia screening offices are responsible for ensuring management is undertaken. Positives are given free treatment (azithromycin 1gm single dose, doxycycline 100 mg bd 7 days or erythromycin 500mg bd 14 days) and advice and counselling from a trained person. Aggregate data describing management of positives and partners is reported six monthly from local programme areas to the HPA Centre for Infections in London.
Results: The first three years of the NCSP have seen over 90% of screen positives treated. Increasingly this management has occurred outside of traditional GUM clinics (50% in year 1 to 83% in year 3). Approximately 60% of the partners of these positives have been verified as notified, primarily via the index case. The number of partners treated per index case has fallen from 0.6 in year 1 to 0.43 in year 3, although this figure varies between programme areas. As with the index cases, treatment has increasingly occurred outside of traditional GUM settings, primarily in the local chlamydia screening offices. Uptake of testing by partners is less than uptake of treatment but where partners are tested approximately 60% are positive. Preliminary results for year 4 will be presented.
Conclusions: Management of screen positives and their partners is feasible outside of traditional GUM clinics, in a variety of health and non-health care settings. However, current rates of partner notification and treatment need to be improved to increase the effectiveness of the NCSP. These rates differ by local area and research is required to highlight the reasons why and guide implementation of good practice.

P-106 IS THE NEW VARIANT CHLAMYDIA TRACHOMATIS PRESENT IN THE UNITED KINGDOM?

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Objectives: The Chlamydia trachomatis cryptic plasmid is medium copy number, and as such, is a popular target for commercial diagnostic platforms. However a new variant C. trachomatis strain has been isolated in Sweden, Norway and Finland which has a 377bp deletion in a portion of the plasmid that is the target area for the C. trachomatis nucleic acid amplification tests manufactured by Abbott and Roche. Consequently these platforms generate false negative results when presented with this strain. This study aimed to determine if the new variant was present within the United Kingdom.
Methods: Specimens, which had been determined to be C. trachomatis positive using an unaffected platform (Strand displacement assay, Becton Dickinson; Aptima Combo Two, Genprobe or the Artus C. trachomatis PCR Kit, Qiagen) were forwarded to the Sexually Transmitted Bacteria Reference Laboratory. All specimens were tested for the presence of the deletion using an in-house nested block based PCR assay which generated a 225bp fragment in new variant strains and a 602bp fragment in wild-type strains. The specimens, which were examined, could be divided into two main groups. Two hundred and twenty specimens were sourced from MSM patients and forwarded from 34 clinics throughout the UK. Another 397 specimens were sourced primarily from heterosexual patients were forwarded from five cities within the UK (London, Portsmouth, Plymouth, Harrogate and Nottingham).
Results: A total of 617 C. trachomatis positive clinical specimens were screened for the presence of the new variant mutation. Five hundred and seventy seven specimens generated the 602bp amplicon, which is consistent with the wild type strains. Forty specimens failed to generate an amplicon, which is consistent with differences in the analytical sensitivity of different platforms and probably reflective of low C. trachomatis DNA load.
Conclusions: The results of this study have highlighted that currently there is no evidence that the new variant C. trachomatis strain is present within the UK. However screening and prevalence studies are ongoing and UK clinicians and microbiologist should remain vigilant for suspicious, negative results. *This abstract is submitted on behalf of the Unitied Kingdom CT variant Incident group

P-107 WHAT IS THE PREVALENCE OF LYMPHOGRANULOMA VENEREUM IN THE UNITED KINGDOM AMONG MEN WHO HAVE SEX WITH MEN, AND IS THERE AN ASYMPTOMATIC RESERVOIR OF INFECTION?

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Objectives: The LGV enhanced surveillance program was launched in the United Kingdom in October 2004 and early data demonstrated widespread geographical distribution of this infection among men whom have sex with men (MSM). Despite the launch of the program several outstanding epidemiological questions remained. A large scale, collaborative screening exercise was under undertaken to establish (i) the overall prevalence of C. trachomatis infection, (ii) the prevalence of LGV infection and (iii) if an asymptomatic reservoir of LGV exists, in UK MSM populations.

Methods: Unselected MSM attending five Genito-Urinary Medicine clinics between the period of November 2005 and December 2006 were screened for both urethral and rectal C. trachomatis, according to sexual risk assessment but irrespective of symptoms. The screening was carried out on consecutive patients for limited time periods that varied between clinics. All C. trachomatis positive specimens were referred to the Sexually Transmitted Bacteria Reference Laboratory (STBRL) for C. trachomatis confirmation and LGV typing. We collated results with denominator data on numbers of men screened and symptoms in those with LGV.
Results: A total of 221 LGV cases were identified during the screening study, of which; 213 (96.4%) were rectal and 8 (3.6%) were urethral specimens. Asymptomatic or presymtomatic infections accounted for 3.16% (7/213) of all rectal LGV infections. All of the urethral LGV infections were symptomatic. To date complete denominator data has been collated for three clinics, based on the urethral screening of 3892 men and the rectal screening of 5568 men. The prevalence of infection (with 95%CI) is: (i) rectal CT 7.2% (6.5%, 7.9%); (ii) rectal LGV 0.97% (0.74%, 1.3%); (iii) urethral CT 3.2% (2.7%, 3.8%); (iv) urethral LGV 0.05% (0.045%, 0.059%). Two of the 44 rectal LGV cases were asymptomatic. No cases of asymptomatic urethral LGV were found.
Conclusions: This study explored key issues surrounding the epidemiology of LGV and non-LGV C. trachomatis infections among the UK MSM populations. Our findings are consistent with previous studies demonstrating a high prevalence of C. trachomatis at both urethral and rectal sites. Most of this infection was non-LGV associated and the overall prevalence of LGV infections was low, particularly in the urethra. In contrast to recent reports from both Europe and the US, we identified very few cases of asymptomatic LGV and those deemed to have been asymptomatic might have been detected at a 'presymptomatic' stage. We have not identified an asymptomatic or a urethral reservoir of infection, and therefore the results of this study reinforce current UK policy that resources for LGV screening should be targeted towards high risk symptomatic patients. * This work is submitted on behalf of the Unitied Kingdom LGV Incident Group.

P-108 THE GROWTH OF THE ENGLISH NATIONAL CHLAMYDIA SCREENING PROGRAMME WITHIN A NATIONAL HEALTH SERVICE

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Objectives: The National Chlamydia Screening Programme (NCSP) seeks to offer screening to a population of approximately 5.3 million sexually active young men and women aged under 25 years. The NCSP aims to control genital chlamydial infection through the early detection and treatment of asymptomatic infection; prevent the development of sequelae; and reduce onward transmission. Other countries, such as the USA and Sweden, have introduced screening initiatives that were initially successful, and the design of the NCSP builds on experience from these programmes. This presentation describes how the NSCP is developing the delivery of an effective, equitable intervention strategy.
Methods: The NCSP is a community based opportunistic screening programme, which the WHO considers to be the best method of delivering chlamydial screening in early adulthood to those accessing sexual health services and primary care. National guidelines are set for all aspects of service delivery including: diagnosis, treatment, partner notification, and outreach methods in clinical and non-clinical settings. The programme is co-ordinated at three levels: national, regional and local. Responsibility for local programme delivery is the responsibility of 85 programme areas. The local provision of service consists of the NHS and voluntary sector, sexual health agencies, and other local initiatives involving military, prison and educational establishments, depending on local initiatives and needs. These local networks determine the mix of screening venues most appropriate to their community.
Results: The phased implementation of the NCSP started in 2003, initially with 10 programme areas which expanded to 16 areas after 2 years (25% of England). Full participation will be achieved during 2007. In the early stages of the NCSP's development (2003/04), the majority of screening activity was provided within clinical settings, such as community contraceptive services (74%). However, service delivery is now expanding to include a wide range of non-clinical settings, which accounted for 40% of screening activity in 2006. Within established programme areas, coverage of the target population was an average of 6.2% (range 0.01% to 21.42%) in 2005 and 5.6% (range 0.01% to 23.53%) in 2006.
Conclusions: The English Department of Health has described the NCSP as 'the cornerstone of the drive for better sexual health' and is contributing to the delivery of sexual health services outside of the more traditional sexually transmitted disease clinics. The strategy will continue to be evaluated to maximise uptake and coverage, and the reasons for variation in these measures will be explored. Expansion of screening within the NCSP continues and local areas are tailoring intervention to meet local needs to ensure that vulnerable groups are included.

P-109 LYMPHOGRANULOMA VENEREUM (LGV) DIAGNOSIS AND SCREENING AT A GAY MENS STD CLINIC

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Objective: Lymphogranuloma venereum (LGV) is a systemic and invasive sexually transmitted disease caused by Chlamydia trachomatis (CT) serovars L1, L2, and L3. We evaluated LGV diagnosis and screening at Whitman-Walker Clinic (WWC), a non-profit community-based health organization serving the Washington, DC. metropolitan region established by and for the gay and lesbian community.
Methods: In the course of validating a BD ProbeTec TM ET Assay (a nucleic acid amplification test) for detecting rectal Chlamydia trachomatis, convenience samples were collected from men who had recent receptive anal intercourse attending the Gay Men's Health & Wellness Clinic, an evening STD clinic. All samples that were positive for CT via nucleic acid amplification testing were submitted to the Centers for Disease Control & Prevention (CDC) for LGV identification through sequencing a chlamydia-specific gene (ompA) and comparing the DNA sequences to serovar-standard genotypes.
Results: Of the 50 clients submitting rectal specimens, 26 (51%) were symptomatic. Symptoms included pain, inflammation, abscess, perianal sore, ulceration, proctitis and a mucopurulent rectal discharge. Of the 50 rectal specimens submitted for the in house nucleic acid amplification testing, 10 (20%) were positive for Chlamydia trachomatis. Of these 7 (70%) were symptomatic. Of the 10 rectal specimens initially positive for CT, 3 (30%) were identified as LGV by CDC. Of these 3 (100%) were symptomatic. No single clinical symptom was specific for LGV infection. Of note, of the 10 clients diagnosed with rectal Chlamydia trachomatis infection, 8 were HIV positive. Of these, 7 (88%) were symptomatic.
Conclusions: Nucleic acid amplification testing is useful for screening asymptomatic high-risk clients for rectal Chlamydia trachomatis infection, diagnosing symptomatic clients with Chlamydia trachomatis proctitis, and identifying individuals for further LGV testing. A prospective assessment of the prevalence of C. trachomatis (including LGV) among men who have sex with men reporting anal receptive sex is being conducted.

P-110 THE INTRODUCTION OF A GOVERNMENT LOCAL DELIVERY TARGET AS A LEVER TO SUPPORT IMPLEMENTATION AND COVERAGE IN ENGLANDS NATIONAL CHLAMYDIA SCREENING PROGRAMME

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Objectives: In 2003, England's government Department of Health (DH) launched the phased introduction of a National Chlamydia Screening Programme (NCSP). The government have committed strategic support and investment required for start up and recurrent operational funding for each phase. Local planning and delivery of the third and final phase is underway, aiming to complete full national implementation by the end of March 2007. Funding for the NCSP is now devolved to the local mainstream budget allocations of primary care organisations (PCOs). Stringent performance monitoring of local health economies is planned to monitor implementation and increases in chlamydia screening coverage. The government Public Service Agreement (PSA) for sexual health, upon which PCOs are monitored, introduces a target to increase the percentage of 15 to 24 year olds accepting chlamydia screening. The application of this target and the role of continued governmental support in implementation and coverage of the NCSP are examined.
Methods: Recent mathematical modelling has projected a significant fall in prevalence can be achieved with high rates of chlamydia screening coverage. NCSP coverage is reported as a percentage of the estimated sexually active population under 25 years. The government target for PCOs, referred to as 'PSA11d ' Local Delivery Plan data monitoring line', requires the NCSP to achieve 15% coverage during 2007/08. The denominator used for this target is the total population of 15 to 24s. The NCSP offers opportunistic screening to men and women under 25 who are sexually active, asymptomatic and may not otherwise seek a test. Tests/screens undertaken by genitourinary medicine clinics and other diagnostic tests are not included. Additionally, the target numerator excludes sexually active under 15s and rescreens. Screening of contacts is recorded separately.
Results: After 3 and 4 years respectively of NCSP activity in phases 1 and 2, a small number of areas are approaching or exceeding the required target percentage, whilst others have not yet achieved this proportion of coverage. Whilst many phase 3 areas started screening by March 2007, the introduction of a government target for coverage for 2007/08 is supportive in helping to drive forward planning and implementation activity in this final, and largest, phase, which accounts for 75% of England's PCOs. However, it is not possible to determine whether implementation or measured increases in coverage can be attributed directly to this target. Variation in local coverage will be presented and possible reasons will be explored, such as the degree of community based sexual health development and integration; range of venues involved in screening; extent of involvement of general practice as screening sites; and local screening models and care pathways.
Conclusions: NCSP activity and coverage cannot be viewed in isolation as it sits alongside, and complements, other screening and diagnostic testing in the target group, such as that undertaken within GU Medicine. NCSP data is currently monitored separately from chlamydia testing performed in GU Medicine in England. Government support will need to be sustained and targets increased to contribute to the achievement of levels of collective local coverage required to reduce prevalence.

P-111 EXPERIENCE OF MUTATED CHLAMYDIA TRACHOMATIS IN REBRO COUNTY, SWEDEN PREVALENCE, CHARACTERISTICS AND EFFECTIVE DIAGNOSTIC SOLUTION!

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In Sweden, a new variant of Chlamydia trachomatis, containing a 377 bp deletion in the cryptic plasmid, was recently reported. This deletion included the genetic targets for diagnostic systems such as Cobas Amplicor, Cobas TaqMan48 and Abbott m2000, which are all widely used in Sweden. In Örebro County, Sweden, C. trachomatis samples are analyzed using Cobas Amplicor and/or McCoy cell culture with subsequent identification using fluorescein-labeled monoclonal antibodies.
Objectives: To examine the prevalence and characteristics of mutated C. trachomatis in Örebro county and develop an effective solution for routine diagnostics.
Methods: All patients with suspected C. trachomatis infection were recommended to be diagnosed using Cobas Amplicor and/or culture. For examination of suspected mutants, a mutant-specific PCR with LightCycler probes flanking the plasmid deletion, plasmid sequencing, and omp1 sequencing were used. LightMix 480HT for diagnosis of C. trachomatis was evaluated.
Results: From October 5, 2006 to January 15, 2007, 2401 consecutive samples were cultured (162 (6.7%) positive). Of the culture positive samples (n=162), 61 (38%) were negative in Cobas Amplicor and all except one were also confirmed, by the mutant-specific PCR (n=60) and plasmid sequencing (the initial two samples), as identical to the previously described mutant. A questionnaire did not indicate any obvious differences between infections caused by the mutant and wild type isolates and the mutant displayed similar growth characteristics in culture. The omp1 gene of the initial 13 isolates was sequenced and all were indistinguishable, i.e. identical genotype E. In another study (see Klint et al. 17th ISSTDR/10th IUSTI world congress), these 13 isolates were characterized using a new multilocus sequence typing. Of all the 162 culture positive samples described above, 161 were positive in LightMix 480HT. The single LightMix 480HT negative sample was reported as weak positive in culture (contamination not excluded), however, the sample was repeatedly negative in all the PCRs. Furthermore, of 526 consecutive PCR samples, 36 were positive in both Cobas Amplicor and LightMix 480HT, additional 13 were positive in only LightMix 480HT (mutants), and two were positive in Cobas Amplicor solely.
Conclusions: Mutated C. trachomatis isolates were highly prevalent (38%) in Örebro county. At present, all results indicate that it is one single transmitted clone (see Klint et al. 17th ISSTDR/10th IUSTI world congress), which has not been prevalent in the community for an extended time period. The new diagnostic approach based on isolation of DNA using MagNa Pure LC System and the quantitative real-time PCR LightMix 480HT utilized on LightCycler 480 Instrument was highly sensitive, specific, and fast for high throughput genetic identification of C. trachomatis. However, rare low positive samples may be false-negative. Surveillances to reveal currently used diagnostic assays, abnormal decreases in prevalences, presence of this mutant or other possibly undetected strains, recommendations for laboratories, and actions undertaken in different geographical areas worldwide are critical. More comprehensive evaluation on a regular basis of different diagnostic methods is also crucial for maintaining quality assurance. Diagnostic assays targeting two different genetic sequences, e.g. both plasmid and chromosomal sequences, may be needed. Correspondence: magnus.unemo@orebroll.se

P-112 THE FIRST CASE OF LYMPHOGRANULOMA VENERUM IN IRAN

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Background: Lymphogranuloma venereum (LGV) is a systemic, sexually transmitted disease (STD) caused by a variety of the bacterium Chlamydia trachomatis. It has not been reported in Iran yet. Here we present the first case of LGV in Iran; a young man who developed LGV after sexual contact with a mare (a female donkey).

Case presentation: A 20-year-old man referred to our center because of painful inguinal and femoral masses. He did not have fever, malaise, weakness, rectal pain, tenesmus, urethral discharge, and penile ulceration. No special medical history was noted except of small papules on his penis 10 days before admission. He was not married, and he did deny having any sexual contact with any one, but he gave a history of having unprotected vaginal sexual contact with a mare 14 days prior to his present illness. At the time of admission his temperature was 37°C and pulse rate was 90/min. Respiratory rate was 20/min and blood pressure was 105/80 mmHg. In physical examination, two non-ulcerated, tender, firm, fluctuating and mobile masses were palpated in his right inguinal and femoral regions that caused the characteristic 'groove sign'. In smear examination from samples obtained from the swollen area, no intra or extra cellular bacteria was seen, but there were many polymorphonulear cells. In the culture of the drained fluid from the lesion, no bacteria grew after 4 days. Micrommunoflourescence testing for Chlamydia trachomatis was reactive(IgG 1:1280). Histopathological study of the tissue obtained by biopsy showed central, stellate necrosis with neutrophils, surrounded by a palisading of histocytes (stellate abscess) that was consistent with the diagnosis of LGV (Fig.1). Tissue sample was examined for the presence of Chlamydiae-specific LPS by a horseradish peroxidase-labelled streptavidin-biotin method and the result was negative. Real-time PCR (TaqMan) was used to assess the C. trachomatis DNA and LGV DNA and no C. trachomatis or LGV DNA was detected. With these findings, the patient was diagnosed as having LGV. Doxycycline (2_100mg/day p.o.) was started. He received the medication for three weeks. The response to the treatment was significant and he was asymptomatic after the treatment.

Conclusion: This is the first possible case of LGV in Iran. In our patient the Chlamydial IgG serology was very high, and these titres have never been found in normal STD patients with non LGV C. trachomatis serovars (D-K). The fact that neither Chlamydial membrane parts could be detected by immunohistochemistry nor Chlamydial DNA could be shown by real-time PCR in this case, could be explained by the fact that the initial infectious origin was cleared at the stage of necrotizing granulomatous lymphadenitis. In the Netherlands in men who had sex with men (MSM) also no LGV DNA was present in the biopsies or aspirates (personal communication S.A. Morré). Ammar Hassanzadeh Keshteli. Email: ammar_hassanzadeh@yahoo.com OR: hasanzadeh@med.mui.ac.ir

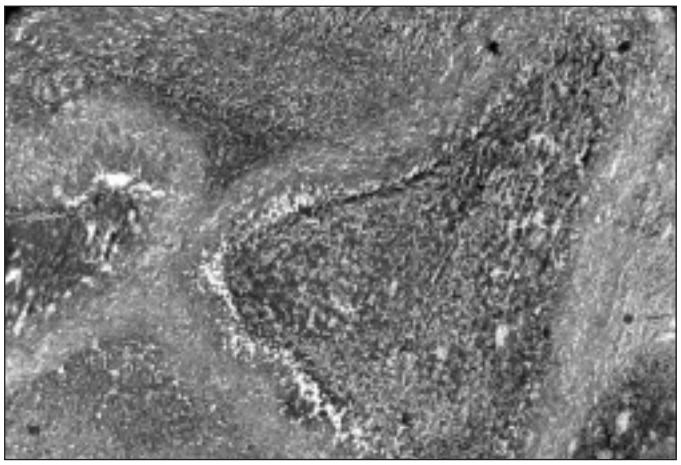

Figure 1: Histopathology of the lymph node

P-113 GENOME SEQUENCE OF LOW PASSAGE CHLAMYDIA TRACHOMATIS ISOLATES

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Objectives: To use whole genome sequence analysis for identification of Chlamydia trachomatis orfs that are associated with different in vivo and in vitro phenotypes.

Methods: Standard genome sequencing methodologies were used to complete the genome sequence of six recent clinical Chlamydia trachomatis isolates representing serovars D, G, and E. Contemporary bioinformatics tools were then used to investigate the relationship between genome sequence polymorphisms and previously characterized phenotypic differences between strains. Finally, DNA from a large collection of clinical isolates was used as template for PCR-based SNP analyses to track differences in genotype as they relate to phenotype.

Results: Each genome is approximately 1.04 Mb in length and varies from the currently available C. trachomatis serovar D genome sequence by between 1,000 and 5,000 nucleotides. Polymorphisms exist in many expected genes including the chlamydial cytotoxin, a candidate phospholipase, and the pmp ORFs. Many other polymorphic loci were identified. The largest insertion in the genome, relative to the serovar D genome, is a 437 nucleotide insertion in a serovar G isolate. There are no genomic islands in any sequenced strain, which is consistent with other C. trachomatis genome sequences. Polymorphisms in several previously uncharacterized ORFs appear to track with in vivo tissue tropism. We also characterized sites of apparent homologous recombination among different C. trachomatis isolates.

Conclusions: Whole genome sequencing of bacterial pathogens continues to decrease in cost and is becoming a straightforward way to analyze phenotypic differences in organisms lacking a genetic system. Our studies have developed procedures for the identification of genes that are associated with different phenotypes both in vitro and in vivo.

P-114 SEXUAL LIFESTYLES AND CHLAMYDIA INFECTION IN WOMEN ATTENDING FE COLLEGES AND UNIVERSITIES IN 2004-6: BASELINE CHARACTERISTICS OF WOMEN IN THE POPI (PREVENTION OF PELVIC INFECTION) TRIAL

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Objectives: The Prevention of Pelvic Infection (POPI) trial aims to see if screening women for chlamydia and treating those found to be infected reduces the incidence of pelvic infection in the next 12 months. It is unique in recruiting women solely from non-healthcare facilities. We looked at chlamydia infection related to baseline characteristics of participants.
Methods: From 2004-6, 2528 sexually active female students aged<28 were recruited from 20 mainly inner city, London universities and further education (FE) colleges. Women were asked to complete a questionnaire on sexual health and to provide self-taken vaginal swabs for chlamydia testing.
Results: Overall prevalence of chlamydia was 5.5% (114/2060). Prevalence decreased with increasing age: 8% (22/272) in women aged <18, 6% (56/886) in 18-21s, 4% (36/902) in age 22-27 years (p=0.01). Although the prevalence of chlamydia was slightly lower in university than FE college students (5.0% 67/1352 versus 6.6% 47/708), when we restricted analysis to women aged 18-21 the rate was nearly identical (6.2% 38/612 versus 6.6% 18/274). Prevalence of chlamydia was higher in those who reported first sexual intercourse at a younger age: 8% (44/569) in women who had sex at age <16, 6% (52/938) for age 16-18, 3% (18/553) for age >18 (p<0.01). Chlamydia was related to number of sexual partners in the previous year: 4% (42/1169) in those reporting 0 or 1 partner, 8% (35/466) in those with two, and 9% (36/412) in those with >two partners (p<0.01). Chlamydia was also related to self-assigned ethnic group: 14% (19/133) in Afro-Caribbeans, 7% (32/451) in 'other black', 4% (54/1244) in whites and 4% (8/211) in other ethnic groups (p<0.01).
Conclusions: Chlamydia prevalence was similar in universities and FE colleges and lower than the 10% rate reported by the National Chlamydia Screening Programme. However, these women were asymptomatic and in education. As in previous studies chlamydia was related to age, number of sexual partners, age at first sexual intercourse and ethnicity. phay@sgul.ac.uk

P-115 COMPARISON OF GEN-PROBE APTIMA COMBO 2 ASSAY WITH ABBOTT M2000 REAL-TIME PCR ASSAY FOR THE DETECTION OF CHLAMYDIA TRACHOMATIS

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Objectives: The Abbott real-time PCR assay m2000 has recently been launched in Europe, and there are limited clinical studies demonstrating the clinical performance of the assay. The m2000 assay targets sequences on the C. trachomatis (CT) cryptic plasmid. Preliminary studies in Sweden have suggested that the m2000 assay may not detect some strains of CT containing plasmid mutations. The aim of the study was to compare the clinical performance of the GEN-PROBE APTIMA Combo 2 assay (AC2) with the Abbott m2000 assay. Furthermore, to determine the clinical performance of the AC2 and m2000 assays with the Swedish mutant CT strains.
Methods: Consecutive first catch urine samples submitted to The Department of Clinical Microbiology in Malmoe, Sweden were tested for Chlamydia with the Abbott m2000 real-time PCR assay and with an in-house PCR for the plasmid mutant. Aliquots of urine samples were sent to The Department of Clinical Microbiology in Aarhus, Denmark for further Chlamydia testing within one week from the time of sampling. In Aarhus the samples were examined by the GEN-PROBE APTIMA Combo 2 (AC2) assay for the combined detection of CT (TMA targeting the CT 23S rRNA) and Neisseria gonorrhoeae. To clear up discrepant results between AC2 and m2000, two additional assays were also performed, the APTIMA_ Chlamydia trachomatis assay (ACT), which detects only CT by targeting a different CT rRNA molecule, and the Roche COBAS_ AMPLICOR (RCA) CT (plasmid PCR). Thus, a combined reference standard was used that defines a sample as true positive if at least 2 results from the 4 commercial CT assays employed were positive.
Results: A total of 1808 urine samples were examined and a positive prevalence of 9% (163/1808) was detected according to the reference standard. The clinical sensitivity and specificity of the four assays were: ACT 100% (163/163) and 99.9% (1643/1645); AC2 99.4% (162/163) and 99.6% (1638/1645); m2000 67.5% (110/163) and 99.9% (1644/1645); and RCA 63.8% (104/163) and 99.9 % (1643/1645). Both the Roche and the Abbott plasmid PCR were unable to pick up the plasmid mutant, whereas the GEN-PROBE assays detected all CT plasmid mutants characterized by the in-house PCR for the deletion in the cryptic plasmid. The main difference in clinical sensitivity between the two plasmid PCR assays and the two GEN-PROBE assays could be explained by the presence of the plasmid mutant in about one third of the Chlamydia-positive samples examined.
Conclusions: The GEN-PROBE APTIMA COMBO 2 assay for detection of CT is highly sensitive and specific irrespectively of the presence of the Swedish mutant CT strain. However, the new Abbott m2000 real-time PCR plasmid PCR cannot detect the mutant CT strain, and thus have a poor clinical sensitivity in an epidemiological situation with an increasing number of CT strains harbouring the plasmid mutant. E-mail JK Møller: JKM@dadlnet.dk

P-116 NEW SEXUAL PARTNER, TOBACCO, CANNABIS, DRUGS, SEXUAL NETWORKS AND FOREIGN ORIGIN ASSOCIATED WITH HIGH PREVALENCE OF CHLAMYDIA TRACHOMATIS AMONG ADOLESCENTS AND YOUNG ADULTS IN CATALONIA, SPAIN, 2006

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Objective: To estimate the prevalence of C. trachomatis and N. gonorrhoeae and to determine risk factors among adolescents and young adults at three Reproductive/Sexual Health Clinics and one Youth's Contraception and Sexuality Centre in the province of Barcelona, Spain.
Methods: Cross-sectional study carried out from June to December 2006 among a stratified (age/sex/centre) sample of 500 sexually active young people aged 16-35 years. A total of 474 endocervical specimens (females) and 26 urine specimens (males) were tested for C. trachomatis and N. gonorrhoeae infections using polymerase chain reaction (PCR) real time technique. A standardized questionnaire was used to collect clinical, epidemiological and behaviour data. Adjusted (age/sex) prevalence of C. trachomatis and N. gonorrhoea were calculated and differences were tested by Pearson's X2 or Fisher's exact test. Association between C. trachomatis infection and several characteristics were examined by Mantel-Haenszel test and multivariate logistic regression models. Odds Ratios (OR) and 95% confidence intervals (95%CI) were computed.
Results: Overall C. trachomatis prevalence was 3.6%: 5.4% women and 5.0% men aged 16-24 years, 1.6% women and 16.7% men aged 25-34 years. Overall N. gonorrhoeae (NG) prevalence was 0.2%: 0.5% women aged 16-24 years. Prevalence of C. trachomatis was significantly higher among participants reporting new sexual partner <3 months (10.8% vs 1.8% No), more than 2 sexual partners <12

months (7.0% vs 2.4% <2), foreign origin (10.0% vs 2.6% Spain), contact with sexual networks <12 months (13.8% vs 3.0% No), drugs use <12 months (5.7% vs 0.9% No), tobacco use <12 months (6.6% vs 1.1% No), and cannabis use <12 months (9.3% vs 1.8% No). In age/sex adjusted analysis a significant higher prevalence of C. trachomatis was found among those reporting new sexual partner <3 months (OR 4.7, 95%CI:1.6-13.4), foreign origin (OR 4.6, 95%CI:1.5-14.2), contact with sexual networks (OR 4.2, 95CI%:0.98-17.9), drugs use <12 months (OR 4.8, 95%CI:1.1-20.8), tobacco use <12 months (OR 5.2, 95%CI:1.5-17.8) and cannabis use <12 months (OR 4.2, 95%CI:1.5-12.2). In multivariate logistic regression analysis, new sexual partner <3 months, foreign origin and tobacco use <12 months remain as independent risk factors.

Conclusions: This is the first study to show higher prevalence of C. trachomatis and associated risk factors among adolescents and young adults in Spain. High prevalence of C. trachomatis among young people and those of foreign origin support the need to consider the introduction of targeted screening and risk behaviour assessment in order to prevent complications, burden of infection and transmission. Monitoring C. trachomatis and N. gonorrhoea prevalence in primary care settings and youth centres, using PCR detection, is a feasible option. Further analysis on specific risk behaviour and CT/NG prevalence among sexual partners are recommended. E-mail: rlc.ceescat.germanstrias@gencat.net

P-117 USE OF AN ON-LINE QUESTIONNAIRE TO IMPROVE RESPONSE RATE FOR A 12 MONTH FOLLOW UP OF STUDENTS RECRUITED TO A COMMUNITY BASED TRIAL OF SCREENING FOR CHLAMYDIA TO PREVENT PELVIC INFLAMMATORY DISEASE

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Objective: The prevention of pelvic infection (POPI) trial aims to see if screening women for chlamydia using self-taken vaginal swabs prevents pelvic inflammatory disease. We recruited 2500 young, multiethnic high risk women from 20 universities and FE colleges. We present follow up methods used for 472 women recruited in the academic year 2004-5.

Methods: Students recruited between September 2004 and December 2005 were followed up using three different initial approaches to the follow up: postal questionnaire; phone contact before sending a questionnaire; and sending an email with a link to an online questionnaire. Follow up was continued for non responders.

Results: For the postal group 41/167 (25%) replied to the first mailing. For the second group 66/133 girls could be contacted by phone prior to posting the questionnaire of whom 13 (20%) had changed address. 46 (33%) returned the questionnaire without further prompting. After intensive follow up by phone, email and post, 84% (251/300) responded, (64 electronic, 176 post, 11 telephone). For the email group initial response to the electronic questionnaire was 29% (49/172). After intensive follow up 84% (144/172) replied (96 electronic, 42 post, 6 telephone). In addition a further 32 were followed up via their GP giving a final follow up rate of 90% (427/472).

Conclusions: The electronic method is very effective and requires the least effort. However, it is not suitable for everyone so other methods of follow up are still required. Using a combination of approaches we achieved minimal loss to follow up.

P-118 PREVALENCE OF CHLAMYDIA INFECTION IN TWO POPULATIONS IN ILOILO, PHILIPPINES AND UTILITY OF RAPID TESTS IN THESE RESOURCE-LIMITED SETTINGS

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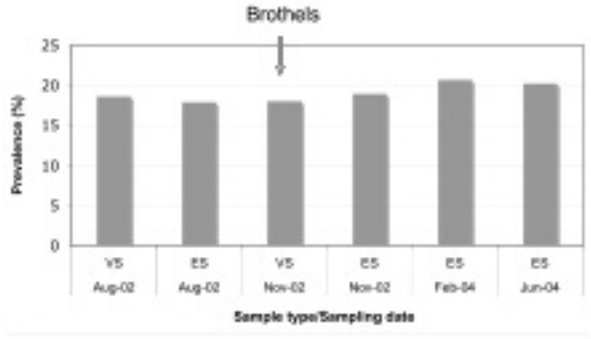
Objectives: To determine the prevalence rates of Chlamydia in Iloilo, Philippines, a province of about two million people where Chlamydia testing does not exist. Two populations were tested by a nucleic acid amplification method: a) a cohort of female sex workers attending the Social Hygiene Clinic (SHC) from 2002-2004, and b) a low-risk population attending an OB-GYN clinic from October 2005 to March 2006. Given the resource-limited nature of the setting, the suitability and performance of two rapid tests for Chlamydia were also evaluated.

Methods: Study participants were selected based on the following inclusion criteria: ≥18 years old, not on antibiotics within the last month, and not menstruating. From 2002-2004, endocervical swabs (ES) from 979 eligible sex workers were collected by the clinician. Vaginal swabs (VS) from 680 sex workers were collected either by the participant or by the clinician. The specimens were tested by the Roche Amplicor_ CT/NG polymerase chain reaction (PCR) and a subset of specimens (721 endocervical swabs and 335 vaginal swabs) by a commercially available rapid test (Clearview_ Chlamydia MF, Inverness). In 2006, a new rapid test for Chlamydia developed by the Diagnostics Development Unit of the University of Cambridge became available and was compared to PCR in vaginal swabs from 838 women attending an OB-GYN clinic. All women positive by PCR were recalled and given antibiotic treatment (doxycycline and ofloxacin or azithromycin) by the clinician.

Results: Study participants attending the SHC (n=843, mean age=25.8) were mostly asymptomatic (72%). The prevalence rate by PCR for Chlamydia infection in the SHC population ranged from 17.9 to 20.2% between 2002 to 2004 (Figure 1). Compared to PCR, results in ES from 721 sex workers showed the Clearview sensitivity to be 53.8 % with a specificity of 98.8%. In vaginal swabs of 335 women, the Clearview sensitivity was considerably lower (sensitivity of 30.2%, specificity of 95.2%) (Table 1). In 2006, the prevalence rate for CRT infection in 838 eligible women attending a OB-GYN clinic (mean age of 25.2 years) using vaginal swabs was 6.3%. In this population, the Cambridge rapid test showed a sensitivity of 86.8% and specificity of 99.6%, and a PPV and NPV of 93.9% and 99.1%, respectively.

Conclusions: Over a four year period from 2000-2004, we found a consistently high rate of Chlamydia infection among sex workers (n = 979, prevalence range = 17.9-20.7%) despite antibiotic treatment. This may be due to constant re-infection from the customer population. Compared to PCR, the Clearview Chlamydia rapid test showed poor sensitivity with endocervical swabs (53.8%). CT prevalence rate in a low-risk population of 838 women attending an OB-GYN clinic was close to the national average of 6%. In this population, the Cambridge rapid test using vaginal swabs had a sensitivity of 86.8% and specificity of 99.6% when compared to PCR. This test is simple to perform and requires no instruments or highly trained personnel, making it suitable for use in resource-limited settings.

Figure 1. Annual prevalence rates for *Chlamydia* infection among sex workers attending the Iloilo SHC from 2002-2004.



ES = Endocervical swabs VS = Vaginal swabs

Table 1. Performance of the Clearview® *Chlamydia* MF (against PCR) in SHC endocervical swabs and vaginal swabs.

Year	Total no. tested	Sample type	Sensitivity %	Specificity %
2002	304	Endocervical	95.9 (81/84)	98.4 (218/221)
2004	429	Endocervical	91.2 (124/136)	98.8 (339/343)
Total	731	Endocervical	93.8 (205/220)	98.6 (557/564)
2002	156	Vaginal	91.3 (21/23)	97.0 (129/133)
2004	159	Vaginal	84.6 (11/13)	97.7 (127/130)
Total	315	Vaginal	89.7 (32/36)	97.3 (256/263)

P-119 DEVELOPMENT OF A REAL-TIME PCR FOR THE DIAGNOSIS OF THE CHLAMYDIA TRACHOMATIS SWEDISH VARIANT (SWCT) AND MONITORING OF THE SWCT IN THE NETHERLANDS AND RUSSIA

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Recently, a new variant CT with a deletion of 377 bp in the cryptic plasmid has been reported in the Swedish county of Halland. This deletion makes it undetectable by the broadly used commercially available Roche and Abbott diagnostic tests. The Becton Dickinson (BD) ProbeTec as well as our in house real-time PCR have their targets on another region of the cryptic plasmid and thus will detect this variant when present. We developed a real-time PCR which specifically detects the Swedish CT (swCT) variant with a probe spanning the 377 bp left and right gap border and used it to monitor if the swCT is present in the Netherlands and Russia. In addition, a positive control was constructed by cloning the fragment of a swCT variant (obtained out of Halland, Sweden) in which the deletion was present. A total of 239 known CT positive samples (with techniques detecting the swCT variant) were retrospectively analyzed with our new developed swCT real-time PCR. 1) 30 CT in house real-time PCR positive samples were selected (population: CT prevalence 1.8%) from the Department of Medical Microbiology and Infection Prevention, VU University Medical Center, Amsterdam, The Netherlands; 2) 57 CT BD positive samples were selected (STD population: CT prevalence 7.3%) from the Department of Infectious Diseases, South Limburg Public Health Service, Heerlen, The Netherlands. and 3) 152 CT culture positive samples were selected (population: CT prevalence average 15%) from the Faculty of Medicine, St.-Petersburg State University, St.-Petersburg, Russia and from the Laboratory of Microbiology, D.O. Ott Research Institute of Obstetrics and Gynecology, St.-Petersburg, Russia. All samples from cohort 1 consisted of cervical swabs in 2-sucrose-phosphate (2SP) transport medium, stored at -80°C. Cohort 2 consisted of frozen dry swabs, before sample preparation these swabs were shaken for 10 seconds in 1 ml 2SP transport medium. Cohort 3 consisted of positive cultured samples. 200 _l 2SP was used for DNA extraction performed with the NucliSens easyMAG (Biomerieux, Boxtel, the Netherlands) eluted in 110 _l. All samples were reconfirmed for the presence of CT DNA with our in house PCR. Subsequently all swCT real time PCR reactions were performed with 10 ml of extracted DNA, except for the Russian samples, where 1 _l of pure culture was added. Amplification and detection was performed with an ABI Prism 7000 sequence detection system (Applied Biosystems). For the moment we didn't find any proof of the presence of the swCT variant in the Netherlands or Russia and the two published studies also did not detect the swCT variant. However, it is highly likely that it will be only a matter of time before this variant will be reported outside Sweden. The ESSTI and the ECDC have launched a survey to provide an overview of the current situation in Europe in CT diagnostics and presence of this strain. Our new swCT TaqMan combined with the positive control (which can be obtained via the corresponding author) will be a very helpful tool to determine if this Swedish CT variant is present outside Sweden.

P-120 PROPAGATION AND MORPHOLOGICAL IDENTIFICATION OF CHLAMYDIA TRACHOMATIS IN HUMAN BLOOD, BONE MARROW AND CEREBROSPINAL FLUID CELL CULTURES

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Objective: Decision of key problems of medical microbiology is impossible without isolation and propagation of pathogen in vitro. For this aim investigation of intracellular parasite such as Chlamydia (C.) trachomatis requires cell culture model. Cultivation of C.trachomatis on McCoy cells that appeared to be 'golden standard' for the diagnostic purposes as well, due to its expensiveness and definite technical difficulties can't be inculcated widely in clinical practice, especially in the developing countries.

Methods: Having long-term and high qualified experience of culturing of hemopoietic cells (more than 40 years 'Prof. T. Shvelidze), original method of blood, bone marrow and cerebrospinal fluid cell cultures was worked out by Saralidze T., and Shvelidze T., (Georgia Patent N3624) that made it possible to support propagation of C.trachomatis bacteria and to reveal this infection in patients' leukocytes.

Results: Use of this method in clinical practice revealed concealed chlamydial infection in children and adults even in the cases when direct and indirect immunofluorescent assays and even PCR tests were negative. This method appeared useful for the diagnosis of chronic and latent forms of the disease in the cases of chlamydial infection in the upper part of urogenital tract, pneumonia of newborns and obstructive bronchitis in children. Morphology of C.trachomatis inclusions in leukocyte cultures was studied. Light microscopy of Giemsa stained culture smears of the patients' with C.trachomatis before treatment revealed dark violet granules and contours along plasma membrane in the macrophages and neutrophilic granulocytes on the second day of cultivation. On the third day of cultivation chlamydial inclusions were revealed mainly in the form of contours along the plasma membrane and most of the infected cells were damaged losing their usual morphological structure. As C.trachomatis consumes glycogen culture smears were also stained with PAS reactive and revealed positive reaction. In bone marrow cultures C.trachomatis inclusions were revealed in the myelocaryocytes and erythrocaryocytes as well. Notable that in children chlamydial inclusions was revealed in quite amount of lymphocytes. Though after treatment quantity of

C.trachomatis inclusions in vitro was significantly decreased it did not disappear thoroughly. Electron microscopy study showed different stages of developmental cycle of the bacteria: elementary body, intermediate form and reticulate body. Micro colonies of bacteria were revealed in macrophages and basophilic granulocytes but the colonies were absent in neutrophilic leukocytes. After treatment majority of chlamydial bodies were vacuolated but single of them was remained (though somehow damaged) pointing to the resistance of bacteria to antichlamydial drugs.

Conclusions: Results of our investigations show that patients' leukocyte culture can be successfully used for the diagnosis and control of concealed C.trachomatis infection in adults and children, for the estimation of the effectiveness of treatment and what is most important for the examination of antichlamydial drugs in vitro and their impact on C.trachomatis developmental cycle in blood macrophages, granulocytes and bone marrow cells as well. Besides the offered method of culturing is easy for performance and can be widely inculcated in clinical practice even in developing countries. saralidzet@yahoo.com; www.chlamydia.site.ge

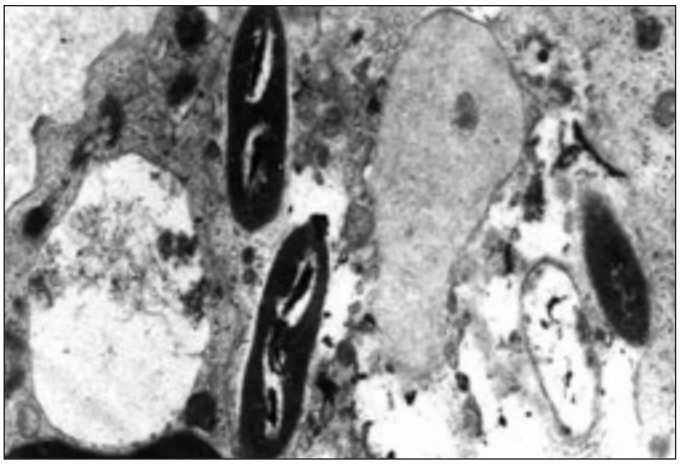

Figure 1: C.tracomatis ret bod.in macrophage after treatment

P-121 REPEAT CHLAMYDIA TESTING AND CHLAMYDIA POSITIVITY RATES AT FAMILY PLANNING CLINICS

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Objectives: Chlamydia positivity rates have plateaued or increased in recent years in many regions of the United States. While such trends may reflect increasing chlamydia prevalence, increases in reported positivity rates may also reflect increased testing of individuals at high risk of chlamydia. This study was designed to test whether increased testing of women who had previously tested positive for chlamydia, who have been shown to have a high incidence of repeat infection, is correlated with an increase in chlamydia positivity.

Methods: Chlamydia positivity prevalence monitoring data, collected through the National Infertility Prevention Project (IPP), were analyzed for 28 family planning clinics in Pennsylvania. Clinics were included in the analysis if they had contributed data to the IPP continuously between 2000 and 2005, and if they administered >100 chlamydia tests to women annually. Correlation analysis was performed to determine whether changes in chlamydia positivity rates between 2000 and 2005 correlated with the percentage of repeat testing of patients who had previously tested positive for chlamydia. Repeat tests were defined as those administered within 365 days of a positive chlamydia test in the previous calendar year.

Results: Between 2000 and 2005, the overall chlamydia positivity rate in females tested at the selected clinics rose only slightly, from 4.27% to 4.83%. At individual clinics, the change in chlamydia positivity between 2000 and 2005 ranged from '2.58% to +4.93%. Similarly, the overall percentage of total tests that followed a positive chlamydia test within the prior calendar year changed little (1.56% and 1.63% in 2000 and 2005, respectively); however, the change in the percentage of total tests at individual clinics that were composed of repeat tests ranged from -0.74% to +3.00%. The change in the percentage of tests at each clinic that followed a positive test in the previous calendar year was significantly correlated (p=0.04, Pearson's correlation coefficient=0.39) with the change in chlamydia positivity at that clinic.

Conclusions: The percentage of repeat testing following positive chlamydia tests was found to correlate significantly with chlamydia positivity in female patients at the family planning clinics in this study. The potential effect of repeat testing should be considered when trends in chlamydia positivity are presented.

P-122 OUTBREAK OF LYMPHOGRANULOMA VENEREUM IN VIENNA, AUSTRIA: IDENTIFICATION OF NEW CHLAMYDIA TRACHOMATIS L2 STRAINS

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Objectives: Since 2003 an ongoing outbreak of lymphogranuloma venereum (LGV), caused by Chlamydia trachomatis serovars L2b, has been reported among men who have sex with men (MSM). In this study we determine the genovariants of C. trachomatis involved in an outbreak of LGV in Vienna, Austria.

Methods: Twenty-four samples positive for C. trachomatis were analyzed for specific serovars by genotyping of the variable segment (VS) 4, VS2 and VS1 regions of the outer membrane protein (omp) 1. In addition we assessed the LGV patients' socio-demographic background and clinical signs and symptoms.

Results: 24 MSM presented with either anorectal or inguinal symptoms. 15 patients tested positive for L2 genotype, with a high coinfection rate with HIV (73.3%) and other sexually transmitted infections (53.4%). Analysis of the VS1, VS2 and VS4 regions of the omp1 gene revealed genotype L2b in eight patients. In four patients, three new L2 sequences were identified with nucleotide changes in the VS1, VS2 and VS4 region, respectively, defining new subtypes designated L2c, d, e.

Conclusions: This outbreak of LGV represents the further spread of C. trachomatis L2 infection. Sequence analysis of omp1 regions shows heterogeneity of L2 strains, suggesting more than one source of the LGV infections diagnosed in Vienna. Increased awareness and adaptation of current screening policies in European countries are urgently required to get the recent LGV outbreak under control.

P-123 GENETIC CHARACTERIZATION OF THE NEW VARIANT OF CHLAMYDIA TRACHOMATIS IN DIFFERENT COUNTIES OF SWEDEN

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Objectives: A new variant of C. trachomatis (nvCT) was discovered in Sweden during 2006. Of commercial detection methods targeting the cryptic plasmid the nvCT is not detectable with Cobas Amplicor/TaqMan48 (Roche) and Abbott m2000 (Abbott), but it is detected by the ProbeTec system (BectonDickinson). The objective of the present study was to compare prevalence differences of the nvCT in counties using Roche/Abbott or the alternative BD test system. Genetic characterization was also performed to analyze differences in nvCT specimens from some counties.

Methods: A collection of 139 BD positive chlamydia urine specimens from Uppsala and 117 BD positive urine specimens from Luleå were analyzed with Roche

TaqMan48. Samples with discrepant results were tested with a mutant specific real-time PCR (Ripa & Nilsson, www.eurosurveillance.org/ew/2006/061109.asp#2). A collection of 20 nvCT cases from two geographically separated counties (Örebro, n=13 and Malmö, n=7) were genotyped with multi locus sequence typing (MLST), a high resolution method using five target regions (Klint et al, J Clin Microbiol, in press).

Results: Of the 139 BD chlamydia positive samples from Uppsala, 22% were negative in Roche TaqMan48 and all, except one, were confirmed to be mutants by real-time PCR. Similarly of the 113 samples from Luleå, 10% were negative in TaqMan48 and all were confirmed as mutants by PCR. The proportion of nvCT in counties using Roche/Abbott tests, as Örebro and Malmö, has been found to range from 25% to 65%. Higher rates in such counties are explained by accumulation of undetected and untreated cases and therefore an escape of the mandatory contact tracing. All nvCT specimens had ompA sequences identical to the prototype strain E/Bour. In two major previous studies in Sweden ≥95% of all serotype E samples had ompA sequences identical to the E/Bour strain (Jurstrand et al, J Clin Microbiol 2001 and Lysén et al, J Clin Microbiol 2004). Genetic characterization with high resolution typing of the 20 nyCT isolates rendered one unique variant, i.e. multilocus sequence designations: 21 (target region CT046, hctB), 19 (CT058), 1 (CT144), 2 (CT172), and 1 (pbpB). This high resolution method for genotyping of C. trachomatis has so far only been used for a limited number of strains. However, in a previous evaluation on an arbitrary selection of chlamydia positive samples collected during one year in a single laboratory, 7 genetic variants were identified by using MLST on 12 cases of serotype E. Thus, the present result of identical sequences in ompA and five other target regions strongly indicates that the 20 different isolates of the new genetic C. trachomatis variant is of one clone that not has been prevalent in the community for an extended time period, at least not in high numbers.

Conclusions: The nvCT is present all over Sweden, but at higher rates in counties having had Roche/Abbott for extended time periods compared to those using the BD system. MLST sequencing of nvCT speciemens indicates that there is only one clone.

P-124 EVALUATION OF SYNDROMIC MANAGEMENT FOR CHLAMYDIA TRACHOMATIS IN STI CLINICS IN BOLIVIA

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Objective: To better understand the performance of syndromic management for diagnosis of Chlamydia trachomatis (CT) in comparison to PCR-based reference methods in a large sample of women in Bolivia.

Methods: We prospectively recruited 1,840 women from four sexually transmitted infection (STI) centers of reference clinics in La Paz, El Alto, Cochabamba, and Santa Cruz, Bolivia. After providing written informed consent, participants received syndromic diagnosis for cervicitis, vaginal discharge, and genital ulcers in tandem with reference testing by PCR (Roche CT/NG Amplicor) assay.

Results: This was primarily a young population (52.1% were less than 25 years old) engaged in risky sexual behaviors with 39.2% reporting sex with more than 3 men in the last 24 hours and over 33% reporting being diagnosed with an STI ever in their life. Overall CT prevalence by PCR was 12.7% though it varied by location with the highest prevalence in Santa Cruz and El Alto (14.3% each), followed by Cochabamba (12%) and La Paz (11%). Syndromic management was 35% sensitive (95% CI 29.3'41.5) and 76% specific (95% CI 73.4'77.6) overall when compared to PCR. However, sensitivity and specificity did vary considerably among locations (19.0'45.1 and 56.3'88.1% respectively).

Conclusions: Syndromic management was neither sensitive nor specific in this population. This conclusion points to the need for better point-of-care testing options for clinicians in resource-limited settings. Additionally, the heterogeneity in performance by location is suggestive of a need for retraining among providers in centers that see high-risk women. Finally, providers may want to consider adding new elements into the current syndromic management protocol to improve its sensitivity such as measurement of vaginal pH and possibly leucocyte count.

P-125 A NEW GENETIC VARIANT OF CHLAMYDIA TRACHOMATIS AND ITS IMPACT ON NATIONAL DETECTION RATES IN SWEDEN

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Objectives: A new variant of C. trachomatis (nvCT) was discovered in Sweden during 2006 and it is not detectable with Cobas Amplicor/TaqMan48 (Roche) and Abbott m2000 (Abbott) (1). The objective of the present study was to analyze the impact of nvCT on national detection rates.

Methods: Data reported to the Swedish Institute for Infectious Disease Control were used. The proportion of nvCT were determined in some counties that have used Abbott/Roche systems for several years and added alternative methods (culture or ompA based PCR) when the nvCT was discovered. Reported figures of national chlamydia rates were recalculated by taking into account nvCT cases that were missed during 2006 in counties using Abbott/Roche detection systems. Of the 21 counties in Sweden 14 used Abbott/Roche in 2006, six had BectonDickinson ProbeTec (BD; a system that detects the nvCT) and one county using both Roche and BD was excluded. Data from Halland and three other geographically representative counties having used Abbott/Roche detection systems reported that the nvCT comprised between 25% and 65% of all detected chlamydia cases between November and December 2006. For confirmation of suspected nvCT cases a specific real-time PCR, only detecting cases with the deleted target region, was used [Ripa & Nilsson, 2006].

Results: For 2006 counties using the BD system reported 6579 cases, which is a 12% increase compared to 2005. In contrast Abbott/Roche counties reported a decrease of 6% resulting in 20 672 cases in 2006. It could be assumed that 30% of all chlamydia cases were nvCT in the 14 counties that had used Abbott/Roche for several years. A recalculation indicated that approximately 8200 nvCT cases were undetected in 2006 in these 14 counties. This would mean that the national figures of C. trachomatis would be about 41 000 cases instead of the reported 32 515 cases. In Sweden the chlamydia rates have more than doubled in the last ten years and for 2006 the official figures show a decrease for the first time since 1997. However, when compensating for undetected nvCT cases an increase of approximately 20% took place in 2006.

Conclusions: It is not known when the genetic change in the plasmid resulted in the nvCT, but from published data it can be suggested that detectable levels emerged in the last two years (2). So far only two cases of nvCT has been reported outside Sweden (in Norway), but it is now only a question of time before it has been spread to more countries. The impact of the nvCT on complication rates is unknown, but considering the high number of undetected cases the nvCT is a severe threat to public health if inappropriate detection systems are used. 1. Ripa T, Nilsson P. A variant of Chlamydia trachomatis with deletion in cryptic plasmid: implications for use of PCR diagnostic tests. Euro Surveill 2006;11(11):E061109.2: http://www.eurosurveillance.org/ew/2006/061109.asp#2; 2. Söderblom T, Blaxhult A, Fredlund H, Herrmann B. Impact of a genetic variant of Chlamydia trachomatis on national detection rates in Sweden. Euro Surveill 2006;11(12):E061207.1: http://www.eurosurveillance.org/ew/2006/061207.asp#1

P-126 EPIDEMIOLOGY OF GENITAL CHLAMYDIA TRACHOMATIS (CT) INFECTION AMONG YOUNG WOMEN IN COSTA RICA

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Objective: To investigate the epidemiology of Chlamydia trachomatis infection in a community-based study of 5,828 sexually active women, 18 to 25 years old in rural Costa Rica.
Methods: Data are from the baseline examination of women participating in a large, double blind, randomized controlled clinical trial of a vaccine against human papillomavirus (HPV) 16/18. Before randomization, eligible women were interviewed on multiple risk factors and sexually active women underwent a pelvic exam with collection of cells for CT DNA testing by Hybrid CaptureTM 2 (HC2). Odds ratios of prevalent infection were calculated with logistic regression and a multivariate model was developed.
Results: Overall prevalence of cervical CT infection was 14.2% (95% CI: 13.3-15.1). Prevalence peaked at age 20-21 and declined slightly with increasing age. In multivariate model, those who were divorced, separated or widowed, (OR 1.6, 95% CI: 1.1-2.4) and single women (OR 1.4, 95% CI: 1.1-1.7) were more likely to have CT infection than married women. There was a strong increase in risk with increasing number of partners of the women, and among monogamous women, the factor most strongly associated with CT detection was the lifetime number of sexual partners of the partner with a peak increase in risk among women with partners with 4 partners (OR 2.5, 95% CI:1.3-4.8). Current IUD users had an elevated risk of CT infection (OR 1.7, 95% CI: 1.1-2.5), and current users of oral contraceptives had a marginally significant increase (30%), but no associations were evident for the use of injectable contraceptives or condom. Women who reported any abortion or miscarriage were at lower risk of CT detection (OR 0.7, 95% CI: 0.5-0.9). Current smokers were more likely to be infected with CT. Vaginal discharge was associated with a 20% increase in CT infection and those with moderate or extensive ectopy had twice the risk of CT detection. Cytological findings of reactive changes, ASCUS or LSIL presented a near 3 fold increase in CT detection. Increasing severity of inflammation on cytology was also associated with CT infection. Cytology evidence of sexually transmitted cervical infections, but not Candida, were correlated with CT. Detection of high risk HPV types and gonorrhea by HC2 was significantly associated with increased detection of CT.
Conclusions: The prevalence of chlamydia infection among young women in rural Costa Rica is high. The strongest risk factor for CT infection was sexual behavior of women and their partners. An increase in CT infection among IUD users, the lack of protection of condoms and the interplay between ectopy, inflammation and other STDs warrant further investigation in high incidence populations. Topic: B6 Epidemiology, Chlamydia trachomatis. cporras@proyectoguanacaste.org

P-127 CHLAMYDIA TRACHOMATIS IGA LOCAL RESPONSE IN THE DISTAL URETHRA AND EXPRESSED PROSTATE SECRET IN MEN WITH CHRONIC INFLAMMATION OF THE PROSTATE

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Objectives: In men ascending Chlamydia trachomatis (CT) infection may result in the inflammatory process in the prostate. The better understanding of the body's immune response to this pathogen is of great interest because the role of the infection in the pathogenesis of chronic prostatitis (CP) is still not clear. In this respect, the occurrence of CT DNA and the prevalence of CT IgA antibodies in urethral and prostate samples in Russian men with/without CP was investigated and compared.
Methods: From May through to October 2006 among 220 heterosexual men, who were routinely tested against C. trachomatis and other STIs in 2 urology outpatient units in St. Petersburg, 25 patients (mean age 33.4, range 21-53 years, 50 life-time sex partners in average) with the diagnosis of chronic prostatitis (CP) and 33 men with no complains (mean age 30.7, range 16-52 years, 25 life-time sex partners) were enrolled in the study. The urethral (urethral brushings) and prostate (EPS; expressed prostate secret, obtained after prostate massage) samples were collected. The men were tested for CT by culture (urethra) and real-time (RT-) PCR (urethra and EPS). Only men with no other current STIs (urethra and EPS, RT-PCR) were included in the study. Both urethral and EPS samples were re-tested in Amsterdam for the presence of CT DNA by real-time PCR (TaqMan, Applied Biosystems) assay as well as CT-specific MOMP IgA antibodies were additionally measured in the samples by a serology test (pELISA, Medac), respectively.
Results: The results are presented in the Table. In total, CT infection was detected by RT-PCR in 6.9% men (both urethral and EPS samples). Meanwhile, positive CT IgA findings were additionally observed in 20.1% men. In men with CP in the urethral samples CT infection was detected more often by both serology (16 vs 3%) and RT-PCR (12 vs 3%) assays, whereas in the EPS samples mainly by RT-PCR (12 vs 3%). As it can be seen in the Table, concordance between sample sites, DNA positivity and serology was reasonable high. Interestingly, men with CP had more life-time sex partners then the healthy ones: 78 vs 32.
Conclusions: Our results support the role of CT on CP and its importance in diagnosis. For the first time, the occurrence of CT DNA and the prevalence of CT antibodies in urethral and prostate samples in Russian men with/without CP was investigated and compared. Serological tests of the EPS are useful as a complementary method in the diagnosis of chronic prostatitis. It seems that the number of life-time partners might be associated to an increased risk to CP. A multivariate regression analysis to see which factors are independently associated with an increased risk to CP will be performed. At the moment we: 1) extent the study group; 2) investigate the CT IgG including hsp60 IgG response and 3) the role of co-infection, i.e. HPV and genital mycoplasmas.

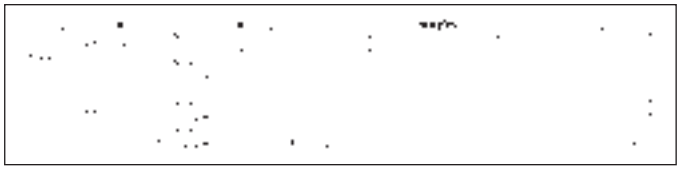

Figure 1: CT IgA in men with/without chronic prostatitis

P-128 CHLAMYDIA AND GONORRHEA PREVALENCE RATES AMONG MALE PATRONS OF NIGHT CLUBS IN THE KINGSTON PLACE RCT

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Objectives: Jamaica has a comprehensive HIV/STI control program since 1988 with HIV prevalence rates among adults of approximately 1.5% since 1998. Condom demand has grown fourfold to approximately 10 million per year since 1996 and 25% of men having sex with a non regular partner report not using a condom at last sex since 1992. While syphilis rates have declined dramatically, Chlamydia rates among pregnant women and family planning clients in public clinics are high (approximately 10%). However, little is known about Chlamydia and gonorrhea prevalence outside of clinic populations. A randomized controlled trial was conducted at sites in Kingston where persons go to meet new sex partners to explore whether a prevention intervention could increase condom use among persons with new or multiple sex partners. The objective of this study is to determine the feasibility of collecting urine specimens from male patrons of nightclubs, bars and hotels and estimating STI prevalence among the intervention and control groups.
Methods: 50 clusters of 147 sites including clubs, bars, hotels, fast food restaurants and street corners were randomized to receive or not receive a site-based prevention program delivered by outreach workers from the Ministry of Health. At follow-up, patrons were selected systematically, interviewed and asked to step into a private area such as a restroom to provide the urine sample. The specimens were tested for Chlamydia and gonorrhea using transcription-mediated-amplification (TMA), specifically, the APTIMA Combo2 (Gen Probe, Inc.) test according to manufacturer's instructions. All positives were retested and only repeat positives were considered positive. Urine samples and test results were managed using ID numbers.
Results: At follow-up 234 urine samples were taken from male patrons at nightclubs, bars or sex worker street sites (130 intervention, 104 control). The response rate was 76.0% (80.0% at intervention sites, 72.3% at control sites). There were 5 cases of gonorrhea, a prevalence rate of 2.1%. There were 21 cases of Chlamydia at intervention sites (16.2%) and 18 (17.3%) cases at control sites. There was no significant difference in Chlamydia rates by age, condom use or number of new or total sex partners over the past 4 weeks or past year. 14 (17.5%) of 66 men reporting no new sex partner over the past year and 5 (13.9%) of 32 men in long term monogamous relationships were infected with Chlamydia.
Conclusions: The prevalence of Chlamydia is high among male patrons of nightclubs, bars and hotels and was similar in both the intervention and control groups of a RCT of a site-based prevention intervention in Kingston, Jamaica. Many of the men may have been infected through the risk behavior of their female sex partners.

P-129 A MATHEMATICAL MODEL TO ASSESS THE IMPACT OF A SCREENING PROGRAM ON THE PREVALENCE OF CHLAMYDIA TRACHOMATIS IN AUSTRALIA

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Objectives: Chlamydia trachomatis (Chlamydia) is a significant health problem in Australia with notifications rising from 47 to 203 per 100,000 between 1997 and 2005. It is estimated that 80-90% of infections are asymptomatic and, in the absence of an effective vaccine, screening is the only means of detecting and treating infections to reduce the risk of serious sequellae. The Australian government has allocated AUS$12.5 million for Chlamydia control with plans to introduce a pilot Chlamydia screening program in 2007. We have developed a mathematical model of Chlamydia transmission to assess the potential impact of screening on Chlamydia prevalence in Australia. Results from the model will help determine the optimal target populations (age-range and sex) and screening frequency to design the most cost-effective screening program. The model also enables us to investigate the relationships between screening efficacy and uncertainties in the natural history of Chlamydia infection (e.g., duration of infectiousness, duration of immunity, proportion of infections that are asymptomatic) and sexual behaviour (e.g., partner exchange rate, mixing patterns).
Methods: The model is an age-structured deterministic dynamic transmission model formulated as a system of differential equations. We only consider Heterosexual transmission and sexual behaviour parameters were estimated from the results of a recent survey of sexual behaviour and practises in Australia. Latin hypercube sampling was used to generate 10,000 parameter sets to facilitate uncertainty and sensitivity analyses. Annual screening strategies were modelled which targeted males (M), females (F), or both (M&F) between the ages of 15 and 25 years. Screening coverage was either 20% (M, F, M&F), 40% (M, F, M&F), or 20% (M) and 50% (F). The latter strategy was considered assuming that females may be screened at higher coverage than males through participation in the National Cervical Screening Program.
Results: Figure 1 shows the relative reductions in prevalence after 10 years of annual screening. In general, female-only screening results in greater reductions in prevalence than male-only screening for a given coverage. Screening 40% of females results in a greater reduction in prevalence than screening 20% of males and 20% of females. The most important parameters contributing to the outcomes of prevalence and average time to infection were the recovery time for natural infection, the proportion of infections that are asymptomatic, and the proportion having high partner acquisition rates. Figure 2 illustrates that the number of times the average woman will be infected over her lifetime increases with the average recovery time and the proportion of asymptomatic male infections that are asymptomatic. The proportion asymptomatic becomes less important as the duration of infection decreases. The model predicts that increased Chlamydia screening and treatment will reduce natural immunity and increase the rate of reinfection.
Conclusions: The model predicts that routine screening can significantly reduce the prevalence of Chlamydia in the population within 10 years and this is achieved more effectively by targeting females than males. Screening may increase the reinfection rate and this will have important consequences if it is shown that frequent reinfection significantly increases the risk of serious sequellae.

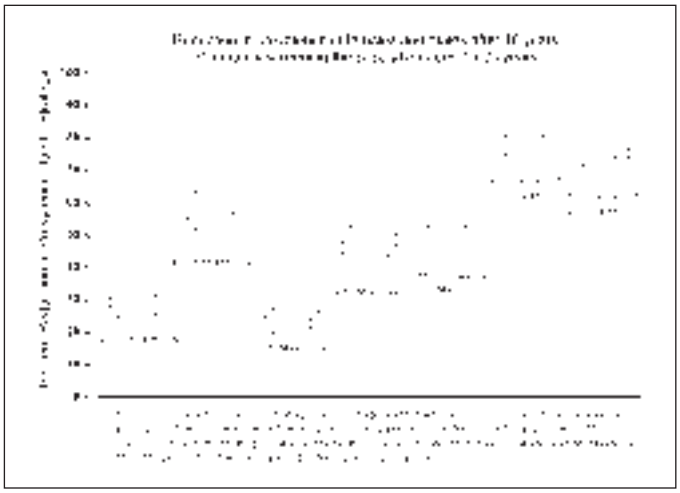

Figure 1

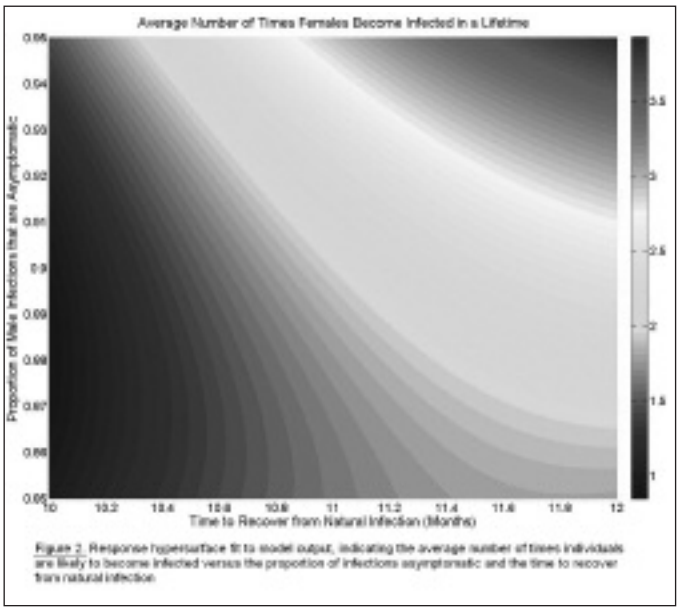

Figure 2. Response hypersurface fit to model output, indicating the average number of times individuals are likely to become infected versus the proportion of infections asymptomatic and the time to recover from natural infection.

Figure 2

P-130 CLONING, EXPRESSION, PURIFICATION AND CHARACTERIZATION OF PKN1 AND MOMP- POTENTIAL VACCINE CANDIDATES FOR CHLAMYDIA TRACHOMATIS

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Development of a vaccine against C. trachomatis remains a challenge primarily because of the poor understanding of the regulation of the immune response elicited in a Chlamydial infection. For a successful vaccine development, identification of proteins that trigger activation of both CD4+ and CD8+ T cells is important. Our laboratory is currently working on two chlamydial proteins viz. Pkn1 and MOMP. Pkn1 is a Ser/Thr kinase which is secreted by the type III secretion system of C. trachomatis. Because Pkn1 enters the cytosol of the host cells, it is likely to be presented by the MHC class I molecule and hence be a target of the CD8+ T cells. The Major Outer Membrane protein (MOMP) constitutes 60% of the total protein mass of the bacterial outer membrane and has been shown to elicit MHC class II immune response. Therefore, both Pkn1 and MOMP are potential vaccine candidates against C. trachomatis.

Objectives: To clone Pkn1 and MOMP in bacterial expression vector PtrcHis and purify the over expressed proteins using Ni+-NTA affinity column. The purified protein will be further used to study individual as well as synergistic effect of Pkn1 and MOMP as potential vaccine candidates.

Methods: C. trachomatis was cultured in McCoy cell line infected with EBs purified from patient samples. Genomic DNA of C. trachomatis was isolated and PCR was performed to amplify Pkn1 and MOMP. Bacterial expression vector PtrcHis was used for in-frame cloning of Pkn1 and MOMP. Ni+-NTA affinity chromatography was performed to purify the over expressed recombinant proteins. MTT assays for Pkn1 were performed in Hela cell line. Antigenic stretches of Pkn1 and MOMP were identified using ProPred, Propred1 and CTLPred web servers designed for identification of subunit vaccine candidate by Bioinformatic center of IMTECH Chandigarh, India.

Results: PCR amplified Pkn1 and MOMP were cloned in frame in bacterial expression vector PtrcHis. Nucleotide sequence analysis using BLAST (NCBI) has revealed two percent variation in amino acid sequence of Pkn1. The two proteins were expressed in XL1Blue and BL21 strains of E. coli respectively and purified using Ni+-NTA affinity chromatography. In MTT assays Pkn1 was found to be non-toxic upto a concentration of 30_g/ml. Interestingly Pkn1 has shown an increase in the cell proliferation and viability at concentration of 500 ng/ml for 48 hours. MTT assay for MOMP is being carried out. Analysis by ProPred, ProPred1 and CTLPred web servers identified MHC Class-I, Class-II binding regions and CTL epitopes in Pkn1 and MOMP sequence. We are currently also studying the effect of Pkn1 and MOMP on the expression of cytokines in cell culture and the immune response elicited in mouse models.

Conclusion: The two chlamydial proteins Pkn1 and MOMP have been cloned, expressed and purified. Pkn1 amplified from Indian isolates of C. trachomatis have exhibited polymorphism. Pkn1 at low concentrations was found to increase the cell viability. Bioinformatic analysis has also reveled several antigenic stretches in Pkn1 and MOMP. The purified proteins are being used in immunization studies for characterization of these proteins as vaccine candidates

POSTER SESSION: DERMATOLOGY

P-131 GENITAL LICHEN SCLEROSUS IN MALES: ROLE OF OCCLUSION DUE TO PREPUCE

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Objective: To study the effect of preputial occlusion in uncircumcised males with early genital lichen sclerosus. Aetiology of lichen sclerosus (LS) is still unknown, but genetic susceptibility, autoimmune mechanisms, infection with human papillomavirus and spirochetes, and Koebner phenomenon have been postulated.

Methods: We report 5 male patients with genital LS, in whom the disease involved predominantly the inner aspect of prepuce up to the preputial ring and the area of glans normally covered by the prepuce, with almost complete sparing of the exposed area of glans. In all patients diagnosis was confirmed histologically.

Results: Age of the patients ranged from 38 to 67 years. Duration of disease ranged from 8 months to 14 months. There was involvement of areas of glans that are covered by prepuce (Fig. 1). Also, in all cases, the preputial involvement was restricted to its mucosal side which is in contact with the glans. The involved area was restricted up to the preputial ring, therefore the external surface of the prepuce was spared. There was sharp demarcation between the involved and uninvolved areas. This suggests the role of occlusion due to prepuce in the development of LS.

Conclusion: This pilot observation suggests that occlusion due to prepuce may be playing a greater role in the causation of LS than is currently thought. Studies have shown LS to be very rare in circumcised males. Other inflammatory skin diseases like psoriasis, seborrhoeic dermatitis, lichen planus, and allergic and irritant dermatitis are also less common in the circumcised individuals. Psoriasis, lichen planus and LS manifest the Koebner phenomenon. This is because the presence of foreskin facilitates minor trauma. Another possible contributory factor is the presence of smegma at the inner aspect of prepuce. Accumulation of smegma does play a role in uncircumcised males in predisposition to carcinoma of the penis. The same factor may be applicable in development of LS in uncircumcised males.

Figure 1. LS confined to area covered by prepuce

P-132 DERMOSCOP OF GENITAL LESIONS: VISION WITH BRILLANCE

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Objective: Dermoscopy is a non-invasive method that enables clinicians to evaluate numerous morphological features, colors and microstructures of the epidermis, the dermoepidermal junction, and the papillary dermis of various dermatological conditions which are not visible to the naked eye. This method improves diagnostic accuracy by 20-30% compared with simple clinical observation. Primarily used for only pigmented skin lesions it has extended its application to various dermatological disorders. Recently, computer-aided dermoscopy with the help of image enhancement software has revolutionized DERMATOLOGé. The images features specifically correlate to gross histologic features. The identification of specific diagnostic patterns relates to the distribution of colors and dermoscopy structures for better clinical and diagnostic conclusion. Because of the complexity involved, this methodology is reserved for experienced clinicians.

Method: Using Scalar dermatoscope with polarised function and various magnifications up to 200 X digital images of genital pathologies were taken. Incorporating Computer Aided Image Enhancement Digital Scale software, various features like geometric correction, duplication, grey scaling, inversion, pseudo color, spatial filters , arithmetic operations, background fitting, histogram, histogram equalization, color selection, binarizaion, shape analysis, calibration, feature parameters, geometrical and manual measurement, and detailed color information, the image visualization and interpretation aided to a qualitative clinical judgement. Spectral features of lesions are enhanced for visualization of infective, inflammatory, non inflammatory, pigmented, auto immune and miscellaneous skin features. Till date no studies have been done on dermoscopy of genital lesions of dermatological and sexually transmitted disease origin.

Results: Out of total 12,000 dermoscopic images of common and uncommon dermatological conditions, study of images of the male and female genitals were carried out. Penile and Vulval and Anal condition: 1. Normal Pilosebaceious Units; 2. Infectious Diseases: Viral, Bacterial, and Fungus Infections; 3. Infestations: Scabies, Pediculosis Pubis; 4. Balanitis; 5. Drug reaction; 6. Blistering Diseases Erythema Multiforme, Hailey-Hailey Disease; 6. Pigmentary lesions: Hypopigmented Lesions - Vitiligo; Hyperpigmented Lesions; 7. Inflammatory Diseases: Contact Dermatitis, Lichen Simplex Chronicus, Intertrigo, Hidradenitis Suppurativa, Psoriasis, Lichen Planus; 8. Miscellaneous Disorders. Specific features were noted and serial imaging helped the prognosis and therapeutic response.

Conclusion: We are beginning to move away from clinicopathologic diagnosis into an era of clinicoimaging diagnosis. Dermoscopy presents an attractive addition to the dermatologic diagnostic armamentarium which adds to the confidence, elegance, and enjoyment of clinical diagnosis by visualizing the primary morphology of various genital conditions. Digital techniques permitting analysis of computer images generated by sophisticated software's have opened new horizons in this field. It is well to bear in mind, however, that in medicine, digital systems will always be limited by the extreme complexity of biological systems compared to physical ones. Often it is not feasible to use dermoscopic handpieces due to the localization of the lesions. Dermoscopy should not be the final diagnostic tool with-out histopathologic examination of clinically suspicious lesion. Computerized digital dermoscopy with image enhancement software can be extremely useful for diagnostic and therapeutic purposes. E mail: kbp@icenet.co.in

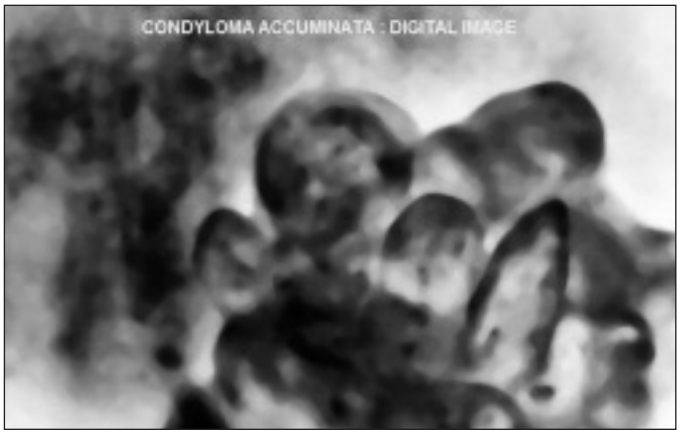

Figure 1: CONDYLOMA ACCUMINATA

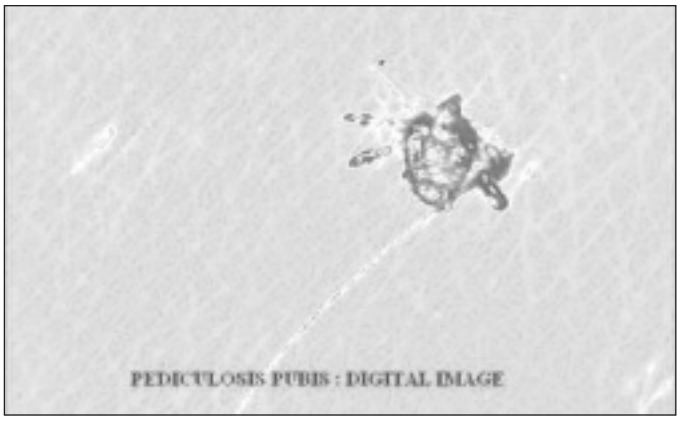

Figure 2: PEDICULOSIS PUBIS

POSTER SESSION: DIAGNOSTICS

P-133 COMPARISON OF COMMERCIAL HSV TYPE-SPECIFIC ELISA KITS: FOCUS DIAGNOSTICS, TRINITY DIAGNOSTICS AND EUROIMMUN

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Objectives: Compare the performance of three commercial HSV type-specific ELISA kits using a defined serum panel.
Methods: Three HSV type-specific ELISA kits evaluated with three serum panels containing a total of 261 sera. The HSV-1 Panel consisted of 89 sera submitted to a reference laboratory for HSV type-specific Western blot testing and was used to evaluate the performance of 2 commercial kits for HSV-1 only. The HSV-2 Panel consisted of 89 sera sequentially submitted to a reference laboratory for HSV type-specific serology. The False Positive Panel consisted of 83 sera collected over a two-year period that were all found to be HSV-2 positive when initially screened by ELISA, but subsequently determined to be HSV-2 negative when tested with the HSV-2 inhibition assay. Western blot and a HSV-2 inhibition assay were performed on selected sera.
Results: For HSV-1 the sensitivity and specificity of the Focus HerpeSelect ELISA was 95% and 96% respectively versus Western blot while the Euroimmun ELISA was 93% and 89% respectively. The HSV-2 Panel was evaluated with all three HSV-2 type-specific ELISA kits, and discordant samples were tested further by a HSV-2 inhibition assay and Western blot to resolve discordant results. Based on the combination of consensus ELISA results, HSV-2 inhibition, and Western blot the following sensitivity and specificity values were obtained: Focus - 100% and 100%, Euroimmun - 54% and 91%, and Trinity - 100% and 89%. Eight of the 89 sera gave 'equivocal' results with the Euroimmun kit, thus producing the low sensitivity value. No equivocal results were detected with the Focus and Meridian kits. Using the False Positive Panel the Focus assay determined 48 of the 83 sera (58%) to be negative, Euroimmun found 23 (28%) to be negative, and Trinity had 37 (44%) negative.
Conclusion: The Focus and Euroimmun HSV-1 kits gave similar performance values versus the Western blot, although samples with only HSV-2 antibodies did react with the Euorimmun HSV-1 kit. Both the Focus and Trinity kits were highly sensitive for the detection of HSV-2 antibody, but the Focus kit did provide a higher specificity as determined by the inhibition assay and Western blot. The Euroimmun HSV-2 kit gave a high number of negative and equivocal results that resulted in the low sensitivity for the detection of HSV-2 antibodies. *whogrefe@focusdx.com

P-134 USE OF SELF-COLLECTED VAGINAL SWABS AS AN INNOVATIVE APPROACH TO FACILITATE TESTING FOR REPEAT CHLAMYDIA INFECTION

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Objectives: CDC guidelines recommend rescreening women at three months after treatment for chlamydia. The purpose of this study is to determine if, among women who were treated for a prior chlamydial infection, home-based, self-collected vaginal swabs can increase rescreening for chlamydia in comparison with rescreening in the clinic.
Methods: The study design is a randomized trial. Women/girls who had a positive test for chlamydia are enrolled in person or by phone from multiple family planning or STD clinics. After written informed consent is obtained, women/girls are randomly assigned (at 1:1 ratio) to the Clinic Group, in which they are advised to return to the clinic for rescreening, or the Home Group, in which they are asked to collect a vaginal swab at home and mail it to the study laboratory for chlamydia testing. Rescreening is scheduled at 3 months following prior treatment, and a reminder call is made about 2 weeks before scheduled rescreening. For women assigned to the Home Group, a specimen collection kit is mailed to their home (or other preferred addresses) with instructions on how to collect a vaginal swab; women/girls can also pickup the collection kit from the clinic if so desired. The cost to the clinic of the two rescreening methods is also compared.
Results: Study enrollment started in October 2004. As of February 2006, about 1,000 women have been enrolled from a total of 10 clinics, including 4 STD clinics, 5 family planning clinics and 1 teen clinic from 4 US cities. The study enrollment will continue through the first quarter of 2007 and follow-ups will be finishing in mid-2007.
Conclusion: If proved more effective and/or cost-saving, home-based, self-collected vaginal swabs may be used to facilitate rescreening women for recurrent chlamydia infection and, therefore, reduce the risk for long-term sequelae caused by chlamydial infection.

P-135 STDLABTRACK: AN AUTOMATED SYSTEM TO DETECT IRREGULAR LABORATORY REPORTING; THE NYC EXPERIENCE

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Objective: In 2005, >200 laboratories submitted reports to the New York City (NYC) Department of Health and Mental Hygiene (DOHMH), Bureau of Sexually Transmitted Disease Control (BSTDC), resulting in ~40,000 cases of Chlamydia (CT), >10,000 cases of Gonorrhea (GC) and >3,100 cases of syphilis (any stage). Laboratory-based reporting to public health authorities is the foundation of sexually transmitted disease surveillance. With such a large volume of disease, BSTDC needed a systematic way to monitor the consistency of laboratory reporting. Informatics staff at DOHMH developed an automated system to detect irregularities in patterns of electronic laboratory reports received and applied this method to monitoring the origin of STD laboratory reports in the surveillance registry database. This system, STDLabTrack (SLT), analyzes the number of reports added to the registry for the current week (by laboratory and disease) and compares those to previously measured counts. Three different signals indicate when current counts are more than a certain number of standard deviations (range 2.7 ' 8.0) below average counts over varying periods. When a trough is detected by SLT, an investigation is initiated. SLT was implemented in NYC in May 2006. The objective of this analysis is to examine the findings of SLT, and to consider the usefulness of SLT for identifying laboratories which have ceased reporting.
Methods: Laboratory reports received by paper are keyed into the registry and electronic records are imported. Weekly, SLT examines the top 20 laboratories in the registry by disease (CT, GC, syphilis) and signals any troughs. Troughs can be caused by 1) delays in data-entry or electronic import 2) problems with receipt of electronic reports 3) laboratory not sending reports. We investigated SLT troughs from 13 weeks (October-December 2006).
Results: During the study period the SLT made 780 observations (20 laboratories X 3 diseases X 13 weeks); 32 (4.1%) troughs were detected. There were 13 troughs for CT, 11 for GC and 8 for syphilis. Three troughs were attributed to problems with receipt of electronic reports; 2 were related to delayed import of results; and one trough was due to delays in report data-entry. Issues related to these troughs were resolved with the next electronic transmission, by establishing a regular import schedule and keeping data entry up to date. The remaining 27 troughs were indications of lower volume then expected, but not a complete lack of reports in the registry, these troughs were not investigated, but closely monitored for the next few weeks. SLT showed that no laboratory had failed to report during this period.

Conclusions: Once the programming interface with the STD registry was complete, SLT was a simple means of monitoring for problems related to laboratory data. SLT showed that none of the laboratories stopped reporting, and it identified other issues that might not otherwise have been noticed or fixed in a timely manner. SLT troughs associated with a decrease of reports (not just lack of reports) should be further evaluated to help identify and improve other reporting limitations.

P-136 EVALUATION OF A CANDIDATE TEST AND THE ABBOTT DETERMINE TEST TO DETECT SYPHILIS IN POINT-OF-CARE SETTINGS

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Objectives: A simple point-of-care (POC) test for syphilis that requires no special equipment would enhance syphilis elimination efforts in the United States (U.S.), but no such test is U.S. Food and Drug Administration (USFDA) cleared for use in the U.S. We compared a POC test widely used outside the U.S. (Determine test, Abbott Laboratories, Chicago, IL) with a developmental POC test that is a potential candidate for USFDA clearance ('candidate test'). Specifically, we estimated the sensitivities and specificities of the two tests performed on whole blood, plasma, and serum.

Methods: Staff at sexually transmitted disease clinics in five U.S. cities enrolled consenting adult patients. Non-laboratory staff at three clinics tested venipuncture-obtained whole blood, plasma, and serum specimens with each test and finger stick specimens with the candidate test. Nonlaboratory staff at the fourth clinic and a laboratorian at the fifth clinic tested finger stick specimens with the candidate test. Laboratorians at the Centers for Disease Control and Prevention (CDC) tested study patients' sera with both tests and, as reference tests, with the rapid plasma reagin test (RPR) and a Treponemal pallidum particle agglutination test (TPPA). To calculate test sensitivities and specificities, patients were classified by stage of syphilis and, separately, by TPPA and RPR results without regard to stage of syphilis.

Results: The study clinics enrolled 2,225 patients, including 337 with and 1,888 without current or past syphilis. Among patients with primary, latent, or past syphilis, nearly all differences in sensitivities of the candidate and Determine tests performed on venipuncture specimens at study sites and on sera at the CDC favored the candidate test. In addition, four candidate-test-positive patients with secondary syphilis were Determine test negative. However, these differences were not statistically significant. With few exceptions, point estimates of sensitivities of the candidate and Determine tests exceeded 90% among patients with TPPA+ / RPR+ syphilis. Specificities of the Determine test exceeded 99.0% for each specimen type at two study sites, but were significantly lower at the third site (97.7% [95% CI 95.9%-98.8%] to 98.4% [95% CI 96.9%-99.3%]). Specificities of the candidate test were significantly lower than the Determine test and more variable among specimen types and study sites. Comparison of study site and CDC results implicated patient factors in the small variation in specificity with the Determine test; inter-tester variability implicated predominately non-patient factors in the lower specificity of the candidate test.

Conclusions: The candidate test demonstrated consistent high sensitivity, but specificity was variable. The Determine test demonstrated high specificity and satisfactory sensitivity. POC tests involve qualitative readings by non-laboratorians for whom training and testing conditions are difficult to standardize. Careful attention must be given during manufacture and use of POC tests to define test strip composition and quality control methods required to detect and eliminate the influence of such factors. Efforts should continue to encourage introduction of sensitive and specific POC tests into the U.S.

P-137 COMPARISON OF TRANSCRIPTION-MEDIATED AMPLIFICATION, RAPID ANTIGEN TEST, CULTURE AND WET MOUNT FOR DETECTION OF TRICHOMONAS VAGINALIS IN FEMALE ADOLESCENTS

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Objective: Trichomoniasis is common among adolescents. However, T. vaginalis (TV) infection is often overlooked by clinicians treating adolescents, and most commonly used diagnostic tests are insensitive. In this study, we compared the performance of four different tests for TV detection in a large sample of adolescent women.

Methods: The study population was a convenience sample of 376 young women (ages 14-21) at high risk of STI presenting to a teen health center or hospital emergency department in Cincinnati, Ohio, USA. Four vaginal swabs were obtained by clinicians and used in random order for TV testing. One was used for wet mount microscopy, which was positive if motile trichomonads were present. A second swab was used to inoculate InPouch TV cultures (BioMed Diagnostics). Cultures were examined daily up to 5 days and were positive if motile TV were observed. OSOM TV rapid antigen test (Genzyme Diagnostics) was performed on a third swab according to the manufacturer's instructions. The fourth swab was processed in an APTIMA vaginal swab transport tube (Gen-Probe, Inc.). TMA was performed on a DTS400 system using TV analyte specific reagents (ASR) with the APTIMA General Purpose Reagent kit (Gen-Probe, Inc.). Specimens with TV ASR results >10,000 relative light units (RLU) were retested, and 2 results above this cutoff defined TMA positives. We used nonparametric receiver-operating characteristics (ROC) analysis to assess TV ASR sensitivity and specificity at different RLU cutoffs compared to a positive result with any of the non-TMA tests. All specimens were also tested with an alternate TMA assay (ALT TV, Gen-Probe, Inc.) that detects a different TV rRNA target sequence.

Results: Results from all tests were available for 332 subjects. TV was detected by wet mount in 31 (9.3%), by culture in 47 (14.2%), by rapid antigen test in 50 (15.0%) and by TMA in 61 subjects (18.4%). The area under the ROC curve for TV ASR was > 0.99, indicating excellent test performance. Using 10,000 RLU as a cutoff in the ROC analysis, TV ASR sensitivity was 98.2% and specificity was 97.2% compared to a positive by any non-TMA test. Six specimens were positive by TV ASR and negative by the other tests; all 6 were positive by ALT TV. All TV ASR positive specimens were also positive by ALT TV, however, the alternate test detected 34 additional positives that were negative by all other tests, including TV ASR. The table shows relative test sensitivities, including the combination of wet mount and culture.

Conclusions: The prevalence of trichomoniasis among adolescent women in this study was high: up to 18% depending on the method used for diagnosis. Not surprisingly, TMA was the most sensitive test for TV detection. The OSOM TV rapid antigen test performed as well as culture and better than wet mount. Along with FDA-cleared TMA tests for gonorrhea and chlamydia, the addition of the TV assay to the APTIMA repertoire allows testing for all 3 infections from a single specimen in settings where nucleic acid amplification is feasible.

Test	Sensitivity estimate* (%)	95% Confidence Interval
APTIMA TV ASR	98.4	91.4 – 99.7
OSOM TV rapid antigen test	80.7	69.2 – 89.5
Wet-mount/InPouch TV culture	79.0	67.4 – 87.3
InPouch TV culture	75.8	63.9 – 84.8
Wet mount	50.0	37.9 – 62.1

*Compared to "gold standard" (culture and/or PCR)

Figure 1: Relative sensitivities of T. vaginalis tests

P-138 THE UTILITY OF MALE URETHRAL GRAM STAIN FOR INFORMING TREATMENT DECISIONS ON THE DAY OF CLINIC VISIT

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Objective: Urethral gram stain (UGS), an inexpensive, point-of-care test, identifies gonococcal and non-gonococcal urethritis. Annually, ~32,800 male patients receive physician evaluations at 10 New York City (NYC) Department of Health and Mental Hygiene (DOHMH) sexually transmitted disease (STD) clinics; urethral specimens are collected for UGS and gonorrhea (GC) and chlamydia (Ct) testing by nucleic acid amplification tests (NAATs). Men with UGS showing gram-negative diplococci (GNID) are treated for GC and presumptively for Ct. Men with >5 polymorphonuclear neutrophils per oil immersion field (PMNs/oif) on UGS and no GNID are treated for Ct, although other pathogens (e.g., herpes, Trichomonas, Mycoplasma genitalium, Ureaplasm urealyticum) also cause urethritis. We evaluated the value added by UGS for informing treatment decisions on day of clinic visit.

Methods: Data were examined for male NYC STD clinic attendees with UGS and urethral Ct/GC NAATs during September 2005-September 2006 (n=12,585). Subgroups considered were: 1) sexual contacts to GC cases (including men with known Ct contact (n=293)), 2) sexual contacts to Ct (not GC) cases (n=828), 3) symptomatic men (reporting dysuria/discharge or with discharge noted on exam (n=6560)), and 4) asymptomatic men (no symptoms/signs above and no Ct/GC contact (n=4904)). NAAT results were the gold standard for infection. UGS sensitivity, specificity, positive and negative predictive values (PPV and NPV) for Ct and GC were examined by subgroup, using GNID and >5 PMNs/oif as measures of GC and Ct infection, respectively.

Results: Prevalence of GC and Ct, and performance of UGS are in the accompanying tables. UGS sensitivity for GC was poor among GC contacts and moderate for Ct among Ct contacts. GC prevalence among Ct contacts was low (2%). Men with signs/symptoms comprised the largest group (52%), followed by asymptomatic men (39%). Among symptomatic men, UGS had high sensitivity, specificity, PPV, and NPV for GC and 85% sensitivity for Ct. Among asymptomatic men, GC prevalence was very low (1%). The prevalence of Ct was moderately high (12%), and the PPV of UGS for Ct was only 21%. One-third of asymptomatic men with GNID or >5 PMNs/oif on UGS had neither GC nor Ct by NAAT.

Conclusions: UGS does not inform clinical decision-making among contacts to GC or Ct, because UGS performed poorly at detecting these pathogens among them, and presumptive treatment obviates the benefit of UGS; however, partner management messages may differ if UGS results are available. Prevalence of GC among Ct contacts is so low empiric treatment for GC is unwarranted. UGS appropriately identifies men with signs/symptoms who should be treated on the day of clinic visit. Few asymptomatic men were GC-positive; UGS findings indicated GC treatment for less than half of these men and would have resulted in gross over-treatment for Ct. Dropping UGS for asymptomatic men, Ct contacts, and GC contacts reduces UGS performed in NYC DOHMH STD clinics by ~6000/year, while minimally increasing (~650/year) men with GC or Ct by NAAT who should be called back for treatment (monthly average: 6.5 per clinic). However, without UGS, asymptomatic men with non-GC/non-Ct urethritis would not be treated.

	Prev. of GC N (%)	Prev. of Ct N (%)
GC contact (n=293)	23 (8)	26 (9)
Ct contact (n=828)	14 (2)	304 (37)
Signs/ symptoms (n=6560)	1026 (16)	1118 (17)
No sign/sym, No Ct/GC contact (n=4904)	71 (1)	568 (12)

Figure 1: Prevalence of GC and Ct

	Performance of gram stain (GC+)				Performance of gram stain (Ct+)			
	Sens %	Spec %	PPV %	NPV %	Sens %	Spec %	PPV %	NPV %
GC contact n=293	30	100	78	94	69	71	19	96
Ct contact n=828	50	100	70	99	85	80	66	90
Sign/ sympto n=6560	90	99	95	98	85	55	32	93
No sign/sym or Ct/GC contact n=4904	39	100	82	99	88	62	21	94

Figure 2: Performance of gram stain

P-139 THE AETIOLOGY OF VAGINAL DISCHARGE, MALE URETHRITIS AND GENITAL ULCER SYNDROMES IN KIMBERLEY, SOUTH AFRICA

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Objectives: To determine the aetiology of three major sexually transmitted infection (STI) syndromes, and their association with HIV seropositive status, in Kimberley, South Africa.
Methods: A total of 420 STI patients, accounting for 258 episodes of vaginal discharge syndrome (VDS), 160 episodes of male urethritis syndrome (MUS) and 33 episodes of genital ulcer syndrome (GUS) were recruited at a public healthcare facility in Kimberley. Anonymous samples were collected from patients whose STI syndromes were treated in accordance with national STI management guidelines. A real-time multiplex PCR (M-PCR) assay for Neisseria gonorrhoeae (GC), Chlamydia trachomatis (CT), Mycoplasma genitalium (MG) and Trichomonas vaginalis (TV) was used to determine the aetiology of 158 MUS and 256 VDS cases. Ulcer swabs from 32 GUS patients were tested by M-PCR for herpes simplex virus (HSV), Haemophilus ducreyi and Treponema pallidum. Endourethral swabs from MUS patients were cultured for gonococci, Gram stained vaginal smears from VDS patients were scored for bacterial vaginosis (BV) using the Nugent scheme, and Giemsa-stained ulcer material smears were examined for Donovan bodies. Serological evidence of syphilis was assessed by the RPR test, HIV serostatus by the rapid DetermineTM test (Abbott Laboratories) and HSV serostatus by ELISA. A chi squared test was used to determine associations between HIV status and the causative agents of each syndrome. The study received ethics approval from the University of the Witwatersrand.
Results: Neisseria gonorrhoeae was found in 50/158 (32%) of MUS specimens and 15/256 (6%) of VDS specimens tested by M-PCR. Only 35 (22%) endourethral swabs collected from MUS patients yielded gonococci on culture. Chlamydial infection was detected in 15/158 (9%) of MUS samples and 27/256 (11%) of VDS samples. MG and TV accounted for 12/158 (8%) and 16/158 (10%) of MUS cases, and for 24/256 (9%) and 77/256 (30%) of VDS cases, respectively. Gram stained slides were prepared for 235 of 258 VDS patients; 116 (49%) had normal flora, 37 (16%) had intermediate flora and 82 (35%) had BV. Based on M-PCR results, 20 of 32 genital ulcers tested were due to HSV (63%) and 6 (19%) were due to syphilis; no cases of chancroid or donovanosis were detected. No aetiological cause was found for 79 (50%) MUS, 92 (36%) VDS and 9 (28%) GUS cases. HIV and HSV-2 seroprevalences were highest in the GUS group (69% HIV+, 77% HSV-2+) and lowest in the MUS group (42% HIV+ and 46% HSV-2+). RPR serology was positive in 8% of MUS, 6% of VDS and 26% of GUS cases. With the one exception of trichomoniasis in VDS patients ($p<0.0001$), HIV seropositivity was not statistically associated with STI syndrome aetiology. There was a significant association between HIV seropositivity and HSV-2 seropositivity ($p<0.0001$).
Conclusions: Within the STI patient sample tested, gonorrhoea was confirmed as the most frequent cause of MUS, bacterial vaginosis and trichomoniasis as the most frequent causes of VDS, and genital herpes as the leading cause of genital ulceration. The overall HIV prevalence was high reinforcing the need to address HIV testing in the STI patient population.

P-140 E-TEST AS AN ALTERNATIVE TO CONVENTIONAL MIC DETERMINATION FOR SURVEILLANCE OF ANTIMICROBIAL SUSCEPTIBILITY OF NEISSERIA GONORRHOEAE

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Objectives: To evaluate E-test (AB Biodisk, Solna,Sweden) in comparison with reference agar dilution method for the susceptibility testing of Neisseria gonorrhoeae isolates
Methods: A total of 50 clincal isolates of Neisseria gonorrhoeae were obtained from men with uretheritis.Agar dilution susceptibility tests for penicillin, tetracycline , ciprofloxacin and ceftrioxone were performed according to standard method as recommended by NCCLS. GCMB agar with 1% hemoglobin, incorporated with serial doubling dilution concentrations of antibiotics was used for susceptibility testing. E test (AB Biodisk Solna Sweden) for four drugs was performed according to E test technical guidelines. MIC of these drugs obtained by E test were then compared with that obtained with agar dilution.Pearson's correlation was used to assess the correlation between E-test and agar dilution MIC values
Results: E-test MICs of all the four antibiotics used (Penicillin, Tetracycline, Ciprofloxacin and Ceftriaxone), correlated well with those determined by the agar dilution method (98% within 1 log2 dilution step). The agreement was 100% for Penicillin, Ciprofloxacin, and Ceftriaxone tests and it was 90% for Tetracycline. Among the antimicrobials tested Ceftriaxone showed the best correlation ($r = 0.97$), followed by Penicillin ($r = 0.94$), Ciprofloxacin ($r = 0.91$) and Tetracycline ($r = 0.84$). No major or very major error in interpreting the susceptibility category was observed, only minor errors were observed in 9.5% of E-test results
Conclusions: E test for susceptibility testing of Niesseria gonorrhoeae was found to be simple, rapid and reliable when compared to standard agar dilution test and thus can be applied routinely in laboratories for surveillance

P-142 EVALUATION OF THE BIOPLEX TM 2200 SYPHILIS IGG FOR THE DETECTION OF SPECIFIC IGG ANTIBODIES TO TREPONEMA PALLIDUM

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Objectives: This study was conducted to determine the performance characteristics of the Bio-Rad BioPlex 2200 Syphilis IgG test for syphilis when compared with two known FDA approved serologic tests. The BioPlex 2200 Syphilis IgG is a multiplex flow immunoassay which uses a Luminex platform, similar to a traditional EIA, but differs in that it can be used to simultaneously detect and identify many antibodies in a single specimen.
Methods: Commercially procured serum samples were obtained from pregnant women (n=433), and syphilis patients at different stages of disease (n=221) and screened for IgG antibodies to treponemal antigens using the BioPlex 2200 instrument. All sera were also tested using the TP-PA and RPR tests. Any discordant treponemal results were resolved by using a commercial treponemal EIA test.
Results: A total of 654 samples were screened for specific syphilis IgG antibodies using the BioPlex assay. Of these 387 (59.2%) were found to be reactive to treponemal antigens, 382 (58.4%) were reactive with the TP-PA test and 254 (38.8%) in the RPR test. Only one biological false positive RPR was detected among the sera tested (1/654, 0.15%). Of 387 samples found to be BioPlex 2200 Syphilis IgG reactive, 380 (99.5%) were also reactive in the TP-PA test, while 265 (97.4%) of non reactive samples (n=267) by BioPlex were non reactive also by TP-PA. Overall, seven specimens were found to be BioPlex 2200 Syphilis IgG reactive and TP-PA negative, four of which were negative and two positive by EIA. One specimen gave an equivocal EIA result and could not be resolved. Two specimens were found to be Bioplex Syphilis IgG non-reactive and TP-PA positive, and both proved to be EIA negative. The sensitivity of the BioPlex assay was found to be 99.5% and the specificity between 98.1% and 98.5%.
Conclusions: The BioPlex 2200 Syphilis IgG test was found to have a comparable sensitivity and specificity when compared to the TP-PA test. This automated test could prove to be a valuable screening test for syphilis in high volume settings, particularly where the prevalence of disease is low and positives can be confirmed with a non-treponemal test.

P-143 METHOD OF SELF-COLLECTION FOR GLANS SWAB AFFECTS NAAT PERFORMANCE FOR DETECTION OF CHLAMYDIA TRACHOMATIS, BUT NOT FOR NEISSERIA GONORRHOEAE

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Objectives: Nucleic acid amplified tests (NAATs) are sensitive and specific for the detection of Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (NG) in men who have sex with men (MSM). The use of non-invasive specimens would make home-based testing and broad scale screening programs possible. A few studies have shown that self-collected glans swabs are appropriate, convenient specimens for CT and NG NAATs. In an on-going study, we evaluated self-administered glans swabs for CT and NG by SDA (ProbeTec, Becton Dickinson Co.) and AC2 (APTIMA COMBO 2, Gen-Probe Inc.) in MSM.

Methods: MSM were seen at the San Francisco City STD Clinic. We excluded subjects if antibiotics were used within 21 days or if they had urinated within one hour. After verbal consent was obtained, subjects were given oral and written instructions for the self-collection procedure. Each patient self-collected a glans swab and placed it into M4 transport media. Then, 25 ' 30 ml of first catch urine (FCU) was provided. Initially, self- collection was done by rolling the tip of a Dacron type 1 swab across the opening of the penis 3 times (method 1). Later, this procedure was changed to a slightly more invasive collection method by inserting the swab _ inch into the urethra and rotating it once (method 2). The swabs were tested for CT and NG by SDA and AC2. These results were compared to AC2 on the FCU specimen. True positives were defined as either FCU positive or both glans positive or glans positive and confirmed by an alternate amplification.

Results: A total of 698 MSM were enrolled in our study. The majority of patients had urethritis. Overall, we found more NG (13.6%, 95 positives) than CT (6.6%, 46 positives). The majority of MSM were circumcised (85.6%, 593/693). Our analyses of CT and NG sensitivities by either AC2 or SDA in the circumcised group versus the uncircumcised group found no significant differences (p= .34 and 1.0) Table shows NAAT performance by collection methods.

Conclusions: GC detection was efficient with either test or glans swabbing method. However with CT, the more aggressive swabbing method, involving a minor insertion of the swab into the urethral opening, improved CT detection and the AC2 appeared to be more sensitive. Thus it would seem that if self collected glans swabs are to be used for CT screening, considerable attention will have to be paid to educating the men as to the more sensitive method of swabbing. Our results are based on symptomatic men and test performance may differ more in an asymptomatic population. Obviously we need further studies before these conclusions can be considered robust.

		Sensitivity		
C. trachomatis	FPV	FCU by AC2	Glans by AC2	Glans by SDA
Method 1	[illegible]	[illegible]	[illegible]	[illegible]
Method 2	[illegible]	[illegible]	[illegible]	[illegible]
N. gonorrhoeae				
Method 1	[illegible]	[illegible]	[illegible]	[illegible]
Method 2	[illegible]	[illegible]	[illegible]	[illegible]

Figure 1: NAAT Performance by Collection Method

P-144 ANALYTICAL DETECTION WITH THE BD PROBETEC ET CT AMPLIFIED DNA ASSAY OF A VARIANT OF CHLAMYDIA TRACHOMATIS WITH A DELETION IN THE CRYPTIC PLASMID

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Objectives: An unexpected decrease in the incidence of Chlamydia trachomatis (CT) infections in Sweden led to the discovery of a new variant of the organism that possesses a mutation in the cryptic plasmid, which is the target for several nucleic acid amplification assays routinely used for diagnosis of CT in Sweden. The objective of this study was to characterize the mutation in the CT cryptic plasmid and determine its impact on the ability of the BD ProbeTec™ ET Chlamydia trachomatis Amplified DNA Assay (BD ProbeTec CT Assay) to detect this variant strain.

Methods: An aliquot of the variant CT strain (vCT) was obtained from the Statens Serum Institut in Copenhagen, propagated in a BGMK cell line and the elementary bodies (EBs) harvested by differential centrifugation. EB stocks were enumerated by direct counting of a known volume on a Direct Fluorescent Antibody-stained slide. The analytical limit of detection (LOD) of the BD ProbeTec CT Assay was determined by testing dilutions of the enumerated stock suspension in sample diluent. Purified DNA was also prepared from an aliquot of the vCT stock and PCR primers were designed to facilitate sequencing of the approximately 7.5 kb cryptic plasmid.

Results: The analytical LOD of the vCT strain in the BD ProbeTec CT Assay was determined to be 51 EBs/mL (5.1 EBs/reaction). This value is below those reported for CT serovars D-K in the manufacturer's package insert, which have claimed analytical LODs ranging from 15 to 200 EBs/reaction. These observations were confirmed through additional testing of the vCT and CT serovar H at a spike level of 15 EBs/reaction. All (100%) assay replicates for both strains yielded positive results. DNA sequence analysis identified a 377 base pair deletion in the cryptic plasmid region that is targeted by several of the commercially available in vitro diagnostic assays.

Conclusion: Analytical testing verified the ability of the BD ProbeTec ET CT Amplified DNA Assay to detect the vCT strain at levels equal to or below those reported for serovars D-K. The identified deletion lies outside the target region of the BD ProbeTec CT assay and, as a result, does not impact the analytical sensitivity of this particular system. Bernie_Dellone@bd.com

P-145 COMPARISON OF A ROTOR GENE-BASED REAL-TIME PCR AND THE APTIMA COMBO-2 ASSAY FOR THE DIAGNOSIS OF GONOCOCCAL AND CHLAMYDIAL INFECTION IN MALE URINE SAMPLES

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Objectives: To compare the performance of a real-time polymerase chain reaction (RT-PCR) assay with the APTIMA COMBO-2 (AC-2) assay for the detection of Neisseria gonorrhoeae and Chlamydia trachomatis infection in men with urethral discharge and asymptomatic men.

Methods: The first-pass urine samples used in this study were obtained from 265 asymptomatic men attending mobile clinical services in informal settlements around Carletonville and 266 men with urethral discharge attending a primary healthcare facility in Johannesburg in 2006. In both studies, a trained nurse took a history and performed a genital examination to determine the presence of symptoms and signs of sexually transmitted infections. Urines were split into three aliquots at the laboratory; one was stored at '20oC, one was processed for the AC-2 assay (Gen-Probe, USA) according to manufacturer's instructions and DNA was extracted from the third aliquot for use in a RT-PCR assay using the Rotor Gene platform (Corbett Robotics, Australia). Urine specimens giving discrepant results were re-tested with either the APTIMA Chlamydia (AC-CT) assay or APTIMA Gonorrhoea

(AC-GC) assays (Gen-Probe, USA), which use different primers to those contained in the AC-2 assay. Resolution of the discrepant results allowed comparison of the performance of both the RT-PCR and AC-2 assays by sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV).

Results: (A) SYMPTOMATIC MUS PATIENTS: Dual testing of the 266 urines produced 193 negative, 51 positive and 22 discordant results for C. trachomatis infection, and 133 negative, 112 positive and 21 discordant results for N. gonorrhoeae infection. The RT-PCR had a sensitivity of 88.3%, a specificity of 94.7%, a PPV of 82.8% and a NPV of 96.5% for C trachomatis infection, whereas AC-2 had a sensitivity of 96.6%, a specificity of 99.0%, a PPV of 96.7% and a NPV of 99.0%. Likewise, for gonococcal infection, the RT-PCR had a sensitivity of 96.6%, a specificity of 93.2%, a PPV of 91.9% and a NPV of 97.2%, whereas AC-2 had a sensitivity of 99.2%, a specificity of 96.0%, a PPV of 95.1% and a NPV of 99.3%. (B) ASYMPTOMATIC PATIENTS: Dual testing of the 265 urines produced 218 negative, 20 positive and 27 discordant results for C. trachomatis infection, and 231 negative, 11 positive and 23 discordant results for N. gonorrhoeae infection. For C.trachomatis infection, the RT-PCR assay had a sensitivity of 92.0%, a specificity of 91.7%, a PPV of 53.5% and a NPV of 96.5% and the AC-2 assay had a sensitivity of 88.0%, a specificity of 99.2%, a PPV of 91.7% and a NPV of 98.8 %. For N. gonorrhoeae infection, the RT-PCR assay had a sensitivity of 91.7%, a specificity of 92.9%, a PPV of 37.9% and a NPV of 99.6% and the AC-2 assay had a sensitivity of 100%, a specificity of 98.4%, a PPV of 75% and a NPV of 100 %.

Conclusions: The overall performance of the AC-2, was superior to the RT-PCR assay for the detection of chlamydial and gonococcal infection in first-pass urine samples from both symptomatic and asymptomatic men.

P-146 DISCORDANT ELISA AND RPR TESTS FOR SYPHILIS IN HIV INFECTED AND UNINFECTED INDIVIDUALS

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Objectives: New testing algorithms for syphilis using an ELISA for screening have been adopted particularly by laboratories processing large numbers of specimens. Reactive ELISAs without a supporting reactive non-treponemal serologic test occur regularly and are of unclear clinical significance. This study sought to determine and compare the prevalence of reactive ELISA syphilis tests accompanied by a non-reactive RPR in populations of HIV infected and uninfected individuals drawn from the same community.

Methods: 242 sera specimens for routine syphilis screening were collected: 129 from patients in an STD Clinic who tested HIV-seronegative by routine methods and 113 from HIV-seropositive patients attending an HIV care clinic. Almost all patients were asymptomatic for clinical syphilis. Both clinics are part of the same hospital in Brooklyn, NY. Each specimen was tested initially using ELISA IgG (Captia IgG, Trinity Biotech, Jamestown, NY).Reactive tests were confirmed using RPR (Macro-Vue™ RPR Card Test, Becton Dickinson, Franklin Lakes, NJ). Specimens positive by ELISA were also tested by FTA-ABS (Zeus Scientific Inc, Raritan, NJ) or TPPA (Fujirebio Diagnostics, Malvern, PA).General demographics including age and sex were collected for both cohorts, and CD4 lymphocyte count and HIV RNA PCR viral load were collected for the HIV-seropositive patients.

Results: 12(9%) of all ELISAs from HIV-seronegative individuals were reactive. Of these, 6(50%) had non-reactive RPR tests. Two of these were also non-reactive by the FTA-ABS or TPPA. Among HIV-seropositives, 39(35%) had reactive ELISAs of which 18(46%) had non-reactive RPRs . All in this group were reactive by FTA-ABS tests. HIV-seropositive individuals had more discordant tests when these were considered as a proportion of all ELISA tests (OR 3.88 95%CI 1.48-10.16). Average CD4 counts in HIV-seropositive individuals with discordant ELISA/RPR and all non-reactive ELISA were similar. The average age of individuals with discordant results did not differ by HIV-serostatus although the STD clinic patients overall tended to be younger than those patients in the HIV clinic (mean ages 29 versus 48). HIV-seropositive individuals with a reactive ELISA were more often men compared those with non-reactive ELISA tests.

Conclusions: In these clinical environments, among all syphilis ELISA tests performed, a reactive syphilis ELISA test not confirmed by RPR was common (~50%). Those with discordant results tended to be older and were more likely to be HIV infected. That ELISAs were so often confirmed by other treponemal serologic tests (i.e. FTA-ABS) may suggest that these represent true past or present syphilis rather than immunologically mediated false-positive reactions. HIV-seropositive patients are known to be at risk for complications from syphilis. As more laboratories resort to these tests, clinicians will be faced with the difficult decision of whom to treat and how to follow response after treatment. Current guidelines do not address this situation. More research is needed to clarify the implications of isolated reactive treponemal serologic tests.

P-147 EVALUATION OF NUCLEIC ACID AMPLIFICATION TESTS (NAATS) FOR DIAGNOSIS OF NEISSERIA GONORRHOEAE IN RUSSIA

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Objective: In Russia, diagnosis of gonorrhea is mainly based on microscopy of Gram-stained smears only. However, this rapid and inexpensive method has a suboptimal sensitivity and specificity, especially for cervical and extragenital samples. Nucleic acid amplification tests (NAATs) for identification of Neisseria gonorrhoeae usually comprise a high sensitivity and specificity, fastness and possibility for non-invasive sampling. At present, it is not recommended to use NAATs as the sole method of diagnosis mainly due to the lack of possibilities to perform antibiotic susceptibility testing. Although, for screening populations, subpopulations, or core groups of high-frequency transmitters, or for using in settings where effective sampling, transportation and culturing are not accessible, NAATs can be suitable. This study was aimed to evaluate the performance characteristics of microscopy of Gram-stained genital smears, polymerase chain reaction (PCR) and nucleic acid sequence based amplification (NASBA) for diagnosis of N. gonorrhoeae in Russia.

Methods: Symptomatic patients attending two dermato-venereologic dispensaries in St. Petersburg, Russia from April to July 2006 were enrolled. Cervical and urethral swabs from women (n=286) and urethral swabs from men (n=48) were analyzed using microscopy of Gram-stained smears, PCR and NASBA. The genetic targets of the PCR were the cppB gene and the cytosine DNA methyltransferase gene, which where identified in separate PCRs. Samples were considered positive only if positive results were displayed in both the PCRs. In the real-time NASBA, NucliSens_ Basic kit (BioMerieux) and primers as well as probes specific for N. gonorrhoeae 16S rRNA were utilized. All target-specific oligonucleotides for PCR and NASBA were developed and synthesized at Central Research Institute of Epidemiology, Moscow, Russia.

Results: Twelve women and 4 men were positive in both the PCR and NASBA (100% agreement). However, three and four of the women were solely positive in the cervical sample, i.e. not in the urethral sample, in the PCR and NASBA, respectively. Thus, the prevalence of N. gonorrhoeae according to the results of the NAATs was 4.8% (16/334). In the microscopy of stained smears, only four of the women were positive and all of these were also positive in both the NAATs. In the men, three of four samples positive in the NAATs showed typical intracellular Gram-negative diplococci in polymorphonuclear leukocytes. Thus, when using the NAATs as gold standard, the sensitivity of microscopy of stained genital smears for diagnosis of

N. gonorrhoeae was 33% when analyzing both cervical and urethral samples from women and 75% for urethral samples from men. The specificity was 100% for all the samples.

Conclusions: In the present study, microscopy of Gram-stained smears displayed relatively high sensitivity and specificity for urethral specimens from symptomatic men but comprised a very low sensitivity for both cervical and urethral specimens from women. Both the PCR and NASBA assays showed a high sensitivity and specificity, however, comprehensive evaluation, optimization, standardization, and quality assurance of all the NAATs used in Russia are crucial.

P-148 DETECTION OF CHLAMYDIA TRACHOMATIS WITH COBAS TAQMAN AND APTIMA COMBO2 ASSAYS IN FREEZE-STORED URINE SAMPLES

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Objectives: Chlamydia trachomatis (CTR) diagnostics is based on NAATs that recommend the samples to be tested within a day if stored at room temperature (RT) and within 30 days if stored at -20˚C. A longer storage time of specimens may be needed to enable transport and collection of research material and accumulation of sizeable sample panels to be tested. This study was conducted to evaluate the effect of storage on detection of CTR nucleic acids in urine specimens by two sensitive NAAT assays.

Material & Methods: Altogether 264 urine samples that had been freshly analyzed with Cobas Amplicor (Roche) assay (103 CTR positives and a random sub-sample of 161 negatives) ex protocol in conjuction of phase III HPV 16/18 vaccination study and stored thereafter at -20˚C for 0.5-29 months were analyzed with Cobas TaqMan (Roche) and with APTIMA Combo 2 (Gen-Probe) assays.

Results: Independent of the storage time, 242/264 (91.6%) cases by TaqMan and 246/264 (93.2%) cases by APTIMA were in accordance with the results by Amplicor. Of Amplicor positive samples, 16 were TaqMan negative and 12 APTIMA negative. On the other hand, 6 Amplicor negative samples were both TaqMan and APTIMA positive. APTIMA had slightly higher sensitivity than TaqMan in samples freeze-stored less than one month (Table 1). In the course of increasing storage time up to 29 months, sensitivity and kappa-value declined with both assays while specificity remained excellent.

Conclusions: Our results showed that an increased storage time of urine samples either at RT or at '25˚C freezer has no remarkable effect on the detectability of chlamydial nucleic acids by amplification methods. Despite the considerably higher analytical sensitivity of APTIMA, there were no great differences between the tests when analyzing freeze stored urine samples. These findings support the feasibility of research programs based on collected or mailed urine specimens.

Storage months (-20 C)	Number of samples	TaqMan			APTIMA		
		Sensitivity	Specificity	Kappa-value	Sensitivity	Specificity	Kappa-value
0-1	54	0.94	1.00	0.956	1.00	1.00	1.000
2-11	130	0.81	1.00	0.912	0.92	1.00	0.936
12-23	70	0.95	0.89	0.782	0.93	0.89	0.782
24-29	31	0.71	1.00	0.706	0.92	1.00	0.924

Table 1: Sensitivity and specificity of assays

P-149 CHLAMYDIA TRACHOMATIS IN CERVICAL, VAGINAL, URINE AND COMBINED VAGINAL/URINE SPECIMENS FROM WOMEN ATTENDING STD-CLINICS, YOUTH-CLINICS AND WOMENS HEALTH CLINICS IN SWEDEN

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Objectives: To evaluate the sensitivity of different sampling sites of Chlamydia trachomatis (CT) by nucleic acid amplification tests (NAAT) in women and whether self-collected sampling sites as First Void Urine (FVU) and vaginal swabs are as accurate as FVU and endocervix samplings sites used in a clinical setting.

Methods: Women attending STD-clinics, youth clinics and Women's health clinics in Linköping and Jönköping because of their male sexual partners' genital chlamydial infection, were enrolled. Some women (so far n=7) with a confirmed CT infection detected in screening programs by endocervical and or FVU chlamydial sampling were also included. Bladder incubation time was >1 hour but preferably > 2 hours. The subjects were asked to insert two polyacrylamide swabs 3-4 cm into the vagina and rotate the swabs firmly at least 3 times. The swabs were thereafter placed one in a sterile empty polypropylene (PP) tube (Sarstedt) and the other in a PP-tube containing 2-SP medium respectively. FVU (< 25 ml) was poured in an empty Sarstedt tube and in the tube containing the vaginal swab. An experienced midwife or a physician performed a gynecological examination and an endocervical specimen by swab was collected and placed in a PP-tube containing 2-SP medium. The four samples from women attending at the different clinics in Linköping were sent by post to the Dept of Clinical Microbiology in Örebro and analyzed with the COBAS Amplicor CT-test (Roche Diagnostics Corp). Inhibition control and confirmation by rerun were performed for all CT-negative and CT-positive test respectively. Samples from women enrolled and tested at respective clinics in Jönköping were sampled by the same described procedure and the samples analyzed with BD ProbeTec (SDA; Becton Dickinson Diagnostic Systems) at the Dept of Clinical Microbiology Ryhov County Hospital, Jönköping.

Results: The study is ongoing and so far data from 47 subjects (median age 22 years, range16-44) are evaluated. Twentyfive women had CT-positive results from all sites whereas 18 were all-over CT-negative. In four subjects discrepant results were found. A sensitivity of 100 % was defined as a confirmed positive CT-test from any sampled site and with either analysis method. Sensitivity for vaginal swab, cervical swab and combined cervicalswab/ FVU respectively was 96.5% (28/29) and for FVU 93.1% (27/29). Of subjects CT-positive in test 22/29 (76%) were asymptomatic including all with discrepant test results. More and hopefully conclusive data will be presented at the ISSTDR-meeting.

P-150 DEVELOPMENT OF AUTOMATED TRANSCRIPTION-MEDIATED AMPLIFICATION NUCLEIC ACID TESTS FOR GENITOURINARY PATHOGENS

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Objective: Microbial pathogens associated with vaginitis, urethritis and cervicitis will affect half of all women at some point in their lives. A series of Transcription-Mediated Amplification (TMA)-based nucleic acid amplification tests (NAATs) are under development for research on microbial pathogens associated with vaginitis, urethritis and cervicitis. Using GEN-PROBE_ APTIMA_ General Purpose Reagents (GPR), these research use assays employ magnetic target capture, TMA, and Hybridization Protection Assay technologies to detect Trichomonas vaginalis (TV), Mycoplasma genitalium (MG), Ureaplasma species, Megasphaera species, and Lactobacillus species in multiple sample types. The TMA NAATs can be tested on the semi-automated DTS_ instruments and the fully automated TIGRIS_ DTS_ sys-

tem equipped with Laboratory-Developed Assay (LDA) software. We demonstrate that the use of the APTIMA GPR and analyte-specific oligonucleotides enables the development of both semi-automated and automated high-throughput assays for a variety of genitourinary pathogens.

Methods: Target capture, amplification, and probe oligonucleotides specific for TV, MG, Megasphaera elsdenii, Lactobacillus jensenii, and Ureaplasma urealyticum and U parvum were added to the APTIMA GPR at concentrations determined using Design of Experiment methodology. To evaluate analytical sensitivity, APTIMA_ specimen transport media were spiked with laboratory strains of TV, MG, M elsdenii, L jensenii, U urealyticum and U parvum. To evaluate analytical specificity, APTIMA_ specimen transport media was individually spiked with laboratory strains of 35 different non-target species of genitourinary pathogens. To assess assay signal in different sample types, urine samples added to Gen-Probe's urine specimen transport medium and swab samples collected in Gen-Probe swab specimen transport medium were spiked with various concentrations of targets and tested. Cutoff values of 100,000 Relative Light Units (RLUs) were applied to determine sample reactivity. Testing was performed on the semi-automated DTS_ instrument and on the TIGRIS_ DTS_ system. In addition, on the TIGRIS_ DTS_ system, TMA NAATs for TV, MG, M elsdenii and L jensenii were tested back-to-back using the LDA software.

Results: On both DTS_ platforms, analytical sensitivity (100% reactivity level) was less than one cell equivalent per milliliter for TV and Ureaplasma species, less than 10 cell equivalents per milliliter for MG, and less than 1000 cell equivalents per milliliter for M elsdenii and L jensenii. Cross reactivity of these assays was not observed with any of the 35 non-target species when tested at 1e6 CFU/mL with the semi-automated DTS_ instrument. The RLU values for analytes tested in the vaginal swab or urine sample transports were not significantly different when tested with the TIGRIS_ DTS_ system. Average signal to cutoff RLU ratios for all analytes was greater than 200.

Conclusion: High-throughput TMA NAATs for TV, MG, M elsdenii, L jensenii, U urealyticum and U parvum were developed to run on both semi-automated and fully automated instrument platforms. All assays had sufficient analytical sensitivity to detect clinically-relevant levels of these organisms in both swab-based and urine-based samples. None of the assays cross-reacted with a wide range of bacterial organisms commonly found in the human urogenital tract.

P-151 COMPARISON OF APTIMA ANALYTE SPECIFIC REAGENTS TO WET MOUNT, CULTURE, AFFIRM VPIII, AND OSOM TRICHOMONAS RAPID TEST FOR DETECTION OF TRICHOMONAS VAGINALIS FROM VAGINAL SWABS & CYTYC THINPREP VIALS

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Objectives: Trichomonas vaginalis (TV) is the most common non-viral cause of vaginitis in the world. In the US it is a non-reportable sexually transmitted infection (STI) and is estimated to cause up to 5 million infections annually. The purpose of this study was to evaluate 5 separate assays for detection of TV from vaginal secretions and/or liquid Pap (TP) specimens.

Methods: Specimens were collected from symptomatic and asymptomatic adult subjects presenting to Wishard Health Services OB-GYN Dept for regular Pap testing and/or subjects being screened for TV infection as part of their diagnosis for their visit. Subjects receiving metronidazole and/or Tinidazole therapy within the previous 21 days were excluded. All specimens were randomly collected, processed, and tested according to Good Clinical Practices (GCPs) and manufacturer's recommendations. The assays evaluated included: wet mount, conventional culture (cult) using the InPouch™ TV culture medium (BioMed Diagnostics, White City, OR), BD Affirm™ VPIII (Affirm) test (BD Diagnostic Systems, Sparks, MD), OSOM Trichomonas Rapid Test (OSOM) (Genzyme Diagnostics, Cambridge, MA), and the APTIMA_ analyte specific reagents for Trichomonas vaginalis (ATV) (Gen-Probe, Inc., San Diego, CA). The ATV assay was performed from vaginal swab secretions placed directly into both the liquid transport medium and the TP vial. The only assay performed on the TP specimens was ATV. Sensitivity and specificity of each method from each specimen type was determined and laboratory methodology information such as turn-around-time (TAT), ease of use, and workflow were evaluated. True positives were defined as a positive cult or any two positive results from the other assays while true negatives were defined as a negative cult and < 1 positive result from the other assays.

Results: Of the 101 subjects tested to date, specimen results yielded 72 true negatives and 29 true positives. Sensitivity was 100% for ATV (from both direct and TP specimens), 87.9% for OSOM, 82.9% for both cult and Affirm, and 69.1% for wet mount. There were no false positive results yielding 100% specificity for each method. The TAT for wet mount was approximately 5 minutes (read directly at point-of-care), 12 minutes for OSOM, 45 minutes for Affirm, 5 hours for ATV, and up to 96 hours for cult.

Conclusions: OSOM, Affirm and cult all performed similarly (significantly better than wet mount) for detection of TV, but optimal sensitivity (100%) was achieved by ATV from both direct and TP specimens. In pregnant women, undetected TV may result in pre-term rupture of membranes as well as pre-term labor and birth. TV is also a risk factor for post-surgical gynecological infections and HIV. Additionally, use of TP allows for detection of multiple pathogens such as Chlamydia trachomatis, Neisseria gonorrhoeae, Human Papilloma Virus as well as TV from a single source specimen.

P-152 AN EVALUATION OF SELF-TAKEN SAMPLES FROM MEN FOR CHLAMYDIA TRACHOMATIS (CT) AND NEISSERIA GONORRHOEAE (NG)

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Objectives: Self-taken genital samples from women have proved to work well. This study investigates the option of a self-taken meatal (STM) sample for men to be used in clinical settings or in the privacy of their home. The aims of the study are: • To see whether results from self-taken samples (STM & first-catch urine - FCU) are at least as sensitive as urethral (Ur) swab testing. • To determine whether STM samples are feasible and an acceptable alternative to FCU samples.

Methods: All men (both heterosexual and MSM) attending the GUM clinic at Mortimer Market Centre with the following were invited to enrol in the study: • Symptoms/signs suggestive of urethritis (dysuria/discharge); • Untreated chlamydial or gonococcal infections; • Contacts of chlamydial or gonococcal infections. Exclusion criteria. • The use of antibiotics against these STIs; • Men aged less than 18 years of age. Men were asked to follow a simple instruction sheet on 'How to take a sample'. The STM was collected before the standard laboratory samples. The routine Ur sample was processed as to the standard laboratory method for both CT (PCR: Polymerase Chain Reaction Cobas Amplicor) and NG (culture). The additional STM and FCU samples were batched and tested for both CT and NG using the PCR and the Transcription Mediated Amplification (TMA: GenProbe Aptima Combo 2) assays. The men completed a Questionnaire: • To determine the acceptability of STM to that of FCU. • Questions about hygiene and habits. • To determine the preference of STM or FCU.

Results: Recruitment is slower than anticipated owing to staff shortages within GUM, hence the number of positive samples are lower than expected. The population that submitted samples were: • Mean age of 31 years. • 46% heterosexual and 54% being homo/bisexual. • Circumcision rate in non-Caucasians 56% was higher than in Caucasians 31% ($p<0.005$). • 45% washed their penis <4 hours before attendance and non-Caucasians significantly more likely to have done so. Preliminary analysis of the data shows: For CT testing of the 49 positive PCR ure-

thral samples, 42 STMs were positive by either test giving a 85.7% (95%CI 72.8-94.1) concordance and 47/49 FCUs resulted positive indicating a 95.9% (95%CI 86.0-99.5) concordance. For NG testing of the 35 positive by gonoccoal culture, 34 STMs were positive by either test which indicates a 97.1%% (95%CI 85.1-99.9) concordance and 32/35 FCUs indicating a 91.4% (95%CI 76.9-98.2) concordance. There was no association with circumcision status or discharge in the discrepant group.

Conclusion: The statistical analysis at this preliminary stage demonstrates that there is no statistical difference between the sample types, suggesting that STM swabs are a feasible alternative to either a urethral or FCU sample. Almost all of the men found taking a swab easy and said they would test more frequently if STM was available. Corresponding Author e-mail: caroline.carder@uclh.nhs.uk

P-153 HPV SCREENING TEST: DEVELOPMENT FOR LOW-RESOURCE SETTINGS

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Objective: To develop two rapid, accurate, acceptable, and affordable HPV tests for primary screening in low-resource settings.

Methods: One test being developed is a rapid-batch assay for oncogenic types of HPV DNA in partnership with Digene Corporation, building on their Hybrid Capture_ technology to produce a test requiring minimal training and equipment, and can deliver up to 90-patient results in less than 2.5 hours. The other test, a lateral-flow strip, is under development by PATH in collaboration with Arbor Vita Corporation (AVC) to detect E6 protein from oncogenic types of HPV in less than 20-minutes. Women's and providers' needs are being assessed and business and commercial strategies are being developed.

Results: The prototype rapid-batch test (Digene) is based on Hybrid Capture using magnetic beads with a luminometer output. Fourteen high-risk HPV types will be used in the probe cocktail and the test is expected to require less than 2.5 hours with simplified procedures, reagents, and equipment. The prototype rapid-strip test (AVC) uses a PDZ capture protein with the greatest reactivity and cross-reactivity to multiple high-risk types of E6. E6-specific antibodies that achieve coverage for the most common high-risk HPV types were generated from mice. A conjugate of the E6 antibodies and colloidal gold is the detection reagent and qualitative results are visually read in 20 minutes. Test development and field testing are scheduled for completion during 2007. Introduction of the Digene test and clinical utility studies of the AVC test are planned for late 2008.

Conclusions: The tests under development represent innovative approaches to the detection of HPV and promise a higher degree of performance than cytological and visual screening methods.

P-154 SELF COLLECTION OF GENITAL HPV-DNA IN HETEROSEXUAL MEN

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Objectives: As studies and interventions for HPV in heterosexual men continue to develop, reproducible testing methods need to be assessed. In this study, we examined the accuracy of self-obtained HPV specimens compared to clinician-obtained specimens, to establish if self collection for HPV DNA detection in heterosexual men is feasible.

Methods: Heterosexual men over the age of 18 who were presenting for STI screening were recruited from the Provincial STI clinic at the BC Centre for Disease Control. Men who had a history of genital warts were excluded. Participants were administered a structured questionnaire by an experienced, trained healthcare provider to assess sexual history, risk factors for sexually transmitted infections and sociodemographic variables. Nursing staff obtained specimens using emery paper followed by saline moistened Dacron swab from three genitourinary sites: penile shaft (ventral and dorsal surfaces), glans penis/foreskin and scrotum. Participants received written instructions and took specimens from one of the three sites using same technique as clinicians. Both the emery paper and the swab from each sampling site were placed together into a sample transport tube containing 1ml of liquid-based cytology (LBC) medium (Cytyc Corp, Boxborough, MA) which was stored at room temperature (18-30°C) for no more than 48 hours until delivered to the laboratory. HPV testing was undertaken following the manufacturer's (Roche) instructions. All samples found to be positive with the MWP assay were subsequently tested with the Roche Linear Array HPV typing assay to establish the type(s) in the sample. QA testing was undertaken by retesting 10% of negative samples using the Roche Linear Array HPV typing assay. Demographic characteristics and sexual practices of the study sample were determined. Concordance between participant obtained and clinician obtained was determined using Cohen's kappa statistic.

Results: To date, 199 men have been recruited to participate. Mean age was 32 and average age at first intercourse was 17. Median number of sexual partners was 15. Forty-one percent of men were uncircumcised. Of the 199 men recruited, HPV test results from both the patient and nurse were available for 69 men. Men provided specimens from a single site: glans/foreskin (20), shaft (21) and scrotum (28), and nursing specimens were available for each of these sites. HPV prevalence by genital site was 48.1%, 61.1% and 41.3% respectively for all HPV types. Cohen's kappa between clinician and patient collected specimens were 0.9 (95%CI 0.7-1.0) (glans/foreskin), 0.8 (95%CI 0.5 -1.0) (penis) and 0.4 (95%CI 0.1-0.7) (scrotum). Overall agreement between patient and clinician collected specimen was 0.6 (95% CI 0.5-0.8), and for glans/foreskin and shaft combined was 0.8 (95%CI 0.7 ' 1.0)

Summary: Men can accurately self collect specimens for HPV-DNA from the genitourinary region with written instructions. Specific regions of the genitourinary area such as the glans/foreskin and penis offer greater correlation between self collected and clinician collected specimens than others. Self collection could be used to assess the impact of interventions for HPV in men and as part of studies on the natural history of HPV in men.

P-155 TIME-MOTION COMPARISON OF THE IUO ABBOTT REALTIME CT/NG ASSAY, GEN-PROBE APTIMA COMBO2 ASSAY, BD PROBETEC ET SYSTEM AND ROCHE COBAS AMPLICOR ASSAYS FOR CHLAMYDIAL AND GONORRHEA DIAGNOSIS

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Objectives: While each of the currently available nucleic acid amplification assays for diagnosis of gonococcal and chlamydial infections provide significant increases in diagnostic sensitivity compared to other detection methods, they vary substantially one from another in terms of numbers of steps and time to perform them. We conducted time-motion studies of the technician steps and total time required for processing and testing urine specimens for GC and CT with the investigational (IUO) Abbott RealTime CT/NG molecular diagnostic assay, the BD ProbeTec ™ ET (PT) and Gen-Probe _ APTIMA _ Combo 2 ™ Assay (GP AC2) and the Roche Cobas Amplicor PCR assay.
Methods: Highly experienced laboratory technicians used a stop watch to perform duplicate direct observation for processing 32 urine specimens using each of the four assays. Total time, numbers of discrete processing steps, and duration of each step were recorded for each assay.
Results: When using the IUO Abbott RealTime CT/NG assay, 14 steps were recorded over a period of 306 minutes. The total direct hands on time recorded was 36 minutes. In comparison the ProbeTec, Gen-Probe AC2, and Cobas Amplicor assays, required 27, 28, and 24 steps over periods of 239, 294, and 617 minutes, respectively. Hands on time for the IUO Abbott RealTime was 36 minutes; in comparison, the Becton Dickinson ProbeTec™ required 74 minutes and the GP AC2 and Roche Cobas Amplicor PCR assays required 64 and 197 minutes of hands-on time, respectively. In addition, the IOU Abbott RealTime CT/NG Assay provided large blocks of automated processing time.
Conclusions: The total technician hands on time for performance of the IUO Abbott RealTime CT/NG Assay using urine specimens was substantially less, and required fewer steps than the Gen-Probe AC2, the BD ProbeTec and the Roche Cobas Amplicor assays. The large blocks of 'walk-away' time, along with fewer required steps with the IUO Abbott RealTime CT/NG assay makes the performance of this assay useful and particularly efficient.

P-156 EFFECT OF SPECIMEN TRANSPORT TEMPERATURES ENCOUNTERED DURING POSTAL SHIPPING ON DETECTION OF CHLAMYDIA TRACHOMATIS (CT) USING GENPROBE APTIMA COMBO 2

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Objectives: Self-collected vaginal swabs may allow for the expansion of screening programs for C. trachomatis (CT) by incorporating home collection and mailing of specimens to the testing site by the patient. However, product inserts for commercial nucleic acid amplification tests for CT typically list temperature ranges from 2 to 30C. This range may be inadequate for regular mailing of specimens. In this study, we monitored temperatures inside shipping containers during transit by the USPS between Atlanta GA, New Orleans LA, St. Louis MO, Jackson MS, Pierre SD and Anchorage AK. Contrived CT specimens were exposed to these temperature ranges and tested with the GenProbe APTIMA Combo2 assay (GenProbe).
Methods: Temperature monitoring devices (KoolTrak) were programmed to record ambient temperature every 10 minute and placed inside shipping containers approved by the USPS for mailing vaginal specimens. Temperatures were recorded during transit beginning with placement in mail boxes at the originating site until arrival at the destination during July and August 2004, 2005 and 2006. Swab specimens were spiked with 10, 1000 or 100000 inclusion forming units of CT and exposed to the temperature extremes and/or variation cycles identified in the shipping study. APTIMA was used to test these specimens.
Results: Temperature recorders were mailed from Atlanta to either New Orleans or St. Louis, during July 2004. The packages were delivered within 4 days after mailing and the lowest and highest recorded temperatures were 20.5C and 45C respectively for those sent to New Orleans. Packages mailed from Atlanta to St. Louis were exposed to a temperature range of 18C to 50C. A similar transit time was observed during July and August 2005 when temperature recorders were mailed from St. Louis and Jackson to New Orleans. The temperature range from St. Louis to New Orleans was 18C to 43.5C while a range of 19C to 52.5C was recorded in packages mailed from Jackson. During July 2006, a 20C to 43C temperature range was recorded in packages mailed from Pierre to Atlanta. The highest temperature recorded during each of the shipments was typically a single peak. In contrast, three separate high temperature peaks of up to 30C followed by two low temperatures of 6C to 8C were observed when a package was mailed from Anchorage to Atlanta in July 2006. All spiked swab specimens exposed to the recorded temperature ranges including cyclic variations and all tested positive for CT with APTIMA.
Conclusions: Specimens mailed from residential or community USPS mail boxes are exposed to temperatures greater than allowed in package inserts. These excessive temperatures did not appear to affect the performance of APTIMA testing. For home collection and mailing of specimens to become a viable option for CT screening, specimen tolerance to temperatures likely to be encountered during the shipment should be determined. Allowable specimen holding temperature ranges in product inserts may need to be changed to reflect shipping conditions. Alternatively, laboratories participating in chlamydia home testing programs should be required to perform their own verification studies to meet regulatory requirements.

P-157 COMPARISON OF SELF-TAKEN VAGINAL SWABS (SVS) AND FIRST CATCH-URINE (FCU) WITH A COMBINED SPECIMEN OF SVS AND FCU FOR THE DIAGNOSIS OF CHLAMYDIA TRACHOMATIS WITH TWO AMPLIFIED DNA ASSAYS

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Background: CT is most prevalent bacterial sexual transmitted disease, yet willingness to undergo traditional gynaecologic STD testing is limited. Efforts to enhance compliance with testing among at-risk women are needed. The use of a self-taken vaginal swab (SVS) and first-catch urine samples (FCU) appropriate specimens for highly sensitive STD diagnosis. They are acceptable and feasible approaches to improve adherence to STD-testing in young women. Prior studies showed highest sensitivity when both tests were done seperately.
Objective and study design: The objective is to study the laboratory performance of three different testing approaches to find the most sensitive one-sample test-procedure with two amplified DNA assays: Strand Displacement Amplification assay (SDA) of Becton Dickinson (ProbeTec ET system, Maryland, USA) and Polymerase Chain Reaction (PCR) by Roche Diagnostics Inc. (Cobas Amplicor system, California, USA). We compared both one-sample approaches self-taken vaginal swabs (SVS) and first catch-urine (FCU) with a combined specimen of SVS and FCU in one test (combi) for the diagnosis of Chlamydia trachomatis.

Methods: Participants of this cross-sectional survey were 735 women (11% was commercial sex worker) who attended our STD-clinic in 2006. The SDA group were 371 women (mean age 28.3 years; range 16'57 years) who were tested by SVS and combi. The PCR group were 364 women (mean age 24.5 years; range 16-62 years) who were tested by SVS, urine and combi. We compared percentage CT positive in the individual test results to percentage CT positive in at least one of the specimens.
Results: CT was diagnosed in 12.8% (94/735) at least one of the specimens. Ct positivity in at least one test of the SDA group was 13.5%: 12.9% (48/371) in SVS and 13.5% (50/37) in the combi (2 discrepant results). Ct positivity at least one test of the PCR group was 12.1% (44/364): 10.7% (39/364) in urine, 11.3% (41/364) in SVS and 10.7% (39/364) in combi (9 discrepant results).
Conclusions: A combined specimen of SVS and FCU in one test does perform better in the SDA group but not in the PCR group. SVS performs best in the PCR group altough some CT positives are missed.

P-158 COBAS TAQMAN CT TEST V2.0: DETECTION OF THE SWEDISH VARIANT BY NAAT

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Objective: Diagnosis of infection of Chlamydia trachomatis, including the Swedish variant, in urine and swab specimens using the COBAS_ TaqMan_ CT Test V2.0
Methods: The COBAS_ TaqMan_ CT Test (CTM CT) is an in vitro nucleic acid amplification test (NAAT) for the qualitative detection of Chlamydia trachomatis cryptic plasmid DNA. In mid 2006, a variant strain of Chlamydia was identified in Sweden that is missing 377bp of the cryptic plasmid target region rendering it undetectable by the current CTM CT test. The expanded CTM CT test (Version 2.0) incorporates an added target region located off the cryptic plasmid that allows the test to detect plasmid free variants as well as the mutant strain identified in Sweden.
Results: The enhanced CTM CT test targets a highly conserved portion of the genome while retaining the ability to detect the presence of the wild type cryptic plasmid. With 5-10 copies of the wild type cryptic plasmid generally present in each elementary body of CT, it remains a preferred target for detection of wild type infection and offers 5-10 fold greater sensitivity than targets located within the genome. Data presented here demonstrates the sensitivity and inclusivity of the improved COBAS_ TaqMan_ CT Test (V2.0) using manual specimen preparation from urine and M4RT swab specimens to detect wild type Chlamydia strains as well as the newly identified Swedish variant.
Conclusions: The COBAS_ TAQMAN_ CT TEST V2.0 is able to detect wild type Chlamydia strains as well as the newly identified Swedish variant.

P-159 USERS INPUT DURING THE DEVELOPMENT OF RAPID HPV SCREENING TESTS FOR LOW-RESOURCE SETTINGS

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Objectives: More than 80 percent of the 490,000 new cases of cervical cancer identified annually occur among women in low-resource settings. In response to this need, the Screening Technologies to Advance Rapid Testing (START) Project is developing tests suitable for primary screening in such areas. To optimize effectiveness, acceptability, and introduction of the new tests, information gathered from women, health care providers, and policymakers regarding their perspectives and needs was incorporated into development of the new tests.
Methods: Both quantitative and qualitative methods including'surveys, in-depth interviews, and focus groups'were used to collect information from over 750 women, 400 health providers, and 40 policymakers in rural and urban China and India. Data collected included knowledge, attitudes, and preferences regarding cervical cancer and screening methods.
Results: Important acceptability information was obtained from users, and was fed into the research and development phase of the test in an iterative process. This included preferences regarding vaginal or cervical sampling, willingness to pay, equipment, staff training, test output format, storage temperature, number of tests per kit, batch size, and tolerance for contamination. Users' feedback influenced the development of a new specimen collection medium for the rapid-batch test allowing storage of specimens at room temperature for several days, and making the test more feasible for clinics that have fluctuations in client volumes. For similar reasons, lower batch sizes of 24'48 were preferred over larger batches of 96 tests. While both qualitative and quantitative output of results were acceptable, the cost of equipment was more of a concern. Both women and health workers provided feedback that having women collect the specimen for the test themselves (i.e., self-sampling) would be acceptable. This could have implications for wider accessibility of the test. Users provided data regarding factors that promote or act as barriers to using the new tests.
Conclusions: Aside from providing valuable input into final specifications of the test, soliciting user perspectives was instrumental in raising awareness and obtaining political and donor support for the upcoming introduction of the new tests in numerous countries.

P-160 COMPARISON OF DETECTION RATIO OF CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE FROM MALE PATIENTS WITH URETHRITIS BY TWO DIFFERENT DNA AMPLIFICATION METHODS

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Background: Neisserria gonorrhoeae and Chlamydia trachomatis are most common pathogens causing sexually transmitted diseases. It is difficult to culture both organisms from clinical specimen, because both organisms are easy to die outside of the human body, moreover C. trachomatis is obligate cell parasite organism. Though N. gonorrhoeae is able to culture in most cases, C. trachomatisdetection is usually performed by DNA or RNA amplification method for diagnosis of its infection. Recently both organisms can detect simultaneously by DNA or RNA amplification methods. This study was performed to compare 2 DNA amplification methods for the diagnosis of urethritis caused by C. trachomatis and N. gonorrhoeae.
Methods: 113 patients who had urethritis were recruited at 6 clinics in Kitakyushu Japan during March to September 2006. About 30 ml of first-voided urine from men with urethritis were used in this study. 10 ml of the urine was used for Roche polymerase chain reaction (PCR) Amplicor, 3.45 ml of the urine was used for Becton Dickinson strand displacement assay (SDA) BDProbetec, and the other 10 ml was used for culture of N. gonorrhoeae.
Results: In C. trachomatis detection, 36 samples were positive by both Amplicor and BDProbtec, 76 samples were negative by both methods. One sample was negative by Amplicor and positive by BDprobtec. The ratio of identity between both detection methods was 99.1% (112/113) in C. trachomatis. In N. gonorrhoeae detection, 66 culture positive samples were also positive by both methods, and 40 culture negative samples were also negative by both methods. Though the residual 7 samples were culture negative, these samples were shown positive results by Amplicor and BDProbtec. The completely identity were shown between both DNA amplification methods. The ratio of N. gonorrhoeae positive by culture method was only 90% (66/73) of DNA amplification methods.
Discussion: In C. trachomatis detection, it has been noticed that mutant that is not detectable by Amplicor but detectable by BDProbtec has been appearance in Sweden. In this study only one sample was not identical results between Amplicor

and BDProbtec. It is not analyzed the clone is the mutant or not yet. Even if it is the mutant, it is considered that the ratio is very low in Japan now. But it is important to research the mutant. In N. gonorrhoeae detection from male patients with urethritis, the results of both DNA amplification methods were completely identical. But from 10% of all positive samples detected by both DNA amplification methods, N. gonorrhoeae isolates were not able to detect by culture method using Thayer Martin Agar. It is necessary to analyze the samples in detail, such as antibiotic use, time until starting culture, microscopic results including diplococcus and leukocytes counts. In conclusion, both methods of Amplicor and BDProbtec are useful methods to detect C. trachomatis and N. gonorrhoeae from male patients with urethritis in Japan now. e-mail:t-matsu@med.uoeh-u.ac.jp

P-161 REVISITING THE GRAM STAIN DIAGNOSIS OF NON-GONOCOCCAL URETHRITIS (NGU) IN THE ERA OF NUCLEIC ACID AMPLIFICATION TESTING (NAAT) FOR CHLAMYDIA TRACHOMATIS (CT) AND NEISSERIA GONORRHOEAE (GC)

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Objectives: NGU is the most common diagnosis for which syndromic treatment is given among men visiting sexually transmitted diseases (STD) clinics. A Gram-stained smear is often used for the laboratory evaluation of NGU. A cut-off of > 4 white blood cells (WBC) per high power field (HPF), in the absence of intracellular Gram-negative diplococci, is generally used to diagnose NGU. However, studies establishing this cut-off were conducted in the pre-NAAT era, using CT culture as the gold standard. Given the higher sensitivity of NAAT over CT culture, the currently used cut-off may be too restrictive and should be re-evaluated with NAAT as the gold standard.
Methods: We used the electronic medical record database of the Denver Metro Health Clinic to evaluate Gram-stained smears of male urethral specimens for a 24-month time period (March 2005 ' February 2007). Specimen collection for Gram-stained smears was conducted on all men with a discharge on physical examination and attempted on all men who had urethral complaints (discharge or dysuria) regardless of whether they had a visible discharge. Gram stain results were recorded as the exact number of WBC per HPF from 0 to 10. Beyond 10, results were recorded as >10. CT/GC NAAT was conducted routinely on all men using urine samples. We analyzed CT and GC prevalence for each stratum of Gram stain results (combining the 6,7,8, and 9 strata as 6-9 in the table) and also included results for those men who did not have a Gram stain evaluation. Patients with dual CT/GC infection were excluded.
Results: A total of 5,923 Gram stain results were analyzed, 4,673 were included for the CT analysis (overall CT positivity: 25.4%) and 4,104 for the GC analysis (overall GC positivity: 15.1%). Results for the stratified analysis are described in the Table. CT prevalence at the 1 WBC stratum (6.0%) was not significantly different from the 0 WBC stratum (5.7%), or from the 8,769 men who did not have a Gram stain evaluation (6.8%). However, CT prevalence in the 2 WBC stratum (15.0%) was significantly higher than in the 1 WBC stratum (p<0.001). When combining the 2, 3, and 4 WBC strata, CT prevalence was similar in these strata (15.8%) compared to the 5 WBC stratum (20.9%, p=0.08). For GC there were very few cases below the 10 WBC stratum.
Conclusions: If CT prevalence using NAAT is used to determine the optimal cut-off of WBC per HPF in the diagnosis of NGU, our data provide a rationale to lower this cut-off to 2 WBC/HPF. The CT prevalence in the combined 2, 3, and 4 WBC strata (15.8%) compares favorably to the CT prevalence in asymptomatic men who are currently treated presumptively in our clinic as contacts to women with gonorrhea (8.5%), pelvic inflammatory disease (9.6%) or mucopurulent cervicitis (6.7%). Lowering the cut-off would provide earlier treatment to 10.4% of men with CT while treating an additional 4.6% of CT-negative men who would otherwise not have been treated.

Table: Chlamydia and Gonorrhea Prevalence by Gram Stain Result

	Chlamydia			Gonorrhea		
WBC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0	[illegible]	62	5.7	[illegible]	2	0.2
[illegible]	[illegible]	24	[illegible]	[illegible]	2	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]
3	[illegible]	16	26.2	45	0	0
4	[illegible]	[illegible]	[illegible]	[illegible]	1	0.4
5	249	52	20.9	[illegible]	1	0.5
[illegible]	[illegible]	118	[illegible]	[illegible]	3	1.1
[illegible]	[illegible]	[illegible]	41.1	[illegible]	[illegible]	[illegible]

P-162 ASSESMENT OF SELF-COLLECTED ANAL SWABS FOR DIAGNOSIS OF CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE BY PCR IN MSM AND WOMEN REPORTING ANAL SEX

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Objectives: Self-collected swabs are increasingly used as effective and client-friendly method in STI screening. The present study aims to assess usability of self-collected anal swabs in diagnosing anal CT and NG among men who have sex with men (MSM) and among women. Furthermore the acceptability of self-taken anal swabs is evaluated from patient's perspective.
Methods: During the period January-July 2007 all MSM and women, who report receptive anal sex upon STI screening at the Amsterdam STI clinic, are asked to provide a self-collected anal swab in addition to the provider-collected anal swab. Provider- and self-collected swabs are tested for CT by PCR (Cobas Amplicor; Hoffman-La Roche); provider-collected swabs for NG by culture tests (Becton Dickinson Biosciences); self-collected swabs for NG by PCR (Cobas Amplicor; Hoffman-La Roche) with confirmation of positive samples by real-time Taqman PCR (in-house developed). In addition, a provider-collected swab will be tested for NG by PCR. Sensitivity and specificity of self-collected swab compared to provider-collected swab were calculated, as well as kappa (test agreement) between the tests.
Results: From January to February 2007, 393 MSM and 195 women reported anal receptive sex and were eligible for participation. MSM: 359 out of 393 (91.3%) MSM accepted the self-swab. Prevalence of anal CT by provider-collected swab is 11% and by self-collected swab 11%. Prevalence of anal NG is 7.4% by provider-collected and 8.2% by self-collected swab. Self-swab test performance was good for both CT and NG (table). Inhibition of CT-PCR occurred in 1% of provider-collected and 3% of self-collected swabs. Inhibition of NG-PCR occurred in 3% of self-collected swabs only. Women: 140 out of 195 (71.8%) women accepted the self-swab. Prevalence of anal CT by provider-collected swab is 9.4% and 9.4% by self-collected swab. Prevalence of anal NG is 1.4% by provider-collected and 1.4% by self-collected swab. Self-swab test performance was good for CT but moderate for NG. Inhibition of CT-PCR occurred in 1.4% of provider-collected and 0.7% of self-collected swabs. Inhibition of NG-PCR occurred in 0.7% of self-collected and 0% of provider-collected swabs. Of 588 eligible MSM and women, 66% (n=391) filled a questionnaire. Of all respondents 72% (MSM:72%; women:71%) would use the

self-collected swab again; 22% (MSM:23%; women:19%) would prefer the provider to take the swab; 95% (MSM:95.4%; women:93.7%) would visit the STI-clinic again in case self-collected swabs would be the standard test procedure.
Conclusions: Our preliminary results indicate that the use of self-collected swabs is a valid screening method for MSM and women regarding anal CT. Assessment of self-collected swabs for NG-detection needs additional testing on provider-collected swabs (by including NG-PCR next to NG-culture). The study will be continued and more patients included to obtain more valid results on test usability at an STI-clinic setting. Patient's expressed acceptability of self-swabs is moderate, however use of self-collected swabs will not prevent the majority of clients coming to the STI-clinic again and is thus considered a feasible alternative screening method.

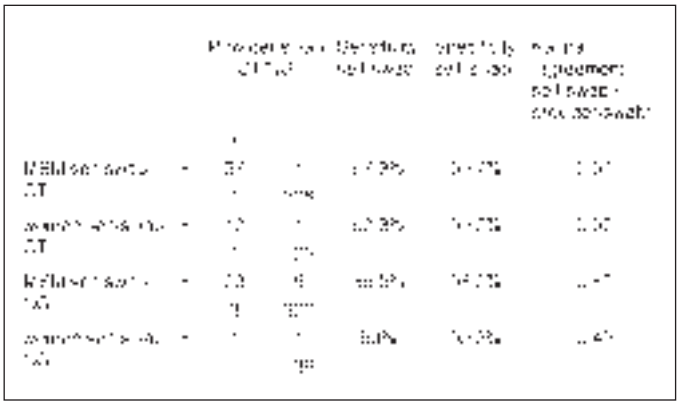

Figure 1: self-swab test performance

P-163 DETERMINATION OF THE VIABILITY OF CHLAMYDIA TRACHOMATIS IN SUREPATH LIQUID-BASED PAP SAMPLES AND THE ABILITY OF APTIMA ASSAYS TO DIAGNOSE INFECTIONS

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Objective: [a] Determine the endpoint of detection of C. trachomatis [CT] diluted in APTIMA specimen transport media [STM, (Gen-Probe Incorporated)] or SurePath liquid-based Pap [L-Pap] collection media; [b] Measure the effect of storage of L-Pap patient samples containing CT; [c] Compare the ability of the APTIMA Combo 2 [AC2, (Gen-Probe Incorporated)] assay to detect CT in SurePath L-Pap samples compared to cervical swabs [CS] and first catch urine [FCU].
Methods: CT [serovar L2-434] was propagated in McCoy cells and serial ten-fold dilutions were made in STM and SurePath L-Pap collection media. Replicates of 6 were tested for CT by AC2 over a period of 16 weeks. The stability of CT in clinical samples of L-Pap was determined by pooling L-Pap residua submitted for Pap testing within 48 hours. Each positive pool [n=5] was held at 4°C and 3 replicates of each pool were tested by AC2 on 5 time points from 0 to 10 days. In the prospective clinical evaluation we enrolled 423 women collecting an FCU, a CS and an L-Pap sample. The L-Pap sample was processed for cytopathology and the residual material and the other 2 samples were tested for CT using AC2. A patient was considered infected with CT if positive in more than 1 specimen type or if a single positive specimen was confirmed using an alternate amplification assay for CT [ACT] from Gen-Probe.
Results: The AC2 test recorded positives for CT organisms diluted to 10-8 in STM or L-Pap media. All 5 of the L-Pap patient pools remained positive by AC2 over the ten day period. Three of the pools retained >90% and the 2 others >60% of their original assay relative light unit [RLU] values. In the clinical evaluation the prevalence of CT infection was 5.6%. A total of 24 women were infected and 17/24 [70.8%] were positive in all 3 specimens by AC2. The % sensitivity and specificity of each specimen type were as follows: 91.7% [22/24] and 99.5% [397/399] for CS; 87.5% [21/24] and 100% [399/399] for L-Pap; 83.3% [20/24] and 100% [399/399] for FCU.
Conclusions: The AC2 test detected CT diluted in SurePath L-Pap media to a dilution of 10-8. Stability of CT in pools of SurePath L-Pap ranged between 60-90% of starting RLU values over a ten day period when held at 4°C. Comparing L-Pap, CS and FCU collected from 423 women showed that most had CT in all sample types. Most CT-infected women should be detected by AC2 testing of SurePath L-Pap media if the samples are handled optimally at 4°C and processed within ten days after Pap testing.

P-164 DETECTION OF TRICHOMONAS VAGINALIS IN CANADIAN WOMEN USING TRANSCRIPTION MEDIATED AMPLIFICATION ANALYTE SPECIFIC REAGENTS ON SELF-COLLECTED VAGINAL SWABS

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Objective: To determine the prevalence of T. vaginalis by testing self-collected vaginal swabs by wet mount and a transcription mediated amplification [TMA] test which uses Gen-Probe analyte specific reagents [ASR].
Methods: T. vaginalis [in-Pouch™TV+, BioMed Diagnostics] was propagated in Diamond's medium and ten-fold dilutions were made in sample transport medium [STM] before testing to determine the endpoint of detection using the T. vaginalis-ASR reagents [Gen-Probe Incorporated]. A cross-sectional study of 247 women attending a street youth clinic [n = 174] and a community health centre [n = 73] self-collected 2 vaginal swabs. The first dacron swab was collected and placed into an M40 tube [Copan] for wet mount examination within 24 hours. The second swab was placed into an STM tube for T. vaginalis ASR. Extra samples included a first catch urine [FCU] or a cervical swab [CS]. Patients were considered infected if the vaginal swab was positive in both wet mount and ASR; or by wet mount or ASR only, but confirmed by having a CS or FCU positive by ASR or by a second research use only [RUO] TMA test directed against alternate targets from a different rRNA region [ALT TMA]. Both of the T. vaginalis -TMA tests use APTIMA_ general purpose reagents. A cutoff value of 50,000 RLU was used to define a positive TMA result.
Results: T. vaginalis diluted in STM was detected by the ASR to a dilution of 10-8. The T. vaginalis prevalence was 18.2% [45/247]; 20.1% [35/174] at the street youth clinic and 13.6% [10/73] at the community health centre. The percent sensitivity and specificity of the ASR-TMA test performed on self-collected vaginal swabs was 93.3 [42/45] and 97.5 [197/202] compared to wet mount which was 20.0 [9/45] and 100 [201/201].
Conclusions: This T. vaginalis-TMA test using ASR was easy to perform and yielded clear results with self-collected vaginal swabs. A run of 98 samples was processed in approximately 6 hours. The sensitivity of wet mount makes it unacceptable as a screening test.

P-165 DEVELOPMENT OF A HPV-E6 ONCOPROTEIN-BASED RAPID STRIP TEST FOR CERVICAL INTRAEPITHELIAL NEOPLASIA

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Introduction: Infections with high risk types of human papillomavirus (HPV) result in approximately 270,000 deaths from cervical cancer per year, approximately 85% of which are in developing countries. E6 oncoprotein from high-risk HPV types is necessary for transformation of squamous cells to cervical cancer. Arbor Vita Corporation (AVC) has proprietary technology that utilizes the interaction between PDZ proteins and high-risk but not low-risk HPV-E6 in cervical cancer diagnostics. AVC and PATH are collaborating to create an affordable, rapid, point-of-care diagnostic test using this technology.
Objectives: To develop a rapid test, suitable for use in low resource settings, that detects high-risk HPV-E6 oncoprotein to identify cervical intraepithelial neoplasia (CIN) at increased risk of progression to cervical cancer.
Methods: Cervical specimens for assay development were collected from a population-based sample of women in China and India (dry swabs stored and transported to our laboratories at -60°C). Women were screened by visual inspection of the cervix with acetic acid, cervical cytology, and, in China, hybrid capture II (Digene Corp., Gaithersburg, MD). Women who were positive on at least one screening test, underwent colposcopy and had directed biopsies obtained as appropriate. Histology was assessed by expert pathologists who were blinded. Women without any abnormalities on all screening tests were deemed negative for CIN. Samples from women with and without CIN were genotyped for HPV by an in-house real-time PCR assay utilizing E6-specific primers. Next, the presence of E6 oncoprotein in the samples was assessed using the ICS and confirmed via E6 specific Western blot analysis using aliquots of the samples. The prototype rapid test is an immunochromatographic strip (ICS). It utilizes a nitrocellulose membrane with PDZ protein immobilized as the capture reagent. The signal reagent is a colloidal gold conjugate with an antibody that is specific to high-risk HPV-E6. Extraction of the E6 from specimen occurs in a buffer with surfactant that conditions the sample for the strip. Liquid gold conjugate is added to an aliquot and the mixture is loaded on the ICS test. The sample migrates up the strip via capillary action. Results are read visually and with a strip reader for quantitative evaluation at 15 minutes. If E6 from HPV is present in the sample, a red test line appears. Evaluation of analytical assay sensitivity was conducted by spiking recombinant HPV-E6 into CIN-negative samples. Studies of larger numbers of frozen cervical samples from women in India and China are planned for mid-2007.
Results: Testing with spiked samples indicates an analytical sensitivity of 20 pg HPV-16 E6. 5 of 7 CIN 3 samples that had been genotyped as HPV-16 positive were identified as strip test positive and 7 of 8 CIN-negative samples were test strip negative.
Conclusions: These results from the prototype strip test are encouraging. Further work to eliminate strip test false positives and to provide the gold conjugate in a dry, stable format is underway. For additional information contact: johannes.schweizer @arborvita.com.

P-166 FIELD EVALUATION OF A RAPID SYPHILIS TEST IN A RED-LIGHT DISTRICT OF MANAUS, AMAZON REGION IN BRAZIL

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Objective: To strengthen syphilis control in Manaus, Brazil, we evaluated the performance and operational characteristics of a rapid treponemal antibody point of care (POC) test.
Methods: Consecutive patients attending an STI clinic located in the harbour area, a red-light district, of Manaus, were enrolled over a six-month period (May-October 2006). Fingerprick blood was tested using the Visitect_ Syphilis POC test (Omega Diagnostics, UK) and sera were collected for HIV and syphilis serologies through conventional methods. Diagnostic accuracy of the rapid test was evaluated against FTA-Abs (WAMA Diagnostica, Brazil), as the reference standard treponemal serological assay, with external quality control. The non-treponemal VDRL was also performed to detect cases of recent/active syphilis among FTA-Abs positives. Operational performance of the rapid syphilis test was assessed through staff and patients' interviews. An economic evaluation of syphilis screening from the provider's perspective was conducted using assay and testing (staff) costs, comparing high ($3.2) and low ($0.9) unit cost for POC test (depending on procurement), and VDRL ($0.06), the currently available method for syphilis screening.
Results: 506 patients from 3 male (n=301) and 3 female (n=205) high-risk populations were enrolled. Prevalence of HIV ranged from 1.6% to 33.3% (male sex workers) among men, and from 1.1% to 2.6% (female sex workers, FSW) among women. Prevalence of syphilis by FTA-Abs ranged from 13.0% among male clients of FSW, to 30.1% among FSWs. Prevalence of recent/active syphilis (FTA-Abs+/VDRL+) was 5.6% in men and 10.1% in women. Overall, 11.26% (57/506) of samples were positive with Omega Visitect Syphilis, and 1.2% 'indeterminate' results prompted immediate re-testing. The sensitivity, specificity, positive and negative predictive values of rapid syphilis test compared to FTA-Abs were 56.5% (95%CI, 45.8 to 66.7), 98.8% (95%CI, 97.0 to 99.6), 91.2% (95%CI, 80.0 to 96.7) and 91.1% (95%CI, 88.0 to 93.5), respectively. The cost per-case of syphilis (treponemal antibody positive) correctly identified was $15.57 for VDRL, $33.44 for low-cost Visitect_ and $51.78 for high-cost Visitect_; whilst the cost for true case of recent/active syphilis (FTA-Abs+/VDRL+) were $15.98, $31.62 and $56.75, respectively. Study participants had initially little knowledge of syphilis and only 52.2% of unidentified syphilis cases ever got tested and sought treatment. Participants identified pain caused by fingerprick and preference for venous blood collection as minor barriers to test use, whilst waiting time, cost and trust in test results were not identified as obstacles. The most valued component of the project from the patients' perspective was the availability of the clinic in its location and the handling of patients by the staff.
Conclusion: Evaluation of a new rapid POC test for syphilis serology showed substandard performance despite excellent initial lab-based evaluation and validation in a reference STI clinic. The test was found operationally suitable, but was less cost-effective than the conventional VDRL.

P-167 PERFORMANCE OF SEROLOGICAL TESTS OF SYPHILIS IN STD LINICS IN GUANGXI AUTONOMOUS REGION, CHINA: IMPLICATIONS FOR SYPHILIS SURVEILLANCE AND CONTROL

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Objectives: To assess the toluidine red unheated serum test (TRUST) performance at the local STD clinics and to evaluate the TRUST test and a rapid treponemal test (SD-TP) in combination and the SD-TP test alone in diagnosis of serologically active syphilis.
Methods: A total of 11,558 serum specimens were obtained from the patients attending 14 local STD clinics at provincial, prefecture and county levels in Guangxi and were tested for syphilis seropositivity using a TRUST and SD-TP tests at the local clinic and TRUST and TPPA tests at Reference Laboratory.
Results: In the local clinics, 1,513 specimens were read as TRUST positive (13.2%) and 1,446 as TRUST/SD-TP positive (12.6%). In the Reference Laboratory, 1% (115/11554) and 2.2 (39 of 1759 TRUST positive) specimens showed discrepant TRUST qualitative and quantitative results, respectively, between the two technicians. Among the 11,396 specimens with consistent results qualitatively and quantitatively, 1,718 specimens were read as TRUST positive (15.1%) and 1,316 (11.5%) as TRUST/TPHA positive. The prevalence of syphilis based on results of local clinics was significantly higher than that from the Reference Laboratory (11.5% vs 12.6%, _2=6.08, P=0.014). In a comparison of the local TRUST test with that test of National STD Reference Laboratory, the qualitative agreement was 96.4% with a kappa value of 0.85 (95% confidence interval of 0.84-0.87, P<0.001), and the quantitative agreement _ 1 dilution was 93.4%. Comparing local TRUST and SD-TP tests in combination and SD-TP test alone to a diagnosis of serologically active syphilis defined as Reference Laboratory TRUST and TPHA positive, the TRUST and SD-TP tests in combination was 96.6% sensitive, 99.31% specific, 95.1% positive predictive value (PPV) and 99.5% negative predictive value (NPV); the SD-TP test alone was 96.9% sensitive, 98.0% specific, 87.4% PPV and 99.6% NPV.
Conclusions: In study province, the TRUST and SD-TP tests in combination or SD-TP test along at local STD clinics has a good performance and local clinics has a good qualitative or quantitative agreement in TRUST testing with National STD Reference Laboratory. However, continuing capacity-building of the laboratory staff and quality-control of the testing performance at local STD clinics is still needed to closely follow up.

P-168 PERFORMANCE OF HSV-2 TYPE SPECIFIC SEROLOGICAL TESTS IN SERA FROM FISHERMEN IN KISUMU DISTRICT, KENYA

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Objectives: To determine serological test or test combinations that could most accurately detect antibodies to herpes simplex virus type 2 (HSV-2) among fishermen along Lake Victoria, Kisumu district, Kenya.
Methods: A random sample of 250 fishermen from 18 beaches along Lake Victoria were sampled and consented as part of pre clinical preparedness study for a male microbicide efficacy trial. Sera were tested by two generations of the HerpeSelect HSV-2 ELISA (Focus Gen 1 and Focus Gen 2), Kalon HSV-2 ELISA (Kalon) and biokit Rapid HSV-2 (Biokit). Test performance; concordance, sensitivity, specificity, negative predictive values (NPV) and positive predictive values (PPV), was determined by comparing results against Western blot test (WB). Test results for Focus and Kalon were interpreted as negative if index values <0.9, positive if >1.1 and equivocal if values ranged from 0.9 -1.1. Rapid Biokit test was recorded as positive when a test spot was colored red or pink. The effect of adjusting cut-off values for the positive results from 1.1 to 3.5 and 1.1 to 1.5 on the performance of Focus and Kalon ELISA respectively was determined. Lastly we tested the performance of Focus Gen 2 and Kalon and Biokit and Kalon test combinations in sequence.
Results: The prevalence of HSV-2 ranged from 42.9% by Biokit, 58.2% WB, 63.9% Kalon, 73.5% Focus Gen 1 to 79.5% by Focus Gen 2. Test concordance, Sensitivity and specificity were: Biokit: 75.4%, 66.0% and 90.9%, Kalon: 93.8%, 98.6% and 85.5%, Focus Gen 1: 85.5%, 98.6% and 63.1% and Focus Gen 2: 81.5%, 99.3% and 51.7%. The NPV and PPV were; Biokit: 62% and 92.2%, Kalon: 97.3% and 92.1%, Focus Gen 1: 96.4% and 82.1% and Focus Gen 2: 97.8% and 94%. Adjusted index value for Focus Gen 1, increased both specificity and concordance from 63.1% to 93.0% and 85.5% to 96.1% respectively while decreased sensitivity from 98.6% to 97.9%. Focus Gen2 test, specificity and concordance increased from 51.7% to 84.9% and 95% from 81.5% respectively. Sensitivity was only affected slightly. Kalon test increased both the specificity and concordance from 85.5% to 92.2 and from 93.8% to 96.2% respectively. Sensitivity and specificity of combining Focus Gen 2 and Kalon in sequence was 98.6% and 85.2% while PPV and NPV were 92.1% and 97.2% respectively. The Biokit and Kalon combination gave sensitivity and specificity of 67.9% and 97.6% while the PPV and NPV were 97.9% and 64.3% respectively.
Conclusion: The prevalence of HSV-2 is high among this geographically defined population independent of serological test used. The Kalon test provided results that most closely approximate those of WB. Reformulated Focus Gen 2 offered no improvement in specificity over that of Focus Gen 1 among. Adjusted cut-off for Focus Gen 2 and Kalon improves both the specificity and sensitivity. However, approximately one quarter of results by Focus Gen 2 test were equivocal, seriously reducing the utility of this test. No test combination gave better sensitivity and specificity than use of the Kalon test, alone.

P-169 THE AETIOLOGY OF GENITAL ULCER DISEASE AMONG MEN PRESENTING AT PRIMARY HEALTH CARE CLINICS IN SOUTH AFRICA

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Objectives: To determine the aetiology of genital ulcer disease (GUD) and association with HIV serostatus among men with GUD from primary health care clinics in Gauteng Province, South Africa.
Methods: Consecutive men presenting with a genital ulcer to three primary healthcare clinics in Gauteng from March 2005 to December 2006 agreed to participate in a study assessing the impact of adding acyclovir to current syndromic management therapy for GUD. This is a secondary analysis to determine GUD aetiology and its association with HIV serostatus among 450 male participants. A real-time multiplex PCR (M-PCR) assay was performed using ulcer swabs from 450 patients to determine the prevalence of Herpes simplex virus (HSV), Haemophilus ducreyi (HD) and Treponema pallidum (TP). An additional real-time PCR assay was developed to assess the proportion of ulcers caused by Chlamydia trachomatis L-serovars (lymphogranuloma venereum, LGV). Human immunodeficiency virus (HIV) infection was determined at the first clinic visit with two HIV rapid tests (DetermineTM, Abbott laboratories, Japan and the CapillusTM HIV-1/HIV-2 test, Trinity Biotech, Ireland). HIV-negative patients were re-tested for HIV antibodies on day 28 by ELISA. A chi squared test was used to determine associations between HIV status and the causative agents of GUD. Ethics approval was obtained from CDC and University of the Witwatersrand.

Results: Among 450 participants, the mean age was 31 years of age. Herpes simplex virus was the most frequent cause of genital ulceration (69%, 312). The prevalence of the other pathogens was as follows: T. pallidum 8% (37), H. ducreyi 5% (21) and LGV 1% (3). No pathogens were detected in 23% (104) of the men. Mixed infections, caused by two aetiological agents or more, were present in 8% of men (26/346). Overall, almost two thirds of men were HIV seropositive (64%, 286). For each GUD aetiology the proportion HIV-positive was: LGV 100%, HD 71%, HSV 65% and TP 54%. HIV status was not statistically associated with any of the four GUD aetiologies. However, all three cases of LGV occurred in HIV seropositive men.
Conclusions: We found a high prevalence of HSV and HIV amongst patients presenting with GUD in this population. The proportion of GUD with unknown aetiology is similar to what has been reported for other studies in the region. We did not find LGV to be a significant cause of GUD. The high prevalence of HSV-2 underscores the urgent need for studies that will provide evidence for the efficacy (or not) of acyclovir as an additional therapeutic agent in the GUD syndromic ulcer algorithm.

P-170 TOWARDS A FAST, AFFORDABLE AND SENSITIVE TEST FOR HIGH-RISK HPV DNA DETECTION IN RESOURCE-LIMITED REGIONS

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More than 80% of the burden of suffering from cervical cancer is borne by economically developing regions. In the majority of these cases, a limited number of high-risk (HR) types of human papillomavirus (HPV) are associated with the disease. Despite the potential of primary prevention with vaccines for HPV 16 and 18, screening methods for HPV infection as part of secondary prevention programs still hold particular promise in underserved areas. The goal of the PATH-Digene partnership (a part of PATH's START program--Screening Technologies to Advance Rapid Testing) is to design, develop, and commercialize an HPV DNA test based on Digene's Hybrid Capture_ technology. The resulting prototype test'a magnetic particle-based target capture with enhanced signal amplification'has been validated in extensive analytical studies in the laboratory and is now being validated in field studies in China and India under environmental conditions in which the commercial test will be implemented. The test can be performed in less than 2.5 hr, and can process up to 88 specimens in one run, allowing sample collection, testing, results analysis, and clinical follow-up in a single day. To facilitate sample preparation, a solubilizing collection medium has been developed to suspend and lyse specimens by gentle manual mixing. Labile test-kit components, sensitive to temperature and humidity extremes, are preserved at ambient temperatures via a novel desiccation process that facilitates reconstitution for full assay potency. In the laboratory the test has proven to be robust, rapid, reliable, and simple and is anticipated to be cost-effective for the populations in which it is intended. Together with adequate screening coverage and proper clinical management this innovative HPV-detection test promises to contribute improved outcomes for populations of women at risk for cervical cancer in low-income regions of the world.

P-171 DETECTION OF Y-CHROMOSOME SEQUENCES FROM CERVICOVAGINAL LAVAGE FLUID IN WOMEN WITH AND WITHOUT LOWER GENITAL INFECTIONS

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Objectives: Y- chromosome sequences (YCS) detection in vaginal fluid is a potential biomarker of self-reported sexual exposures in women. In previous work, we demonstrated that YCS detection at day 1 following unprotected intercourse was 100%, and was detectable up to a week post-coital. Our goal was to determine whether stored cervicovaginal lavage (CVL) fluid can be used to detect YCS and whether presence of a lower genital tract infection alters detectability of YCS.
Methods: Behavioral data, comprehensive STD assessment, and CVLs were obtained from women enrolled in a prospective study at Baltimore STD clinics in 1992 to 94. CVLs were stored at -70 C. We assayed CVL samples from women who reported unprotected heterosexual intercourse in the preceding 7 days. Time from last intercourse, number of sexual exposures, and presence of lower genital infections were documented. YCS were detected by Real-Time PCR using the LightCycler_ system with hybridization probes complementary to unique sequences of the Y chromosome genome. Positive samples were quantified with a standard curve. All runs included positive and negative controls.
Results: Samples from 97 subjects who reported unprotected intercourse were analyzed. At time of visit, 72.2% of subjects had at least one lower genital infection (22.9% gonorrhea, 28.6% chlamydia, 35.7% trichomoniasis, 10% mucopurulent cervicitis, 25.7% bacterial vaginosis, and 2.9% candidiasis);and 27.1% had multiple infections. Median time from last intercourse was 3.0 days (range 1-7 days) and median number of sexual exposures in the preceding week was 2.0 (range 1-7 exposures). YCS was detected in 40.2% of samples. Overall mean YCS concentration was 9.2 ng/ml. Of the positive specimens, 64% were detected in women who reported intercourse within the preceding 48 hours [mean YCS 10.35 ng/ml] vs. 36% in women reporting intercourse >48 hours [mean YCS 7.1 ng/ml] (p= 0.01). 48.2% of women without an infection were positive for YCS vs. 39.2% of women with one infection and 31.6% with more than one infection (p=0.5). In a multivariable model adjusting for number of sexual exposures, sexual intercourse >48 hours was associated with a decreased odds of YCS detection (aOR 0.34, 95%CI: 0.14-0.79) whereas the presence of a lower genital tract infection was not (aOR 0.61, 95%CI: 0.24-1.55).
Conclusions: Evaluation and implementation of intervention programs for the prevention of sexually transmitted infections requires accurate report of sexual behavior, which can be validated through the use of a biomarker such as YCS. These data suggest that YCS can be detected in CVL, but sensitivity of the assay may be lower than with vaginal swabs-especially for specimens obtained more than 48 hours following unprotected intercourse. Nevertheless, we found the assay useful in assessing archived material, and together with a previous study using vaginal swabs suggest that YCS can be detected in vaginal fluids regardless of the collection method. There was a trend for decreased detection of YCS in the presence of a lower genital infection but this was not statistically significant. A larger more definitive study is warranted.

P-172 THE PERFORMANCE OF HERPESELECT ELISA, KALON ELISA, AND THE BIOKIT RAPID TEST AND THE EFFECT OF HIV CO-INFECTION ON THE DETECTION OF HSV-2 SEROSTATUS IN RAKAI UGANDA

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Objective: To determine the performance of the HerpeSelect (Focus) and Kalon HSV-2 ELISAs and the BioKit rapid test for the detection of HSV-2 sero status on subjects from Rakai Uganda. A second objective is to determine the effect of HIV infection on the performance of these assays.
Methods: Stored serum samples from subjects of the Rakai cohort of known HIV status were tested by the Focus ELISA, the Kalon ELISA, BioKit Rapid test and Western Blotting (WB). A total of 820 samples were tested by Focus ELISA and WB, and 538 were test by Kalon and WB, 535 were tested by the Rapid test and Western blot, 535 samples were tested by all methods. Optimal index cut-off value was determined by the receiver operator curve (ROC) analysis using the WB as the gold standard.
Results: From the 820 samples with both Focus ELISA and WB results, the optimal index cut-off value was 3.2 (sensitivity 88.4%, specificity 80.8%). When stratified by HIV status, there were 273 HIV+ samples with optimal cut-off value at 3.2 (sensitivity 89.1%, specificity 80.6%). Among the 547 HIV- samples, the optimal index cut-off value was at 2.2 (sensitivity 95.9%, specificity 75.2%), for a cut off value of 3.2 the sensitivity and specificity was 88.0% and 80.9% respectively. Using a cut off value of 3.2 the concordance with WB was 85.6 % for all samples, 85.0% for HIV- and 86.8% among HIV+ samples. Of the 538 samples tested by both the Kalon ELISA and WB, the optimal index cutoff value was 1.5 (sensitivity 91. 7%, specificity 92.4%). When stratified by HIV status, the optimal cutoff value was 1.5 for both HIV positive and negative populations (HIV+: N= 177, sensitivity 90.5%, specificity 86.0%; HIV-: N = 361, sensitivity 92.5%, specificity 94.0%). For the cut off value of 1.5 the concordance with WB was 92.0% for all samples, 93.4% for HIV- and 89.3% for HIV+. For the 535 samples tested with the BioKit Rapid test 27.3% (N = 146) were negative, 35.7% (N = 191) were positive and 35.0% (N = 187) were light positives, and 11 indeterminates. For the 337 samples either truly positive or truly negative the sensitivity and specificity was 93.9% and 94.4% with a concordance of 94.1%. If the low positive samples were considered positive the sensitivity and specificity changed to 95.8% and 56.1% and a concordance of 77.7%.
Conclusions: In the rural sub Saharan African population of Rakai Uganda, the optimal index cut off for the Focus and Kalon ELISAs for the detection of antibodies to HSV-2 was 3.2 and 1.5 respectively. At these optimum cut off values the accordance with WB was 86% and 92% respectively. The concordance between the two ELISAs was 81.4%. The BioKit rapid test performed well on 65% of samples tested, which questions its utility in an African setting. HIV sero-status did not significantly impact the performance of any the HSV-2 serologic tests.

P-173 CLINICAL USES OF HIV NUCLEIC ACID AMPLIFICATION TESTING ON POOLED SERUM SAMPLES AT AN URBAN GAY MENS STD CLINIC

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Objective: To evaluate the clinical uses of human immunodeficiency virus (HIV) nucleic acid amplification testing (NAAT) on pooled serum samples at Whitman-Walker Clinic (WWC).
Methods: Interested clients of the men's STD clinic consented to HIV testing using both OraQuick ADVANCE Rapid HIV-1/2 Antibody and HIV-1 RNA nucleic acid amplification assays (NASBA and bDNA). Clients who were HIV negative via rapid antibody testing and had blood drawn for a Rapid Plasma Reagin (RPR) assay for syphilis had leftover serum pooled. The published sensitivity and specificity of this assay are 100% and 99.7%, respectively. Clients who were ultimately HIV negative were told to return for retesting 1 week - 3 months later, depending on the situation. We surveyed 6 STD clinic staff to ascertain how HIV NAAT results were used for comprehensive patient care.
Results: From September 2004 to February 2007, 3,013 serum samples were pooled and 12 were HIV-1 RNA positive. Nucleic acid amplification testing on pooled serum samples: 1. Diagnosed 12 acute HIV infections. 2. Helped identify possible infection sources and protected partners through aggressive partner notification and testing. 3. Allayed the anxieties of clients presenting >72 hours after unanticipated sexual HIV exposure, who were therefore not eligible for Nonoccupational Postexposure Prophylaxis (nPEP). 4. Ruled out HIV seroconversion syndrome (acute retroviral syndrome) in those clients presenting with flu-like symptoms and a history of high-risk sexual behaviors. 5. Ruled out early HIV co-infection in clients presenting with primary or secondary syphilis.
Conclusions: Using HIV NAAT at an urban STD clinic for gay men provides opportunities for counseling (to influence behavior during a period of high infectivity), early referral into comprehensive HIV care, and possible epidemiologic intervention. In addition, HIV NAAT results play an integral part in the psychological wellbeing of clients who may be in the 3-6 month seroconversion 'window period.'

P-174 IMPACT OF AN INTERNATIONAL LABORATORY PARTNERSHIP FOR THE QUALITY ASSURANCE AND EVALUATION OF FIVE INTERNATIONAL LABORATORIES THAT PERFORM HIV AND STD TESTING IN RESOURCE POOR SETTINGS

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Objective: To ensure the conduct of good laboratory practices and sustain operational improvements in five clinical laboratories in China, India, Peru, Russia, and Zimbabwe.
Methods: Five international laboratories performed testing for HIV and other STDs, in order to provide biological outcomes as a measure of an HIV behavioral intervention effectiveness. At pre-baseline, the JHU International STD Reference Laboratory (RL) facilitated the conduct of good laboratory practices through training of site laboratory mangers and staff. The RL conducted standardized training, which included a review of: laboratory techniques, safety guidelines, standard test-

ing protocols, clinical diagnostics, equipment maintenance, and quality assessment (QA) practices. At pre-baseline, quality control (QC) panels, containing multiple known specimens, were sent from the RL to each site for testing. Each site sent a 20% QA shipment of pre-baseline and initial baseline samples to the RL for comparison testing. Tests performed included chlamydia/gonorrhea (CT/GC) PCR, HSV2 EIA, Syphilis RPR/TPPA, HIV EIA/Western Blot. After satisfactory performance, sites reduced shipment size from 20% to 5% for all tests except CT/NG, which remained at 20% throughout the study. After pre-baseline testing, the College of American Pathologists (CAP) proficiency testing (PT) program was selected, as representative of the U.S. standard for laboratory proficiency measurement. Sites also enrolled in local PT programs, if available. Enrollment was renewed each year. All PT and comparison testing evaluations were reviewed by the site lab managers and the RL. Errors and discrepancies were documented along with corrective action. Monthly lab managers phone meetings were convened to discuss lab operational issues, the performance of PT surveys, and various QA items. Each lab manager was required to submit a monthly report, which details lab activities including QA and QC. The RL performed on-site lab inspections for each site a minimum of once a year, or as needed. All lab operations were reviewed and discussed with the lab management. Formal reports and recommendations were sent to study leadership.
Results: Lab operations and facilities in all 5 countries progressively improved throughout the conduct of the trial. Recommendations for improvement by the RL, were consistently followed. All sites successfully met inspection criteria, demonstrated progressive improvement, adhered to study protocols, and consistently exceeded adequate PT performance scores. Most sites had reached higher standards qualifying for further accreditation. In the first year, CT/GC PCR: 3 surveys with 5 challenges each, laboratories scores were 80-100%. HSV2 EIA: one survey with one challenge, laboratories scored 100%. Syphilis RPR/TPPA: 3 surveys with 5 challenges each, laboratories scored between 80-100%. HIV EIA/Western Blot: 3 surveys with 5 challenges each, sites scored between 80-100%. Scores improved after the first PT survey, where a few reporting rather than testing errors occurred. As of 2006, all sites scored 100% for all proficiency testing panels they received. To date, for the 2007 PT survey submitted, all sites have scored 100%.
Conclusions: Findings suggest that similar to U.S. practices, quality assessment programs that engage ongoing training, comparison testing, site visits, and PT are fundamental to quality laboratory testing conducted in international labs.

P-175 A COMPARATIVE PERFORMANCE EVALUATION OF FLOCKED SWABS VERSUS DACRON SWABS FOR USE WITH AN IMMUNODIAGNOSTIC STI ASSAY IN A POPULATION OF HIGH RISK WOMEN IN BOLIVIA

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Objectives: Diagnosis of bacterial sexually transmitted infection (STI) most often requires the collection of a swab specimen from the cervix or vagina. Dacron swabs are the most commonly used collection device. Recent data suggest that new collection devices may gather and release more target analyte per unit volume and so provide better diagnostic assay performance.
Methods: PATH carried out a prospective study to assess the potential effect of using a flocked swab on the performance of a rapid immunochromatographic strip (ICS) test for chlamydia. The study was conducted among a population (N=1, 840) of high-risk women attending four STI clinics in Bolivia. After undergoing written informed consent, women were randomized to have an endocervical specimen collected with either a Dacron or Copan flocked swab; both swabs were then used with an ICS test developed by PATH. Two Dacron swab specimens were subsequently collected for use with the BioRad ELISA and with the Roche Amplicor CT/NG test. Sensitivity and specificity were calculated by comparing the results of the ICS test with the Roche Amplicor CT/NG test.
Results: Overall, the performance of the PATH ICS test for chlamydia was poor (18.5% sensitivity and 96.8% specificity). However, the ICS test was 13.7% more sensitive (25.4% versus 11.7%) when using the flocked swab with approximately equivalent specificity when compared to standard Dacron swabs (95.9% compared to 97.7%).
Discussion: This is the first large evaluation employing a randomized design to assess the effect of an alternative swab collection device on the performance of an STI immunodiagnostic. Use of flocked swabs improved the sensitivity of this test and should be considered for use with other immunodiagnostic tests. Further research is necessary to better understand the potential utility of flocked swabs or other swab devices with nucleic acid amplification tests.

P-177 FEASIBILITY AND ACCEPTABILITY OF A RAPID-TEST FOR SYPHILIS IN DIFFERENT POPULATIONS IN PORTO ALEGRE, BRAZIL: A PILOT STUDY

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Introduction: Congenital syphilis are still a health care preoccupation in Brazil, in spite of availability of techniques of diagnosis and treatment. Prevalence of syphilis among pregnant women in Brazil was 1.6% in 2002. In Porto Alegre, 4.4 cases for each 1,000 new births were reported in 2005. Considering the current underreporting, estimated in 50% by the Brazilian Ministry of Health, these numbers can be seen as underestimated. The diagnosis of syphilis involves a inexpensive, safe, and easily-performed tests, and the treatment is also effective and readily available. Innovative approaches are in great need and the aim of this study was to study the feasibility and acceptability of using rapid-tests in the field for syphilis to different populations in Porto Alegre and estimates de prevalence of syphilis among those groups.
Methods: Rapid-tests for syphilis were donated to the municipal administration of Porto Alegre by the Pan-American Health Organization, through the Brazilian Ministry of Health. The Ministry of Health is now evaluating the appropriateness of recommending this test in the health policies. The test used the Determine Syphilis TP test, widely validated internationally, including in Brazil. We conducted a pilot study in Porto Alegre offering tests during February, 2007. People with positive results were referred to treatment. A short structured questionnaire was applied.
Results: A total 347 rapid-tests for syphilis were performed. Patients were invited in came from health care centers, STI clinics, delivery rooms, voluntary counseling and testing centers, shelters for person in the streets, and in streets of poor neighborhoods. Prevalence of seropositivity was 3.7% (IC 2.1- 6.5) and 86.8% (IC 82.5 ' 90.4) patients reported that would prefer the rapid-test to conventional testing for syphilis diagnosis.
Conclusions: Using rapid-test showed to be a suitable strategy, considering the acceptance by patients and agility to provide diagnosis and treatment. It would be of special interest in contexts as prenatal care, delivery care and with hard to reach populations. The main disadvantage of the rapid-test is the higher cost, compared with the current techniques used. Further studies should urgently address the cost-effectivity of the rapid-test in different Brazilian settings. Offering rapid-test to high risk pregnant women can be a strategy for the elimination of congenital syphilis. Developing of a less expensive test is crucial. Corresponding author Mauro Cunha Ramos, E-mail: dermauro@terra.com.br

P-178 EVALUATION OF A RAPID ONE-STEP IMMUNOGRAPHIC TEST AND TWO ENZYME-LINKED IMMUNOSORBENT ASSAYS FOR THE DETECTION OF ANTI-TREPONEMAL PALLIDUM ANTIBODIES

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Background: The incidence of syphilis in Europe has risen since the end of the 90's because of an increase in unsafe sex. In the Netherlands, this increase (>300% between 2000 and 2004) is mostly attributable to men having sex with men. In Europe, screening depends mostly on the Treponema pallidum particle agglutination test (TPPA), while outside Europe the plasma reagin test (RPR) or venereal disease research laboratory (VDRL) is most often used for screening purposes. Because of the long turnaround time of the available screening methods and the need for human serum, a laboratory and experienced personnel, a rapid and simple test that can be performed on whole blood, is needed.
Objective and study design: In this study a one step-immunochromatographic test (Biorapid Syphilis, Biokit, SA) and two enzyme-linked immunosorbent assays (Elisa's), the Bioelisa Syphilis 3.0 (Biokit, SA) and Eti-Treponema Plus (DiaSorin, SpA), were evaluated.
Methods: Serum samples were collected between February 2000 and May 2006 at the University Hospital in Maastricht, The Netherlands. 145 TPPA positive sera, confirmed by fluorescent treponemal antibody absorption (FTA-Abs, treponemal test) and/or the rapid plasma reagin test (RPR, non-treponemal), 41 sera from healthy control and 144 TPPA negative sera from controls with underlying conditions that might interfere in TP serology, were collected.
Results: The sensitivity of the Biorapid Syphilis, Bioelisa Syphilis 3.0 and Eti-Treponema Plus were 92%, 100% and 99% respectively with our selected sera. The Biorapid Syphilis had an inter-observervariability of 85% (kappa 0,65).
Conclusions: The performance of both Elisa's was excellent in our study and is favoured over the TPPA because of the ability to be run on an automated system. The sensitivity of the Biorapid Syphilis was considered too low to be used in our laboratory, but might have potential in remote areas where no laboratory is available.

P-179 CONTAMINATION OF THE CLINIC ENVIRONMENT WITH CHLAMYDIA AND GONORRHOEA-A POTENTIAL SOURCE OF SAMPLE CONTAMINATION

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Objective: No Nucleic Acid Amplification Test (NAAT) demonstrates 100% specificity and there is potential with these tests for laboratory contamination of the sample with either true target or amplicon. These qualifications are often cited as an explanation to patients of false positive results if further investigation of the patient or contacts does not confirm previous laboratory findings. If the sample is a confirmed positive but further sampling again fails to confirm initial findings other explanations are given e.g. mislabelling, inadvertent sample switching. We offer a further explanation of false positive samples derived from contamination of samples when patients have acquired a Chlamydia or Gonorrhoea target by touching a contaminated clinic environment prior to taking their sample. We sampled the clinic cubicle areas of two sexual health clinics, one hospital and one community clinic, for environmental contamination, and the fingers of nurses taking the swabs for target organisms by NAAT.
Methods: We asked clinic nurses under supervision to take swabs of the cubicle environment where patients were likely to touch prior to taking self-collected samples for Chlamydia and Gonorrhoea e.g. door handles, light switches, shelves, toilet lid and seat, toilet flush handle, sanitary box lid, wash hand basin and sink taps, soap and towel dispenser. Each area was sampled with ten gentle strokes using a standard swab from a sampling kit (Genprobe) and swabs returned to the laboratory for analysis using the Aptima Combo 2 assay with single target confirmation of both C. trachomatis and N. gonorrhoeae.
Results: Of 53 samples taken on 4 occasions in 2 sexual health clinics, 18 (34%) were positive for either agent. Chlamydia was recovered in 15 samples (28%) and Gonorrhoea in 6 (11%). We also recovered Chlamydia from the nurses' finger tips when asked to touch the areas a patient was likely to touch in the cubicle. Consistent contamination of the sampling shelf, toilet, sanitary box, and wash-hand basin was recovered from both clinics on each occasion.
Conclusions: We have demonstrated contamination of patient cubicle areas, in 2 sexual health clinics, with Chlamydia and Gonorrhoea. As sampling has now switched from clinician-taken to patient-taken sampling, clinic staff need to find ways of preventing or reducing the likelihood of Chlamydia and Gonorrhoea contaminating patient's hands when they use clinic areas to take their self-taken samples. The clinic environment and the patient's own hands may be a source of contamination of their samples. This may lead to patients being inappropriately identified as being infected with Chlamydia or Gonorrhoea and inappropriately treated for these infections. Care in the clinic to avoid sample contamination is just as important as the need to avoid contamination in the laboratory.

P-180 MIRACARE RAPID HIV ANTIBODY TEST COMPARED TO REGULAR RAPID HIV TESTING IN THE STI CLINIC OF THE MUNICIPAL HEALTH SERVICE, AMSTERDAM, THE NETHERLANDS

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Objective: Since HIV self-tests need a CE-approval to be sold in the Netherlands, the last HIV self-test was withdrawn from the market in 2006. If a self test is easy to use and if it produces a clear and reliable result, it could be very useful. We performed a study to compare the MiraCare rapid HIV antibody test (MedMira Laboratories, Halifax, Canada) with the rapid HIV test we used for several years, the Determine rapid HIV 1/2 test (Abbott Japan Co LTD, Tokyo, Japan). In this study we evaluated rapid HIV testing in a high risk group, based on a risk evaluation during history taking.
Method: High risk patients who opted for HIV testing and gave their informed consent, were tested with the MiraCare as well with the Determine HIV tests. The tests were performed by instructed analists, at the out-patient STI clinic of the Municipal Health Service in Amsterdam, The Netherlands. Both tests were performed with blood from 4ml EDTA tubes (BD Vacutainer, Becton Dickinson, Plymouth UK). For this study HIV seronegative was a negative Determine or negative Elisa if the Determine failed to give a result. Seropositive was a positive Western blot. The Western blots were ordered when a positive result was observed in any of the three tests; Determine, Elisa, MedMira.
Results: Between October 10 and December 22, 2006 five hundred patients were tested with the MiraCare HIV test. Twelve (2.4%) tests failed to give a result (invalid), eight were tested positive and 480 were tested negative. Of the twelve failures with the MedMira, eleven were negative in the Determine and one was positive in Determine and Western Blot. Also five Determine tests failed to give a result, all were negative in the Elisa and in the MiraCare.
Conclusion: In 2.4% the MedMira tests failed to give a result. The remaining 488 test had a perfect sensitivity and specificity (100%). The Determine and the MedMira can both fail to give a result but in this study they never failed both in the same patient. We conclude that the MedMira test is a very quick and reliable test when failures are recognized.

POSTER SESSION: DRUG RESISTANCE

P-181 RISK FACTORS FOR COMMUNITY ACQUIRED METHICILLIN RESISTANT STAPHYLOCOCCAL AUREUS (CMRSA) AMONG A MIXED RURAL-URBAN HIV INFECTED POPULATION

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Objectives: To examine risk factors for cMRSA among a mixed rural-urban HIV-infected population.
Methods: Case-control study enrolling HIV-infected cases and sex, age, and race matched controls.
Results: 34 HIV-infected cases were compared to 49 HIV-infected race, sex, age, matched controls. Multivariate analysis revealed a statistically significant association with cMRSA and the following variables: prior antibiotic exposure OR 4.63 (95%CI 1.27-16.9) and recent hospitalization OR 8.09 (95% CI 1.8-35.8). No association was found with regards to geographic distribution (e.g., rural versus urban).Most isolates (95%) retained sensitivity to sulfamethoxazole/trimethoprim.
Conclusion: Clinicians should be aware of risk factors involved in cMRSA disease acquisition among HIV-infected sub-populations. Geographic distribution does not appear to be a risk factor. On-going monitoring and larger epidemiologic studies in both HIV-infected and un-infected patients are warranted.

P-182 TRANSMISSION OF DRUG RESISTANT HIV IN THERAPY-NAIVE MSM PATIENTS IN LOW ENDEMIC AREA

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Objectives: During the rapid replication of HIV, high level of genetic mutations occure, resulting in emergence of drug resistant HIV variants. Hungary belongs to low HIV endemic area of Europe. Between 1986-2006 alltogether 511 AIDS cases had been registered. More than 70% of them acquired infection by homo/bisexual transmission. In a country as Hungary with very favourable HIV/AIDS epidemic situation,HIV genotyping before therapy should be performed almost in every case. Mutations occur in the region of the HIV genome for the enzymes targeted by the current anti-HIV drugs i. e. the reverse transcriptase (RT)gene and the protease gene. We determined the mutations in the HIV-1 pol gene associated with resistance to antiretroviral drugs in primary HIV infected individuals who did not receive antiretroviral treatment.
Methods: Integrated provirus DNAs were purified from patients' lymphocytes. Nested PCR was used for amplifying HIV pol sequences. Drug resistance genotyping of HIV RT was done by in situ DNA hybridization using a Line Probe Assay (Inno-LiPA) .
Results: Viral variants harboring resistance mutations such as: M41, T69R, K70R, M184V, T215Y and others in the pol gene were detected in 15% of the subjects . M184V and T215Y was found most frequently indicating resistance against RT inhibitors zidovudine (AZT), stavudine (D4T),lamivudine (3TC) and in less frequently emtricitabine (FTC). HIV mutants resistant to NRT inhibitors were revealed in 10 % of those infected before and in 20% in patiens infected after the year 2000). Multiple drug resistant viruses (2-3 drug classes) were present in 3.5% of those studied, mainly in recently infected patients. Amino acid substitutions in RT were only found in those infected before year 2000 as T69D (4.5%), T215S/D (6%) and T215A/V (3%). These findings indicate the evolution of drug resistance showing a correlation with the time of introduction of combination therapy in our country.
Conclusions: Surveillance of antiretroviral resistance is a main objective of our anti-HIV program. This study identified antiretroviral resistant mutations in HIV-1 RT gene in HIV infected thrapy-na_ve patients. This confirm the transmission of drug-resistant HIV revealed by genotype testing during primary infection and raises serious clinical and public health consequences. Development of resistance leads to viruses escaping the control of drug combination therapy and cause disease progression. Resistant mutations observed with preliminary drug resistance appear to be far more stable, presumably because there are no competing drug-sensitive strains. Drug resistance testing (HIV genotyping) at the time of diagnosis should be the standard of care.

P-183 TREATMENT OF WOMEN WITH METRONIDAZOLE-RESISTANT TRICHOMONAS VAGINALIS INFECTIONS

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Objectives: Between March 2003 and November 2006, 141 viable Trichomonas vaginalis isolates from women who failed standard metronidazole therapy were submitted to CDC for metronidazole and tinidazole susceptibility testing. Based on patient history and the results of the in vitro testing, an alternate treatment was suggested. The purpose of this evaluation was to describe: 1) the demographic and clinical characteristics of the women, 2) the susceptibility testing results for their submitted isolate, and 3) the outcome of the recommended treatment, based on the in vitro testing results.
Methods: Existing records of the demographic, clinical history, metronidazole and tinidazole susceptibility testing results (minimum lethal concentration [MLC]) and response to therapy were reviewed. In vitro susceptibility to metronidazole and tinidazole was defined as an aerobic MLC of less than 50 µg/ml. MLC cut-offs for tinidazole were based on previously established metronidazole cut-offs, but a more accurate cut-off may be lower due to tinidazole's greater in vitro potency. Isolates with MLCs of 50 to 100 µg/ml were considered minimally resistant; isolate MLCs of 200 µg/ml were moderately resistant; and isolates with MLCs ≥ 400 µg/ml were highly resistant. For women with isolates susceptible to metronidazole, 3g oral metronidazole for 14 days was recommended; for women with minimally resistant isolates, 2g oral tinidazole for 7 days was recommended; for women with isolates with moderate resistance, 3g of oral tinidazole and 1g of vaginal tinidazole for 14 days was recommended; and for women with highly resistant isolates, treatment with vaginal furazolidone was recommended.
Results: For the 141 women, the mean age was 37 years (range: 15-67 years). Sixty (43%) of the women were black, 50 (35%) were white, and 31 (22%) were 'other' race or unknown. Eighty-nine (63%) of the isolates had in vitro resistance to metronidazole; 42 (30%) of the isolates had in vitro resistance to tinidazole. All isolates resistant to tinidazole were also resistant to metronidazole. No association was found between the level of in vitro resistance and age, race, or weight. Follow-up after susceptibility testing was available on 56 (40%) women. Forty-three (77%) of 56 women were treated following the suggested recommendation based on the in vitro assay results; 38 (88%) of these women were cured (Figure 1). An additional 13 women were cured using a treatment not recommended based on in vitro testing; however, these treatments were often similar to the recommendation. The median number of follow-up treatments was 2.5 (range 1-4). Overall, 51 (91%) women were cured and five women were never cured.
Conclusions: Successful cure was achieved for 51 (91%) out of 56 women who had clinically resistant T. vaginalis infections following in vitro testing of metronidazole susceptibility and provision of an alternative treatment protocol. The recommendations based on in vitro results were least successful for women with highly resistant isolates. Additional treatment options may be necessary for these women. Interestingly, the isolates from approximately one-third of the women with apparent clinically resistant trichomoniasis did not demonstrate resistance in vitro. The reason they failed initial treatment requires further investigation.

In vitro aerobic metronidazole results	Women following recommendation, N	Cured from recommendation based on in vitro testing, n (%)
Susceptible	11	10 (90.9)
Minimal	11	10 (90.9)
Moderate	3	3 (100.0)
High	18	15 (68.4)
Total	43	38 (88.4)

P-184 ASSESSING TRENDS IN DECREASING SUSCEPTIBILITIES TO ANTIMICROBIALS FOR NEISSERIA GONORRHOEAE IN CALIFORNIA: MIC-EY MOUSE DATA OR CALL TO ACTION?

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Objectives: Few therapies remain effective for treating gonorrhea, and for the effective therapies, specifically cephalosporins, there is a critical need for early detection of resistance. Antimicrobial-resistant cases of gonorrhea in the US have often emerged first in the West. Our objective was to conduct exploratory data analysis to assess changes in patterns of gonococcal antimicrobial susceptibility in California and to generate hypotheses based on observed results.
Methods: We analyzed Gonococcal Isolate Surveillance Project (GISP) data from January, 1987 to August, 2006 from four California sentinel sites. Patterns and trends in agar dilution-based minimum inhibitory concentrations (MICs) were assessed using two approaches: (1) standard geometric mean (GM) approach; and (2) an approach based on cut-points at approximately the 90th and 75th percentile values of the MIC distribution below the threshold for reduced susceptibility set by the Clinical and Laboratory Standards Institute (CLSI). Simple linear regression was used for the GM approach and chi-squared trend tests were used for the cut-point approach. MIC patterns for ciprofloxacin, ceftriaxone, and cefixime were assessed and were stratified by sexual orientation and geographic location (counties/cities of Long Beach, Orange, San Diego and San Francisco).
Results: A total of 15,266 isolates were tested from 1987 to 2006, with an average of approximately 775 per year. Statistically significant increases in geometric mean MICs were observed for ciprofloxacin ($p < 0.001$) and ceftriaxone ($p < 0.001$), and a statistically significant decrease was observed for cefixime ($p < 0.001$). Men who had sex with men had higher geometric mean MICs for all 3 therapies than heterosexual men, with differences most apparent in recent time periods. These overall trends were generally observed in each of the 4 geographic locations. The cut-point analysis approach confirmed the general pattern of the geometric mean approach. For ciprofloxacin, this approach further suggested increases in elevated MICs below the threshold for decreased susceptibility, prior to emergence of resistance. This approach also indicated an increasing proportion of elevated MICs for ceftriaxone, from 14% (Jan-June 1987) to 31% (Jan-June 2006; $p < 0.001$). No cephalosporin isolates in the past 10 years were observed with MICs indicative of reduced clinical susceptibility based on CLSI standards (≥ 0.5).
Conclusions: Significant trends in MICs were observed for all GC therapies assessed. Based on this strictly exploratory analysis, no clinical significance can be inferred from these trends. The pattern of increase in MICs for ciprofloxacin prior to the emergence of resistance suggests this analytic approach may be valuable for resistance monitoring for other drug therapies. Opposing trends in ceftriaxone and cefixime were unexplained and unexpected within the same class of antibiotic. Further research into these analytic approaches is warranted to determine their clinical and epidemiologic utility.

P-185 DISEASE PROGRESSION MEASURED BY CD4 DECLINE AMONG RECENTLY DIAGNOSED TREATMENT NAVE PATIENT WITH DRUG RESISTANCE RESULTS, VARHS, SEATTLE, WASHINGTON

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Objective: To evaluate HIV disease progression using CD4+ lymphocyte cell counts in cells/_L among patients newly diagnosed with HIV with and without transmitted antiretroviral drug resistance using antiretroviral resistance surveillance data collected through CDC's Variant, Atypical, and Resistant HIV Surveillance (VARHS) project in Seattle, WA.
Methods: VARHS, 2003-present, currently includes about half of newly diagnosed, anti-retroviral na_ve patients reported to Public Health. Leftover sera from eligible patients are sent to a national virology lab for consensus genotyping. Results are also collected from genotypes performed in routine clinical practice. Drug resistance is defined here as mutations conferring low-, moderate- or high-level drug resistance in at least one of three major drug classes: nucleoside reverse transcriptase inhibitor (NRTI), non-nucleoside reverse transcriptase inhibitor (NNRTI) and protease inhibitor (PI). CD4 counts collected through routine HIV surveillance were available only for patients testing confidentially (not anonymously) and were measured at baseline closest to initial positive Western Blot and subsequent CD4 counts measure within one year intervals. Comprehensive CD4 count reporting was not available until September 2006. Prior to this, Washington state did not required the reporting of CD4 counts >200 or 14%.
Results: Genotype results were available for 447 patients, 169 which were confidentially tested and had CD4 counts. Eleven percent of patients with available CD4 counts had mutations conferring some level of resistance, 8% had high-level drug resistance and 2% had high-level drug resistance in two or more drug classes. The median baseline CD4 count for patients with drug resistance was 401 compared with 325 for patients without drug resistance. Those with drug resistant HIV had a somewhat lower proportion of baseline CD4 counts <350 (44% versus 54%). 116 patients had at least one follow-up CD4 count in the year subsequent to their baseline CD4 count, including 13 (11%) with drug resistance. The median follow-up CD4 count was 227 cells/_L for patients with drug resistance and 202 cells/_L for patients without drug resistance. There was a mean increase in CD4 count from baseline through follow-up of 2 for drug resistant patients and 25 for patients without drug resistance ($p=0.08$).
Conclusion: Transmitted drug resistant HIV may be paired with routinely collected surveillance data to evaluate the impact drug resistance may have on disease progression, especially in patients with high-level or multi-class drug resistant HIV. Public Health has encouraged providers to include genotype testing at the time of diagnosis, or failing this, prior to antiretroviral treatment initiation and to report cases with multiple class drug resistance.

P-186 SURVEILLANCE OF ANTIMICROBIAL SUSCEPTIBILIY OF NEISSERIA GONORROHEAE

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Objetives: Monitoring of antimicrobial susceptibility of N.Gonorroheae for detection of emergence of drug resistance.
Methods: Thayer Martin agar and Kirby-Bauer Disc Test were used and were collected urethral, anal and cervical patients samples at Referral Center of DST/Aids, São Paulo, from january 2005 to may 2006.
Results: Of a total of 942 processed samples, 79 (8,39%) cultures were positive and 59 had been identified; of 26 discs resulting 53.85% of sensitivity penicillin, 88.46% of sensitivity ciprofloxacin and 73.08% of sensitivity tetracycline.
Conclusion: Antimicrobial susceptibility of gonococcus guides therapeutical options and is a tool in the control of the IST.

P-187 QRDR MUTATIONS ASSOCIATED WITH CIPROFLOXACIN RESISTANCE IN GONOCOCCAL STRAINS ISOLATED IN ARGENTINA OVER 1996-2004 PERIOD

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Objective: Between 1996 and 2004, 3098 Neisseria gonorrhoeae (NG) isolates were sent by the Gonococcal Antimicrobial Susceptibility Surveillance Argentinean Program's laboratories for susceptibility testing. In 1996 for the first time, one strain showing intermediate resistance was submitted. However, no NG strain with high level quinolone resistance (QRNG) was isolated up to May 2000. The characterization of these strains was already presented during the last ISSTDR meeting. The aim of this study was to analyze the relationship between alteration patterns in the quinolone resistance-determining region (QRDR) and the ciprofloxacin resistance evolution in Argentina over 1996 to 2004.
Methods: MICs were determined by agar dilution method according to CLSI; beta-lactamase production was detected using an iodometric method. In addition, Pulsed Field Gel Electrophoresis (PFGE) patterns using NheI and SpeI were defined. Analysis by PCR and direct DNA sequencing of the QRDR in the gyrA, parC, gyrB and parE genes was performed in all quinolone resistant strains and two wild type strains. Fifteen ciprofloxacin resistant NG strains were detected in the studied period.
Results: Previous results partially presented are resumed in Table1. The analysis of the sequence of internal fragments from QRDRs showing different point mutations is presented in Table2.
Conclusions: • No different point mutations to those previously described for Neisseria gonorrhoeae in gyrA and parC were found. • Mutations appearing in gyrB or parE do not seem to be associated with ciprofloxacin resistance in gonococcal strains. • Patterns mutation in the QRDRs appeared mostly associated with specific clones rather than showing random distribution.

			MIC (mg/l)					PFGT	

Table 1

Id	YEAR	GyrA	ParC	GyrB	ParE
	1998		-		-
	2000			-	-
	2000		-		
	2001		-	-	-
	2001			-	-
	2001				
	2001			-	-
	2001			-	-
	2001		-	-	-
	2002				-
	2004				-
	2004			-	-
	2004			-	-

Table 2

POSTER SESSION: EMERGING BIOMEDICAL INTERVENTIONS: VACCINES & MICROBICIDES

P-188 CLEANLINESS, SEXUALITY AND MICROBICIDES: VAGINAL HYGIENE AND VAGINAL SUBSTANCE USE IN THE FEASIBILITY STUDY FOR THE MDP MICROBICIDES TRIAL IN MWANZA, TANZANIA

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Objectives: Vaginal microbicides, as a female-initiated method, offer hope for improving the range of options for HIV prevention. We explored vaginal hygiene and vaginal substance use practices and their likely impact on effectiveness in microbicide clinical trials.

Methods: In Mwanza, Tanzania, 1573 women who worked in food or recreational facilities (FRF) were recruited to the feasibility study for the Microbicides Development Programme Phase 3 clinical trial of Pro-2000 (MDP301) and completed an enrolment face-to-face interview. Multivariate logistic regression analysis of enrolment data identified factors associated with reporting vaginal cleaning, sex during menstruation, vaginal drying or wetting. 150 participants were also randomly selected to complete coital diaries for 28 days. Ethnographic fieldwork was conducted in 68 FRFs. Six focus group discussions were conducted with FRF workers, and two with male customers. Nine women completed open-ended interviews on vaginal hygiene practices.

Results: Despite efforts to encourage condom use amongst study participants, in coital diaries, condom use was reported by 38% of participants and in 28% of all sex acts. Thus most participants were unprotected by condoms from the potential influence of vaginal practices on HIV acquisition. Vaginal cleaning was reported by 74.6% of enrolment interviewees: qualitative research suggested this was an underestimate. Cleanliness was thought to require actively removing uchafu (Swahili: dirt) from the vagina. This included semen following intercourse, vaginal discharge and menstrual blood. Women were expected to clean their vaginas regularly and to do this more often after sex, during menstruation, in hot weather and to treat infection and unpleasant odours. Most commonly, women inserted fingers into the vagina while pouring water over the genitalia; some applied soap to the fingers before insertion. Vaginal cleaning was reportedly carried out within 2 hours after 45% of sex acts, and was more frequently practised by women with multiple partners, who cleaned partly to avoid STI. Insertion of substances to enhance sexual pleasure was uncommon, but included application of lemon juice to tighten the vagina or plant sap for lubrication. Women reporting multiple partners were more likely to report lubricating the vagina before sex. Sex during menstruation was thought to push blood back into the womb, increasing risk of infertility and STI, including HIV. In coital diaries, five percent of sex acts reportedly took place during menstruation.

Conclusions: In this population, sexual enhancement practices and sex during menstruation are unlikely to exert major influences on trial results. Vaginal cleaning shortly after sex may have a substantial impact on the apparent efficacy of vaginal microbicides, since finger-cleansing may remove microbicide product. However, impact on HIV prevention may depend on the exact cleaning method (e.g. with or without soap) and the characteristics of the microbicide itself, such as period of activity against HIV. The importance of not cleaning the vagina for at least two hours after sex should be emphasised to trial participants. Vaginal practices should be monitored during microbicide trials so that their impact on microbicide effectiveness can be assessed. Using coital diaries and qualitative research methods can aid interpretation of trial results.

P-189 FISHERMEN IN KISUMU: ARE THEY A SUITABLE POPULATION FOR TESTING A MALE MICROBICIDE?

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Objective: To determine the suitability of fishermen along Lake Victoria in Kisumu District, Kenya for testing of a post coital male microbicide for STI/HIV prevention

Methods: We conducted a cross-sectional study in 18 of the 32 beaches in Kisumu District selected using a proportional to size sampling method based on the number of registered boats on each beach. From the boats selected on each beach, we randomly selected 4 crewmembers from each boat to give a sample of 250 men. Participants were consented and subjected to a standardized structured interview that gathered information on genital hygiene, migration patterns and sexual behavior. In addition, we pre- and post-test counseled them for HIV and took blood samples for HIV-1, Herpes Simplex Virus type 2 (HSV-2) and syphilis serological tests; urine for gonorrhea and chlamydia and genital swabs for Human Papillomavirus (HPV). Appropriate treatment was given for STI's diagnosed

Results: About two-thirds (70%) of the fishermen were married with total of 41% of all men being polygamous. About a third (30%) had completed basic education and 27% post basic education. Of 100 participants who provided dates of sexual liaisons, over a third (38%) were involved in concurrent sexual partnerships, with 15.2% having more than three concurrent relationships. Three quarters (77%) of the men reported extra-marital sex and almost half (46%) engaged in transactional sex with one of their three most recent sexual partners. About 45% of the men suspected at least one of their three most recent sexual partners was involved in sexual relationship with other fishermen. Condom use among men whose last three most recent sexual partners was not their spouse was less than 30%. The HSV-2 prevalence among this group was 74%, HPV was 57%, HIV-1 25.6% and syphilis 9.6%. Other STIs diagnosed included chlamydia 3.2% and gonorrhea 1.2%. Approximately, 97.6% expressed willingness to participate in a two-year study to test the efficacy of a male microbicide against STIs.

Conclusion: The existence of multiple, concurrent and transactional sexual behavior coupled with low condom use among this fishing population, predisposes them to high risk of STI/HIV transmission and acquisition. The high prevalence of STIs, high sexual behavour, low condom use and willingness to participate in a two-year efficacy trial makes these fishermen a suitable target group for a microbicide efficacy trial. Email contact: zkwena@kemri-ucsf.org

P-190 METHODS FOR DETERMINING VAGINAL APPLICATOR USE IN MICROBICIDE TRIALS

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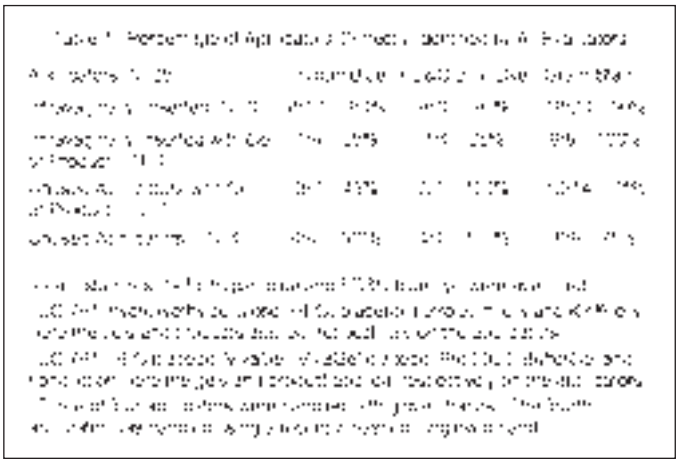
Objective: Adherence to product usage is essential in clinical trials which rely on vaginal applicators of gel products. Our objective was to evaluate two proposed laboratory methods that assess accuracy of self-reported vaginal applicator use.

Materials and Methods: Single-use, empty, HTI applicators were inserted intravaginally by 14 women. Each participant was given two applicators and instructed to insert one intravaginally in the morning and evening of the same day. Applicators air dried for one to seven days. Prior to testing, one half of each applicator was swabbed with a cotton-tipped applicator moistened with sterile water and rolled onto a glass slide for Gram staining. Applicators were separated into two groups and half were stained with a 1% trypan blue solution, and the other half were stained with a 0.05% FD&C Blue Dye No. 1 solution. Intravaginally inserted applicators should stain blue with trypan blue and turquoise with FD&C Blue Dye No. 1. Unused applicators should not retain any stain. After staining, applicators and slides were assessed independently by four individuals. Each scored the applicators and slides for the presence of vaginal material based on observation of the applicators and inspection of the slides using oil immersion microscopy. The individual responsible for randomly labeling and staining the applicators did not serve as an evaluator.

Results: Neither method accurately identified all of the applicators which had been inserted intravaginally. Application of gel products to used applicators decreased the binding of stain to the applicators, minimizing the sensitivity of the method (Table 1). It should be noted that two unused applicators reported as used when assessed by Gram stain were applicators handled with ungloved hands in attempt to mimic emptying applicator contents without vaginal insertion. The transfer of epithelium from palm to applicator during this process was seen on the Gram stain but not detected by either stain.

Conclusion: In this study, three of four intravaginally inserted applicators with gel or product applied were identified as unused based on both stain methods, while all were correctly identified as used by Gram stain. Some unused applicators with gel or product applied were identified as used when stained with trypan blue or by Gram stain but not FD&C blue dye No. 1. This suggests that the FD&C Blue Dye method had fair sensitivity and excellent specificity for the detection of applicator usage. Preparing Gram stains from the used applicators was a feasible method for detection of cellular material, but handling of the applicators could result in false positive results. Additional results from an ongoing microbicide study in which applicators are inserted intravaginally into trial participants will be presented.



P-191 PRECLINICAL EFFICACY EVALUATIONS OF OCTYLGLYCEROL IN THE PIGTAILED MACAQUE MODEL OF TRICHOMONAS VAGINALIS AND CHLAMYDIA TRACHOMATIS INFECTIONS

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Objectives: This study tested the effectiveness of 0.5% octylglycerol (3-OG) gel, a topical microbicide candidate, in the prevention of Trichomonas vaginalis (T. vaginalis) and Chlamydia trachomatis (C. trachomatis) in the pigtailed macaque model.
Methods: T. vaginalis study: Twelve pigtailed macaques were randomized into two groups of six. Six macaques were exposed (vaginal application) to 1.5 ml 0.5% 3-OG gel thirty minutes prior to vaginal challenge with 7 x10^5 T. vaginalis (ATCC 50148). Six macaques underwent identical vaginal challenge with no prior gel administration. Vaginal swabs were collected weekly for five weeks, and assessed for detection of T. vaginalis by use of the InPouch TM TV culture system. Detection of trichomoniasis was defined as documented presence of motile trichomonads in the InPouch under low power (10x) magnification. Samples were incubated (37oC) for up to five days after collection, and assessed daily. Five weeks after inoculation, each animal was treated with metronidazole (35 mg/kg X 3 days). C. trachomatis study: Twelve different pigtailed macaques were randomized into two groups of six. Six macaques received a single 1.5ml intravaginal application of the 0.5% 3-OG gel thirty minutes prior to cervical challenge with 5x 10 ^5 IFUs of serovar E, C. trachomatis. Six macaques underwent cervical challenge with no prior gel administration. In each animal, cervical swabs were assessed for detection of chlamydia (NAAT and culture) at weekly intervals for five weeks. Bloods were drawn on the same timeline for detection of serum antibody to C. trachomatis. Chlamydial infection was defined as any positive culture result, positive NAAT from two or more time points, or positive serology. Five weeks after inoculation, each animal was treated with oral azithromycin (14 mg/kg X 3 days). In both efficacy studies, vaginal pH and cytology by gram stain were evaluated at each weekly visit. Animals in the T. vaginalis study underwent colposcopic exam at baseline and week 5 post-challenge. The chlamydia efficacy study included colposcopic exams at each weekly visit. Rates of infection were compared in test and control arms of each study to determine the efficacy of the 0.5% 3-OG topical microbicide gel in preventing T. vaginalis and/or C. trachomatis infections.
Results: Baseline cultures of all animals for both trichomoniasis and chlamydial infections were negative, as expected. In the trichomoniasis efficacy study, three of six test animals became infected while all six control animals infected. In the chlamydia efficacy study, both the test and control groups resulted in equal infection rates; five of six animals infected.
Conclusions: A single application of 0.5% 3-OG gel did not protect macaques from acquisition of cervical chlamydial infection. Of the six animals pretreated with this product prior to challenge with T. vaginalis, infection was documented in only three.
Research supported by NIH contract N01-AI-95388 and RR00166 of the Washington National Primate Research Center.

P-192 TOPICAL MICROBICIDES AND STIS: RESPONSES TO CLINICAL TRIAL CHALLENGES

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Objectives: The purpose of this analysis is to convey how trial groups and the microbicide field, individually and collectively, have addressed a series of challenges that have arisen during the course and context of current and recently concluded candidate microbicide effectiveness trials. The issues revolve around how to assess candidates' preventive effectiveness for both STIs and HIV, and include: 1) how STIs are used as secondary endpoints; 2) how a microbicide that alters STI risk may also affect HIV risk; 3) laboratory assessment of STIs; 4) accounting for varying STI prevalence in different trial sites or arms; and 5) management of STIs. Each of these issues in different ways contributes to complexities in trial design, implementation, analysis, and interpretation. The premise of this analysis is that the process of identifying these challenges and responses will inform future microbicide trials in particular and STI prevention trials in general.
Methods: A range of literature on both current and recently concluded microbicide effectiveness trials was reviewed, including published scientific articles, trial protocols, meeting reports, conference abstracts, and relevant technical background material. Members of the Quick Working Group, which functions under the aegis of the Microbicide Donors' Committee, were also consulted to enrich and validate the conclusions derived.
Results: Given the ethical and practical imperative of maximizing learning from clinical trials of candidates that might or might not qualify for licensure, the microbicide field, through active collaboration and information-sharing, has been able to reach relatively quick consensus on key trial-related decisions and adjustments to issues related to STIs, and have devised new strategies for analyzing and interpreting trial results. This analysis validates these processes, their productivity, and the ways in which they can inform alternative STI prevention trial designs and implementation.
Conclusions: From this analysis, areas of emphasis for future work can be identified and new approaches to trial design explored.

P-193 PROGRESS TOWARDS A MICROBICIDE FOR THE PREVENTION OF SEXUALLY TRANSMITTED INFECTIONS

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Objectives: The public health impact of a microbicide intended to prevent HIV would be enhanced if it were also able to reduce the risk of acquiring a sexually transmitted infection (STI). Decreasing STI incidence is important in its own right, and also provides a means of reducing HIV incidence, since individuals with an STI are at increased risk of acquiring HIV. In addition, a microbicide effective against STIs may have wider appeal than a candidate intended solely for the prevention of HIV, particularly in areas where HIV incidence is low. This presentation provides a summary of research assessing the STI prevention potential of microbicide candidates.
Methods: For each microbicide in clinical trials, data on preclinical activity in a variety of models was compiled. A range of literature was reviewed, including published articles, meeting reports, and conference abstracts. Developers were contacted to obtain preliminary or unpublished information, when available, and to ensure that the review was comprehensive. To obtain information on STI testing in clinical trials, protocols were reviewed to determine which trials include STIs as secondary endpoints, and the frequency and methods of STI testing in each trial.
Results: Most microbicides reduce transmission of HIV through one of three mechanisms of action'enhancement of vaginal defenses, inhibition of viral entry and/or fusion, or inhibition of viral replication. Vaginal defense enhancers and entry/fusion inhibitors may prevent STIs as well as HIV; for these candidates' ACIDFORM™/Amphora™, BufferGel_, Carraguard_, Invisible Condom™, PRO 2000, and VivaGel™/SPL7013'preclinical research has assessed activity against several STIs, including C. trachomatis, herpes simplex virus, human papillomavirus, and N. gonorrhoeae. Replication inhibitors'UC-781, Dapivirine (TMC120), and Tenofovir /PMPA gel'are not expected to have direct activity against STIs, although some preclinical assessments have been conducted. Praneem polyherbal vaginal tablet, whose mechanism of action is uncharacterized, has also undergone preclinical testing to assess activity against STIs. PC 815, a combination product, contains MIV-150 and Carraguard_, which has been shown in laboratory studies to be active against STIs. Two of the three ongoing effectiveness trials include STIs as secondary endpoints. A Phase 3 trial of PRO 2000 evaluates prevention of C. trachomatis, HSV-2, and N. gonorrhoeae. A Phase 2/2B trial of BufferGel_ and PRO 2000 includes these STIs as well as bacterial vaginosis, genital ulcer disease, syphilis, and trichomoniasis as secondary endpoints. VivaGel™/SPL7013, which is intended for prevention of HIV and genital herpes, is being tested in two Phase 1 studies. Planning is underway for a Phase 3 trial to evaluate the effectiveness of ACIDFORM™/Amphora™ in preventing infection with N. gonorrhoeae and C. trachomatis.
Conclusions: Microbicides capable of preventing STIs are critical to reducing the global burden of disease and may play a role in reducing the increased risk of HIV infection associated with STI infection. Focusing on STIs may also create a market for microbicides in areas where HIV incidence is low. As the field begins to determine the effectiveness of first-generation candidates, developing products to prevent STIs as well as HIV will be vital to maximizing acceptability, use, and impact.

POSTER SESSION: HEALTH SYSTEMS SERVICES & POLICY

P-194 INCREASING CAPACITY TO EVALUATE STD PREVENTION ACTIVITIES

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Objective: To provide information on a viable strategy that the US Centers for Disease Control and Prevention (CDC) used to increase the capacity of local areas to evaluate their STD activities. Given the current accountability environment and limited resources in public STD programs, it is critical that limited program resources be used effectively. Ongoing monitoring and evaluation of STD prevention and control activities can help programs ensure that their prevention efforts are of high-quality, appropriately targeted, and successful. However, public programs often do not have staff with expertise in program evaluation, nor have the resources to hire outside contractors to evaluate their activities. This presentation will offer them a cost-effective alternative to hiring experts or contractors.
Methods: Evaluation needs were identified from a needs assessment conducted by the National Coalition of STD Directors; further detail on program evaluation needs was provided by 7 STD project areas. The tools were assessed by content experts in STDs, and reviewed by 23 program staff at CDC and in the field before being pilot-tested by 4 STD project areas. The final product is a set of 16 tools that provide step-by-step instructions on how to conduct an evaluation of an STD activity, intervention, or program. The tools contain the theory of program evaluation, as well as narrative instructions, STD examples, case studies and exercises with answer keys. The tools are based on the 6 steps of CDC's Framework for Program Evaluation in Public Health.
Results: These evaluation tools were created to respond to local programs' requests for technical assistance in program evaluation. The tools were tested and endorsed by STD programs of varying size, epidemiology, geographic location, resources, and knowledge and experience with evaluation. Changes were made to the tools based on comments from program staff reviewing and using them. According to the users, the content of the tools is informative, complete, and user-friendly. Initial results from the pilot sites indicate that STD program staff are able to utilize the tools with minimal technical assistance, and find them valuable in determining the effectiveness of program activities. Respondents reported varying degrees of utility from individual tools; therefore, CDC has modified training on the program evaluation tools to demonstrate how project areas can use the tools to adapt the evaluation process to meet the unique parameters of current program needs. The tools will be available on the CDC Division of STD Prevention website, in print, and on disks in Spring 2007.
Conclusion: It is expected that the use of these tools will increase the likelihood that programs will evaluate the performance of their STD prevention and control efforts, thereby making them more effective, targeted, and successful. Evaluating the effectiveness of STD program activities will also ensure wiser use of limited resources.

P-195 PROJECT REPORT: ENDING DISCRIMINATIONS AGAINST PEOPLE WITH HIV/AIDS BY EXTENDED PERSONAL PROTECTION IN HEALTH CARE SERVICES

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Purpose: The present project was designed to pilot an effective model of implementing education and behavioral intervention on personal protection for HIV/AIDS related occupational exposure in health care services, by accessing the impacts of the training on freeing health care workers from HIV/AIDS related fear, discrimination and prejudice.

Methods: According to experimental epidemiological methodologies, three subject hospitals and 3 control hospitals in Beijing, Shanghai and Suzhou were selected for intervention studies between December 2005 and September 2006. Extended Personal Protection was promoted in the subject hospitals through establishing training system and carrying out multi-level trainings.
Results: The incidence of skin stabbing among medical workers in the subject hospitals decreased from 15.8% to 8.6%, which is significantly lower than the controls (P<0.05); the rate of glove-wearing in handling blood and blood contaminated substances raised from 69.5% to 81.9%; correct treatment of blood or body fluid on skin increased from 86.6% to 94.8%, which is significantly higher than the controls (P<0.05); the percentage of medical workers feeling fear when facing the people with HIV/AIDS in subject hospitals, dropped from 28.6% to 15.6%, is lower than the controls (P<0.05); the subject hospitals showed a higher rate of medical workers who are willing to assist the persons with HIV/AIDS(raised form 38.8% to 63.3%) than the controls (P<0.01).
Conclusion: Extension of training on Guidelines for personal protection on HIV/AIDS related occupational exposure in health care services and related knowledge showed positive impacts on increasing occupational personal protection capability, deceasing the incidence of occupational exposure and improving the altitude and behavior toward people with HIV/AIDS among medical workers.

P-196 APPROPRIATE METHODS OF PARTNER NOTIFICATION ARE NOT SUFFICIENT TO CURTAIL THE CHLAMYDIA TRACHOMATIS EPIDEMIC

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Objectives: Extensive opportunistic Chlamydia screening of young women, free testing and treatment, case-finding by mandatory partner notification and compulsory testing have not reduced the prevalence of Chlamydia trachomatis (CT) infections in Sweden. The study was conducted in order to define the contact tracing success rate of partner notification services provided by the County Medical Officer for Communicable Disease Control (CMO) in Uppsala County during 2005.
Methods: Sexual partners who do not respond without delay to being examined by the physician are reported according 3 kap 6§ of the communicable diseases Act to the CMO, who thereafter must take measures needed to prevent further spread of infection or in order to secure medical examination of the person suspected of being infected.
Results: 327 (230 men and 97 women) unsuccessful notifications were reported by physicians to the CMO. 250 (76%) notifications came from physicians in Uppsala County and 77 (24%) from other counties. The majority of notifications (84%) came from the youth-health centres in the County (8), followed by the Department of venereology (9%), maternity clinics (4%), primary health care centres (2%). 157 (47%) notifications were successfully concluded by the CMO e.g. the notified partner consulted a physician and was tested for Chlamydia infection, 109 (33%) notifications was transferred to the CMO in the county where the person was living and 64 (20%) notifications were written off because to little personal details of the contact were given by the index for the CMO to be able to determine the identity.
Conclusions: 20% of all given sexual contacts remained unidentified. Clearly, this large number of individuals must be of importance for the perpetuation of the CT epidemic. Appropriate methods of partner notification are not sufficient to achieve its aims at the population level.

P-197 HIGH EFFICACY OF PARTNER NOTIFICATION SERVICES ROUTINELY OFFERED TO MALE AND FEMALE CLIENTS WITH GENITAL CHLAMYDIA TRACHOMATIS INFECTIONS AT YOUTH-HEALTH CENTRES IN UPPSALA COUNTY, SWEDEN

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Objectives: The study was conducted in the context of the current increase in cases of Chlamydia trachomatis (CT) infections in order to define the contact tracing success rate of the partner notification services routinely provided by the community based youth-health clinics in Uppsala County.
Methods: A prospective study at eight community-based youth-health clinics for teenagers and adolescents. The number of sexual partners reported by each diagnosed index case with CT and the success rate in tracing and testing these partners for CT performed by the youth-health centres was registered. Successful contact tracing was defined as the confirmed attendance of a sexual contact within 12 months of the contact with the index case. Confirmation was obtained verbally by phone or by letter.
Results: The number of CT cases diagnosed by the youth-health centres was 463 (299 females and 164 males). The females reported 660 male sexual contacts and the males reported 386 female contacts; a mean of 2.2 and 2.4 partners per index case, respectively. Successful partner notification was achieved for 71% of male contacts to female index cases and for 76% of female contacts to male index cases. Among the successfully notified partners, 63 % were tested within one month after the diagnosis of the index case, and 99% were tested within three months.
Conclusions: The contact tracing and partner notification services routinely provided by experienced medical workers trained in counselling and communication skills at youth-health centres has a high effectiveness. However 25-30% of all given sexual contacts remained untested by the youth-health centres. This cohort of individuals is probably important for the perpetuation of Chlamydia infection among young adults in Uppsala County.

P-198 THE DIFFERING VIEWS OF MALE AND FEMALE PATIENTS TOWARDS CHAPERONES FOR GENITAL EXAMINATION IN A SEXUAL HEALTH SETTING

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Objectives: There are few data on the attitudes of patients towards the use of chaperones for genital examinations within sexually transmitted diseases clinics, even though these are undertaken frequently in such a setting. The objective of this study was to determine the attitudes of male and female patients to the use of chaperones under such circumstances.
Methods: An anonymous, self-completed questionnaire was administered to patients attending the Melbourne Sexual Health Centre, Australia, between September and October 2006.
Results: The mean age for participating men and women was 32 and 29 years respectively (p<0.01). Of 166 male patients, only 7% and 5% expressed a desire for a chaperone when being examined by a male and female practitioner respectively. Of 153 female patients, 26.8% desired a chaperone if they were going to be examined by a male practitioner compared to 5.2% for a female practitioner (p<0.001). About 30% of male and female patients indicated they would feel uncomfortable having a chaperone present and this did not vary by the sex of the practitioner (p>0.48). For female patients being examined by a male practitioner, the desire for a chaperone was associated with having had a previous cervical

smear (OR=0.35, 95%CI: 0.12-0.98, p=0.04) and feeling comfortable about the presence of a chaperone present (OR=28.9; 95%CI: 11.1-75.0; p<0.001), but was not influenced by not age (p=0.16) or having had a previous genital examination (OR=0.55, 95% CI: 0.21-1.45, p=0.2). About half of male and female patients indicated that they would prefer to be routinely asked if they would like a chaperone present.

Conclusions: Men attending a sexual health service rarely wanted a chaperone during a genital examination. By contrast, a substantial minority of women being examined by male practitioners indicated that they would want a chaperone present, though most women either felt neutral about this or indicated that they would feel uncomfortable with a chaperone in this situation. These findings indicate that in a sexual health setting, female patients undergoing genital examination by a male clinician should be asked whether they would like a chaperone to be present.

P-199 OPTIMIZATION OF THE DIAGNOSIS OF REPRODUCTIVE TRACT INFECTIONS (RTI) IN EASTERN EUROPEAN COUNTRIES (EEC) PERFORMED BY THE NETWORK FOR SEXUAL AND REPRODUCTIVE HEALTH AND RIGHTS (SRHR)

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Objectives: Many previous, comprehensive surveys regarding sexual reproductive health (SRH) issues, conducted as a part of Swedish ' Eastern European countries (EEC) projects supported by Swedish International Development Cooperation Agency (SIDA), have emphasized the difficulties in different EEC countries and the similarities of their problems. These experiences stressed the necessity of a dialogue-based collaboration between international experts and national health care specialists in the EEC for improving the situation. Effective diagnosis and case management are crucial in all types of SRHR issues. These, as well as other SRHR issues have to be addressed multidisciplinary. Consequently, multidisciplinary networks within each specific country as well as between countries are fundamental. The aim of the present paper is to briefly describe the establishment and some of the progresses of the multinational RTI Diagnostic group, which is a branch of the SRHR network among the catchments countries.

Methods: In 2006, the SRHR Network, which aims to include 25 countries of Central and Eastern Europe, Central Asia and Western Balkans, was established as a project supported by SIDA. A multinational RTI diagnostic expert group was also established. Drafts of East-European guidelines for diagnosis of gonorrhea and syphilis were prepared in Russian and English languages and during several workshops discussed between the international experts and national representatives.

Results: In autumn 2006, the first international presentation of the SRHR network was performed at the 22nd IUSTI-Europe meeting in Versailles, France. An English version, i.e. a consensus document, of the guidelines regarding diagnosis of gonorrhea was finalized and is accepted for publication in two parts in 'Acta Medica Lituanica' 2007 volume 14 N 1 (April issue) and N2 (July issue; available on: http://www.maleidykla.katalogas.lt/). In comparison with these consensus guidelines, some national guidelines include minor differences in regards of descriptions, methodological performances, or nationally available materials. All these differences are documented and also accepted by the diagnostic expert group, if they are based on international evidences. Countries that, so far, have presented plans for implementation of the present guidelines are: Ukraine, Georgia, Belarus, Bulgaria, Estonia and Russia. The comprehensive draft of guidelines for diagnosis of syphilis has also been elaborated and discussed between the international expert panel and the national specialists of the catchment countries. Hopefully, also the syphilis guidelines will be finalized and published during 2007.

Conclusions: The present powerful tool, i.e. the SRHR Network, comprising multiple, multidisciplinary and international forces for combating RTIs in EEC has been established. Approaches, strategies, and methodologies elaborated by such joint 'task forces' have high intellectual potential, avoid duplication of previously available solutions and, finally, they result in evidence (or, at least, best practice) based methodology, diagnostics and RTI case management and health care. Information: Marius.Domeika@medsci.uu.se

P-200 A COST EFFECTIVENESS ANALYSIS OF INCORPORATING ENZYME IMMUNOASSAY (EIA) AND IMMUNOBLOT (INNO-LIA) TESTING FOR THE DIAGNOSIS OF SYPHILIS IN ALBERTA, CANADA

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Objective: The incidence of syphilis has been steadily increasing in Alberta. The burden of disease and associated health care costs of syphilis are significant in light of the relatively inexpensive and effective treatment with penicillin. Our objective was to provide economic information to inform decision makers whether to recommend EIA initial testing and Inno-Lia (IL) confirmatory testing (EIA+IL) as the standard protocol for the diagnosis of syphilis in Alberta.

Methods: A probabilistic cohort simulation model was constructed to determine from a health systems perspective, the cost-effectiveness of EIA+IL versus Current Protocols [Initial test conducted with Rapid Plasma Reagin (RPR) with confirmatory diagnoses (for individuals testing positive on RPR) conducted using treponemal pallidum particle agglutination assay (TPPA) and fluorescent treponemal antibody absorbed assay (FTA) tests]. Using 2006 utilization levels for prenatal and non-prenatal populations, the model simulated the cohort of individuals from each population (separately) according to the protocol (EIA+IL or Current) to generate costs and outcomes. Estimates of prevalence, test costs and utilization services for 2006 were derived from Alberta STD databases. Estimates of test characteristics were derived from available literature.

Results: In the prenatal population, the incremental cost effectiveness ratio (ICER) of EIA+IL was $1,358 per additional correct diagnosis. In the non-prenatal population, the ICER of EIA+IL was -$541 per additional correct diagnosis (South East Quadrant of Cost Effectiveness Plane). Overall (prenatal & non-prenatal), the ICER of EIA+IL was -$461 per additional correct diagnosis (South East Quadrant of Cost Effectiveness Plane).

Conclusion: It would be cost effective to replace current protocols with EIA+IL for diagnosing syphilis.

P-201 COMPARISON OF MALE AND FEMALE USERS OF THE INTERNET FOR STD TESTING USING SELF-OBTAINED SAMPLES: PERCEPTION, PREVALENCE, AND RISK FACTORS

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Objectives: To measure how gender differences influence the use of the Internet for home-collected genital samples for detection of STDs, to ascertain how users view Internet recruited testing, and to determine STD prevalence and behavioral risk factors for the participants.

Methods: An Internet website, www.iwantthekit.org, has been in use for women since 2004; over 800 participants have mailed vaginal samples for testing. Samples were tested for chlamydia and gonorrhea using nucleic acid amplification tests. Recruitment of males began in 2006, along with trichomonas testing. Participants requested kits for home collection of urogenital samples via the Internet or calling a toll-free phone number. Self-obtained vaginal swabs (SOV) were collected by females and both urine and penile swabs were collected by males. Participants submitted questionnaires for demographics, perceptions of use, and sexual risk history.

Results: From September 2006 - February 2007, 231 requests from males and 480 from females were received. Males submitted 13.9% of requested kits and females returned 34.2%. From a total of 822 females since 2004, prevalence observed was: chlamydia, 9.1%; gonorrhea, 1.2%; and trichomonas (n=158), 8.9%. In women 15-19 yr, the chlamydia prevalence was 16.9%. Multivariate analysis indicated Black race, age <25 yr, using birth control, non-consensual sex (protective) and multiple partners were all significantly associated with chlamydia infection. Of females, 96.0% rated collection of SOV easy/very easy, 98.2% rated instructions easy/very easy, and 93.5% would use the Internet method of SOV again. For males, Internet recruited self-collected penile swabs and urines have shown a chlamydia prevalence of 31.3%, with good agreement between urine and penile swabs; no gonorrhea or trichomonas were detected. All but one male collected both urine and penile swabs. Median age was 23 yr. Prevalence by age indicated 15-24 yr males had the highest prevalence (33.3%). By race, 62.1% were Black (prevalence, 33.3%) and 34.5% were White (prevalence, 20%) (p=ns). Of infected men, 100% did not always use condoms vs. 65% of uninfected (p=0.053). Previous history for STDs was 25%; 17.9% for chlamydia. Multiple partners were reported by 82.1%, new partner by 60.7%, anal sex by 32.1% and oral sex by 100%. No symptoms were reported by 76% of all men, only 12% reported penile discharge, all of whom were uninfected; 8% reported painful urination; none were infected. Of infected men, only 1 reported any symptoms. By questionnaire, 79.3% of men preferred to self-collection, 89.7% believed the method was safe, 86.2% would use the Internet method again; 55.2% preferred urine or penile sample vs. physician swab (31.0%). Over 95% of infected male and female participants were treated.

Conclusions: Recruitment of participants to perform home sampling for STDs was feasible via the Internet. Males did not seek self-collected STD screening with the same frequency as females. A high prevalence of chlamydia was detected in both sexes and treatment of infected individuals was effective. Self-obtained vaginal and penile swabs collected outside of clinic settings may open new horizons for diagnosis and control of STDs. More study of self-collected penile swabs is required.

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P-202 COMMUNITY HEALTH SERVICE BASED STD/AIDS CARE MODEL AS A NEW STRATEGY OF STD/AIDS PREVENTION AND CONTROL IN URBAN AREAS IN CHINA

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Objectives: To explore as strategy for STD/AIDS prevention and control in China an affordable, accessible, acceptable and replicable model for high risk populations in urban areas in China,

Methods: The program was implemented from April 2002 to December 2006. Eight cities and 20 Community Health Services (CHS) have been selected, some more developed than others. Staff has been trained in conducting outreach work among female sex workers (FSW) and their clients and in providing syndromic STD care, which included wet mount, gram stain and RPR testing, and treatment with single dose drugs; in case of complications CHS had the possibility to refer patients to a STD clinic. PCR testing of discharge samples and RPR has been performed to provide information on the pathogens causing syndromes. Evaluation by external consultants has taken place at the end of November 2006.

Results: All CHS performed outreach activities among FSW and treated clients of whom 25% was male. The prevalence of CT was 13.6%, of GC 12.9% and of positive RPR 4.1%, indicating the reach of high risk populations. Main achievements: 1) new outreach methods to access people who need STD service 2) documents issued by MOH to establish outreach teams in urban and regional CDC all over China, 3) change in opinions of the professionals about syndromic approach, opposing the etiological approach previously used. The external evaluation showed: 1) Essential STD services based CHS is practical and easily replicable. 2) Outreach service is the core of STD care based in CHS. 3) Strong policy and financial support by national and local governments is the guarantee for the implementation of project activities. 4) The cost of STD treatment decreased dramatically, four to ten times less than the costs in STD clinics. 5) Training provided has built a strong human resource foundation for the implementation of project activities.

Conclusions: Community health service based STD/AIDS care is a useful and replicable new strategy of STD/AIDS prevention and control in urban areas in China and should be promoted all over the country. Financial support next to policy support is essential for its successful implementation. Further work is needed to improve the quality of the outreach and to improve the acceptance by clients of syndromic approach. In addition, surveillance of pathogens should be continued to evaluate the treatment guidelines.

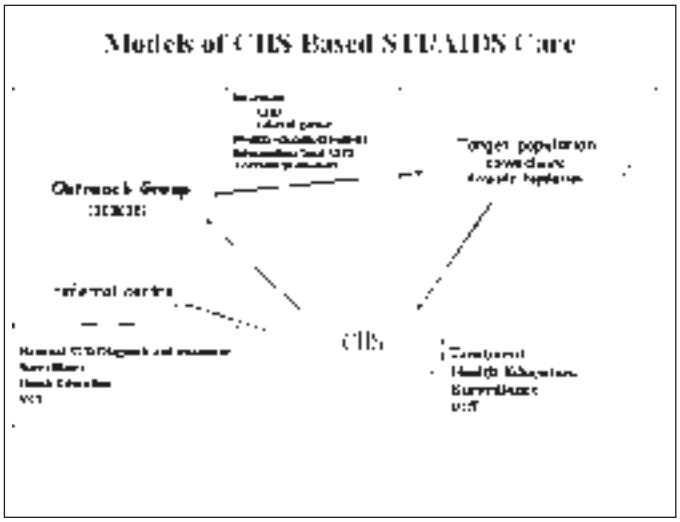

Figure 1: Model of CHS Based STI/AIDS Care

P-203 AN ON-LINE SURVEY OF MALE PATRONS OF FEMALE SEX WORKERS

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Objective: To evaluate an on-line sexual health and referral service aimed at male patrons of female sex workers (POSW).

Methods: Street Outreach Nurses at the BC Centre for Disease Control have provided on-line sexual health information and referral services to male patrons of female workers through www.perb.ca since Jan, 2006. PERB (Pacific Escort Review Board) is a website, used primarily by sex trade patrons and sex workers. A 27-item questionnaire was developed to evaluate this outreach service. Questions were formulated to determine the acceptability of the service and measure self-reported change in behaviour or attitude regarding sexual health. The questionnaire was posted on Surveymonkey.com and we provided a link on PERB which allowed participants anonymous on-line access to the survey.

Results: A total of 100 volunteers (61[61%] men; 14[14%] women; 25% unknown) completed the questionnaire between 21 Nov ' 11 Dec 2006. Fifty-two of the men (85%) reported being a patron of female sex workers, and 11 (91%) of the women reported being sex workers. The remaining participants were either 'observers' on the site or did not disclose this information. Among the 52 who reported being a patron, 47 (90%) stated they found the service useful and 51 (98%) stated their questions were well answered. Twenty-three (44%) stated their thinking about safer sex practices changed after they used the service and 19 (36.5%) stated that their behavior around condom use/safer sex practices changed after using the service. If the health nurse recommended testing for an STI, 30 (46.9%) of patrons and sex workers did go for testing and 8 (12.5%) stated they did not go. The remainder either did not respond to this question (13) or did not have a test (13). Thirty seven (71.2%) of patrons stated they feel most comfortable discussing sexual health issues with a health care provider on the internet, with an additional 8 (15.4%) stating they feel most comfortable with either an internet discussion or a face to face discussion. One patron (1.9%) stated he prefers a face-to-face discussion alone and 2 (3.8%) stated they prefer a telephone discussion. Among the sex workers who completed the survey, 5 (41.7%) stated they were most comfortable with an internet discussion and 4 (33%) stated they prefer face-to-face discussion alone. Twelve (23%) of the patrons stated they have told their doctor that they visit sex workers and 1 (8.3%) of the sex workers have told their doctor that they do sex work.
Conclusions: Participants found this internet service useful and reported that the information they received resulted in positive mental and behavioural changes related to safer sex practices. Recommendations, such as STI testing, were followed through by almost half of participants. The internet offers patrons of sex workers an anonymous arena for obtaining sexual health and referral services and it is preferred by both patrons and sex workers who don't typically disclose their activities to their doctor. The survey provides added evidence that the internet facilitates recruitment and data collection from hard-to-reach populations.

P-204 ATTITUDES TOWARDS STIS AMONG PEOPLE ACCESSING VCT AT CHIPATA CLINIC IN LUSAKA

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Objectives: Voluntary Counselling Testing has been used as an entry point to a number of interventions in the fight of HIV/AIDS. The sexual behaviour study was designed to assess whether clients who come for VCT do change their sexual behaviour after accessing the VCT process.
Methods: The study started in June 2004 recruiting a cohort of 819 clients accessing VCT services at Chipata Health Centre using a structured questionnaire which includes basic demographic details, details about previous sexual behaviour, proposed risk reduction strategies, reasons for coming forward for VCT and history of STIs. Cohort clients were asked for permission to be followed up after six months of initially accessing VCT, to see if there is any sexual behaviour change in the 6 months period for a re-interview either from the clinic or followed up at home. This abstract concentrates on the attitudes towards STIs in relation to sexual behaviour of the cohort clients.
Results: Of the 810 clients recruited at cohort; 379 were HIV positive; 371 were HIV negative; 236 used condoms; 143 had genital ulcer; 50 had discharge; 50 reported having disclosed to their partners that they had an STI.
Conclusions: STI can be used as an entry point to various interventions for HIV; condom use is still very low in resource poor settings, VCT helped those who did not access treatment to be referred for STI treatment immediately after VCT.

P-205 MEN HAVING SEX WITH MEN CLINICAL FRIENDLY SERVICES: PHNOM PENH, CAMBODIA

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Issues: The recent Cambodian STI survey 2005 revealed that MSM are an emerging risk group and key bridge group for HIV transmission. Sex between men is culturally and socially stigmatized leading to inadequate health services seeking behavior.
Project Description: Medicine De l'Espoir Cambodge (MEC) is the first community based clinic providing STI and VCT services to MSM in Cambodia. The MSM friendly clinic has MSM on the team as health educators and clinical staff sensitized on issues related to MSM. Services provided include free consultations, lab tests, treatments, VCT, mobile services, condom and lubricant distribution, health education and advocacy at national level.
Results: Through a combination of approaches, MSM visiting the clinic increased from 35 in 2003 to 1350 in 2006. Advocacy at the national level has led to integration of MSM as a priority group in the National Strategic Plan and the creation of a National MSM network. National STI management guidelines for MSM are being developed and MSM friendly services are being integrated into provincial clinics.
Conclusion: Sensitizing staff on MSM related sexual health issues, creating a friendly, confidential clinic setting are key to ensuring uptake of services. Advocacy at the national level is integral to raise attention to issues surrounding Most At Risks Populations.

P-206 FROM THEORY TO PRACTICE: LESSONS LEARNT FROM STI PROGRAMMING IN CAMBODIA

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Issues: The Cambodian national STI program targeting female sex workers, called 100% Condom Use Program (100%CUP), received support from Family Health International (FHI) through USAID funding over the past 5 years. In this period, significant achievement in matter of positive attitudes among staff providers and quality of STI case management were obtained.
Description: After piloting the 100%CUP in one province, the National Center for HIV AIDS Dermatology and STIs Control (NCHADS) scaled up the program nationwide. FHI technical support strengthened the capacity of government staff in providing STI case management and improved the quality of services. This presentation describes the management policies that made this program successful.
Lessons Learnt/Recommendations: • Onsite ongoing mentoring and capacity building of health care providers is critical. Formal teaching must be complemented with practical trainings. • Providing technical guidance to build capacity at national level is essential to ensure program's ownership and improve quality of services. • Creation of communication channels facilitating exchanges of information between STI staff from national and provincial levels is essential to effectively implement policies and provide feed-back. • Ensuring a good relationship between national technical staff and clinic staff in the field is one of the main factors for improvement of service quality. • Program strategic planning should be guided by surveillance data and openly discussed at all level. • Quality of STI services must be understood in the cultural context including behaviors of both STI service staff and clients. • Expansion of the program to other vulnerable group should be done in partnership with gatekeepers/NGOs. • Monetary incentive is not a solution to the lack of motivation if not associated with staff recognition, capacity building and other support which is valued by providers.

P-207 AMPLIFYING THE IMPACT OF AN STI/HIV RISK REDUCTION INTERVENTION AMONG DRUG-USING WOMEN WITH A BODY EMPOWERMENT APPROACH: EFFECTS ON HEALTH SERVICE UTILIZATION OF THE 'BESTBET STUDY'

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Objectives: Conventional health education approaches stress the importance of restricting educational content to a simple message in order to change behavior. As a result, research on HIV prevention interventions for women have frequently cast basic body education, and coverage of general women's health issues, as suitable material only for 'control' conditions, rather than recognizing it as integrally linked to women's STI/HIV risk. We analyzed secondary outcomes of a body empowerment intervention for drug-using women, whose primary objective was to reduce HIV/STI risk behaviors, and whose secondary objectives included increasing the utilization of women's health screening services and psychosocial counseling services. The theory underlying the intervention was that by educating and empowering women to 'take control' of their bodies, they would experience increases in self-esteem leading to greater self-protective behaviors in multiple health domains. In particular, women's solidarity and attendance at women's self-help/ discussion groups was promoted as a way of decreasing isolation, a key variable in the interlocking grid of personal risk behaviors, psychological comorbidities and economic/structural factors that lead to and maintain drug use and related risky sexual behaviors.
Methods: We conducted a randomized trial of a 'body empowerment' intervention among 198 out-of-treatment, crack-using women recruited from high-risk neighborhoods in Philadelphia. Intervention subjects received five, 3-hr, participatory, peer-led group sessions stressing basic body knowledge, women's solidarity, family planning, women's cancer screenings, and hierarchical HIV risk reduction with male condom, female condom and other women's barrier methods. Intervention subjects were taught self breast exam, and practiced insertion of barrier methods on multiple plastic models of the reproductive organs, as well as at home. They received speculums for self-cervical exam at home. The link between sexually transmitted disease and cervical cancer was presented. All STIs, as well as all contraceptive methods, were thoroughly discussed and demonstrated. Control subjects received enhanced HIV-CT in a one-on-one context.
Results: Most women were African-American (66%); mean age was 40 yrs. Most women used crack (88%) and over 1/3 injected heroin. 37% tested positive for trichomonas. 22% reported using emergency room services, 36% received a pap test and 4% received family planning services in the 6 months prior to baseline. Intervention subjects showed a greater number of significant reductions in HIV risk behavior as compared with controls at 12 month follow-up (reported on elsewhere) . Intervention subjects also reported receiving a pap smear, breast exam, and mammogram, as well as attending family planning services and women's counseling groups, more frequently than control subjects. For mammography (p=.029) and women's counseling groups (p=.06), these differences were statistically significant or of borderline significance.
Conclusions: In addition to significant reductions in risky sexual behaviors, BestBET intervention subjects showed a significantly greater tendency to report certain health screening and counseling behaviors at 12 months, such as utilization of mammography screening. STI/HIV prevention interventions that educate women about their bodies and promote women's solidarity and a forum to discuss health experiences offer the possibility of amplifying a narrow impact on HIV/STI infection, and producing a more sustained impact on women's health.

P-208 STI CARE PROVISION IN PAKISTAN

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Objectives: The burden of STIs in Pakistan is mainly among sex workers and to a lesser extent among bridge groups. Very few STIs have been documented among the general population. STI care provision in Pakistan is not well understood and to date STI management funding and training has largely focused on public sector providers.
Methods: This assessment was conducted to better understand STIs care in Pakistan to effectively target training on STI management guidelines. We conducted 41 in depth interviews with public and private sector providers to understand their practice patterns. One focus group discussion was held with FSWs to see how they seek care.
Results: Dedicated STI facilities (public or Non-Governmental Organizations - NGOs) have low volumes (<2-5 patients/d), except public sector urologists who may see up to 10 complicated STIs daily. Most public clinics cater to clients of sex workers. Public sector providers usually practice personal empiricism. Many have either not heard of or mistrust published guidelines. They seldom see follow ups. Public sector gynecologists see mostly general population women and seldom see STIs. A few departments have previously conducted syphilis testing series in their patients and rarely found any. NGO clinics see sex workers and their clients. Their providers follow some published guidelines, see follow ups and are the only providers consistently providing or promoting condoms. Both NGO and public sector providers variably test for STIs, mainly syphilis. Most only prescribe medications (as opposed to dispensing them). Almost none administer injections. Private sector general practitioners manage most STIs. They see male sex workers, clients of sex workers, other men and occasional women with an STI. They spend about 5 minutes or less per patient, see follow ups and variably follow syndromic management guidelines. Most dispense medications and injections. Female sex workers reported mostly self treatment or followed peer advice for genital symptoms. On occasions they sought care from diverse providers including lady health visitors (minimally trained women from community) and NGO providers. They felt reluctant to report anal symptoms to providers. Anal symptoms are rarely seen by any provider. Partner management is never considered. Syphilis management is infrequent. We could not interview informal providers including traditional healers who provide a significant minority of STI care in Pakistan.
Conclusions: Diverse providers manage STIs in Pakistan. As they follow differing approaches to STIs management, there is no standardization/ benchmarking and therefore quality of care may vary widely. Most cater to clients of sex workers. High risk group members (HRGs) either treat themselves or infrequently see private practitioners or NGO providers. Syphilis testing is available mainly at public or NGO facilities. Since private sector providers who see the bulk of STIs seldom test for syphilis, syphilis management is a problem. We recommend including general practitioners, NGO providers, peers from HRGs and perhaps non formal providers in trainings on standardized national STI management guidelines. Partner management must be emphasized in trainings. Future research should focus on optimizing syphilis case finding and management.

P-209 CARE SEEKING FOR STI SYMPTOMS IN PAKISTAN

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Objectives: STI presentations, prevalence and care seeking are not well understood in Pakistan. Limited data suggest high STI prevalence among high risk groups and moderate prevalence among bridge groups. To be effective STI control strate-

gies must include better understanding of a diverse set of factors including those related to care seeking.

Methods: We performed a cross-sectional survey of 3660 male and female sex workers (MSWs, FSWs), transgenders (TG), injection drug users (IDUs) and truckers, who are considered the major bridge group in the country. The survey included questions about sexual risk, protective actions and care seeking for genital symptoms. Subjects were asked questions about those genital symptoms that serve as the initiation points for the national STI syndromic management algorithms.

Results: Nearly half (45%) of our subjects reported one or more genital symptoms during the past 12 months. Symptoms are depicted in Table 1. About 60% with symptoms sought care. Care seeking was relatively quick at a median of 2 days for all except truckers who sought care at 4 days (range: 0 - 90 days). The median cost of care ranged from Rupees 20 - 200 (1 USD = 60 Rupees). Care seeking venues are described in Table 2.

Conclusions: Genital symptoms are common among high risk and bridge groups in Pakistan. We found frequent anal discharge among IDUs suggesting selling of sex by IDUs. This is consistent with anecdotal evidence from our IDU harm reduction programs. Many (41%) of our subjects did not seek care for their genital symptoms. Since timely care is crucial for control of STIs and their transmission in communities, lack of care seeking means a breakdown in the STI control process. It also represents a missed opportunity to provide harm reduction interventions such as counseling or condom promotion. Future research should address why some patients with genital symptoms do not seek care and how best to facilitate their access to care. Majority of care was sought from private providers, which is consistent with the overall healthcare provision in Pakistan. This emphasizes the need to reorganize STI management training programs to include private providers, non-formal providers such as pharmacists, traditional healers and even some members of high risk groups for peer outreach. This will represent a significant shift from the current practice of exclusively focusing resources and trainings on public sector STI providers.

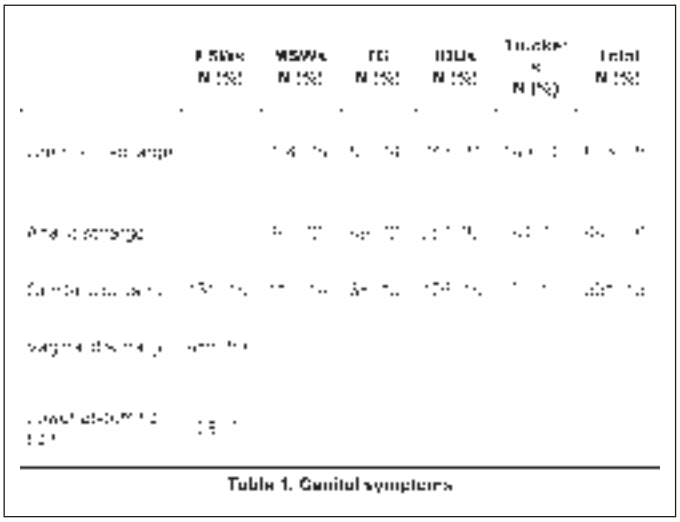

Table 1: Genital symptoms

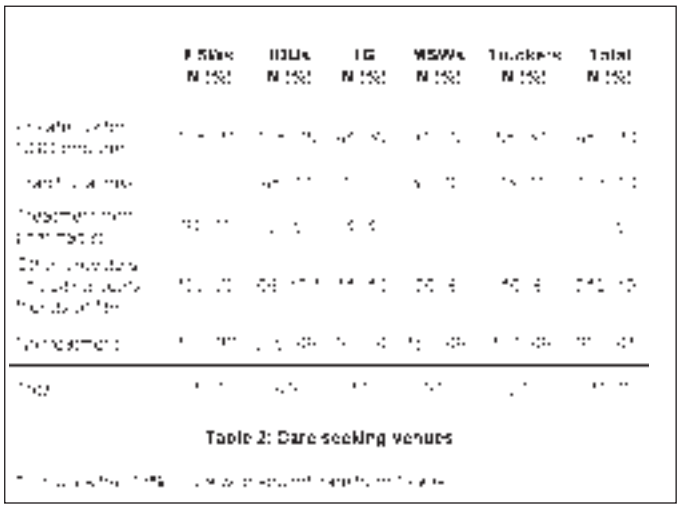

Table 2: Care seeking venues

P-210 PARTNER NOTIFICATION INTERVIEWS FOR GONORRHEA: WHO DO WE TARGET? HOW MANY DO WE FIND? U.S. 2005-2006

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Background and Objectives: Effective partner notification for gonorrhea control starts with timely interviewing of index cases. Because STD programs are unable to interview all cases, programs often target their highest-risk populations, i.e. 'priority' populations. In 2004, CDC developed a performance measure requiring programs with few syphilis cases to report the percentage of priority gonorrhea cases that are interviewed within 7, 14, and 30 days of specimen collection. STD programs could define their own populations. We used performance measure data to identify characteristics of priority gonorrhea populations and evaluate program effectiveness in interviewing priority cases.

Methods: Beginning in 2004, STD programs in 19 states were required to report on this measure; 8 additional states also submitted data. Due to low reporting (30%) during 2004, we restricted analysis to 3 twice-yearly reporting periods ending June 2005, December 2005, and June 2006. For each priority population, states reported number of priority gonorrhea cases (denominator) and number of priority interviews conducted within 7, 14, and 30 days from specimen collection (numerator). To determine which populations were selected, we analyzed grant applications and the performance measure database and we conducted telephone surveys of program staff in each of the 19 states required to report. We then compared priority populations for all 27 states. Program effectiveness was evaluated by analyzing proportion of interviews completed within 7, 14, and 30 days.

Results: 27 states had 42 priority populations. Eight prioritized all gonorrhea cases rather than a targeted population. The remaining states selected populations based on: geographic region (3), STD clinic patients (2), pregnant women (5), age-specific females (6), males (1), ethnic/racial groups (3), MSM (3), antibiotic resistance (4), repeat gonorrhea (1), PID-related gonorrhea (1), youth (4), HIV co-infection (1). It is unclear whether states targeting resistant gonorrhea actually screen all gonorrhea cases for resistance. Selection of priority populations was not associated with disease burden. One state with 3739 cases in 2005 selected all gonorrhea; another with 119 cases selected a targeted population with a denominator of one. In 2005, the 27 states reported 90780 gonorrhea cases; 10968 (12%) cases were identified as priority cases. Of these, 3367 (31%) were interviewed within 7 days; 4305 (39%) were interviewed within 14 days. Over three reporting periods and among all states, proportion of cases interviewed within 7 days improved slightly (29%; 32%; 33% [p<.00001]); 14-day interviews improved

slightly (39%; 40%; 41% [p<.015]). Among states selecting targeted populations, proportion of 7-day interviews improved significantly over time (39%; 46%; 51% [p<.00001]); 14-day interviews improved significantly (49%; 53%; 60% [p<.00001]). Among states interviewing all gonorrhea, proportion of 7-day interviews decreased slightly over time (19%; 15%; 17% [p<.0007]); 14-day interviews decreased slightly (29%; 23%; 25% [p<.00001]).

Conclusion(s): Priority populations varied widely in both size and characteristics, making comparisons of performance difficult to interpret. These data raise questions about what priority populations should be. More research is needed to determine the impact of partner notification for gonorrhea and how to prioritize.

P-211 RESTORATION OF SEXUALLY TRANSMITTED INFECTION (STI) SERVICES IN NEW ORLEANS AFTER HURRICANE KATRINA

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Objectives: In the aftermath of Hurricane Katrina, much of New Orleans and many hospitals and clinics were left in ruins due to extensive flooding. Although the Delgado STD Clinic did not flood, the building sustained serious wind damage and was occupied by the police department and other law enforcement agencies. Prior to the hurricane, the STI clinic was a New Orleans Health Department clinic that was substantially supported by the LA Office of Public Health (OPH) and the LSU Section of Infectious Diseases. After the hurricane, the city was not able to financially support the clinic and it remained closed for one year. We describe the restoration of STI services in New Orleans post-Katrina.

Methods: After one year of negotiations between the New Orleans Health Department, the LA Office of Public Health STD Program Office, and the LSU Section of Infectious Diseases a memorandum of understanding was signed outlining a collaborative effort to re-open the clinic. The city would provide the clinic building, the LA Office of Public Health would provide staff salary support, clinical supplies, medications and Disease Intervention Specialists, and the LSU Section of Infectious Diseases would provide a medical director, physician staff, laboratory and operational support for the building through a newly formed collaboration with the LSUHSC Foundation.

Results: Approximately one year after Hurricane Katrina, essential repairs were made and the building was cleaned primarily by members of the former clinic staff and the LSU STD Research Team. The clinic was renamed the 'Delgado Personal Health Center' and was re-opened in September 2006. The staff consisted of borrowed nursing and clerical staff from the LA Office of Public Health, and part-time medical assistants, laboratory staff and physician staff from the LSU Section of Infectious Diseases. STI training programs and clinical research were also reestablished in the clinic. On the opening day of clinic 3 cases of 1° and 2° syphilis were diagnosed. Prior to the hurricane, an average of 3 cases of 1°and 2° syphilis were seen each month. The clinic is currently seeing an average of 35 patients each day and saw nearly 3,300 patients in the first 6 months of operation. Prior to the storm the clinic saw an average of 50 patients a day. The current clinic population is 60% men and 40% women with 87% African American, 10% Caucasian, 2% Hispanic, and 1% other. Prior to the storm the clinic population was 95% African American. The proportion of men and women has not changed.

Conclusions: In the aftermath of natural and man-made disasters there is often a breakdown of public health services leading to a rise in STIs. Affected citizens often lose employment and health insurance benefits forcing them to rely on public health services. Restoration challenges include loss of facilities, funding and healthcare personnel. Although there were great challenges involved in the restoration of STI services in New Orleans, we learned that disaster breeds opportunities for the development of new collaborations and creative approaches to building an academic STI program. e-mail: staylo2@lsuhsc.edu

P-212 POLICY INITIATIVE TO SUPPORT LOCAL IMPLEMENTATION OF A RECOMMENDED CLINICAL PRACTICE: CAST STUDY OF IMPLEMENTATION OF EXPEDITED PARTNER THERAPY

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Objectives: Expedited partner therapy (EPT) is the practice of providing treatment to partners of persons diagnosed with an STD without clinical examination or encounter with those partners. With EPT, the patient delivers either medication or prescription to the partner. Recently, the U.S. Centers for Disease Control and Prevention (CDC) recommended EPT as a useful option for treatment of partners of patients diagnosed with chlamydia or gonorrhea. However, implementation of EPT at the practice level requires addressing a number of non-clinical barriers. Uncertainty about the legality of EPT was considered a barrier to widespread implementation of EPT. The objectives of this project were to identify local barriers to the implementation of EPT and address these through policy initiatives that are appropriate for CDC to pursue.

Methods: We undertook an assessment of legal barriers to and facilitators of implementation of EPT at the state level. Using legal research engines (Westlaw, Lexis) and publicly-available websites, we researched three broad areas relevant to EPT: 1) medical licensing practices for an array of practitioners; 2) public health and safety laws; and 3) pharmaceutical practices exclusive of laws governing controlled substances. Discussions of the legal research, local legal environment, and other policy barriers with state-level public health practitioners suggested other policy initiatives that could appropriately be undertaken by CDC to facilitate local implementation of EPT.

Results: The legal research resulted in development of a web-based tool for local public health practitioners interested in implementing EPT in their jurisdictions. Additional policy initiatives include collaboration with American Medical Association which supported the practice of EPT through passage of a resolution at its June 2006 House of Delegates meeting; collaboration with the American Bar Association to develop a resolution supporting removal of state-level legal barriers to implementation of EPT; and collaborating with other federal agencies (Indian Health Service, Health Resources and Services Administration) to remove policy barriers. CDC is pursuing collaborations with the American Pharmacists Association and National Association of Boards of Pharmacy for endorsement of EPT.

Conclusions: The web-based tool developed by CDC and the Center for Law and the Public's Health provides a starting point for local public health practitioners interested in implementing EPT. Collaboration with national professional organizations to endorse the clinical practice is an appropriate policy role for CDC and is a promising avenue to support local implementation efforts. Support for EPT by national professional organizations provides both credibility and a structural mechanism for action at the state and local level by affiliates of the national organization. Collaboration with other federal agencies to address implementation barriers is another appropriate policy role for CDC to play to support state-level implementation of EPT.

P-213 ASSESSMENT OF STATE-LEVEL LEGAL CONTEXT FOR IMPLEMENTATION OF EXPEDITED PARTNER THERAPY IN THE UNITED STATES

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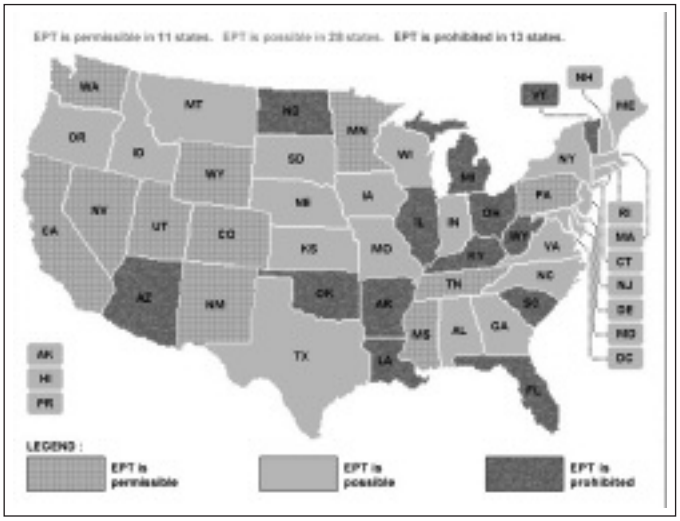
Objectives: Traditional partner notification practices rely on patient or provider assistance to notify sex partners of STD patients of their exposure to an STD and to encourage them to seek evaluation and treatment. Expedited partner therapy (EPT) is an alternative wherein medications or prescriptions for the partner are delivered to the sex partner by the patient who has been diagnosed and treated.

After evaluating multiple studies of EPT, in 2005 CDC recommended EPT as a useful option for treatment of partners of patients diagnosed with chlamydia or gonorrhea. Throughout discussions of EPT, uncertainty about the legality of the practice was consistently raised as a barrier to widespread implementation of EPT. The objectives of this study were (a) to assess the U.S. state-level legal environment relevant to implementation of EPT and (b) to produce a web-based comprehensive table of U.S. state-level legal authorities relevant to implementation of EPT to assist state and local STD programs implement EPT.

Methods: Legal research was conducted in three broad areas relevant to implementation of EPT at the state-level within the U.S.: 1) medical licensing practices for an array of health care practitioners; 2) public health and safety laws; and 3) pharmaceutical practices, exclusive of laws governing controlled substances. Using legal research engines (Westlaw, Lexis) and publicly-available websites, a broad range of legal provisions was examined including: 1) existing statutes/regulations that specifically address the ability of authorized health care providers to provide a prescription for a patient's partner(s) without prior evaluation for certain STDs; 2) specific judicial decisions concerning EPT (or like practices); 3) specific administrative opinions by the Attorney General or medical or pharmacy boards concerning EPT (or like practices); 4) legislative bills or prospective regulations concerning EPT (or like practices); 5) laws that incorporate via reference guidelines as acceptable practices (including EPT). Resulting information was organized by jurisdiction into a comprehensive table that summarizes findings, provides legal citations and offers legal interpretation of the legal status of EPT.

Results: EPT is legally permissible in 11 jurisdictions because laws or other legal authorities expressly permit the practice; EPT is likely prohibited in 13 jurisdictions because interpretations of legal authorities suggest EPT is not permitted; EPT is neither clearly permitted nor prohibited in 28 jurisdictions because legal authorities present inconsistent provisions or are subject to interpretation to make a clear conclusion.

Conclusions: The web-based tool developed by CDC and the Center for Law and the Public's Health provides a starting point for local public health practitioners interested in implementing EPT in their jurisdictions. Despite perceptions of legal status of EPT at the local level, in a majority of local jurisdictions, EPT is either legally permissible or not specifically prohibited.



P-214 TRIAGE SYSTEM FOR ELIGIBILITY FOR CONSULTATIONS IN STI CLINICS IN THE NETHERLANDS

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Background: In 2006 the Dutch government developed a new financing system for STI consultations at STI clinics and Municipal Health Services in the Netherlands. This system is complementary to the regular care with GPs and specialists and is targeted towards inclusion of high risk groups. In view of the limited capacity of resources, a triage system to determine eligibility for STI consultations at publicly funded STI clinics was developed. The proposed triage criteria were being MSM, (client of) CSW, age younger then 24, having an origin in an STI endemic country (defined as Surinam, Netherlands Antilles, Turkey, Morocco, Sub-Saharan Africa, Asia and Latin America) and having multiple sex partners. Furthermore, partners of individuals that meet one of the criteria mentioned and individuals who choose to remain anonymous are included. Individuals that do not meet one of the criteria should be referred to a GP for regular medical assessment. In this study the impact of this triage system is evaluated.

Methods: STI consultations are registered in a national internet based application. The registration consists of demographics, anamnesis, laboratory tests and results and final STI diagnoses. 67% of all consultations in the Netherlands are registered. All triage criteria were linked to the data in the registration, except for 'partners of' and 'choosing to remain anonymous'. The percentage of consultations that met one of the triage criteria and the number of STI was calculated.

Results: 42,679 consultations were registered in 2006. Of these, 89.2% met one or more of the triage criteria. In 5243 (13.8%) of these consultations one or more STI was found: 845 gonorrhea (16%), 4297 chlamydia (82%), 357 infectious syphilis (7%), 11 acute hepatitis B (0.2%) and 120 HIV (2%) were found. All mentioned indicators are independently related to diagnosing an STI (see table 1), except client of CSW in men. In 209 of the 4017 consultations (5.2%) without a triage-indication an STI was found: 15 gonorrhea (7%), 183 chlamydia (88%), 12 infectious syphilis (6%), 1 acute hepatitis B (0.5%) and 1 HIV (0.5%). In these consultations other reported characteristics were: no use of condom in last sexual contact (51.2%), having a new sexual relationship (42.6%), having 2 or more partners in the last six months (28.7%) and having a history of STI (25.4%).

Conclusions: The indication tool was an adequate tool to target groups at increased risk for a STI. In depth analysis is needed for future refinement, because resources for consultations are limited. Further studies are indicated to detect whether those not meeting the triage criteria and referred to a GP actually received appropriate care. In addition, those not meeting the triage criteria should be investigated to determine if they might include a high risk group. More information: marion.de.boer@rivm.nl

	Men		Women	
	OR	95% CI	OR	95% CI
Having multiple sex partners	1.1	0.6 - 2.2	1.1	0.7 - 2.2
MSM	2.2	1.6 - 3.4	-	-
Client of CSW	0.6	0.5 - 0.8	-	-
CSW			1.2	0.6 - 2.4
Origin in STI endemic country	1.7	1.5 - 1.9	1.4	1.2 - 1.8
Symptoms	3.5	3.2 - 3.9	1.5	1.3 - 1.8
Age <24	1.4	1.3 - 1.6	1.8	1.6 - 2.0
Notified	4.8	4.3 - 5.4	5.8	5.1 - 6.5

Table 1: Odds Ratios for diagnoses of STI

P-215 THE ELEPHANT NEVER FORGETS: PILOTING A RE-TESTING REMINDER IN PUBLIC STD CLINICS; THE NYC EXPERIENCE

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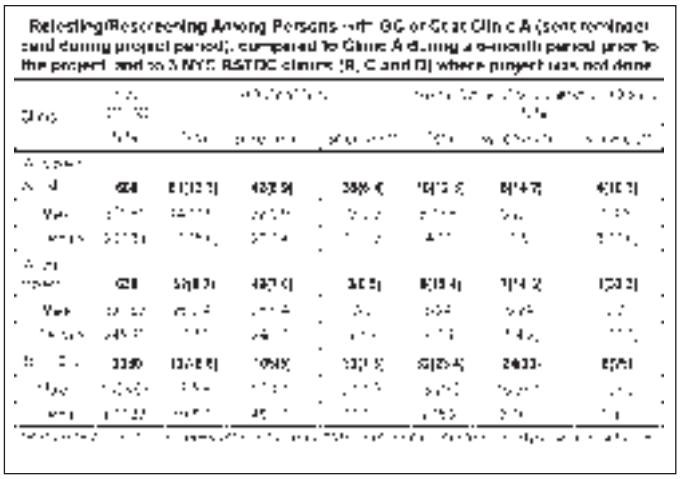
Objectives: To detect asymptomatic reinfection, the US Centers for Disease Control and Prevention (CDC) 2006 Sexually Transmitted Disease (STD) Treatment Guidelines recommend physicians consider re-testing women with Chlamydia trachomatis (Ct) or Neisseria gonorrhoeae (GC) infection 3-4 months after treatment. Public STD clinics in 3 cities (New York City (NYC), San Diego, and Washington DC) are evaluating use of a reminder postcard encouraging patients to return for Ct and GC re-testing. We used preliminary data to examine the effectiveness of this approach in NYC, where there is no formal policy at public STD clinics regarding re-testing.

Methods: At a single NYC clinic (clinic A), all persons tested for CT and GC by nucleic acid amplification test (NAAT) during a 6 month project period (April-September, 2006) were informed at the time of testing that if positive, they would be sent a postcard reminding them to return for re-testing in 3-4 months. A black elephant silhouette was introduced as the re-testing logo and appeared on posters around the clinic and on the postcard sent 10 weeks after the initial positive Ct or GC test; clinic staff reinforced the importance of re-testing at multiple points in the clinic visit, including in a waiting room presentation. Patients with a positive Ct or GC NAAT at clinic A were compared to those seen at clinic A in the 6 months prior to the project period, and to those seen at three high-volume STD clinics in other boroughs. A re-testing visit was defined as a visit to the same clinic 10-16 weeks later at which Ct/GC NAAT was performed. A re-screening visit was defined as an asymptomatic re-testing visit (no dysuria or discharge). We examined re-testing and re-screening rates and relative rates (RR), and the proportion of each group re-infected with either Ct or GC. Rates were stratified by sex.

Results: A data table accompanies this abstract. During the project period, 608 infected persons at clinic A were sent postcards, and the re-testing rate was 13.3%, significantly higher than that before the project period (8.2%, RR 1.6, p=0.003) and higher than that in the other NYC comparison clinics (6.6%, RR 2.0, p<.0001). There was no change in symptomatic re-test rates at Clinic A (6.9% during project versus 7.6% before project), but there was a significant increase in asymptomatic re-testing (i.e., re-screening; 6.4% during project versus 0.5% before project, RR 13.6, p<.0001). The re-infection rate among re-testers at Clinic A during the project period did not differ from that before the project or compared to the other 3 clinics. The number of infections among asymptomatic re-testers (re-screeners) were few in every group.

Conclusions: Our re-testing strategy improved overall re-testing rates and re-screening rates among Ct/GC positives at Clinic A and resulted in higher rates than those demonstrated at other high-volume clinics in NYC. Our findings suggest that the strategy has some potential to improve disease detection among asymptomatics- persons at greatest risk for having an untreated re-infection.



P-216 MEN-MIDWIVES: MANAGERS OF MALE SEXUALLY TRANSMITTED INFECTIONS IN DEVELOPING COUNTRIES?

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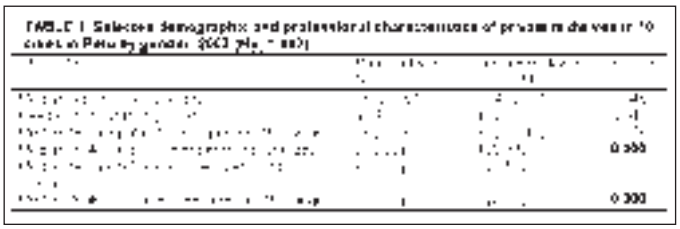
Objectives: To analyze demographic and practice characteristics of private practice midwives in 10 cities of Peru, and to understand the role of midwives in the delivery of reproductive health care, specifically management of sexually transmitted infections (STI).

Methods: As part of an intervention trial in 10 cities in the provinces of Peru designed to improve management of RTIs, detailed information was collected regarding numbers of midwives in each city. A door-to-door survey was then conducted within each city of all private and public medical offices and institutions. Each private practice midwife encountered was asked to answer a baseline questionnaire regarding demographic information, training, type of private and public practices currently engaged in, number of STI cases seen per month, and average earnings per consultation.

Results: Of 889 midwives working in the ten cities, 442 reported having a private practice, either exclusively or concurrently with other clinical positions. 99.3% of midwives reported managing cases of RTIs. The region with the highest density of midwives was the Andean region, which had an average of 3.2 private midwives per 10,000 inhabitants, followed by 2.6 midwives per 10,000 inhabitants in the jungle region and 1.8 midwives per 10,000 inhabitants in the Coastal region. The vast majority of midwives were trained in the provinces (89.4%) as opposed to the capital city of Lima (9.9%). The greatest proportion of male midwives was seen in the Jungle region, where they comprised 35.5% of midwives. Of note, both male and female midwives reported seeing male patients (Table 1), but male midwives saw a significantly greater number of male patients than their female counterparts (22.2% v. 11.1% of patients per month respectively, p=0.000).

Conclusions: Midwives play an important role in management of STI in the provinces of Peru. Male midwives, or 'man-midwives', are a small but growing population in the Peruvian healthcare workforce. In areas where physicians are scarce, midwives can provide needed reproductive health services, including STI management, that are not easily accessible otherwise. Men-midwives in particular appear to serve as providers of health care for male patients with STI. This finding may be commonplace in other developing countries with similar healthcare workforce demographics, and highlights important areas for training and health services research in areas of STI treatment and prevention.



P-217 HIGHLY VARIABLE USE OF DIAGNOSTIC METHODS FOR SEXUALLY TRANSMITTED INFECTIONS RESULTS OF A NATIONWIDE SURVEY, GERMANY 2006

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Objective: Syphilis and HIV are the only notifiable sexually transmitted infections (STI) in Germany. Data for STI are collected through a sentinel surveillance system. The use of diagnostic methods with high sensitivity and specificity are needed for high data quality and early detection. We asked sentinel and other physicians about the current use of diagnostic methods for STIs in order to recognise potential problems and provide recommendations.

Methods: We performed a nationwide cross-sectional survey among randomly chosen physicians with a specialisation in gynaecology, urology and dermato-venerology (DV) as well as sentinel physicians. We asked physicians about the methods and the type of samples used to diagnose HIV, chlamydia (CT), gonorrhoea (GO) and syphilis (SY) and whether they would perform STI testing in asymptomatic patients. The results were stratified by medical speciality.

Results: A total of 691/2228 (31.0%) physicians participated. 80.1% participants offered tests for HIV, 84.0% for CT, 83.1% for GO and 83.5% for syphilis. Of all participants who performed HIV testing, 89.5% ordered an antibody test, 3.2% a rapid test and 1.2% a nucleic acid amplification tests (NAAT). For CT testing, NAAT were used in 33% and rapid tests in 34.0%. Gynaecologists used more often rapid CT tests (48.1% vs. 17.3%; p=0.02) and less often NAAT than other physicians (29.4 vs. 38.0%; p<0.0001). Overall, 33.2% of the participants reported performing GO resistance testing. 98.1% of participants offer SY serology. DV reported more often to do dark-field microscopy than other physicians (42.1% vs. 7.1%; p<0.00001). 65.4%, 33.4% and 65.2% of physicians tested asymptomatic patients for CT, GO and SY. In 53.0%, the reason for testing was antenatal care. There was no difference between sentinel and other physicians.

Conclusion: Used diagnostic methods for STI are highly variable among medical specialities. NAAT for CT, GO resistance testing or screening of high-risk patients were rarely part of the daily routine. Physicians should be further trained in STI diagnostics. Diagnostic guidelines of different clinical bodies should be reviewed and harmonised, if needed, to ensure the evidence-based use of the optimal STI diagnostic methods.

P-218 VARIATION IN PRACTICE AMONG STD CLINICS PARTICIPATING IN THE U.S. STD SURVEILLANCE NETWORK (SSUN)

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Objectives: There are limited data regarding STD clinic practices in the U.S. We compared practices in STD clinics collaborating in the SSuN, a CDC-funded sentinel surveillance network.

Methods: A survey assessing STD clinic practices (excluding treatment) was conducted among the 8 SSuN clinics located in Denver, Minnesota, New York City (10 clinics, reported as 1 since they operate under a single protocol), San Francisco, Seattle, and Virginia (3 clinics).

Results: All 8 clinics offer a walk-in service; fee structures vary from no-cost (3) to sliding schedules (5). Five clinics employ nurses and other non-physician staff to examine patients with physician consultation; 3 clinics have physicians examining all patients. Two clinics offer an 'express' visit option for eligible patients that includes chlamydia and gonorrhea urine NAAT testing for men and women. Women: 7 clinics test all women for chlamydia ' 6 use cervical and 1 uses urine specimens; 1 clinic only tests women <30 years old, and uses vaginal specimens. 7 clinics test all women for gonorrhea ' 4 use cervical NAAT, 1 cervical culture, 2 use a combination; one clinic only tests women <30 years old, and uses vaginal specimens. All clinics use wet preps to diagnose trichomoniasis, bacterial vaginosis and yeast infections; use varies from being routine (6) to only being offered to symptomatic women or those with abnormal discharge (2). Men: 6 clinics test all men for urethral chlamydia and 2 clinics test men based on age criteria, symptoms, or contact; all employ NAAT testing, with 4 clinics using urine and 4 urethral specimens. One clinic performs rectal chlamydia NAAT when clinically indicated. Six clinics test all men for urethral gonorrhea, and 2 clinics test based on symptoms or contact; 7 clinics use NAATs (5 urethral, 2 urine), and 1 urethral culture (3 clinics use urethral gonococcal culture for surveillance purposes). Women and men: All clinics use pharyngeal and rectal gonorrhea cultures (7) or NAAT (1), depending on sexual exposure (e.g. MSM) and/or symptoms. Six clinics perform Gram stain testing for urethritis/cervicitis when patients present with urethral or cervical discharge; one of these clinics performs urethral/cervical Gram stains on all patients, regardless of signs or symptoms. All clinics offer syphilis testing to all clients, using either RPR (6) or VDRL (2); darkfield testing is available in 5 clinics. Culture for and typing of herpes is available in 6 clinics and herpes PCR testing in 1; 3 clinics offer HSV serologic testing for a fee. HIV testing is offered in all clinics; 6 offer rapid tests, 4 of them routinely. HIV RNA pooling among HIV negative patients is conducted in 2 (soon 3) clinics. Expedited partner therapy is offered in 3 clinics.

Conclusions: We observed a considerable variation in practice patterns among the SSuN clinics. While some of the differences may be explained by local epidemiology (e.g., age cut-off for chlamydia testing), some clinical practices may not be optimal and may benefit from a rigorous evaluation process to enhance quality and efficiency in the clinics.

P-219 IMPLEMENTATION OF EXPEDITED PARTNER THERAPY (EPT) IN A BUSY STD CLINIC: UPTAKE AND REASONS FOR NOT PROVIDING EPT AMONG ELIGIBLE MEN AND WOMEN

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Objectives: Expedited partner therapy (EPT) given to patients diagnosed with gonorrhea (GC) and chlamydia (CT) infections has been shown to decrease recurrent infection in the index patient and is therefore a potentially effective tool in the prevention of STD. The U.S. Centers for Disease Control and Prevention (CDC) have endorsed this practice and have encouraged STD prevention programs to explore the feasibility of EPT in their jurisdiction and work with policy makers and other stakeholders to address legal and administrative barriers to the use of EPT. Data on the implementation of EPT in the non-research setting will be useful to guide dissemination of this practice.

Methods: The Denver Metro Health (STD) Clinic implemented EPT in November 2006. Women and men (with the exclusion of men who have sex with men) with an established diagnosis of GC and/or CT are eligible to receive treatment ('partner packs') for up to 3 partners. EPT is comprised of a single 400 mg dose of ofloxacin (for GC) and/or a single 1 gram dose of azithromycin (for GC and CT). EPT implementation is closely monitored with daily chart reviews of patients eligible to receive EPT to document uptake and reasons for not providing EPT. Furthermore, a review of the electronic medical record is conducted to investigate the association of demographic and risk factors with the uptake of EPT.
Results: Between November 9 2006 and February 28 2007, 223 patients were eligible to receive EPT; 110 had a diagnosis of CT, 104 had a diagnosis of GC, and 9 had both. Of these, 46 (20.6%) received a median of 1 (range 1-3) partner packs. There were no gender, race/ethnicity, or age differences between those who received EPT versus those who did not. Likewise, there were no differences regarding EPT indication (GC and/or CT), number of recent sex partners, history of GC/CT, or whether the patient came to the clinic as a contact to a partner with GC/CT. The major reasons for not receiving EPT included: partners already treated or in the clinic concurrently with the patient (48.1%), patients preferring that partners come to the clinic (25.4%), and no partner contact information (17.5%). Providing EPT varied from 5 to 45% among clinicians who had more than 10 eligible patients, but this difference did not reach statistical significance.
Conclusions: Our brief experience indicates that EPT was readily implemented in our busy clinic, but the overall uptake among eligible patients was limited. While there were legitimate reasons for not giving EPT (for example, partner already treated or in he clinic concurrently), it appeared that provider factors also played a role. Ongoing provider education and quality assurance may be necessary for the optimal use of EPT. Given variations in patient mix and other differences between STD clinics, benchmarks for optimal EPT uptake will be difficult to establish. However, sharing of implementation data in a variety of settings will be useful to both guide and improve implementation as well as assess the 'real world' impact of this promising intervention.

P-220 THE VENUES PROJECT: REDUCING HUMAN IMMUNODEFICIENCY VIRUS (HIV) AND SEXUALLY TRANSMITTED INFECTIONS IN BATHHOUSES, SEX CLUBS, INTERNET SITES, AND CIRCUIT PARTIES

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Objectives: 1. To assess current U.S. health department (HD) practices and beliefs regarding current interventions in venues (bathhouses, sex clubs, Internet sites and circuit parties). 2. To develop menus of options for interventions. 3. To train HDs in how to reduce HIV and STD transmission associated with bathhouses, sex clubs, Internet sites and circuit parties.
Methods: Attention to environmental and structural factors involving STD and HIV transmission lags behind attention to behavioral factors. Meeting partners in these types of venues has long been associated with STD and HIV transmission. Efforts to reduce transmission in these venues have long been hampered by lack of data and a lack of role clarity among HDs. We surveyed and conducted follow-up interviews with a convenience sample of 53 state and local health departments to determine which interventions they were conducting, as well as their attitudes towards the businesses. Based on these responses and a review of the scientific literature, we developed menus of options for reducing transmission in these venues. These represent a comprehensive set of interventions, most of which have not been evaluated but have been attempted by at least one jurisdiction HD or venue. We trained participants from 23 key state and local HDs. Trainings included: a) epidemiology of venues and HIV/STD transmission; b) review of interventions; c) the importance of sexual network paradigms to understanding venues; d) building relationships with venue owners and managers; e) ranking of interventions' feasibility and impact; f) legal strategies available to HDs when cooperation is not forthcoming from venue owners.
Results: Needs assessment: 1) HDs reported a lack of evidence for interventions; however, most continued to conduct outreach despite the lack of evidence supporting it as an intervention; 2) support for the rights of these businesses to exist was near universal; 3) balance of power between HDs and venues varied considerably among jurisdictions; 4) political considerations and lack of a clear constituency for changes hamper development of consistent or coherent policies.
Trainings: Participants reported considerable improvement in understanding why venues are important, their legal options, and the perspectives of business owners. Several participants highlighted the usefulness of discussing who should pay for interventions ' the venues' owners or HDs. Several next steps emerged during the Project: 1) HDs should clarify in discussions with venues that the majority of men who have sex with men (MSM) practice safe sex behaviors most of the time, and that venues could cater to them rather than to high-risk individuals; 2) HDs should obtain better data from HIV/STD interviews regarding venue attendance, as well as denominator data; 3) a coordinated effort is needed to broker agreements between and among jurisdictions and venue owners.
Conclusion: Despite a lack of data, leadership is needed to address environmental facilitators and barriers to health. Clarifying roles, and understanding what HDs should ask from owners of bathhouses, sex clubs, internet site and circuit parties - and how to ask - will hopefully contribute to reducing transmission associated with venue attendance.

P-221 PUBLIC STD CLINICS: BASIC STD CARE SERVICES AND BEYOND

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Objective: Public STD clinics are the primary venue for STD-related services for underserved and at-risk populations. The range of services offered at STD clinics often at minimum includes diagnosing and treating bacterial and vaginal infections. The provision of other important STD prevention services can vary among STD clinics. The ability of STD clinics to provide additional public health-related services such as vaccinations for viral hepatitis, Pap smears, and HIV screening, in one office visit in most situations, may increase the likelihood of those individuals attending these facilities receiving these services and improve their quality of care. We surveyed STD clinics nationally about the STD care services they offered.
Methods: A survey was mailed in two phases between 2004 and 2006 to 2471 STD care facilities in the US; US dependencies and possessions; and independent nations in free association with the US that were identified as publicly funded. The survey contained questions on basic STD services provided such as gonorrhea, chlamydia, and syphilis testing and treatment as well as other STD-related services including screening and testing of HIV, HPV, Pap smears; and vaccinations for HAV and HBV.
Results: Preliminary data is presented for the 1355 facilities that completed the survey in the first phase. Of the surveys completed, 600 identified their primary mission as providing STD care services. Among these STD clinics, 96% reported providing HIV testing, 49% reported providing Pap services and 20% reported HPV testing. Hepatitis A and Hepatitis B vaccinations were provided in 55% and 78% in of STD clinics, respectively
Conclusions: Many patients attending public STD clinics can receive a range of STD-related services beyond the minimum STD prevention services. These additional services are integral to STD prevention and allow populations at risk for STD to obtain services that they may not otherwise receive in one health care setting.

P-222 EVALUATION OF PARTNER SERVICES, INCLUDING PATIENT-ELIVERED PARTNER THERAPY FOR CHLAMYDIA TRACHOMATIS IN CALIFORNIA FAMILY PLANNING CLINICS

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Objectives: In 2001, California legislation amended current law to allow medical providers to supply medication for the sex partners of individuals infected with Chlamydia trachomatis (CT), without an intervening medical examination. We evaluated patient-delivered partner therapy (PDPT) and other partner management strategies used in family planning clinics in California to describe partner services offered to women with chlamydia infection and determine the proportion of partners effectively treated.

Methods: From January 2005 through December 2006, women aged 16 to 35 years with laboratory-confirmed CT infection attending eight family planning clinics in California were interviewed by telephone within two weeks of treatment. Follow-up client interviews and interviews of up to three partners were conducted four to six weeks after treatment. Data collected included number of partners in the two months prior to CT infection, partner contact information, and partner management strategy used: (1) patient referral in which clients refer partners to be tested and treated for CT; (2) PDPT; (3) other strategies, which primarily included PDPT with the additional requirement that partners sign documentation prior to releasing medication indicating they have no allergies.

Results: Of the nearly 2,000 women with CT reported by the clinics during the study period, 778 women were interviewed, and 990 male partners were named as contacts; 17% (n=164) of partners were interviewed. This preliminary analysis is based on data for 694 women and 892 partners. The majority (76.7%) of these women reported having had only one partner in the two months prior to infection. More than half (64.5%) of women reported receiving patient referral for at least one partner (no PDPT offered), 23.2% reported PDPT for at least one partner, and 4.7% reported other strategies (no PDPT or patient referral offered). A small proportion (7.5%) of women interviewed reported that they received no partner management. Among women reporting at least one steady partner (n=497), disclosure of their CT infection to all steady partners was high (>95%), regardless of the partner management strategy reported. Half of the women who reported no partner management strategy reported notifying all steady partners about the CT infection. Among these women who reported patient referral, 72.6% reported that all steady partners received medication for CT, compared to 97.6% of those who reported PDPT ($p<0.001$), and 96.3% of those who reported other strategies ($p=0.7$). Of women who reported no partner management strategy, 33.0% reported that all steady partners received medication. Using individual reported partners rather than clients as the denominator in the analysis yielded similar proportions to those listed above. No adverse events for PDPT were reported by women or partners.

Conclusions: In general, partner management strategies in family planning clinics led to a high rate of partner notification; however, women who reported PDPT were more likely to report that partners received medication. Although clinicians should make every effort to bring partners in for comprehensive testing and treatment, this study provides additional evidence to support PDPT as a second-line therapy for treating partners of women with CT infection. Contact: JFrasure @dhs.ca.gov

P-223 BREAKING THE CHAIN OF HIV AND SYPHILIS INFECTION THROUGH PARTNER SERVICES (PS): CHALLENGES AND OPPORTUNITIES

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Objectives: Despite a long history of promoting partner services (PS) as a cornerstone of STD control effort in the United States, relatively little is known about the outcomes of this basic public health activity. To better define the current PS and identify barriers, challenges and opportunities to improve this service health department STD/HIV partner outcome data was analyzed.

Methods: HIV and syphilis data reported to the STD Program of Los Angeles County Health Departments in 2005 and 2006 was analyzed to determine proportion of persons with HIV and syphilis infections interviewed for purposes of PS, how many partners were elicited, and what were the final partner outcomes. We also analyzed the data to identify the barriers of the partner services.

Results: 2,660 cases of early syphilis and 2,822 cases of HIV for the purpose of HIV PCRS were reported to the STD Program of Los Angeles County Health Department in 2005 and 2006. Of these, 1,139 (42.8%) early syphilis cases and 854 (30.3%) of HIV cases named at least one partner. Of the 1,139 partners named by early syphilis cases field investigation was done on 615 (54%) of partners of which 160 (26%) were found to be syphilis infected. Of the 2,660 early syphilis cases 587 (22.1%) were also HIV co-infected and 1,643 (61.8%) were of unknown HIV sero-status. Of the 854 partners named by HIV cases, 664 (77.8%) were eligible for HIV testing. Of these, 322 were tested and 44 (13.7%) were found to be positive. 887 (31.4%) HIV cases refused PCRS and the most common reason for refusal were: 210 (23.7%) patient had no locating information of partner, 158 (17.8%) patient had anonymous partners, and 231 (26.1%) wanted to notify and refer their partners by themselves.

Conclusions: Partner outcomes of the available data indicate that PS is a useful option to facilitate management among STD cases with syphilis and HIV. Therefore these services should be promoted by local health departments as an important management strategy to break the chain of syphilis and HIV infection including other STDS although ongoing evaluation will be needed to define when and how PS can be best utilized and identify challenges and opportunities related to this service like: the possibility of undetected STD in partners, the medico-legal ramifications in the event of adverse outcomes, direct and indirect costs including limitations on third-party insurance coverage, administrative barriers; privacy issues; and the attitudes and beliefs of health care providers and agencies about this practice.

P-224 EVALUATION OF SOCIAL NETWORK ENHANCED CONTACT TRACING IN SHANGHAI

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Objective: Active partner notification of people exposed to STI is not a routine practice in China. As part of a larger project to analyse the strain specific transmission of N. gonorrhoeae in Shanghai, China, we evaluated the feasibility of social network interviewing techniques to define the social and sexual context of gonorrhoea transmission, thereby facilitating STI control while collecting high quality data.

Method: Three hundred forty-two men with positive gonorrhoea cultures attending the Shanghai Skin Disease and STD Hospital completed a questionnaire collecting information on demography, sex practices, and previous STI history. Proxy data was also collected on current and previous female sex partners, including per-

ceived demographics, type of relationship, and location. The men were then asked to distribute cards containing unique anonymous serial numbers, inviting their partners for STI testing and treatment

Results: Of the 342 men, 97 facilitated the testing and treatment of 110 women, resulting in a brought to treatment index (BTI) of 0.32. This index is higher than the average published BTI of developed nations, calculated by Brewer (2005) to be 0.25. Major social factors that appeared to promote partner presentation in China included: recent date of last sex (<7 days), participation in sex while symptomatic, time since symptom manifestation (<3 days), and co-habitation with sexual partner.

Conclusions: Despite the novelty of formal partner notification, these data indicate the feasibility of partner notification in Shanghai (and possibly China) as a control method with comparable effectiveness in the West. Additionally we demonstrated its success for future studies using social network interviewing techniques. Also, male partners who have closer ties with their partners, evinced by recent sex, cohabitation, and sex despite symptoms seem to have been more motivated than others to facilitate treatment of their partners.

P-225 VARIATIONS IN HIV AND CHLAMYDIA TESTING IN GENERAL PRACTICES IN LONDON, UK: OPPORTUNITIES FOR INCREASING ACCESS TO SEXUAL HEALTH CARE?

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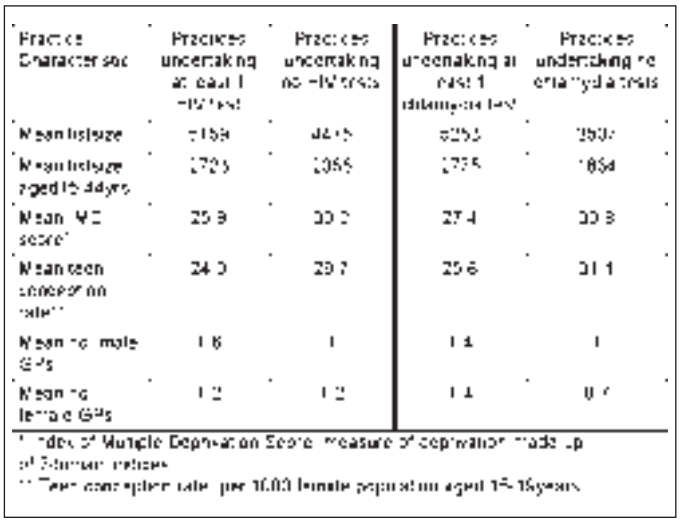
Objectives: To compare HIV and chlamydia testing practices between general practices (GP) and the specialist genitourinary medicine (GUM) Clinic in Brent Primary Care Trust, (estimated population 263,464) in London. To examine the characteristics of general practices in which no patients were tested for HIV or Chlamydia in the past 3 years.

Methods: We analysed HIV and chlamydia testing data from mid-2003 to mid-2006 for 65 general practices and the GUM clinic serving the same population in Brent, London. We calculated HIV and chlamydia testing rates in general practice (per 100 practice population aged 15-64 years). We linked these data with local (ward level) teenage conception rates and Index of Multiple Deprivation (IMD) scores. Logistic regression was used to examine associations between testing rates and practice characteristics.

Results: More tests for both HIV and chlamydia were taken in the GUM clinic than in all general practices combined. The ratio of HIV tests in GP:GUM was 1:7 (1970 and 13658 tests respectively) whilst the chlamydia testing ratio was 1:2 (9403 and 16583 tests respectively). In general practices only 20% (1905/9403) of chlamydia tests were carried out in patients aged under 25 years compared to 36% (6024/16583) in the GUM clinic (p=<0.001). In general practices, females accounted for 81% and 98% of HIV and chlamydia testing respectively, while in GUM clinics they accounted for 51% and 55% respectively (p<0.001). 60% (39/65) of general practices had taken no HIV tests and 26% (17/65) had taken no chlamydia tests. Of ever-testing practices, the annual mean HIV and chlamydia testing rates were 0.6 (range 0.1-3.0) and 2.8 (range 0.1-16.5) (per 100 patients aged 15-64 years) respectively. Practices that had never tested for HIV were smaller (list size 4475 vs. 5159, respectively), with a higher mean ward-level IMD score (30.2 compared to 25.9) and teenage conception rates (29.7 compared to 24 per 1000 female population aged 15-19 years) (table 1) ' though differences were not statistically significant.

Conclusions: The majority of general practices in this relatively high STI prevalence district do not test for HIV and chlamydia testing rates in general practice vary widely. Most chlamydia testing is carried out in female patients aged over 25years, while men receive only a small proportion of HIV or chlamydia tests. These testing patterns do not reflect the known epidemiology of chlamydia and HIV infection in the UK and differ from GUM clinics. The high proportion of non-HIV testing practices, located in more deprived wards with higher teenage pregnancy rates, demonstrates a need to support wider availability of HIV testing in primary care. England's Sexual Health Strategy envisages a shift of STI work to primary care and wider availability of HIV testing in primary care. Our data suggest that specific strategies are needed in this policy context to minimise the potential for under-diagnosis of HIV among men, and to ensure wider availability of STI testing in higher risk populations. For the large proportion of individuals who never attend GUM clinics, the only opportunity for HIV and STI testing is often being missed.



Practice Characteristics	Practices undertaking at least 1 HIV test	Practices undertaking no HIV tests	Practices undertaking at least 1 chlamydia test	Practices undertaking no chlamydia tests
Mean list size	5159	4475	5253	3937
Mean list size aged 15-64yrs	3725	3066	3775	2854
Mean IMD score*	25.9	30.2	27.4	30.8
Mean teen conception rate**	24.0	29.7	25.6	31.1
Mean no. male GPs	1.6	1	1.4	1
Mean no. female GPs	1.2	1.2	1.4	0.7

* Index of Multiple Deprivation Score: measure of deprivation made up of 7 domain ratios
** Teen conception rate per 1000 female population aged 15-19years

Figure 1: Characteristics of General Practices

P-226 HOW MUCH DO DELAYED HEALTH CARE SEEKING AND DELAYED CARE PROVISION CONTRIBUTE TO THE TRANSMISSION OF STIS? EMPIRICAL EVIDENCE FROM ENGLANDS PATSI STUDY

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Objectives: Since the mid-1990s, the UK has experienced a resurgence in the incidence of STIs. This burden has created poor access to genito-urinary medicine (GUM) clinics, despite increasing productivity and work intensity. We quantify the contribution of patient delay and provider delay to delayed access to GUM clinics and identify factors associated with delay, including the availability of walk-in GUM services and patients' prior attempts to use general practice, and examine the contribution of these factors to STI transmission.

Methods: Cross-sectional survey of 3184 new patients attending 4 GUM clinics between October 2004 and January 2005, purposively selected from across England to represent different types of population. Patients completed a short, pen-and-paper questionnaire on sociodemographics, access, and health-seeking behaviour. Questionnaires were linked to routinely collected clinic data to obtain further demographic data and STI diagnosis/es. We analysed delayed access to GUM as 'patient delay' in seeking care, defined as waiting more than 7 days to seek

care from when symptoms began, and 'provider delay', defined as waiting more than 4 days from first contacting any health service to being seen at the study clinic.
Results: Patient delay was a median of 7 days, and did not vary significantly by sociodemographics, access-related factors, or clinic. Median provider delay was also 7 days but varied widely by clinic (medians of 0-20 days), and was significantly greater among patients reporting a booked appointment (OR 10.8, 95% CI 5.51-21.2 in men and OR 14.4, 95% CI 6.75-30.8 in women). Booked appointments were also associated with greater patient delay (OR 2.04, 95% CI 1.41-2.96), but the proportion of respondents having such appointments varied between clinics from 10.4%-94.4% among men and from 9.8%-86.1% among women. 40.7% of patients reported trying to use another health service before attending the study clinic with 72.2% of these patients trying general practice. Trying general practice delayed access to GUM by a further 6 days on average, and those who did were more likely to have STI diagnosis/es in GUM (38.7% vs. 30.7%, p=0.05). 63.9% of those who tried general practice reported consultation(s) with health professional(s). Among men, 19.3% saw a doctor in contrast to 31.0% of women. Despite these gender differences (p=0.035), there were similarities in the 'outcome' of general practice with 84.8% receiving treatment, of whom a quarter were also advised to attend GUM. 40.1% of patients who received treatment in general practice were later diagnosed with acute STI(s) in GUM.
Conclusions: Inadequate access to GUM services, and in particular to walk-in clinics, is an important contributor to delayed access to care and thus to preventable STI transmission in the UK. Our data suggest that greater availability of walk-in slots would reduce both patient and provider delay and should be available to all populations. Diversion from general practice is a major contributor to provider delay. Care given in this setting was often incomplete, suggesting an urgent need to improve diagnosis and treatment in general practice, else to facilitate rapid referral pathways into specialist GUM services.

P-227 AN EXPLORATION OF TRENDS IN THE MANAGEMENT OF MEN PRESENTING WITH STIS TO UK PRIMARY CARE AND ITS IMPACT AT THE POPULATION LEVEL

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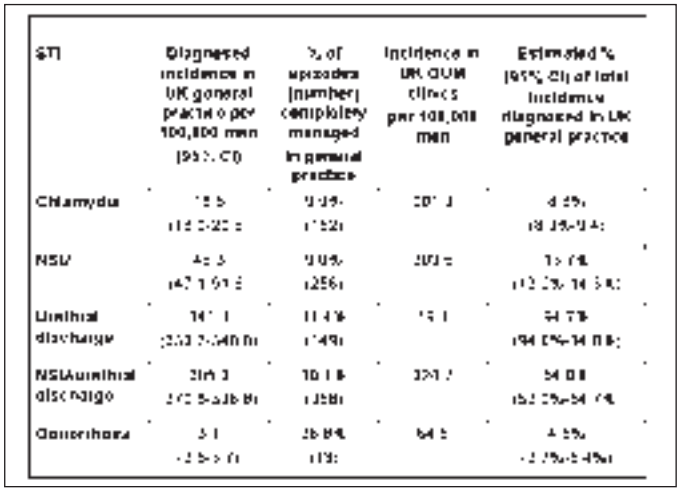
Objectives: A key goal of England's 10-year National Strategy for Sexual Health and HIV is improved management of sexually transmitted infections (STIs) in primary care. Though diagnosed incidence of STIs in primary care is known to have increased, there is evidence that few men are tested for STIs, although half of men with urethral symptoms present to primary care. Here we use a large primary care database to explore the use of appropriate tests and treatments in men diagnosed in general practice with urethral discharge and/or non-specific urethritis (NSU), chlamydia and gonorrhoea.
Methods: The General Practice Research Database (GPRD) is an anonymised database of consultations, diagnoses and prescriptions in UK general practice. In 2004, over 3 million patients, approximately 5% of the UK population, were registered in contributing practices. We used Read codes (indicating diagnoses and symptoms) to identify STI diagnoses and appropriate tests, and British National Formulatory (BNF) codes to identify treatments appropriate for the STIs of interest. An STI episode was considered completely managed in general practice if there was evidence both of an appropriate test and an appropriate treatment code within 30 days of the date of (first) diagnosis Read code. Patients diagnosed with chlamydia or gonorrhoea were not included in the NSU/urethral discharge groups in order to minimise double counting.
Results: The proportion of episodes with evidence of the appropriate test for the diagnosis made increased from approximately 20% to approximately 50% of the STIs studied between 1999-2004 (p<0.0001). However, the proportion of episodes with evidence of a test for a urinary tract infection also increased over this period from less than 10% to approximately one-third of episodes (p<0.0001). There were no significant changes in the proportion of NSU, chlamydia, or gonorrhoea episodes for which appropriate treatment was prescribed (11.4%, 25.7%, or 35.2%, respectively). However, the proportion of urethral discharge episodes involving the prescribing of treatment appropriate for NSU or chlamydia increased from 8.0% in 1999 to 16.1% in 2004 (p=0.009). There is evidence of a significant increase in the proportion of NSU and urethral discharge episodes completely managed in general practice between 1999 and 2004. However, approximately nine out of ten episodes diagnosed in men in general practice in 2004 were not completely managed in this setting (Table).
Conclusions: The proportion of diagnosed episodes of chlamydia, gonorrhoea or NSU/urethral discharge diagnosed in men in general practice for which there was evidence of the appropriate test(s), rather than presumptive diagnosis, increased between 1999 and 2004. However, there remains no evidence of appropriate testing in the majority of men's episodes, suggesting that UK general practice has room for improvement. There is even less evidence of appropriate treatments being prescribed in general practice, though this may be because some episodes are prescribed inappropriate treatment and/or referred to genitourinary medicine (GUM) clinics for management. UK general practice needs to ensure that complete management of STI episodes is provided in order to reduce ongoing transmission and prevent duplication of work in GUM clinics.



P-228 CONTACT TRACING IN NORTHERN FRONTIER ENVIRONMENTS

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Objective: In Montana, contact tracing of sexual partners for all suspected cases of reportable sexually transmitted infections (STIs) is carried out by local public health nurses and by health care providers. In addition to contact tracing, public health nurses are responsible for their county's emergency preparedness, vaccination, and school based sexual education programs. Moveover, state policy requires that contact tracing interviews be carried out in person. Considering the vast area, sparse population, and extreme weather characteristic of Montana, conducting interviews in person can be challenging. Due to these factors, the current protocol for contact tracing may not be practical for a northern frontier environment such as Montana. Our objective was to assess the practicality and effectiveness of the current contact tracing model in Montana and make recommendations to optimize contact tracing for the control of STIs in northern frontier environments.
Methods: Semi-structured interviews were administered in person and over the phone to public health nurses representing each of Montana's 56 counties. The process of developing interview questions began by speaking with 6 key inform-

ants in order to get background information regarding the practical aspects of contact tracing. The interview questionnaire was then pilot tested with 5 public health nurses and revisions were implemented. Topics addressed in the final interview questionnaire included background information regarding the respondent's training and job responsibilities, the respondent's contact tracing method, the factors that influence contact tracing, and the respondent's opinion regarding patient delivered partner therapy. Interview transcripts were analyzed for common themes.
Results: Preliminary results suggest that the current model for contact tracing presents challenges for controlling STIs in Montana. Evidence suggests that alternative methods of contact interviewing would be more feasible in a northern frontier environment such as Montana. Other common themes included: multiple duties of public health nurses; importance of communication between tribal IHS and county nurses; issues surrounding training, geography, and confidentiality; need for standing orders for public health nurses; timing of contact tracing interviews; and the importance of developing formal and informal networks for contact tracing.
Conclusions: We concluded that the current model of contact tracing needs to be updated for rural and frontier environments. Incorporating innovative procedures such as computer based interviewing and patient delivered partner therapy into the contact tracing model of northern frontier environments needs further exploration.

P-229 DEVELOPING INNOVATIVE STRATEGIES IN THE CARE PATHWAY FOR STIS IN PRIMARY CARE

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Objectives: To explore the care pathways of men and women with suspected sexually transmitted infections whose first contact with a health professional is in primary care, and to identify critical points in the care pathway where management could be improved with a view to reducing delays and dropouts from care.
Methods: We conducted a qualitative study using semi-structured tape-recorded interviews in two contrasting locations: Brent, in London, and Bristol, in the South West of England. In each study area, we approached patients attending the local specialist genitourinary medicine clinic who had initially attended or made formal contact with their own general practice for their current problem. We also approached patients in seven purposively selected contrasting general practices whose management was completed in primary care. Transcribed interviews were analysed using the Framework approach.
Results: We interviewed 37 patients face-to-face in genitourinary medicine clinics. We also interviewed 10 patients in general practices by telephone since face-to-face could not be arranged. Patients in both settings, especially those who had previously had difficulties in getting an appointment at the genitourinary medicine clinic, said that they valued the speed of access to their GP.. Patients referred to genitourinary medicine clinics: Health professionals' explanations to patients about their problem, tests, treatment, along with health promotion for STIs, formed an important element of patient experiences and influenced judgements about seeking care from their GP. Most had been dissatisfied and surprised by professionals' 'lack of knowledge'. Few health professionals had referred patients formally to genitourinary clinics, but when an appointment was arranged patient satisfaction was greater. Patients managed in primary care: Experiences differed according to whether the practice has a special interest in sexual health. We interviewed six patients from a general practice with a specialist practice nurse who also worked with local schools. Patients chose this practice because they knew about the clinic from school drop-in sessions and sex education lessons. Patients perceived this nurse to be a 'specialist' and expressed high levels of satisfaction about the information, tests and advice received before, during and after their consultation. By contrast, we were able to interview only four patients from the six other practices. These all reported receiving little information about their problem, and had low confidence in their care.
Conclusions: Good communication, confident care, and the arranging of referral to a specialist clinic were important elements of a satisfying patient experience. These were more likely to happen if the practice had a special interest in sexual health. A National Strategy for Sexual Health, published six years ago, made the provision of essential sexual health services in primary care settings a priority. At the time of increasing numbers of diagnoses of Chlamydia, syphilis and HIV infection in the UK, there is an urgent need to improve sexual health care in primary care, and to ensure that care pathways operate seamlessly.

P-230 HEALTH SECTOR POLICY REFORM IN DEVELOPING COUNTRIES: OLD CONCERNS AND NEW DIRECTION

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Public health services provision in sub-Saharan Africa have deteriorated since the late 1980s, trends which coincide with a period of severe resource constraints necessitated by macro-economic stabilization measures. After government bureaucracies in Africa withdraw from direct health service provision, as reform trends and donor advocacy suggested, do they have the capacity to perform their new indirect role of regulating, enabling, and managing relations with the new direct providers? This changing face of health services provision has therefore created a complex situation, which demands greater understanding of the roles of competition and choice, regulatory structures as well as models of financing for health provision in most countries in the South. Diffusion of ideas from new public management reforms in developed countries, plus donor advocacy and pressures have led to a rethinking of the role of government within the health sector in most developing countries. Since the Millennium Declaration, health has emerged as one of the most serious casualties consequent on the poverty, social exclusion, marginalisation and lack of sustainable development in Africa. Malnutrition underpins much ill-health and is linked to more than 50 per cent of all childhood deaths. HIV/AIDS epidemic poses an unprecedented challenge, causing unnecessary death and suffering, but also undermining economic development and damages the continent's social fabric. Malaria, tuberculosis, communicable diseases of childhood all add to the untenable burden. Yet this burden is in spite of the availability of suitable tools and technology for prevention and treatment and is largely rooted in poverty and in weak health systems in sub-Saharan Africa. In this paper therefore, we discuss whether the governments in the South have the capacity to perform the new indirect role of regulating, enabling, and managing relations with new direct health services providers as advocated by the World Bank in its World Development Report of 1997. The introduction of user fees, decentralisation of service provision to arms-length or semi-autonomous agencies, contracting-out of non-clinical services to the private and voluntary sectors requires a new management culture, vastly improved information systems, and new and clear institutional relationships and have all been on the reform agenda of a number of African countries like Kenya. We recommend a focus on a health policy that can build and strengthen the capacity of poor people to access health services that is cost-effective and sustainable. Such a health policy must strive for equity for the most vulnerable and poor; mobilise and effectively use sufficient sustainable resources in order to build secure health systems and services. Special attention should be accorded to HIV/AIDS in view of the unprecedented challenge that this epidemic poses to Africa's economic and social development and to health services on the continent. Experience with private sector involvement in health projects underlines the need not only for innovative financial structures to deal with a multitude of con-

tractual, political, market and risks, but also building credible structures to ensure that health projects are environmentally responsive, socially sensitive, economically viable, and politically feasible.

P-231 PUTTING THINGS RIGHT TO MAXIMIZE STI QUALITY OF CARE: CLINICAL MENTORING IN PRIMARY CARE SETTINGS IN BOTSWANA

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Objectives: In 2004, the Ministry of Health (MOH) of Botswana adopted revised protocols for syndromic management of sexually transmitted infections (STIs) that included routine HIV testing and episodic treatment for genital herpes with acyclovir (400 mg orally three times daily for seven days) for patients with genital ulcer disease. To implement the revised protocols, the MOH developed a new national STI training program in cooperation with the BOTUSA Project and the International Training and Education Center on HIV/AIDS (I-TECH) and about half of the primary health professionals in Botswana have been trained. (Materials are available online at http://www.go2itech.org.) The MOH seeks to complement the training program with clinical mentoring to support health professionals as they transfer their new attitudes and skills into clinical practice. The MOH in collaboration with the Botswana-Harvard Project has external teams who provide clinical mentoring to the staff at specialized clinics that treat patients with human immunodeficiency virus (HIV). The MOH is exploring models of clinical mentoring in primary care settings where all doctors and nurses could potentially benefit from it. For syndromic management of STIs, the model is to train staff on-site at hospitals and in districts to mentor their colleagues.
Methods: A training program was designed and delivered to selected primary health professionals to learn mentoring skills and plan the clinical mentoring initiative. The training was based on the I-TECH approach to clinical mentoring, which includes five stages: 1) relationship building, 2) identifying areas for improvement, 3) responsive coaching and modeling best practices, 4) advocating for environments conducive to good patient care and provider development, and 5) data collection and reporting. The training featured interactive classroom sessions and clinical sessions. Participants provided feedback on the training program with two questionnaires: 1) qualitative responses to ten questions about the clinical sessions, and 2) self-assessment of clinical mentoring skills before and after the training. In addition, participants shared their feedback about the clinical sessions at a focus group discussion.
Results: Twenty-three people from five out of 24 districts attended the clinical mentoring training February 19-23, 2007. The participants clearly understood that mentoring is a process and the importance of the needs assessment. Selected quotes from focus group discussion are reported below. The analysis of the data on clinical mentoring skills will be included in the presentation. 'Mentoring is not a way of pinpointing mistakes, but improving the quality of care.' 'The gap [in performance] is not necessarily the clinical concept (the knowledge is there), but the attitude to see patients quickly because many are waiting.' 'Doing the right thing every day builds [provider] skills and then ultimately you become faster and it reduces the number of patients outside.' [The most useful assistance a mentor can offer providers is] 'socialization to be a good role model.' 'Teaching moments became clear.' [Mentors can help providers understand that] 'Communication is more therapeutic than the drug.'
Conclusion: Clinical mentoring skills can be taught with a combination of interactive classroom and clinical sessions. fhussein@gov.bw

P-232 INTERNET PARTNER NOTIFICATION OUTCOMES FROM A COMMUNITY-BASED DIS PROGRAM

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Objective: Internet partner notification (IPN) is an emerging method for contact tracing, particularly among MSM diagnosed with syphilis in the US. Previously published reports indicate the feasibility and acceptability of IPN, but the data presented have been limited in scope. Specifically, none of these studies provide evaluation data that describe the contribution of IPN toward overall disease intervention outcomes of public health programs, or compare potential methods of partner contact. This study seeks to begin to remedy this by providing a comparative analysis of two types of partner notification, IPN and telephone notification.
Methods: A retrospective case audit was performed for all syphilis cases interviewed by Howard Brown DIS staff from January 2005-September 2006. 'Partners' in this analysis is made up primarily of elicited sex partners; associates and suspects were also included but represent a smaller portion of the data. Only persons pursued by Howard Brown DIS were considered. For evaluative purposes, IPN was compared to the more traditional approach of contacting partners via the telephone. Therefore, 152 partners that were patient-referred, contacted via another method, or whose information was sent out of jurisdiction were excluded. Partners were coded by method of contact and disposition.
Results: A total of 304 syphilis cases were investigated during the study period. Three hundred sixty-eight (368) partners meeting study criteria were included in the analysis. IPN accounted for 190 (52%) of the partners; telephone partner notification amounted to 178 (48%) partners. Of internet partners, 69 (36.3%) did not respond to DIS contact and were not notified; these were assigned disposition H. In contrast, only 5 (2.8%) telephone partners were assigned this disposition because they could not be reached ($p < 0.05$). When the analysis was restricted to notified partners, however, there was no independent association between method of contact and partner disposition (p=0.30). IPN did contribute to the overall program outcomes. Among the 30 individuals found to be infected and brought to treatment via these methods (disposition C), 12 (40%) were notified through IPN. Similarly, IPN accounted for 40% (32/80) of the partners preventively treated (disposition A) and 45% (33/74) of the partners provided a new exam and found to be uninfected (disposition F).
Conclusions: Partners initiated via telephone number were significantly more likely to be located and notified compared to partners for whom only an internet screenname and/or email address was elicited. Once partners were notified, however, there was no statistical association between contact method and partner disposition. Disease intervention outcomes were enhanced because IPN methods were incorporated; a total of 121 internet partners who may not have otherwise been notified were provided counseling and referral services. These data suggest that STD programs should consider IPN as a complement to traditional disease intervention strategies, especially if high morbidity populations use the internet to meet sexual partners. Further research should be conducted to determine if these findings are replicable, to better understand factors that contribute to the success or failure of IPN outcomes, and to assess cost-effectiveness of various contact methods.

P-233 IMPACT OF INTRODUCING FREE PRIMARY SEXUAL HEALTH CARE VISITS ON STI RATES IN THE WAIKATO, NEW ZEALAND

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Objective: To determine patterns in local primary care testing and diagnosis of sexually transmitted infections following the introduction of free sexual and reproductive health primary care visits for under-25 year olds.

Methods: In July 2003, some primary care practices in the Waikato region, New Zealand were selected non-randomly for a sexual health access-to-care funding initiative that enabled those practices to offer free sexual health general practice consultations for registered under-25 year olds. Practice selection was based on a range of factors including demographic data of the practices' registered populations and rural location. Registered patient numbers for all primary care practices were obtained and linked to laboratory testing data. Two community-based laboratories process specimens for all primary care practices in the Waikato region. We were provided with Chlamydia trachomatis (CT) and Neisseria Gonorrhoea (NG) testing data, including results, from January 1 2003 to December 31 2004. Testing data were de-identified and duplicates removed. Statistical analysis was performed used Poisson model regression analysis.

Results: The majority of all CT tests were from women over the age of 25 years but the highest proportion of positive results were among those aged under 25 years. After the funding intervention, the overall testing rate increased by 11% (p=0.008). For those aged over 25 years, there was a slight decrease in the number of tests while in the under 25 age group, there was a 29% increase in the rate of tests (p<0.001). The overall rate of positive CT tests also increased by 53% (p<0.001). However, funding did not significantly alter the rate of positive tests by age (p=0.084). The majority of all NG tests were from women over the age of 25 years but the highest proportion of positive results was among those aged less than 25 years. There was no evidence of a funding effect (p=0.918) or an age-by-funding interaction (p=0.254) on the rate of NG tests. The rate of positive NG tests was not able to be modelled due to small numbers. Additional analysis of testing data until Dec 31 2005 is being undertaken and will be presented.

Conclusions: This local funding initiative for free primary sexual and reproductive health care visits led to a significant increase in testing and detection for Chlamydia trachomatis, but not Neisseria Gonorrhoea, with the majority of all tests being from women. It is likely that the increased testing and detection of Chlamydia trachomatis was due to increased opportunistic screening amongst young women utilising the free visits for other reasons, such as contraception requests. Subsequent sexual health education sessions with local primary care practitioners have emphasised opportunistic screening amongst under-25 year olds, who have the highest rate of positive tests, rather than amongst older women. Importantly, men do not appear to be accessing primary care in the Waikato for sexual health care needs and this is a focus of ongoing work.

P-234 HEPTEAMLA: COMMUNITY MOBILIZATION TO INCREASE HEPATITIS VACCINATION TO MSM AND OTHER HIGH RISK POPULATIONS

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Objectives: The objectives of this analysis are to assess the feasibility and impact of HepTeamLA, a program launched in Los Angeles County (LAC) in May 2006 to increase access to hepatitis A and B immunization for men who have sex with men (MSM) and other high risk groups. HepTeamLA included partnerships between public, private, and community clinics; immunization outreach events; and media. Vaccines used in the program included the HAV/HBV combination vaccine Twinrix_, Havrix_ HAV vaccine, and Recombivax HB_ HBV vaccine. HepTeamLA was part of a national effort that also included New York City, Chicago, and Atlanta.

Methods: Immunization data were collected from participating County and community clinics, at outreach events offering onsite vaccination, and through an online survey conducted among Gay.com members before the HepTeamLA program launch in May 2006, and post-launch in September and December 2006. Qualitative data on agency collaborations to enable the program were collected from program organizers.

Results: Key components of the HepTeamLA program included: 1) coordinated planning among multiple agencies, including HepTeamLA (a group funded in part by GlaxoSmithKline), the LAC and Pasadena Departments of Public Health, and two community agencies (the LA Gay and Lesbian Center and AIDS Healthcare Foundation); 2) patient education and marketing materials, including print, online and bus shelter advertisements; 3) a website; 4) a coordinated network of 13 public and 3 community clinic sites offering free vaccine; 5) linkage with selected private providers offering vaccine; and 6) community outreach, including six immunization outreach events. During May-December 2006, 787 vaccine doses (42 HAV, 32 HBV, and 713 HAV/HBV) were administered at the six outreach events. STD testing was conducted at 3 of the events, but yielded limited case-finding. Data from the largest outreach event show that among the 386 persons vaccinated, 60.9% were MSM, 67.4% had multiple sex partners in the last 6 months, 7% reported an STD in the past year, 3.4% were IDU, 3.6% reported sex with a chronic HBV carrier, and 2.8% reported chronic liver disease (note: clients could identify multiple risk factors). The three community clinics and twelve LAC Public Health Centers administered an additional 1,371 and 3,654 vaccine doses (provisional data), respectively. These immunizations cannot be attributed directly to HepTeamLA efforts, but vaccine availability and staff awareness were enhanced by the program. Online surveys (n=145 for May pre-launch, and n=421 and n=118 for September and December post-launch, respectively) showed the proportion of respondents who had seen hepatitis A/B information in the past six months increased from 28% to 40%, and respondents getting vaccinated increased from 3.4% to 6.8%.

Conclusions: A multi-agency coordinated effort is feasible, resulting in a network of immunization access points and coordinated publicity and referral. Outreach efforts led to vaccination of a substantial number of high risk individuals, though simultaneous STD testing detected few infections. Data limitations make it difficult to assess the relative contribution of the HepTeamLA campaign compared with other ongoing efforts; but available data have stimulated strong interest among participating agencies in renewing the program in 2007.

P-235 CEARGS: CONTRIBUTION OF A TRAINING AND RESEARCH NGO IN THE FIELD OF STI/HIV/AIDS

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Introduction: Health professionals working in the frontline of STI/HIV/AIDS have limited opportunities to engage in formal academic degree-granting courses. This constrain often prevent them to engage in research. As a consequence, ther is great need of expertise in operational research as well as in monitoring and evaluation activities. We describe the experience of the CEARGS ' Centro de Estudos de Aids e DST do Rio Grande do Sul (Center for Aids and STI Studies of Rio Grande do Sul, Brazil), a non-governmental organization that created an alternative model to capacity building and the development of research projects in the field of STI/HIV/AIDS.

Methods: The CEARGS activities include annual short courses of Research Methods (RM) and Scientific Writing (SW), with the partnership of the Center for Aids Prevention Studies (UCSF)/ NIH Fogarty International Center and the support of the Brazilian Ministry of Health. These training access the health professionals from all states of the country. Besides that, CEARGS locally developed a curriculum of

courses offers courses on epidemiology and research tools. Distance learning activities using low cost technology were implemented and created a expanding momentum for CEARGS activities reaching populations never thought to be a target for this kind of activities. A Internet based Bioethical Introductory Course is under development, with the partnership of the Wellcome Trust.
Results: From 2000 to 2006, 517 professionals have been trained in CEARGS. Ninety five participated at Research Methods Course and/or Scientific Writing Course, of this 31 implemented research protocols, 48 presented results in national and international congresses and 19 have published them in scientific journals.
Conclusions: CEARGS can serve as a model to the development of other institutions. The focus on the STI/HIV/AIDS leads to strengthen of the field increasing scientific production in number and quality. The administrative and financial agility is a differential from bigger institutions , and the national and international partnerships have been crucial for success. Distance learning activities makes possible to reach other countries with low costs. Corresponding author Mauro Cunha Ramos, E-mail: dermauro@terra.com.br

P-236 SEXUAL HEALTH TRAINING OF PUBLIC HEALTH PRACTITIONERS IN CANADA

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Objectives: Public health physicians and nurses are primary contact points for patients and have an important role in reducing STI/HIV transmission rates and overall incidence. A project initiated in 2006 evaluated the current levels of Canadian public health professionals' sexual health training and identified training needs as well as available training opportunities, both in and outside the formal education system.
Methods: A survey was administered by an independent contractor in early 2007. All Federal Provincial and Territorial STI directors were contacted and asked to identify public health professionals who were frontline providers in their jurisdiction for inclusion in the survey sample. The survey was sent to 97 identified individuals across Canada. Survey questions included previous sexual health training, current practices regarding sexual health, barriers to providing services and perceived training needs. Concurrent to this training opportunities available were reviewed. A web search identified accredited Medical universities in Canada who prioritized sexual health. A further search was conducted to identify training opportunities outside the formal education system, including web based courses, continuing medical education and workshops by professional organizations.
Results: The response rate was 51%. Of the 49 individuals who completed the surveys the majority were public health nurses (41%) followed by medical officers of health (16%) and salaried physicians (6%). About half of the respondents (55%) reported sexual health training during their professional education and .further sexual health training was reported by 63%. Half (53%) also knew of available training opportunities. The majority of all respondents (92%) felt competent to perform their sexual health practices. Less than half (43%) obtained sexual health histories at every visit. Topics most difficulty for respondents to discuss with patients were oral sex (mouth to anus) and digital sex. Barriers to HIV and STI counseling were similar and lack of time was mentioned as the predominant barrier. Lack of knowledge was mentioned only in terms of HIV counseling. Cultural barriers, language barriers and patient attitudes were also mentioned. The web scan of accredited Canadian medical school found six course listings dealing with sexual health. Three nursing schools also offered courses and sexuality courses were offered by health related faculties in two additional universities.
Conclusions: Experience and self identified expertise for addressing issues of sex and sexual health varies widely in Canada among frontline public health practitioners. Further development of a curriculum with opportunity to continually enhance knowledge and skills should be a priority for the public health community.

P-237 MODEL COMMUNITY BASED STI/VCT CLINICAL SERVICES FOR PEOPLE ENGAGED IN RISKY BEHAVIORS: THE CASE OF MEDICINE DE LESPOIR CAMBODGE, A LOCAL NGO IN CAMBODIA

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Context: Cambodia has been hailed as an 'HIV success story'. The success has been the result of complementary efforts by local, national and international organizations. STI prevention and control among high risk groups such as sex workers and MSM has played a major role in facilitating this success. Sex workers in Cambodia have always been considered a high risk group. However, the recent Cambodian STI survey 2005 revealed that besides sex workers, MSM are an emerging risk group and key bridge group for HIV transmission. Medicine De L' Espoir Cambodge (MEC) is the first community based clinic providing STI and VCT services to high risk groups such as sex workers, MSM, high risk men and their partners in Cambodia.
Approach: MEC has both a clinical and an outreach component. Through the clinical component, STI/VCT services are provided to high risk groups while through the outreach component education and referrals are provided to different high risk groups. MEC also provides HIV/AIDS/STI/SRH education through the clinic, drop in center and outreach education to over 600 Angkor beer factory workers. A strong referral network with other local partner NGOs doing outreach with sex workers, MSM and other high risk groups has contributed to improving access to services for these groups. Strong linkages exist within the clinic to refer STI clients to VCT services and vice versa. MEC also has strong referrals with local NGOs such as Chhouk Sar (also supported by USAID) that provide OI/ART to most at risk groups. The quality of services in the clinic has been improved by not just strengthening technical and program components, but also sensitizing clinic staff to issues surrounding working with groups such as MSM and sex workers.
Outcomes and Challenges: MEC has been hailed as a 'model training site' by the national government due to its quality, friendly services, effective referral systems and outreach for persons engaged in risk behaviors, especially sex workers and MSM. MEC's work with MSM has been recognized and the National Center for HIV/AIDS, STIs has assigned MEC the responsibility of reviewing national guidelines for MSM and training staff at 6 new pilot MSM STI public clinics that will be set up in the country. Through a combination of approaches including the strong partner referral network, there has been a significant increase in the number of high risk groups visiting the clinic. Monthly visits by MSM to the clinic increased from just 10 in 2003 to over 300 in 2007. MEC provides service to not just sex workers and MSM, but also to clients of sex worker and partners of high risk men, averaging 1000 visits by different groups each month.
Recommendations: Using sex worker/ MSM/ NGO networks and establishing strong linkages between outreach and clinical services is critical to ensuring improved access among most at risk groups.

POSTER SESSION: HEPATITIS

P-238 THE EFFECT OF MIGRATION ON THE PREVALENCE OF CHRONIC HEPATITIS B IN THE NETHERLANDS

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Objectives: Large differences in prevalence of Hepatitis B infection can be observed worldwide. With less than 2% of the population chronically infected with Hepatitis B the Netherlands belongs to the low endemic countries according to the WHO classification. A populationwide representative serosurveillance study in

1995 resulted in an estimate of 0.2% for the HBsAg prevalence in the Netherlands. In low endemic countries immigration from countries with intermediate and high HBsAg-prevalence is believed to have a strong impact on the epidemiology of hepatitis B. However, in the serosurveillance study of 1995 migrants were not well represented and the above estimate is thought to be an underestimate of the true HBsAg prevalence. The aim of our study was to calculate (age-specific) HBsAg-prevalence rates for migrant groups and provide an adjusted prevalence estimate for the Netherlands.

Methods: According to their country of origin first generation migrants were separated into groups with low, intermediate and high prevalence using the WHO classification and data from Statistics Netherlands (CBS). The numbers of chronic HBsAg-carriers for the different population and age-groups was calculated based on studies that we considered representative for low, intermediate and high endemic countries. Then an updated prevalence for the general population in the Netherlands was calculated by combining the age-specific prevalence in first generation migrants with estimates for the remaining population from the serosurveillance study.

Results: At the end of 2005 nearly 10% of the Netherlands population were first generation migrants. From the first generation migrants about 18% were born in low endemic countries, 71% in countries with an intermediate HBsAg-prevalence and 11% in high-endemic countries. The HBsAg prevalence of first generation migrants is lowest in the age-group younger than 5 years (0.22%) and highest in the age-group 15 to 20 years (4.3%). The overall prevalence of first generation migrants is estimated to be at 2.7%. Combining these results with the results of the serosurveillance study the HBsAg-prevalence in the Dutch population is estimated to lie between 0.3% and 0.4%.

Conclusions: Our results show the high importance of targeting migrants and their close contacts adequately in HBsAg-screening programmes, vaccination and treatment for chronic hepatitis B. To obtain valid estimates of hepatitis B prevalence in low endemic countries it is important to adequately include the high risk-groups like migrants and injecting drug users in future seroprevalence-studies.
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P-239 HEPATITIS A & B SCREENING AND VACCINATIONS FOR EMPLOYEES AT A SAUNA FOR MSM WITH AN AIM OF EXPANDING THE SERVICE TO MSM ACCESSING THE SAUNA

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Objectives: Our GUM clinic noted a local sauna was consistently named as a sex venue by MSM diagnosed with STIs, thus required targeting. We initially engaged staff of the sauna with an aim to expand the service to MSM accessing the sauna to promote sexual health and offer screening to those who would not routinely access mainstream GUM services

Methods: An outreach team of Nurses, Doctors, Health Advisers & an Outreach Worker provided Hepatitis A (HA), B (HB) and C screening and HA/HB vaccinations to employees who are mainly MSM working at a sauna on site. They attended the GU service for their follow up blood tests

Results: 55 staff members commenced vaccination. Of these, 50 (90%) had no previous contact with sexual health services. 2 (4%) of the staff tested had infectious HB, 8 (15%) staff were found to have natural immunity against HB, all of whom commenced on vaccination. The remaining 45 (81%) staff completed vaccination. Of those, 33 (60%) attended clinic for Post-vaccine serology. 29 (53%) had protective HBsAb. 6 (11%) staff members attended clinic on subsequent occasions for wider screening tests.

Conclusions: The successful screening and vaccination of staff in the sauna also promoted wider access to mainstream services. This has resulted in the support of sauna owners in developing an expanded outreach service for MSM attending the sauna. Following this, funding from the Primary Care Trust has been secured for 2006/7.

P-240 HEPATITIS B SURVEILLANCE IN THE NETHERLANDS, 2002-2005

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Objective: To interpret trends in reported hepatitis B virus infections between 2002 and 2005 in the Netherlands, and to assess the impact of the current vaccination policy targeted at high risk groups.

Method: Data were obtained from the obligatory notification system in 2002-2005 of the Public Health Services. Data included age, sex, country of birth, date of diagnosis, information on risk factors, probable route of transmission and country of acquiring the infection.

Results: Between January 2002 and December 2005, 7.352 HBV infections were reported, of which 1,168 (16%) were acute and 5,849 (80%) were chronic. Incidence of acute HBV infection in men varied by year between 1.5 and 2.0 per 100,000 population per year and in women between 0.6 and 0.9. The incidence in acute HBV patients born in HBV endemic areas was almost three times higher than in patients from HBV low endemic areas. Overall, 34% of the acute HBV cases were most probably acquired by male homosexual contact, whilst 25% reported heterosexual contact as the most likely route of transmission. The latter increased significantly from 20% in 2002 to 29% in 2005 and was reported more frequently among native Dutch individuals. The number of chronic cases in men increased significantly from 46% in 2002 to 56% in 2005, whereas in women the number decreased over time. Transmission from mother to child was reported in 40% of the chronic HBV infections as the most likely route of transmission. This was reported more often for carriers born in HBV endemic areas (45%) than in native Dutch individuals (22%).

Conclusion: In the Netherlands, sexual contact is the most frequently reported risk factor for acute HBV infection, whereas vertical transmission is the most common risk factor for chronic HBV infection. Transmission by heterosexual contact has become increasingly important in the transmission of HBV over time whereas transmission due to male homosexual contact remains constantly high. Importation of infections through immigration of carriers plays an important role in the epidemiology of HBV in the Netherlands; the vast majority of chronic carriers was born and infected in an HBV endemic area.

P-241 THE EFFECT OF HCV INFECTION ON HIV DISEASE COURSE AMONG HIV/HCV CO-INFECTED PATIENTS IN GEORGIA

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Objective: The aim of this study was to investigate the effect of HCV infection on HIV disease course among HIV/HCV co-infected patients.

Methods: ARV na_ve HIV infected individuals were divided in two groups: HIV mono-infected patients and HIV/HCV co-infected patients. Approximately 60 patients were enrolled in each group. Study included patients with similar baseline CD4 cell count categories (>350/mm3) at their regular visits at The Infectious Diseases, AIDS & Clinical Immunology Research Center of Georgia (IDACIRC) on the first come first served basis. CD4 cell count, HIV RNA viral load dynamic, development of AIDS, new opportunistic diseases and HIV/AIDS related mortality were compared during this study. The patients' follow-up visits will be scheduled in every 3 months. Detection of HIV RNA (Viral load) was performed by Roche AMPLICOR HIV-1 Test. CD4 was performed using FACS Calibur flow cytometer and CD3/CD4/CD8/CD45 Multitest reagent.

Results: CD4 cell count substantially regressive dynamic was found in the 19 HIV/HCV co-infected patients (31%) and in the 14 HIV mono-infected patients (23%). HIV RNA viral load was significantly increased in the 31 HIV/HCV co-infected patients (52%) and in the 26 HIV mono-infected patients (43%). There was no any significant difference in cases of new opportunistic diseases in HIV/HCV co-infected and HIV mono-infected patients. HIV/AIDS related mortality was higher in

the HIV/HCV co-infected patients (7) as compared of HIV mono-infected patients (2). The cause of death in 5 HIV/HCV co-infected patients was cirrhosis of the liver.
Conclusion: The results of this study shows that HCV infection does not important effect on HIV disease course among HIV/HCV co-infected patients in Georgia

P-242 PREVALENCE OF HEPATITIS B AMONGST HEALTHY PREGNANT WOMEN INDIAN SCENARIO

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The routine Antenatal screening of pregnant women for HBsAg and identification of Chronic Hepatitis B in pregnant women with subsequent immunoprophylaxis of newborns has come up with promising results over the years. However, there are limited data in this regard as far as Indian studies are concerned .
Objectives: To determine the Hepatitis B infectivity amongst a large population of pregnant women,the socio-demographic profile and the risk factors if any present in these group of women and to correlate maternal 'e' antigenemia with that of maternal HBVDNA levels.
Patients and Methods: Pregnant women at any gestation coming for antenatal checkup in one of the largest tertiary care center in North India were included in this study from Sept. 2004 till Dec 2006. After an informed consent and a detailed history serological study including HBV markers and moleculer assays of the women were done and results analysed.
Results: Out of a total 36,379 antenatal registrations ,11,000 pregnant women were screened, of which 125 women tested positive for HBsAg .The prevalence of HBsAg 1.13% (11 in 1000) .The age of the HBsAg positive women varied between 18 and 25 yrs (mean 21 ±3.1 yrs) with majority (90%) between 21 and 25 yrs. Seventy percent of them were multigravida. The socioeconomic status in majority was low (52%). Most of them (75%) were illiterate.. Majority (60%) were healthy carriers of HBsAg. HBsAg was incidentally detected in 9%. Family history of Hepatitis B was given by five women (4.5%) and history of blood transfusion(8%) , tattooing(9%) and surgery (8%),The prevalence of HbeAg positivity was 21.6%. The estimation of HBVDNA levels showed that in majority it was undetectable (<0.5 pg/ml) to low levels(0.5 pg/dl -5 pg/ml)(30% and 50%).It was moderate(5 pg/dl '1000 pg/dl) in 6% and high (>1000 pg/dl) in 14% of women.There was a linear correlation between levels of HBVDNA and HbeAg Status in HBsAg positive women . Women with a positive HbeAg had in majority(75%) high to moderate circulating levels of HBVDNA as compared to those who had a positive Hbe antibody in whom HBVDNA was undetectable to low levels(93%)(p<0.001).
Conclusion: Although the Prevalence of Hepatitis B in healthy pregnant women in our population is not high but its prevalence in younger age group and a high infectivity is definitely alarming depicting a major route of transmission from mother to the newborn .Hence to detect, identify and treat these subgroup of population with use of available sensitive methods could really pave a path in preventing Chronic HepB infection on a large scale basis especially in Indian setup.

POSTER SESSION: HERPES

P-243 SEROPREVALENCE OF HSV IN HIV INFECTED PATIENTS IN CANADA

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Objective: To determine the seroprevalence of herpes simplex virus infection in HIV infected individuals in Canada
Methods: HIV infected patients attending infectious disease clinics in 3 locations for follow up HIV care were approached to participate in the study. After informed consent was obtained, subjects were asked to complete a one page questionnaire documenting demographics, length of HIV infection, risk behaviour, history of oral/genital herpes, medications for either HIV or HSV and last CD4 count and HIV viral load. Blood for HSV type specific serology (TSS) was drawn. HSV TSS was performed by ELISA (Focus Diagnostics HerpeSelect 1 & 2). Equivocal samples were repeated and any discrepant results were resolved with Western Blot. The study was approved by the Health Research Ethics Board, University of Alberta and University of Toronto.
Results: 572 HIV infected individuals participated from Edmonton, Toronto and Quebec City. The mean age was 44 years, 75% were Canadian born and 73% were men. The majority of foreign born subjects were black (endemic) and female. There were a higher proportion of aboriginal women than men. Length of HIV infection was 10 years or less for 64% of the subjects. When asked for a history of oral or genital herpes, 56% had a history of oral herpes while only 17% had been diagnosed with genital herpes. The majority (88.2%) of participants were on HAART while only 37.9% were taking medications for HSV. The following table outlines the seroprevalence of HSV 1 and 2 infections by risk group. There were no significant regional differences. Study recruitment continues.
Conclusions: A significant proportion of HIV infected subjects in care are co-infected with HSV. This has implications for transmission, treatment and morbidity. Type specific HSV serology should be a standard investigation for all HIV infected individuals to improve their management.

	Risk Group	Number Seropositive	Number Tested	% Positive	95% CI
HSV 1	All Cases	447	572	78.1%	(74.4%, 81.5%)
	MSM	211	277	76.2%	(71.2%, 81.2%)
	Hetero	77	103	74.8%	(66.4%, 83.2%)
	IDU	81	110	73.5%	(65.2%, 81.1%)
	Endemic	68	73	93.2%	(87.4%, 99.0%)
HSV 2	All Cases	314	570	55.1%	(51.0%, 59.2%)
	MSM	122	274	44.5%	(40.5%, 57.3%)
	Hetero	58	103	57.3%	(47.8%, 66.9%)
	IDU	70	110	61.3%	(52.0%, 70.1%)
	Endemic	55	74	74.3%	(64.3%, 84.3%)

P-244 HS2100275 - A 6-MONTH STUDY OF THE EFFICACY AND SAFETY OF VALACICLOVIR 1G ONCE DAILY VS. PLACEBO FOR THE SUPPRESSION OF HSV-2 GENITAL HERPES IN NEWLY DIAGNOSED IMMUNOCOMPETENT SUBJECTS

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Objectives: Primary: To determine the efficacy and safety of valaciclovir 1gram once daily for 6 months vs. placebo for the suppression of genital herpes (GH) recurrences in immunocompetent subjects who are newly diagnosed with HSV-2 (herpes simplex virus type 2) genital herpes.
Methods: This study was conducted at 74 sites in the U.S., Canada, Argentina, Brazil, and Chile. Immunocompetent subjects who were newly diagnosed with HSV-2 genital herpes were randomized to valaciclovir (1 g daily) or placebo in a 2:1 ratio and double-blind treatment was continued for 24 weeks. Efficacy evaluations included GH recurrence information and genital examinations for GH lesion verification. The primary endpoint was time to first recurrence of GH and secondary endpoints were the number of genital recurrences during the six month study and

incidence of adverse events. There was an additional exploratory efficacy endpoint of time to first oral HSV outbreak. Safety evaluations included adverse event (AE) reporting, clinical chemistry (alanine transaminase, creatinine clearance)

Results: The study enrolled 384 subjects; 256 randomized to valaciclovir and 128 to placebo. Time to first recurrence of GH was significantly shorter in the placebo group compared to the valaciclovir group (p<0.001). The median time to first recurrence was 115 days in the placebo group but could not be calculated in the valaciclovir group due to the infrequency of recurrences during the 6 month study period. The estimated Kaplan-Meier survival (no recurrence) rates at 6 months were 43% on placebo and 71% on valaciclovir. The ITT (Intent-to-Treat) analysis demonstrated a 20% difference in the raw proportions of subjects who were recurrence-free and completed the study (32% for the placebo subjects and 52% for valaciclovir subjects). There was a statistically significant difference (p<0.001) in the mean number of genital herpes recurrences per month between placebo (0.48) and valaciclovir (0.11); the annualized mean number of recurrences was 5.8 for placebo subjects and 1.3 for valaciclovir subjects. There was no difference in time to first oral outbreak of herpes (p=0.37). The three most frequently reported AEs were headache (30% placebo, 23% valaciclovir), nasopharyngitis (10% placebo, 14% valaciclovir), and cold sores (6% placebo, 9% valaciclovir).

Conclusions: Daily suppressive valaciclovir treatment prolonged the time to first recurrence of HSV-2 GH in newly diagnosed patients. In addition, valaciclovir suppression reduced the number of genital HSV-2 recurrences per month during a six month period. The tolerability of daily valaciclovir was similar to placebo in this population.

P-245 ANALYZING THE EFFECT OF TWO DIFFERENT CUT-OFF VALUES OF THE FOCUS HSV-2 TEST ON THE RISK FACTORS FOR HSV 2 INFECTION AMONG MARRIED WOMEN IN MYSORE, INDIA

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Objective: Investigate the extent to which prevalence of infection and relationships between HSV-2 infection and selected risk factors change when cut-off values are raised from the manufacturer recommended value of >1.1 to >=3.49 for detection of HSV-2 antibodies using the Focus Herpes Select IgG test in areas of low to moderate prevalence.

Study Design: A cross-sectional analysis was conducted on baseline data from a prospective cohort study of at-risk women, aged 15-30 years, attending a reproductive health clinic in Mysore between October 2005 and December 2006. Epidemiologic data were collected using a structured interviewer-administered questionnaire. Blood and vaginal samples were collected for detection of reproductive tract infections. ELISA test kits (Herpes Select IgG, Focus Technologies, Cypress, CA) were used according to manufacturer's instructions for detection of HSV-2 antibodies. Data were analyzed using two cut-off index values, >1.1 and >=3.49, for detection of HSV-2 antibodies.

Results: Of 903 women, 12.2% were found seropositive for HSV-2 infection (95% Confidence Interval [CI]: 10.1%-14.5%) using a >1.1 cutoff value. The proportion of women classified as seropositive decreased to 9.6% (95% CI: 7.27%-11.1%) using a >=3.49 cutoff value. Six of the 116 (5.17%) had index values of between 0.90 and 1.1, 15 of 116 samples (12.9%) had values greater than 1.1 and less than 2.0, 11 of 116 (9.48%) had index values of between 2.1 and 3.0, and 2 of the 116 (1.72%) had index values between 3.1 and 3.49, 82 of 116 samples (70.7%) had index values of >=3.49. Among the women who tested positive for HSV-2 antibodies, only one woman presented with genital ulcers. With a >1.1 cut-off, years of sexual activity (adjusted odds ratio [aOR], 95% CI: 1.47, 1.01-2.13), less education (2.47, 1.53-3.97), having a partner who was an unskilled laborer (1.76, 1.07-2.90), not having children (3.47, 1.87-6.46), past history of genital ulcer (2.47, 1.28-4.77), cigarette smoking by partner (1.62, 1.02-2.56) and having trichomoniasis (2.85, 1.48-5.49) were independent predictors of HSV-2 infection. Being Muslim by religion (0.19, 0.09-0.40) was protective for HSV-2 infection. With a >=3.49 cut-off, the strength of association changed for several covariates: age, years of education, past history of genital ulcer remained significant but the strength of the association decreased; In contrast, the strength of the relationship between religion, not having children, cigarette smoking by partner, and having trichomoniasis to HSV-2 antibodies, increased.

Conclusions: Raising the manufacturer recommended cutoff value from >1.1 to >=3.49 for detection of HSV-2 antibodies results in decreased prevalence, but does not substantially alter the characteristics associated with HSV-2 infection. Clinicians should consider using a higher index value in areas where a high proportion of women are asymptomatic and there is substantial stigma attached to seropositivity since the cost of falsely identifying someone as HSV-2 infected outweighs the risk of missing positive cases.

P-246 SEXUAL AND SOCIO-DEMOGRAPHIC DETERMINANTS FOR HERPES SIMPLEX VIRUS TYPE 2 AMONG FISHERMEN IN KISUMU DISTRICT, KENYA

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Objectives: To determine seroprevalence and determinants of herpes simplex virus type 2 (HSV-2) among men in the fishing industry along lake Victoria, Kisumu district, Kenya.

Methods: This study was the pre-clinical phase of a larger clinical trial testing the efficacy of a male microbicide among fishermen along Lake Victoria in Kisumu district, Kenya. Two hundred and fifty fishermen were sampled proportionately from 18 beaches. Eligibility criteria included age over 18 years, working in the fishing industry and able to give informed consent. Structured interviews were conducted to gathered information on genital hygiene, migration patterns, sexual behavior and willingness to test a microbicide. Blood specimens were collected for HIV-1, syphilis and HSV serology, genital swabs for Human Papillomavirus while urine specimens were tested for chlamydia and gonorrhea. HSV-2 serology were tested using Kalon HSV type 2 IgG ELISA (Kalon Biological Ltd, Surrey, UK) where sera with index values <0.9 were considered negative, those >1.1 positive, and values 0.9 -1.1 as equivocal. Bivariate and multivariate logistic regression was used to calculate prevalence ratios and 95% confidence intervals for risk factors for seropositivity.

Results: The mean age of the 250 men was 31.3 years (range: 18 ' 63 years) and the majority were married (69.2%), reported no condom use in the last two sexual acts (62.8%), and were not circumcised (92.8%). The overall HSV-2 seroprevalence among the 250 men was 64%. In bivariant analysis men who were HIV seropositivity PR = 1.26 (95% CI, 1.03 - 1.53), aged 26-30 years PR = 1.56 (95% CI, 1.18 - 2.04), or >40 years PR = 1.6 (95% CI, 1.19 - 2.14), were separated or divorced PR = 1.51 (95% CI, 1.36 - 1.68) and circumcised PR = 1.37 (95% CI, 1.07 - 1.76) were more likely to be HSV-2 seropositive. Those who were single PR = 0.54 (95% CI, 0.39 ' 0.77) or had sex with a wife/regular partner in the last two sexual acts PR = 0.66 (95% CI, 0.49 ' 0.90) were less likely to be HSV-2 seropositive.

Evaluating sexual activity in the last two most recent sexual partners, men who reported condom use at least once showed a trend towards reduced likelihood to test HSV-2 positive PR = 0.81 (95% CI, 0.62 ' 1.06). In multivariate analyses, men aged 26-30 years old PR = 1.43 (95% CI, 1.04 - 1.97), those separated or divorced PR = 1.76 (95% CI, 1.15 - 2.70) and men who were circumcised PR = 1.46 (95% CI, 1.11 - 2.00) were independently more likely to test HSV-2 seropositive.
Conclusions: The prevalence of HSV-2 infection is high among this population and associated with HIV serostatus, age group, circumcision and marital status. This community could benefit from enhanced STI/HIV prevention interventions including condom uptake.

P-247 ONCE DAILY VALACYCLOVIR FOR REDUCING VIRAL SHEDDING IN HSV-2 SEROPOSITIVE SUBJECTS NEWLY DIAGNOSED WITH GENITAL HERPES

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Objectives: Genital herpes (GH) recurrences and viral shedding are more frequent in the first year after initial HSV-2 infection. Although most contagious during visible outbreaks, asymptomatic viral shedding is considered the primary means of transmitting HSV infection to sexual partners. The objective of this study was to provide the first evaluation of the efficacy of valacyclovir 1g once daily compared to placebo in reducing viral shedding in immunocompetent subjects newly diagnosed with GH.
Methods: 70 subjects were randomized to receive valacyclovir 1g daily or placebo in a cross-over design for 60 days with a 7 day wash-out period. A daily swab of the genital/anal-rectal area was self-collected for HSV-2 detection by PCR. Subjects attended the clinic for routine study visits and GH recurrence visits. Treatment differences were assessed using a non-parametric cross-over analysis.
Results: Of the 70 subjects randomized, 20 (29%) prematurely withdrew from the study (11 while receiving valacyclovir, 9 while receiving placebo). The primary reason for withdrawal was 'lost to follow up'. Fifty-two subjects with at least one PCR measurement in both treatment periods comprised the primary efficacy population. Valacyclovir significantly reduced HSV-2 shedding during all days compared to placebo [mean 2.9% vs. 13.5% of all days ($p<0.001$), a 78% reduction]. Valacyclovir significantly reduced subclinical HSV-2 shedding during all days compared to placebo [mean 2.4% vs. 11.0% of all days ($p<0.001$), a 78% reduction]. Sixty percent (60%) of subjects had no viral shedding while receiving valacyclovir compared to 29% of subjects on placebo ($p<0.001$). Seventy-nine percent (79%) of subjects had no GH recurrences while receiving valacyclovir compared to 52% of subjects receiving placebo ($p<0.01$). Valacyclovir was not associated with any significant safety risk compared to placebo.
Conclusions: Individuals newly diagnosed with HSV-2 infection shed virus and thus are at risk for transmitting infection. In this study of subjects newly diagnosed with HSV-2 infection, the frequency of total and subclinical HSV-2 shedding was greater than reported in earlier studies involving subjects with a history of symptomatic genital recurrences. Our study is the first to demonstrate a significant reduction in viral shedding over 60 days with valacyclovir 1g daily compared to placebo in a population of subjects newly diagnosed with HSV-2 infection. Valacyclovir was generally well tolerated in this population. Submitted on behalf of the VLX105832 study team.

P-248 A COMPARISON OF RESOURCE EXPENDITURE (NURSING TIME) REQUIRED BY HERPES SIMPLEX VIRUS (HSV) CLIENTS VERSUS NON-HSV CLIENTS AT A STI CLINIC

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Objective: To determine the relative time demands of clients presenting with HSV related concerns versus clients presenting with non-HSV related concerns in a provincial Sexually Transmitted Infection (STI) clinic. The hypothesis was that clients presenting with HSV related concerns require more nursing time than clients with non-HSV concerns.
Methods: Using a standardized, pilot tested form, Information was collected by nursing staff for each nursing encounter with a client who either entered the clinic for care or who phoned the clinic for STI information (Epid phone line) between 19 Dec 2005 ' 31 January 2006. Information gathered included the main reason for the clinic visit or phone call, whether the client was currently experiencing symptoms of a STI, whether they were a contact to someone who had a STI, what type of services they received from the nursing staff and the total amount of time the nurse spent with each client. Clients were separated into two groups: 1) clients presenting with HSV related concerns and 2) clients presenting with concerns related to a non-HSV STI. These groups were further divided into clients seen at the STI clinic or those who received counselling, follow-up care, education, or referral services over the phone through the Epid phone line. A Wilcoxon's Rank Sum test was conducted to detect a difference, if any, in the means between groups. Pearson's Chi Square tests were used to compare categorical demographic characteristics between HSV clients and non-HSV clients. Mean and standard deviations (SD) were calculated for normally distributed continuous demographic data (i.e. age) and a student's t-test was used to detect a difference, if any, between groups.
Results: A total of 3573 clients were included in this analysis (992 clinic patients; 2581 Epid patients). Overall, 302 (8%) were designated to the HSV group (163 Clinic; 139 Epid) and 3270 (92%) were designated to the non-HSV group (829 Clinic; 2442 Epid). Overall, the median number of minutes spent per encounter in the HSV group was 20 (range: 1 ' 100 min.). This is significantly different than the median of 5 minutes (range: 1-140 min.) in the non-HSV group ($p= <.001$). The same analysis was conducted separating out the clinic and Epid encounters. Among the clinic visits, the median number of minutes spent per encounter in the HSV group was 50 (range: 7 ' 100 min.) compared to a median of 30 minutes (range: 3-140 min.) in the non-HSV group ($p= <.001$). Similarly, among the Epid encounters, the median number of minutes spent per encounter in the HSV group was 6 (range: 1 ' 25 min.) compared to a median of 3 minutes (range: 1-55 min.) in the non-HSV group ($p= <.001$).
Conclusions: Clients receiving nursing care either through the STD clinic or through telephone consultation consumed 1.6-2 times more nursing time if they had a HSV related concern. This effect was noted in both Clinic visits and Epid visits.

P-249 SEROPREVALENCE HSV-2 IN NOVOSIBIRSK, RUSSIA

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Objectives: Herpes simplex virus type 2 (HSV-2) is a common sexually transmitted infection worldwide, and its prevalence has increased significantly over the last two decades in many developed countries. The prevalence rates of HSV-2 infection differ between populations, however, HSV-2 seropositivity is uniformly higher in women than in men and increases with age. Epidemiology of HSV-2 in Russia is largely unknown. Aim of the study was to evaluate seroprevalence of HSV-2 infection in Novosibirsk, Russia.

Methods: A sample of 256 adults aged 30-70 years (mean age, 53.9 years, 71% males) were randomly selected from the general population. Sera were tested for IgG antibodies to HSV-2 with ELISA (VectoHSV-2 IgG, Vector-Best, Novosibirsk, Russia).
Results: The overall prevalence of HSV-2 positivity was 20.3% being higher in females (28.4%) compared to males (17.0%, p = 0.04). Seroprevalence increased with age from 11.5% at 30-50 years to 22.0% at 51-60 years and 20.9% at 61-70 years. The male: female ratio was 1.7 that is consistent with other studies (in Europe this ratio ranged from 1.3 in France to 1.9 in Switzerland, being 1.4 in the USA).
Conclusion: HSV-2 is common in Russia with the prevalence rates close to USA and Scandinavian countries. The sex and age distribution of the infection in Russia is similar to other populations.

P-250 HERPES SIMPLEX VIRUS 2 INFECTION AMONG YOUNG UNCIRCUMCISED MEN IN KISUMU, KENYA

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Objectives: Studies in Mwanza and Rakai estimate that genital infection with herpes simplex virus type 2 (HSV-2) may account for a considerable attributable proportion of HIV infections. Preventing HSV-2 infection may have a significant impact on HIV infection. This analysis sought to identify factors associated with HSV-2 among young uncircumcised men in Kisumu, Kenya.
Methods: We analyzed baseline data from a randomized trial of the impact of male circumcision on risk for HIV acquisition in 18-24 year-old men. Participants were interviewed for socio-demographic and behavioral risks. Infection with HSV-2 was determined by antibody status (Kalon HSV-2 IgG ELISA, Kalon Biological Limited, Aldershot, United Kingdom). The outcome for multivariable logistic regression analysis was infection with HSV-2 by antibody status.
Results: Among 2,784 men enrolled in the trial, 2,771 (99.5%) men had HSV-2 laboratory results and baseline behavioral and demographic data available for analysis. Of these 2,771 men, 767 (27.7%; 95% confidence interval [CI]: 26.0 ' 29.3%) tested positive for HSV-2 antibodies. The median age at first sex was 16 years, the median number of lifetime sexual partners was 4, and the median number of years sexually active was 5. HSV-2 seroprevalence increased from 19% among 18 year-olds to 43% among 24 year-olds (p<0.001). In multivariable analysis, statistically significant risks for infection were: increasing age (adjusted odds ratio [AOR]=1.11; 95% CI: 1.05-1.17), being married or having a live-in female partner (AOR=1.79; 95% CI: 1.27 ' 2.51), preferring 'dry' sex (AOR=1.38; 95% CI: 1.14 '1.69), penile cuts or abrasions during sex (AOR=1.59; 95% CI: 1.32 ' 1.91), increasing number of lifetime sex partners, and non-student occupation. Risk decreased with condom used at last sex (AOR=0.82; 95% CI: 0.68-0.99).
Conclusion: This analysis identified modifiable behaviors for HSV-2 prevention. HSV-2 prevention efforts should be initiated at an early age, prior to first sex. Further study should evaluate the effectiveness of education and behavioral intervention in preventing HSV-2 transmission among men already infected. The behavioral interventions used currently for HIV prevention ' abstinence, reducing number of sex partners, and condom use ' should be effective for HSV-2 prevention.

P-251 DETECTION OF HERPES SIMPLEX VIRUS TYPE 2 INFECTION IN COMMERCIAL SEX WORKERS FROM KUNMING, YUNNAN PROVINCE OF CHINA

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Objective: Herpes simplex virus type 2 (HSV-2) infection is a risk factor for HIV acquisition and transmission; however, epidemiology and test characteristics data on HSV-2 are limited among high-risk groups in Asia. This study determined sociodemographic correlates of HSV-2 infection and diagnostic performance of commercially available HSV-2 antibody assays among commercial sex workers (CWS) in Kunming, Yunnan Province of China.
Methods: Sociodemographic information and serological samples were obtained from 500 CSWs with informed consent. Glycoprotein G-based HSV-2 infection was tested by Focus and Kalon enzyme-linked immunosorbent assay and Biokit rapid assay. All positive results (n=275) by at least one assay were further tested by Western blotting (WB).
Results: HSV-2 seroprevalence were 36.8% determined by Focus, 33.8% by Kalon, and 46.6% by Biokit. The proportion of total positivity and negativity by all three tests were 26.8% (n=134) and 45.0% (n=225) with 28.2% (n=141) discordant positive results. Taking into account the sampling strategy including all seropositive results by at least one antibody assay for WB, HSV-2 prevalence was 33.0% (95% CI: 28.89, 37.31). Estimated sensitivities with consideration for verification bias, Focus, Kalon and Biokit showed 86.7%, 82.3%, and 34.9% respectively, while the specificities were 91.8%, 94.2%, and 60.1% compared to WB. Focus demonstrated 88.0% concordance to WB results, while Kalon and Biokit showed 89.9% and 55.6%. In a multivariate analysis, being a female (OR=5.34, P≤0.001) and having a sex partner last year (OR=1.66, P=0.04) are associated with HSV-2 infection.
Conclusions: There were a significant proportion of females CSWs who had HSV-2 infection. Kalon detected lowest number of false positive which showed strongest concordance to WB, followed by Focus, then Biokit. Risk factors related to HSV-2 infection and serology performance should be further investigated in developing regions to monitor the transmission of virus among high-risk populations.

P-252 SEROPREVALENCE OF AND RISK FACTORS FOR HERPES SIMPLEX VIRUS TYPES 1 AND 2 INFECTION IN A COHORT IN JAPAN

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Objectives: Few published data describe seroprevalence of herpes simplex virus type 1 (HSV-1) and 2 (HSV-2) among Japanese populations and there are no reports on sex- and age- specific seroprevalence. The present study documents HSV-1 and HSV-2 seroprevalence and information on background factors associated with seropositivity in a representative sample of Japanese population.
Methods: A population-based prospective cohort has been set up in the southern part of Japan. We randomly selected 1,228 subjects (565 men and 663 women) aged 18-59 years who participated in a survey in 2002 and who provided blood samples. Serum samples were measured by ELISA with the HSV type-specific antigens glycoproteins G1 and G2. Sex- and age- specific seroprevalences of HSV-1 and HSV-2 were calculated, and associations between seropositivity and background factors (marital status, smoking and alcohol intake) were examined.
Results: HSV-1 seroprevalence increased with age and peaked in both genders at 50-59 years, reaching 71.0% in men and 79.0% in women. HSV-2 seroprevalence also increased with age but non-significantly, reaching 8.5% and 11.0% respectively among men and women at 50-59 years (see figure). Risk of HSV-1 was

3-fold higher in men and almost 2-fold higher in women if infected with HSV-2. While alcohol intake were positively related with HSV-1 infection with a dose-response in men (p for trend = 0.05), smoking showed a negative relationship with HSV-1 (P for trend = 0.02). However, in women, neither smoking nor alcohol intake has impact on HSV-1 infection. For HSV-2 infection, smoking was associated with an increased risk with a dose-response among both men (p for trend = 0.008) and women (p for trend = 0.008). Marital status was not associated with either HSV-1 or HSV-2 seropositivity.

Conclusion: The extent of HSV-1 and HSV-2 infections by age and gender are similar to levels in some European countries. The increase of HSV-1 and HSV-2 seroprevalence with age in both genders and the correlation of HSV-1 and HSV-2 infection are consistent with reports from western countries. The association of HSV-1 or HSV-2 with smoking or alcohol intake may suggest a relationship between lifestyle factors and HSV infection. The findings of the present study add to the paucity of data on herpes infection in Japan.

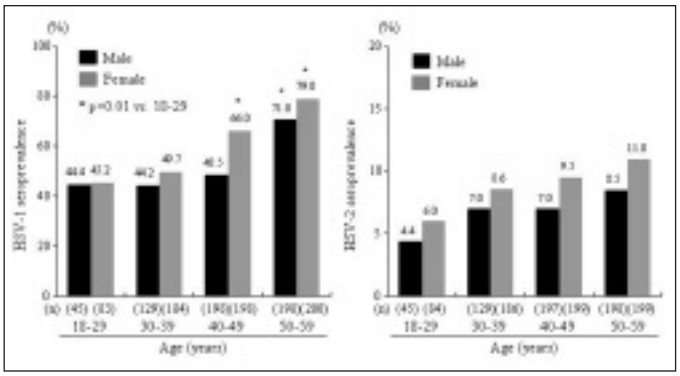

Figure 1: Seroprevalence of HSV-1 and HSV-2

P-253 THE EFFECT OF CO-INFECTIONS ON THE PERFORMANCE OF THREE COMMERCIALLY AVAILABLE IMMUNOSORBENT ASSAYS FOR HSV-2 ANTIBODY IN MEN ATTENDING BALTIMORE CITY STD CLINICS

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Objectives: To determine the effect of STD co-infections on the performance of three commercially available immunosorbent gG-2 glycoprotein-based assays to detect antibodies against HSV-2 among men attending STD clinics in Baltimore City.
Methods: Two hundred eighty sera samples from men attending Baltimore City STD clinics were tested for HSV-2 antibodies using the Focus ELISA, Kalon ELISA, and Biokit rapid assay. All assays were performed and interpreted according to the respective manufacturer's package inserts. Biokit results showing indiscernible or faint coloration were considered indeterminate. Sera with a positive or indeterminate HSV-2 result by any assay were tested for HSV-1 and HSV-2 by Western blotting (WB). Sensitivity, specificity, PPV, and Kappa concordance estimates, corrected for verification bias, were calculated for each HSV-2 immunoassay using WB as the gold standard. Urine samples from study subjects were tested for C. trachomatis, N. gonorrhoeae, T. vaginalis, and M. genitalium while sera samples were tested for HIV-1 and hepatitis C virus. Multiple logistic regression was used to determine associations between these STDs and HSV-2 assay result.
Results: Subjects were predominately heterosexual (95%) and African-American (97%). Ninety-one (32.5%) samples were HSV-2 positive, as confirmed by WB, and 181 (65.7%) were negative. The odds of a sample having a Biokit indeterminate result, compared to a definitive positive or negative, were 3.57 times greater for subjects co-infected with N. gonorrhoeae, after controlling for other STDs (p=0.002, 95%CI (1.58, 8.02)). N. gonorrhoeae infection had no association with the Kalon or Focus results. No other concurrent infections had any impact on the results of the three HSV-2 assays. Compared to WB, Focus showed 82.6% sensitivity, 97.1% specificity, 94.6% PPV, and 84.0% Kappa concordance. Kalon showed 90.8% sensitivity, 99.4% specificity, 98.9% PPV, and 94.6% Kappa concordance. If indeterminate Biokit results were considered negative, its sensitivity was 48.1% with 94.6% specificity, 90.9% PPV, and 54.7% Kappa concordance. When Biokit indeterminate results were considered positive, sensitivity was 64.9% with 71.4% specificity, 69.8% PPV, and 69.8% Kappa concordance. However, when only definitive Biokit results were used to evaluate performance the sensitivity of the assay was 59.0% with 93.3% specificity, 90.9% PPV, and 29.6% Kappa concordance.
Conclusions: There was a significant association between N. gonorrhoeae infection and Biokit indeterminate results, suggesting potential serological cross-reactions. Indeterminate Biokit results should be tested by a subsequent assay for confirmation of the true result. The Kalon assay showed the strongest agreement with WB in this high prevalence population.

P-254 AWARENESS AND PREVALENCE OF HERPES SIMPLEX VIRUS IN A PRIMARY CARE PRACTICE

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Objectives: Herpes Simplex Virus (HSV) is one of the most common STDs with reportedly 60 million people infected in the United States and the majority are unaware they are infected. This study will determine the prevalence rate of HSV in a large Southeastern metropolitan urban primary care practice.
Methods: Participants who were sexually active in the past year and 18 years or older were tested for HSV-2 using type-specific serology. The sample included 185 participants who presented to a primary care practice. Demographic information and a sexual history were obtained from all participants. Participants were tested for HSV-2 antibodies and a history of prior HSV infection and testing were obtained.
Results: Mean age was 35.0 years: 89.3% were African-American and 62.2% were female. Overall prevalence of HSV-2 among participants was 49.3%, with women having a rate of 54.8% compared to men at 41.4%, p = .08. Older participants (>40) were more likely than others to be infected (71.7% vs 39.2%, p <.001). Only 1.6% of participants reported they had previously been told they had 'herpes,' and 17.9% reported they had been previously tested. Only 4.4% reported their partners had been told they had herpes; 92.3% reported their partners had not been told. Self-reported partner status was not related to test result or self-report of participant status. In addition, (89%) participants had been tested for HIV in the past 5 years.
Conclusions: Given this high-prevalence sample who were almost completely unaware of their status, it is important to test for HSV-2 and make people aware of results. Although most STD prevention programs typically target younger people, primary and secondary prevention education can be valuable for older persons, especially with respect to HSV. Routine HSV screening may benefit high-prevalence communities.

P-255 ONE-DAY REGIMEN OF VALACYCLOVIR FOR TREATMENT OF RECURRENT GENITAL HERPES SIMPLEX VIRUS 2 INFECTION

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Objectives: To assess the efficacy and safety of a 1-day course of valacyclovir in reducing the duration and severity of genital herpes recurrences, and to measure the frequency of viral shedding episodes subsequent to episodic therapy.
Methods: In an open-label pilot study, patients with recurrent genital herpes simplex virus 2 (HSV-2) infection were given a 1-day course of valacyclovir (1000 mg given by mouth b.i.d.) to be taken at the first sign of recurrence or prodrome. Participants maintained diaries of signs and symptoms and collected genital swabs for viral culture for the duration of lesions, and HSV DNA PCR for 14 days after initiating treatment.
Results: Ninety-one (79%; 42 men, 49 women) of the 115 persons enrolled in the study experienced either a lesional recurrence or prodrome. Seventy-seven (87%) study participants developed lesions; viral shedding was detected in 31 persons by PCR only and 29 persons by PCR and culture. The median lesion duration, defined as the number of days between initiation of therapy and the complete re-epithelialization of all lesions, was 5 days. The median episode duration, defined as the number of days between initiation of therapy and the resolution of all signs and symptoms, was 5 days. The median pain duration was 3 days. Four (5%) patients experienced a second lesional recurrence during the fourteen-day study period. Among patients who experienced at least one shedding episode, shedding detected by PCR lasted for a median of 3 days and shedding detected by culture lasted for a median of 2 days. Sixteen (27%) of these patients had an additional shedding episode after their initial lesion healed, lasting a median of 2 (range, 1-5) days. Forty-eight percent of patients reported at least one adverse event including headache (18% of participants), nausea (7%), and fatigue (3%).
Conclusions: A 1-day course of valacyclovir was generally well-tolerated and led to a reduction in the duration and severity of genital herpes recurrences compared with historical placebo-treated persons. Further studies are needed to evaluate if 1-day therapy is associated with higher rates of subsequent reactivation than longer courses.

P-256 THREE PHASE III RANDOMIZED CONTROLLED TRIALS OF TOPICAL RESIQUIMOD 0.01% GEL TO PREVENT GENITAL HERPES RECURRENCES

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Objectives: Resiquimod (R-848), an investigational toll-like receptor 7 and 8 agonist, stimulates production of cytokines that promote an antigen-specific T helper type 1 acquired immune response. In a guinea pig model of genital herpes, subcutaneous resiquimod reduced recurrent lesion days both during treatment and after treatment discontinuation (Bernstein JID 2001). In phase II studies, topical resiquimod reduced time to first genital herpes recurrence (Spruance JID 2001), and decreased lesion and HSV shedding rates (Mark JID 2007), compared with vehicle.
Methods: Three phase III randomized, double-blind, vehicle-controlled studies of topical resiquimod to reduce recurrences were conducted in healthy adults with ≥ 4 genital herpes recurrences within the prior year, or if on suppressive therapy, in the year prior to initiating suppression. Participants applied resiquimod 0.01% or vehicle gel 2 times per week for 3 weeks to each recurrence for 12 months. Recurrences were assessed by participant diary and clinic visit. One study in Europe and one in the United States had 2:1 randomization for resiquimod versus vehicle. A study in the United States and Canada (US/CA) had 1:1:1 randomization for resiquimod plus valacyclovir 500 mg orally BID for 5 days (RESI/VAL), resiquimod plus oral placebo (RESI/PLA), and vehicle plus oral placebo (VEH/PLA). Analyses are intention-to-treat.
Results: 255, 246, and 317 participants were randomized in the European, US, and US/CA studies, respectively. Median time to first participant-reported recurrence was similar for resiquimod and vehicle [European 60 and 56 days, respectively, $p = 0.7$; US 54 and 48 days, respectively, $p = 0.47$; US/CA 51 (RESI/VAL), 55 (RESI/PLA), and 44 (VEH/PLA) days, RESI/VAL versus VEH/PLA, $p = 0.62$, RESI/PLA versus VEH/PLA, $p = 0.42$]. Median annualized recurrence rates were also similar for resiquimod and vehicle [European 3.6 versus 3.9 respectively, $p = 0.3$; US 3.9 for both groups, $p = 0.38$; US/CA 4.1 (RESI/VAL), 4.5 (RESI/PLA), and 4.6 (VEH/PLA), $p = 0.85$]. Median time to healing of the initial treated recurrence was longer for resiquimod than vehicle [European 18 versus 10 days, $p < 0.001$; US 19 versus 13 days, $p = 0.16$; US/CA 14 (RESI/VAL), 16 (RESI/PLA), and 8 (VEH/PLA) days, $p < 0.001$]. In the European and US studies, investigator-assessed moderate to severe erythema (European 57% versus 41% $p = 0.017$; US 47% versus 32%, $p = 0.006$) and erosion/ulceration (European 47% versus 34%, $p = 0.007$; US 28% versus 20%, $p = 0.003$) at the site of drug application during initial treatment cycle were more common in resiquimod than vehicle recipients. Subgroup analyses by gender did not show any difference in time to first recurrence or annualized recurrence rates between treatment groups.
Conclusions: These studies fail to show post-treatment efficacy of resiquimod in delaying or reducing subsequent genital herpes recurrences. An increase in time to healing of the initial recurrence, only partially ameliorated with valacyclovir, and local skin signs at the site of resiquimod application are consistent with pro-inflamatory effects of resiquimod-induced cytokines. Reasons for differing results between these larger trials and smaller proof-of-concept studies need to be explored.

P-257 ARE FOCUS HERPESELECT 2 ELISA IGG LOW-POSITIVE/EQUIVOCAL INDEX VALUES A REFLECTION OF HSV-1 POSITIVE SEROSTATUS IN HIGH RISK POPULATIONS

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Objectives: To determine if low index value HSV-2 seropositive results are a reflection of HSV-1 positive serostatus in samples collected from at-risk populations in India, Russia, Peru, China, and Zimbabwe.
Methods: The Focus HerpeSelect_ 2 ELISA IgG and the Focus HerpeSelect_ 1 ELISA IgG tests are intended for qualitatively detecting the presence of human IgG antibodies to HSV-2 and HSV-1 respectively, in human sera. The index value cut-off of >1.1 indicates a positive test, and <0.9 indicates a negative test for both HSV-1 and HSV-2. An index value >1.1 has been shown to increase the number of false positives in developing countries. A previous study of sera taken from persons in 7 countries found variations in the performance of the Focus HSV-2 ELISA. PPV improved when the index cutoff value used to define positivity was increased. Another study suggested that use of a higher index value better defined Focus

ELISA HSV-2 positivity, when HSV-1 serostatus was positive or clinical findings were present. The JHU International STD Reference Laboratory, Baltimore, MD, received 1600 serum samples from at-risk men and women in India, Russia, Peru, China, and Zimbabwe. Samples were collected at three time points of 12-month intervals. All 1600 samples were tested using the Focus HerpeSelect 2 kit to determine their HSV-2 serostatus. Index values >1.1 were considered positive for HSV-2; index values of 0.9 -1.1 were considered equivocal, and index values <0.9 were considered negative for HSV-2. After HSV-2 testing was completed, all index values were defined as follows: HSV-2 low positive/equivocal (index value 0.900-3.499), high positive (index values ≥3.5), and negative (index value <0.9). From these samples, 515 were selected: HSV-2 low positive/equivocal first, followed by equal numbers of randomly selected negative and high positive samples. All 515 samples were tested in duplicate for HSV-1 using the Focus HerpeSelect 1 kit.

Results: Analysis of the 1600 HSV-2 results showed multiple seroreversion/seroconversion changes in serostatus from baseline samples to follow up samples, suggesting possible false positive results in the low positive/equivocal index value range. Analysis of HSV-2 serostatus and index values of the 515 random samples were as follows: 215 (41.7%) were HSV-2 low positive/equivocal with index values >0.9 and < 3.5, 150 (29.1%) were HSV-2 negative with index values of <0.9, and 150 (29.1%) were HSV-2 high positive with index values ≥3.5. Of the 515 samples tested for HSV-1, 471 (91.4%) were positive, 42 (8.2%) were negative, and 2 samples were equivocal. Of the 471 HSV-1 positives, 191 (40.6%) were HSV-2 low positive/equivocal, 141 (29.9%) were HSV-2 high positive, and 139 (29.5%) were HSV-2 negative. Of the 42 HSV-1 negatives, 22 (52.4%) were HSV-2 low positive/equivocal (> 0.9 and <3.5), 9 (21.4%) were HSV-2 high positive (> 3.5), while 11 (26.2%) were HSV-2 negative [p= 0.18].

Conclusions: Our findings demonstrated no relationship between HSV-2 index value and HSV-1 positive serostatus in predicting HSV-2 low positive/equivocal serostatus in high HSV-1 prevalence populations. prizzo1@jhmi.edu

P-258 SEQUENCE VARIATION IN HSV-2 GLYCOPROTEIN G-2 IN UGANDAN SAMPLES COMPARED TO WESTERN EUROPE

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Objectives: Little is known about the genetic variation of glycoprotein G (gG-2) gene in herpes simplex virus 2 (HSV-2) in Sub Saharan Africa. Glycoprotein G is highly conserved in Western Europe and serves as a type-specific protein that is used in antibody testing. Serology assays perform poorly in sub-Saharan Africa compared to the United States and Western Europe, where these assays are manufactured. Variation in the gG-2 sequence may account for the decrease in specificity in samples from sub-Saharan Africa. The objective of this study is to determine if a genetic difference exists in the gG-2 gene of HSV-2 when comparing Ugandan samples with previously published data from Western Europe.

Methods: Swabs from genital ulcers were obtained from the Rakai Community Cohort Study (RCCS) in Uganda. DNA was extracted using a Qiagen DNA extraction kit. Samples were amplified with multiple primer sets covering the entire gG-2 region (nt 137878 to 139977). Sequences were analyzed using BioEdit. Genetic variation was based on a strict Hamming distance. Sequence analysis was performed on a portion of the gG-2 gene, spanning the immunodominant region (nt 139696 to 139977 of HG52 accession # Z86099), comparing 15 clinical isolates from Sweden (Liljeqvist J. Clin. Micro 2000), and lab strains B4327UR and 333 to the Ugandan samples. Additionally, strain G was used as a positive control in the PCR amplifications and also used for comparison

Results: All lab strains varied less than 0.5% from each other and from the clinical samples from Sweden. For the immunodominant region the median variation of Swedish clinical samples was 0% (IQR 0% to 0.4%). The median variation between Rakai samples and sequences from Swedish isolates or lab strains was 3.6%. The Two Rakai sequences differed by 6.5% from each other.

Conclusions: Based on preliminary sequence data, the HSV-2 sequences of the gG gene of HSV-2 from clinical isolates from Rakai Uganda demonstrate a remarkable variation compared to that seen in Swedish isolates. This preliminary data supports the notion that the genetic variation of HSV-2 may contribute to the discordance in performance by serologic tests to determine HSV-2 infection in sub Saharan Africa.

P-259 POPULATION PREVALENCE AND RISK PROFILE OF HERPES SIMPLEX VIRUS-2 IN INDIA: HSV-2 AS A BIOMARKER FOR HIGH RISK SEXUAL BEHAVIOR

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Objectives: In the predominantly heterosexual HIV epidemic in India, determining the biological co-factors and the underlying sexual risk behaviors at the level of the population is critical for effective HIV prevention. HSV2 infection has been shown to be an important risk factor for HIV transmission and a potential population biomarker for cumulative sexual risk. It is unclear whether worldwide reported correlates of HSV2 apply to the general population in India. To fill this knowledge gap, we conducted a general population survey to determine the seroprevalence of HSV2 and the factors associated with HSV2 seropositivity in India.

Methods: In 2006, 2, 765 adults (18+) were surveyed in the pilot studies of the Sample Registration System Health Check Up study, a nation wide prospective study designed to determine the correlates of diseases in India. Participants were recruited from rural and urban areas in 3 states (Chandigarh, Andra Pradesh and Karanataka) across India. Socio-demographic, basic medical, sexual risk behavior and dried blood spot (DBS) samples were collected. DBS samples were tested for HIV (Tridot-J Mitra and InnoLia Microelisa), HSV2 (Focus HerpesSelect-2 type specific ELISA), and Syphilis (Trepanostika EIA).

Results: The overall seroprevalence of HSV2 in our population was 10.1 %. HSV2 levels were higher in the southern state of Andra Pradesh (17.8%) compared to Karnataka (5.8%) and Chandigarh (7.5%) but did not significantly differ between urban and rural areas. HSV2 seroprevalence was higher among women (11.3%) than men (8.9%) (OR=1.3; 95%CI: 0.99 - 1.71). For both men and women, HSV2 seroprevalence significantly increased with increasing age (Trend p value <0.001). For women, age-adjusted HSV2 strongly associated with lower levels of education, occupation, alcohol use, ever being married, early sexual debut and sex with a non-regular partner in the last year. For men, age-adjusted HSV2 associated with having had sex with a man during the last year. We did not see an association between HSV2 and reported number of lifetime sexual partners of men (p=0.881) or women (p=0.873). HSV2 associated with being positive for Syphilis and HIV. 3.7% of men and 1.9% of women who reported never having sex were HSV2 positive.

Conclusion: Our study is one of the few that documents the profile of HSV2 within the Indian general population. Other than age, we found risk factors associated with HSV2 to differ between men and women. Our findings also suggest that conventional questionnaire based methods to asses sexual behavior are not reliable and pre-empt the need for using biological correlates, such as HSV2, of sexual risk at the population level.

P-260 HERPES 2 VIRUS SEROPOSITIVITY AMONG WOMEN IN NORTH AND SOUTH VIETNAM: A POPULATION-BASED STUDY

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Objective: Herpes simplex virus type'2 (HSV-2) may increase risk of acquiring human immunodeficiency virus (HIV) and may act as a cofactor with HPV infection to increase cervical cancer risk. As part of an international survey conducted by the International Agency for Research on Cancer, we analyzed the prevalence and risk factors for HSV-2 seropositivity among women in a peri-urban district of Hanoi (North Vietnam) and the urban district of Ho Chi Minh City (HCMC, South Vietnam).
Methods: Population-based samples of married women aged 15-69 years were interviewed and underwent gynecological examinations. Type-specific plasma IgG antibodies against HSV-2 were detected using an HSV-2 ELISA assay (Focus Technologies). Adjusted prevalence ratios (mPR) were estimated with log-binomial regression models including age and variables with the strongest associations with HSV-2 seropositivity in age-adjusted analyses.
Results: HSV-2 seroprevalence was much lower in the 1,170 women in Hanoi (9.2%, median age 43 years) than in the 1,106 women in HCMC (34.4%, median age 41 years). HSV-2 prevalence increased with age in both groups. The trend was moderate and somewhat inconsistent in Hanoi but pronounced in HCMC, where HSV-2 prevalence increased from 15.7% below age 25 years to ~50% above age 55. HSV-2 seroprevalence was higher for divorced women (age-adjusted PR [aaPR] 1.6: 95% CI 0.8-3.4 in Hanoi, 1.3: 1.0-1.7 in HCMC) and widows (aaPR 1.2: 0.7-2.1 in Hanoi, 1.5: 1.2-1.8 in HCMC). HSV-2 prevalence in HCMC was inversely associated with educational attainment, age at first intercourse, and age at first pregnancy (aaPR 0.7: 0.6-0.9 for >21 years). HSV-2 was higher for women from HCMC who reported being nulliparous, currently using hormonal contraceptives, and having had a spontaneous (aaPR 1.1: 1.0-1.4) but not an induced abortion. HSV-2 seroprevalence in HCMC was higher among women reporting more than one sexual partner (aaPR 1.3: 1.0-1.7) and HPV DNA positive women (aaPR 1.4: 1.2-1.7). In the multiple log-binomial regression model, the trend of increasing HSV-2 seroprevalence with age was weaker in both areas, although still clearly present in HCMC. Multivariate-adjusted prevalence ratios for HCMC were nearly identical to the age-adjusted PR for marital status (1.3 for divorced, 1.4 for widowed), age at first pregnancy (0.8: 0.6-1.0 for age >21), and HPV seropositivity (mPR 1.4), although weaker for having had more than one sex partner (1.1: 0.9-1.4).
Conclusion: HSV-2 was notably more prevalent in surveyed women from HCMC, South Vietnam, than in women from Hanoi (North Vietnam). In HCMC, HSV-2 was associated with traditional HSV-2 risk factors, although associations were largely absent in Hanoi where HSV-2 seroprevalence was generally low. Monitoring HSV-2 seroprevalence in Vietnam will be important, particularly in the North, as globalization proceeds. These findings are consistent with the pattern observed for other STIs (e.g. HPV) and are likely due to socio-cultural and sexual behavior differences between the two study areas.

P-261 RELATIONSHIP BETWEEN SEXUAL PREFERENCE AND SITE OF HERPES SIMPLEX VIRUS REACTIVATION IN MEN

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Objectives: The frequency and anatomic sites of herpes simplex virus (HSV) reactivation among men as measured by frequent polymerase chain reaction (PCR) testing of mucosal samples are not well characterized. Our goal was to define the natural history of HSV mucosal shedding in a cohort of HSV-2 seropositive men with and without HIV infection.
Methods: We followed a cohort of HSV-2 seropositive men who collected oral, penile and perianal swabs daily for HSV detection by quantitative PCR and recorded genital signs and symptoms. Potential risk factors for increased rate of HSV shedding and for lesions (HIV status, sexual preference, age, HSV-1 infection, history of genital herpes, race) were examined using Poisson regression, providing adjusted incidence rate ratios (aIRRs). Among those with detectable HSV shedding, potential differences in log10 copies per mL of HSV DNA were assessed by the Kruskal-Wallis test.
Results: 149 men were enrolled at the Virology Research Clinic in Seattle. 23% were HIV-negative heterosexual, 32% were HIV-negative men who have sex with men (MSM), and 45% HIV-positive MSM. Among HIV-positive MSM, 49% were taking highly active antiretroviral therapy (HAART). 8533 total days of perianal swabs, 8150 days of penile swabs, and 8142 days of oral swabs were collected. HSV was detected in the perianal area significantly more frequently among HIV-negative MSM than HIV-negative heterosexual men (9.5% vs. 3.2% of days; aIRR 3.4 (95% CI: 1.8-6.3), p<.001). Conversely, HIV-negative heterosexual men may have HSV DNA detected from penile samples more frequently than HIV-negative MSM (9.6% vs. 5.2% of days; p=.19). HIV-seropositive MSM also shed more HSV (20.2% vs. 5.2% of days; aIRR 6.3 (95% CI: 3.7-10.6), p<.001) in the perianal area than HIV-negative heterosexuals, but rates of HSV shedding from penile skin were similar (8.8% vs. 9.6% of days; p=.72). The titer of HSV DNA detected in perianal swabs was also significantly greater among HIV-negative MSM than heterosexuals (median, 5.3 vs. 3.7 log10 copies/mL; p<.001); while among MSM, there was no difference by HIV status (p=.65). A trend was found toward a greater amount of HSV DNA in penile sites from heterosexuals (4.5 log10 copies/mL), when compared to either HIV-positive MSM or HIV-negative MSM (median, 3.7 and 3.8 log10 copies/mL; p=.11). Previous history of genital herpes was associated with greater rates of HSV shedding from both the perianal (aIRR 1.7 (95% CI: 1.0-2.7), p=.04) and from the penile skin (aIRR 2.0 (95% CI: 1.1-3.6), p=.02). Oral HSV was detected more frequently among HIV-positive MSM than HIV-negative heterosexuals (6.1% vs. 3.3% of days; aIRR 1.9 (95% CI: 1.0-3.5), p=.06), but HIV-negative MSM shed about the same as heterosexual men (p=.60). Quantity of HSV DNA isolated from oral site was lower among HIV-negative heterosexual men, as compared with HIV-negative MSM (3.5 vs. 4.5 log10 copies/mL; p<.001).
Conclusion: The differences in anatomic sites of HSV reactivation according to sexual behavior suggest that site of HSV acquisition predicts the frequency and quantity of viral shedding.

P-262 SERO-PREVALENCE AND INCIDENCE OF HERPES SIMPLEX TYPE-1 AND 2 IN KAMPALA, UGANDA

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Objectives: Prevalence of herpes simplex type 1 and 2 virus (HSV-1 and 2) infection is high worldwide. HSV-2 infection has been reported to be associated with HIV infection. In this study we set out to Previous studies to assess genital herpes in Uganda were conducted in a rural setting. Type specific serological tests for HSV-1 and 2 now exist to enable estimation of disease burden in communities. The study objectives were to estimate age and sex specific seroprevalence of HSV-1and 2, identify risk factors associated with herpes simplex type 1 and 2 prevalence and estimate HSV-2 incidence and risk factors associated with HSV-2 incidence in a two stage random sample in an urban population in Kampala, Uganda.
Methods: Using two-stage random sampling methods, stratified on population density with weighting, a community sample of persons 15-65 years old were surveyed in the period of February to June 2004. Persons negative for HSV-2 at baseline were followed up every six months for new (incident) HSV-2 infection for one year. Type specific serological tests for HSV-1 and 2 were used to test for HSV-1 and 2 infection (HerpeSelect ELISA 1(HSV-1), 2 (HSV-2) kits, Focus Technologies, California). Two cut-off points for the Focus HerpeSelect 2 test; 1.0 by the manufacturer's guidelines and 3.5 and above were used to characterize HSV-2 prevalence and the lower cut-off to characterize HSV-2 incidence. HIV-1 was tested (Capillus and Abbot Determine and Confirmatory HIV-1 ELISA, Vironostika) as was syphilis (RPR and TPHA). Risk factors for prevalent HSV-2 infection were analyzed (logistic regression). The risk factors for HSV-2 incidence were analyzed using the Cox Proportional Hazards Model.
Results: The prevalence of HSV-2 infection was 75%, of HSV-1 was 98%, of HIV infection was 17.7% and syphilis was 1.7%. The higher cut-off of 3.5 units and above gives a prevalence of 58%. The true prevalence therefore lies between 58-75%. HIV infection is highly associated with prevalent HSV-2 infection (OR 4.3 (95%CI=2.1-8.8)), age at first sex (OR 1.87(95% CI=1.2-2.8)), age (95% CI=2.0-4.1). Annual Cumulative Incidence was 20.4%. Incidence density was 276 per 1000 pyo. The most significant factor influencing failure time to seroconversion to HSV-2 positive was condom use where people who reported low use of condoms were more than two times likely to seroconvert to HSV-2 positive over a period of one year (HR=2.81 (95%CI 1.44-5.46)). A paradoxical finding was that people in 'open' relationships were at reduced risk for new infection (HR=0.35 (95%CI=0.16-0.75)).
Conclusions: In Kampala, Uganda, there is a high prevalence and incidence of HSV-2 (genital herpes). Prevalent HSV-2 infection was highly associated with HIV infection, age group and age of sexual debut for both cut-off points. Persons reporting condom use were less likely to acquire new HSV-2 infection. In this population of high prevalence and incidence, there is also little awareness of genital herpes as a cause of genital ulcers. Interventions need to be rapidly scaled to control the prevalence and high level of transmission of HSV-2 infection in this population.

POSTER SESSION: HIV

P-263 WHAT DO DERMATOLOGICAL PATIENTS KNOW ABOUT HIV/AIDS IN OUT-PATIENT CLINIC: IMPACT FOR PATIENTS EDUCATION ABOUT HIV INFECTION?

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Introduction: Since 2001 to 2005 the HIV incidence is growing from 1.7 to 3.0/100,000 in Germany (Robert Koch Institute. Epidemiol Bull 2006; A:1'10). The knowledge level of HIV/AIDS of patients is important for creating adequate patients' education measures. It is also important for dermatologists to give information for performing HIV prevention. Aim of this pilot study was to receive data on patients' knowledge on HIV/AIDS, HIV prevention, and social behaviour in case of diagnosed HIV infection using anonym questionnaire.
Methods: 448 questionnaires were distributed among patients (18'65 y. o., middle age 42) waiting for physician in a general dermatological out-patient clinic. The questionnaire included questions about social demography, knowledge about HIV transmission and prevention, information sources about HIV/AIDS, behaviour in case of diagnosed HIV infection. HIV/AIDS knowledge level was assessed by simple knowledge index, HIV-AIDS-Transmission-Sex-i.v.-Drug-Abuse (HATSIVDA) from 4.0 (high knowledge level) to 1.0 (very low knowledge level). HATSIVDA is based on correct answers to questions about HIV transmission by sexual intercourse and by needle sharing, and about HIV prevention by condom use and use of single syringes.
Results: 347 (77.5 %) questionnaires were obtained (women 55.5 %), and 314 (70.3 %) were complete. The HIV transmission was mentioned correctly (% of patients) about needle sharing (95.3), vaginal intercourse (87.4), anal intercourse (79.5), mother to child (78.2), and oral intercourse (61.8). Nevertheless, only 55.3 % of responders knew that HIV infection can be transmitted by all three sexual praxis (vaginal, anal, and oral). The percentage of patients (mentioned below) answered correctly on question of HIV prevention: condom (97.8), and use of single needle (76.2). The myths about HIV transmission and prevention were also mentioned (% of patients): mosquitoes (11.0), kissing (8.5), hairdressing/ manicure (6.0), dishes (2.5), WC/ swim bath (0.9), avoidance of blood transfusion (38.9), HIV vaccination (4.1), and contraception (1.5). Mean HATSIVDA (_) was significant ($p<0.05$) lower in patients older than 40 years (_ < 2.6), with incomplete (_ = 2.0) and complete school education (_ = 2.5), in unemployed (_ = 2.25), and retired (_ = 2.5) persons.
Conclusion: This study showed that the dermatological patients are not informed sufficiently about HIV transmission by all three sexual praxis, vaginal, anal, and oral intercourse. The HIV prevention and patients' education about HIV infection should be performed differentially accordantly to age, education and social status of patients. (alexander.kuznetsov@med.uni-muenchen.de)

P-264 UPDATED ESTIMATES OF HIV INCIDENCE AND PREVALENCE IN ST. PETERSBURG, RUSSIA: CONTINUED GROWTH OF AN EXPLOSIVE EPIDEMIC

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Objectives: The Russian Federation has experienced rapid growth in its HIV epidemic since significant spread began in 1996. The majority of HIV cases are among injection drug users (IDU), and the HIV prevalence among IDU exceeds 30% in several cities in Russia. The incidence in St. Petersburg was estimated 4.5 per 100 person-years in 2002-2003. Given the relatively young nature of the epidemic in Russia, monitoring trends in incidence is necessary to understand the possible future course of the epidemic, and to assess and target prevention and care needs.

The purpose of the present analyses was to provide updated estimates of prevalence and incidence of HIV infection among IDU in St. Petersburg, Russia.
Methods: This study utilized data from a NIDA (USA) funded multi-site research project collected during 11/2005 ' 12/2006. Study participants included IDU recruited by respondent driven sampling. Participants completed interviews and underwent HIV testing. A detuned assay (BED HIV-1 Capture Assay) was also conducted on positive samples to determine recent infections in past 160 days. HIV incidence was estimated in the cross-sectional study using two methods. First, survey data including information about past HIV testing and results were used to construct a retrospective cohort. All participants who self-reported their last HIV test was negative were included. Individuals in this group who tested positive at enrollment were considered new cases of HIV. Follow-up time was estimated based on date of last HIV test. The second method for estimating incidence used the results of the detuned assay as described by Parekh et al in AIDS Res Hum Retroviruses (2002).
Results: A total of 412 IDU were enrolled in this study; 194 were confirmed to be HIV positive for an estimated prevalence of 47%. Also at enrollment, 310 individuals reported having been previously tested for HIV, of whom 186 reported their last test was negative. These individuals constituted the retrospective cohort. Forty-one tested positive at baseline, and the total amount of person-time between last HIV test and enrollment was 250 person years; therefore HIV incidence was estimated to be 16.3 per 100 person years. A total of 36 individuals were determined to be recently infected (past 160 days) by the detuned assay; incidence was estimated by the Parekh method to be 25.8 per 100 person-years.
Conclusions: Our estimates of HIV prevalence and incidence are higher than previously reported in St. Petersburg, but not unlike estimates from other explosive IDU-driven epidemics. Reasons for the variable estimates of incidence reported from the current study are not immediately clear, though this could be due to the different prevalent subtype in Russia (subtype A) compared to those used by Parekh (subtypes B, E, D, and African A, C, and E). These remarkably high estimates suggest that the epidemic curve for HIV has not yet reached plateau in St. Petersburg Russia, and effective interventions (behavioral and structural) are urgently needed.

P-265 PREVALENCE OF ANTIRETROVIRAL DRUG-RESISTANCE MUTATIONS AMONG DRUG-NAVE HIV-1-INFECTED PATIENTS IN SEVILLE

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Objective: to determine the prevalence of antiretroviral (AR)-resistance mutations in HIV-1 infected na_ve subjects from Seville, Spain (2005-2006).
Methods: one hundred and fifty six blood-EDTA samples (n=59 in 2005 and n= 97 in 2006) from patients attended in Seville were submitted to the University Hospital Virgen Macarena of Seville (Spain) during 2005-2006 for resistance genotyping. Extraction of RNA was performed with the MagNa Pure LC system (Roche) using the MagNa Pure LC total Nucleic acid isolation kit (Roche). DNA Sequencing of the HIV-1 reverse transcriptase (RT) and protease (PR) genes was performed by use of the TrueGene HIV-1 assay (Visible Genetics).
Results: mutations associated with resistance to AR were detected in 6.8% (4/59) and 6.2% (6/97) of the viral sequences analysed in 2005 and 2006, respectively. Mutations related to resistance to non-nucleoside reverse transcriptase inhibitors (NNRTIs) were observed in 2 RT sequences of 2005 (k103S, n=1; and 181C+190S, n=1) and 4 RT sequences of 2006 (K103N, n=3; and 181C+190S, n=1). Mutations related to resistance to nucleoside reverse transcriptase inhibitors (NRTIs) were observed in 2 RT sequences of 2005 (41L+215D, n=1; and 67N+70R+75A, n=1) and 1 RT sequences of 2006 (D67N+118I+219E). Finally, mutations related to resistance to protease inhibitors (PIs) were not observed in 2005 and were detected in 1 PR sequence of 2006 (I84V). No sequences were observed with mutations in both the PR and the RT gene.
Conclusions: the prevalence of mutations associated with drug resistance among the na_ve HIV-1-infected subjects included in this study is relatively high, but it is not increasing.

P-266 RISES IN HIV NOTIFICATION RATES WITHIN PARTS OF AUSTRALIA ARE CORRELATED WITH DECLINES IN ANTIRETROVIRAL USE

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Objective: The notification rate for Human Immunodeficiency Virus (HIV) among men who have sex with men (MSM) has varied considerably over the last 7 years across the different States of Australia. Between 1998 and 2005, HIV notifications increased by 11% in New South Wales (243 to 270), but in Victoria, notifications increased by 84% (98 to 180) and in Queensland they increased by 50% (68 to 102). Our aim was to determine whether differences in the levels of antiretroviral therapy (ART) could be contributing to these observed differences in HIV notification rates between Australian States.
Methods: An ecological analysis of HIV notification and antiretroviral prescription data between 1998 and 2005. Notifications were expressed as a rate per 100 individuals living with HIV. Treatment was expressed as years of effective ART (3 separate drugs). Those States with over 100 notifications in 2005 were included in the analysis (Victoria (VIC), New South Wales (NSW) and Queensland (QLD)).
Results: HIV notifications were highly correlated with the number of people living with HIV ($r=0.98$, $p<0.01$). HIV notifications have fallen significantly over the study period in NSW ($p<0.01$) to 4.5 per 100 individuals living with HIV in 2005. Conversely, there was no trend evident in other states, with notifications rates remaining higher at 7.8 and 6.9 per 100 individuals living with HIV in QLD and VIC respectively in 2005. The proportion of individuals living with HIV receiving ART in 2005 was lowest in NSW (40%) and higher in Victoria (60%) and Queensland (60%); there was a significant decline in this proportion over the study period in NSW ($p<0.01$) and QLD ($p<0.01$), but an increase in VIC ($p<0.01$). Decreasing ART use was associated with an increase in the number of HIV notifications in NSW ($p=0.09$) and QLD ($p=0.02$), but not in VIC ($p=0.2$) (Figure 1).
Conclusion: Those States with the highest notifications per 100 individuals living with HIV did not have the lowest proportion of individuals receiving ART. Indeed the reverse was true. However, within QLD, rising HIV notifications over time were associated with falling proportions of HIV positive individuals receiving ART, and a similar trend was seen in NSW. These data indicate that the differences in HIV notifications between States are not attributable to differences in the use of ART, but that changes in ART over time in some States may be contributing to the rise in HIV notifications.

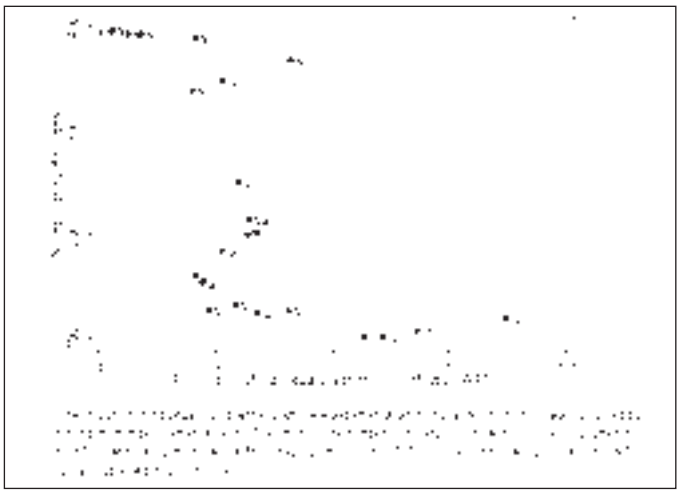

Figure 1: HIV notification and ART use by State, 1998-2005*

P-267 ESTIMATING INCIDENCE FROM PREVALENCE: METHODS AND VALIDATION

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Objective: Surveillance of the HIV epidemic in Africa primarily relies on prevalence among women attending ante-natal clinics but estimates of HIV incidence would be better for monitoring epidemic trends, identifying risk groups and making comparisons between populations. However, repeated cross-sectional measures of HIV prevalence are now becoming available for general populations in many countries and we aim to develop and validate methods that can use these data to estimate HIV incidence.
Methods: Two methods for estimating incidence from prevalence data were developed. They use the idea of demographic accounting to decompose the change in prevalence within a cohort into the contributions of new infections and mortality among infected and uninfected persons. Method 1 uses cohort mortality rates and Method 2 uses information on survival following infection with the additional assumption that the pattern of incidence over age has remained constant. The performance of the methods was assessed using simulated data and actual data from three community-based cohort studies in Africa. The cohort data were put together in a series of workshops organised by the ALPHA network.
Results: The estimates from both methods are within the 95% confidence intervals of actual measurements of HIV incidence in adults and 15-24 year-olds. In most cases, the difference between the estimate and the measurement is less than 10%. The pattern of incidence with respect to age is also correctly captured although there were greater disparities at older ages that may be partly due to the random errors in the measurements themselves. Simulation studies show that these methods can work in a variety of epidemic conditions, detect fast and slow changes in incidence and identify changes in risk distribution. Method 1 is simple to implement but relies on the cohort mortality rates used being appropriate to the context. Method 2 can make use of the same survival distribution in a wide range of scenarios, although the calculation is more complicated.
Conclusions: It is possible to estimate incidence from cross-sectional prevalence with sufficient accuracy to monitor the epidemic. The choice of method will depend on the local availability of mortality data.

P-268 ROUTINE COUNSELLING FOR HIV TESTING AMONG STI CLINIC ATTENDEES: PILOT STUDY AT UNIVERSITY TEACHING HOSPITAL, LUSAKA ZAMBIA

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Objective: To increase access to counselling for HIV testing among STI clinic attendees by offering 'in-house' routine HIV counselling and measuring its acceptability.
Methodology: Consecutive STI patients (n=538) were referred to counsellors for HIV testing. STI treatment was not tied to counselling and clinic attendees were given opportunity to 'opt out' at any stage. Those who consented were counselled; samples collected and sent for testing using rapid kits in one sitting. Counselling took 15 to 30 minutes. Core messages were synergy between STI's and HIV and knowledge of HIV status as an entry point to care and support including access to free Anti-retroviral therapy (HAART) where appropriate.
Findings: 1. All the 538 consecutive STI clinic attendees 'accepted' to undergo counselling for HIV testing;2. 36 patients out of 538 'opted out'. (7%); 3. 502 patients underwent counselling and all gave samples for HIV testing. (93%); 4. Only 18 clients did not return to the counsellor to get their results (3.5%); 5. 75% of 502 STI patients were HIV positive. (377); 6. 93 out of 168 patients who were able to pay for CD4 count (US$20) were started on ART. (55.3%);
Conclusion: Routine counselling for HIV is 'accepted' and should be offered to all patients attending STI clinics. The high number of STI patients with concurrent HIV infection should be linked to care and support facilities. Cost for CD4 count (US$20) should be removed for patients to benefit from free ART scheme.

P-269 IMPACT OF VCT ON WOMEN ACCESSING VCT AT CHIPATA CLINIC IN LUSAKA

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Objectives: Voluntary Counselling Testing has been used as an entry point to a number of interventions in the fight of HIV/AIDS. The sexual behaviour study was designed to assess whether clients who come for VCT do change their sexual behaviour after accessing the VCT process.
Methods: The study started in June 2004 recruiting a cohort of 819 clients accessing VCT services at Chipata Health Centre using a structured questionnaire which includes basic demographic details, details about previous sexual behaviour, proposed risk reduction strategies, reasons for coming forward for VCT and history of STIs. Cohort clients were asked for permission to be followed up after six months of initially accessing VCT, to see if there is any sexual behaviour change in the 6 months period for a re-interview either from the clinic or followed up at home. This abstract concentrates on the sexual behaviour of women at cohort and after six months.
Results: Of the 420 female clients recruited at cohort; 162 were followed up. 37 reported that VCT made them aware of issues pertaining to their lives; 15 women reported having begun to practice safer sex by using condoms; 45 women reported abstaining from sex from the time they first accessed VCT most of these were single or divorced; 1 woman reported having been beaten by the partner in trying to have him test for HIV or use condoms; 64 did not show any change towards their sexual behaviour they just appreciated the services offered at the VCT.
Conclusions: Empowerment of women to choose safe sexual methods still need to be mainstreamed in the health education programs. VCT does influence sexual behaviour and thus it should be maintained as an entry point in various HIV prevention and intervention programs.

P-270 EARLY DETECTION OF HIV-1 SPECIFIC LYMPHOCYTE DERIVED ANTIBODIES IN A HIGH RISK POPULATION

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Objectives: To compare the detection of anti-HIV-1 specific antibodies derived from B-cell lysates to conventional diagnostic serology in prospective samples from individuals with a high risk of infection by HIV.
Methods: Male volunteers were recruited amongst mineworkers attending a sexually transmitted infections clinic at East Driefontein gold mine, located on South Africa's West Rand. Subjects were considered to eligible for the study if they were seronegative for anti HIV-1 antibodies by the rapid initial screening test (Capillus, Scientific Group) and were able to give follow up blood samples within approximately 2 weeks. Lymphocytes were isolated from EDTA blood samples by the

PlasmAcute_ method using CD19 coated magnetic particles, lysed and subsequently tested for anti-HIV antibodies by 2 different ELISA assays (Abbott Axsym and Ortho Vitros or Abbott/Murex HIV-1.2.0 and Vironostika HIV Uni-Form II plus O). Serum antibodies were tested by the same assays. Immunoreactivity of the lysate and serum was confirmed by western blot analysis using one of two different commercial western blot assays. All subjects were additionally tested for viral load (sensitivity 400 copies/ml), HIV-1 p24 antigen, and CD4 count. Samples that tested HIV antibody negative in lysate and serum/plasma, but had positive viral load and p24 antigen were retested for the presence of anti-HIV antibodies after immune complex dissociation.

Results: Seventeen of 259 eligible subjects (7%) tested positive for anti-HIV-1 antibodies in lysates but showed no immunoreactivity in serum at their initial visit. Two of these were also viral load positive at the first visit and subsequently sero-converted. Three participants, whose initial samples were negative for all markers except lysate antibodies, later sero-converted and also subsequently tested positive for viral load. Seven of the seventeen subjects showed only transient HIV-1 antibodies in the lysates and tested negative for all markers at the following visit. Five initial lysate positive/serum negative samples were classified as inconclusive owing to a lack of subsequent participants' sera due to loss to follow-up. In addition to these seventeen samples, one sample showed lysate anti-HIV reactivity at same time as detectable serum antibodies and positive viral load.

Conclusions: This study suggests that B-cell lysate derived anti-HIV 1 antibodies can be detected prior to seroconversion, and earlier or contemporary with a positive HIV-1 viral load. Further investigation is required to establish whether the observation of transient antibody positive lysates represents exposure to HIV-1 virus without subsequent progression to infection.

P-271 PREVALENCE OF HIV-DISCORDANCE AMONG AFRICAN HETEROSEXUAL COUPLES AND RECRUITMENT OF DISCORDANT COUPLES FOR HIV PREVENTION CLINICAL TRIALS

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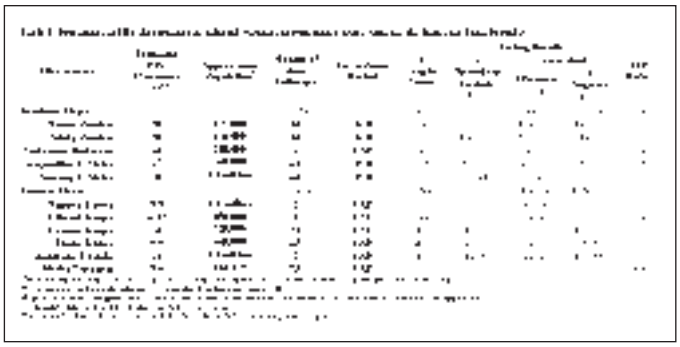
Objectives: Cohabiting couples are the largest risk group for HIV infection in Africa, with >60% of new infections acquired within stable relationships. Since <1% of African couples test together, recruiting discordant couples for a clinical trial is challenging. The Partners in Prevention clinical trial uses couples HIV counseling and testing (CHCT) infrastructure at 14 sites in Eastern and Southern Africa to recruit HIV-discordant couples for a clinical trial of HSV-2 suppression to reduce HIV transmission. We report prevalence of HIV-discordance in a subset of Partners Study sites.

Methods: HIV-discordant couples were identified through Community Awareness and Partnership (CAP) and/or Direct Community Recruitment (DCR). CAP involved collaborations with community voluntary HIV counseling and testing (VCT) centers to promote CHCT and refer discordant couples to the study. In DCR, trained study staff invite couples for CHCT at the study clinic. Both methods promote CHCT through radio, print-media, local solicitation and street drama. Data from 11 of 14 study sites are reported.

Results: HIV-discordance ranges from 12-31% in Southern Africa and 6-17% in Eastern Africa (Table 1). The ratio of HIV-discordant to concordant-positive couples was 0.9 [range 0.6-2.2] for Southern and 1.0 [range 0.8- 4.4) for Eastern African sites. Among all couples with >1 HIV-infected partner, 48% were HIV-discordant.

Discussion: HIV-discordance among heterosexual couples is highly prevalent in Eastern and Southern Africa; often with nearly equal proportions of HIV-concordant positive and HIV-discordant couples. Education about HIV-discordance and expansion of CHCT services are needed to identify high risk groups and prevent HIV transmission. Discordant couples recruitment to the clinical trial depended on the prevalence of HIV discordant couples in the community and on infrastructure to identify these couples. For the Partners Study, CAP was used extensively in Eastern Africa due to existing VCT infrastructure. Most Southern African sites having less VCT infrastructure utilized the DCR approach. Awareness of existing local HIV testing capacity is important in developing strategies for HIV discordant couples recruitment. Contributing authors not included in header due to space limitations: Craig Cohen(2), Kenneth Ngure(3), Elly Katabira (4), Carey Farquhar(1), Joyce Baliddawa(7), Joseph Makhema(6), Saidi Kapiga(8), Rachel Manongi(10), David Coetzee(11), Alan de Kock(9), Ntombi Bandezi(12), Guy deBruyn(12), William Kanweka(13), Susan Allen(5, 13, 14), Amelia Meier(15), Andrew Mujugira(1), Dila Perera(1), Ellen Wilcox(1), Anna Wald(1) and the Partners in Prevention Study Group. Institutions not in header: 8-Harvard University, Cambridge, USA, 9-University of Manitoba, Winnipeg, Canada, 10- Majengo Clinic, Kilimanjaro Christian Medical Centre, Moshi, Tanzania, 11- Infectious Disease Epidemiology Unit, University of Cape Town, Cape Town, SA, 12- Perinatal HIV Research Unit (PHRU), University of Witswatersrand, Johannesburg, South Africa, 13- Zambia-Emory HIV Research Project (ZEHRP), Kitwe, Zambia 14- Emory University, Atlanta, Georgia, 15- University of Washington, Department of Laboratory Medicine, Seattle, USA



P-272 PREDICTORS OF HIV AMONG MEN IN MOSHI, TANZANIA

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Background: There is limited information regarding predictors of HIV among males in Tanzania. This study thus aimed to determine the prevalence and risk factors for HIV among men at two primary healthcare clinics in Moshi urban, Tanzania. Methods: Participants were partners of the pregnant women enrolled in a PMTCT program. They were enrolled from June 2002 to June 2006. After pre-test counseling, they were interviewed, examined and blood samples collected. Post test counseling and results were given after one week. HIV was diagnosed by a positive results of 2 rapid test, Determine HIV _ test and Capillus HIV _ test. Data was analyzed using SPSS.

Results: Three hundred and thirty two males were enrolled. Their mean age was 31.7 (SD 7.6). Sixty nine % were married, 9% in polygamous marriages, 82% had primary education and 30% were formally employed. Ever use of condoms was

reported by 45%, with 15% using them most of the times. The prevalence of HIV was 6.9% (N=23). HIV-positive men were more likely to be older (34.9 vs 31.4; p=0.03) and have more lifetime sexual partners (7.8 vs 4.1; p=0.01) than HIV-negative men. HIV risk was greater among men who; had HSV-2 (OR 3.9; 95% CI 1.5-9.7), had history of recurrent ulcers (OR 5.7; 95% CI 1.7-19.6), had genital ulcers on examination (OR 14.0; 95% CI 0.9-231.5), perceived they had moderate to high risk of having HIV infection (OR 1.7; 95% CI 1.2-2.6), were in polygamy relationship (OR 4.0; 95% CI 1.5-11.1), had women partners who traveled frequently (OR 5.6; 95%CI 1.4-22.9) and women partners with STI symptoms (OR 3.5; 95% CI 1.4-8.7). In multivariate analysis, HSV-2 (AOR 3.2; 95% CI 1.1-9.2), perception of moderate-high risk of HIV infection (AOR 1.6; 95% CI 1.0-2.8) and having a woman with STI symptoms (AOR 4.3; 95% CI 1.3-14.2) remained associated with HIV.

Conclusion: HSV-2 and genital ulceration were important predictors of HIV in men than behavior characteristics. Therefore control of sexually transmitted infections especially HSV-2 management, should be given priority in this setting.

P-273 INVASIVE PRENATAL MEDICAL PROCEDURES AND PREVALENT HIV INFECTION IN SUB-SAHARAN AFRICAN WOMEN

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Objective: To assess the relationship between invasive medical procedures during prenatal care and prevalent HIV infection in women in sub-Saharan Africa.

Methods: We analyzed data from recent Demographic and Health Surveys in sub-Saharan Africa (www.measuredhs.com). We have completed analyses for Cameroon (2004), Ghana (2003), and Ethiopia (2005), and will complete analyses for 8 other countries by July. Our analyses focused on women who gave birth in the prior five years and reported never having tested for HIV previously. We examined the relationship between invasive prenatal medical procedures (phlebotomy [typically for syphilis and anemia screening] and tetanus toxoid vaccination) during prenatal care for the most recent pregnancy and prevalent HIV infection. Control variables included demographics, sexual behavior, STD history and symptoms, a noninvasive prenatal procedure (blood pressure assessment), and husband's serostatus. Our selection of respondents and the indications for prenatal phlebotomy and tetanus vaccination in these countries minimize reverse causation as an explanation for observed relationships.

Results: Women who had phlebotomy or tetanus vaccination during prenatal care were more likely to be HIV infected than those who did not experience such procedures, except for tetanus vaccination in Ghanaian women (Table 1). In multivariate analysis, most invasive prenatal procedures remained moderately to strongly positively associated with prevalent HIV infection (Table 2). Across data sets, phlebotomy and tetanus toxoid vaccination were moderately correlated with each other (range of r=.26-.45). Both invasive prenatal procedures also showed substantial associations with prenatal blood pressure assessment (phlebotomy range of r = .58-.68; tetanus vaccination range of r = .35-.55). Phlebotomy remained a robust correlate of HIV infection in women with seronegative husbands (Ethiopia n=1649; OR=3.64, 95% CI 1.00-13.2; Ghana: n=1037; OR=3.31, 95% 0.42-26.2), but the samples showed mixed results for women with seropositive husbands (Ethiopia: n=25; OR=8.77, 95% CI 1.21-62.5; Ghana: n=20; OR=0.75, 95% CI 0.09-6.04), perhaps due to sampling variability. The relationship between tetanus vaccination and HIV infection also held in Cameroonian women with seronegative husbands (n=879; OR=1.31, 95% CI 0.47-3.64) and those with seropositive husbands (n=39; OR=5.26, 95% CI 0.93-29.4). Health professionals provided prenatal care to 96-100% of HIV-infected women who had been exposed to the invasive medical procedure most strongly related to HIV infection. Most (96% in Ethiopia, 84% in Ghana) of these women received their prenatal care at a government hospital, health center, or health post.

Conclusions: Invasive medical procedures during prenatal care may be major routes of HIV transmission in African women. Prenatal phlebotomy may represent exposures beyond blood drawing (e.g., injections and transfusions for treatment of syphilis and anemia-related conditions, delivery in unhygienic facilities). Invasive prenatal procedures during the most recent pregnancy also may reflect such exposures in prior pregnancies. Comprehensive assessment of sexual and nonsexual exposures in recently infected persons, coupled with tracing of corresponding contacts and DNA sequencing of infected persons' HIV isolates, should be the highest priority for HIV epidemiology in sub-Saharan Africa. Contact: Devon Brewer at interscientific@yahoo.com

Table 1. Bivariate associations between invasive prenatal procedures and prevalent HIV infection

		Cameroon		Ethiopia		Ghana	
		HIV-	HIV+	HIV-	HIV+	HIV-	HIV+
Phleb.	N	647 (87)	22 (3)	2154 (89)	23 (1)	544 (88)	6 (1)
	Y	1182 (93)	92 (7)	276 (80)	23 (10)	1823 (97)	44 (3)
OR (95% CI)		2.3 (1.5-3.6)		10.0 (5.5-18)		2.9 (1.0-8.6)	
TT	N	538 (87)	17 (3)	1434 (89)	18 (1)	368 (98)	8 (3)
vacc.	Y	1290 (93)	98 (7)	905 (97)	28 (3)	1761 (98)	39 (2)
OR (95% CI)		2.4 (1.4-4.1)		2.2 (1.2-3.9)		0.8 (0.4-1.6)	

Note: Cells show frequencies with % in parentheses.

Table 2. Multivariate logistic regression of factors related to prevalent HIV infection

	Cameroon (n = 1674)		Ethiopia (n = 2302)		Ghana (n = 2167)	
	AOR	95% CI	AOR	95% CI	AOR	95% CI
Phlebotom.	1.3	0.7-2.5	3.8	1.4-10.1	6.8	1.9-26
TT vacc.	1.8	1.0-3.3	0.8	0.4-1.7	0.7	0.3-1.6
Age[a]	1.0	1.0-1.0	1.0	0.9-1.0	1.0	1.0-1.1
Urban resid.	1.1	0.5-1.2	2.9	1.2-7.2	0.8	0.2-1.3
Wealth[b]	1.1	0.9-1.4	1.4	1.0-1.9	1.3	1.0-1.8
No. SPs[c]	1.1	1.0-1.1	1.5	1.2-2.1	0.5	0.2-0.8
STD/STD sx[d]	1.4	0.8-2.3	1.7	0.4-7.8	2.8	1.2-6.5
BP measur.[e]	1.0	0.5-2.2	1.0	0.4-2.6	0.2	0.1-0.7

[a]OR per year increase. [b]OR per quintile increase.
[c]OR per partner increase; lifetime for Cameroon & Ethiopia, past 12 mos. for Ghana.
[d]In prior 12 mos. [e]During prenatal care for last pregnancy.

P-274 FACTORS ASSOCIATED WITH AN EMERGING HIV EPIDEMIC AMONG IDU'S IN PAKISTAN: IMPLICATIONS FOR DESIGNING TARGETED INTERVENTIONS

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Objectives: Recent HIV sero-prevalence data indicate that Pakistan can no longer be classified as a 'low prevalence country', as there now is a 'concentrated epidemic among IDUs' getting established in multiple cities. With this emerging epidemic, there is an imperative need to understand various factors associated with transmission of infection to address the challenge of preventing its spread. This study was therefore conducted with the objective to identify the various risk factors associated with transmission of HIV infection among IDUs in Pakistan

Methods: In 2006, 2,431 current male IDUs, were recruited from 07 major cities in Pakistan using time-location cluster sampling based on mapping studies. Data were collected by interviewers, trained in 04 day training on administration of the questionnaire and various aspects of fieldwork. Once the selection of a study subject was done, and the participants' eligibility was confirmed, an informed consent was obtained. Information was gathered through a structured interview which elicited information on demographic characteristics, drug taking history and practices, sexual behaviors and practices and knowledge of HIV/AIDS. The capillary 'Dried Blood Specimen' (DBS) methodology was used for collection of biological specimens. All DBS specimens were screened by a screening EIA (Enzyme immunoassay or ELISA ; Bio-Rad USA). Samples that tested positive by the screening test were tested by a second EIA (Vironostika HIV Uni-Form II) and confirmed by the Western Blot (Genetic Systems HIV-1 Western Blot ; Bio-Rad USA). Data were double entered into a data entry software, specifically designed for the study. Followed by descriptive analysis, multiple logistic regression was done to examine the independent association of multiple variables with HIV infection

Results: 262 IDUs were found to be HIV infected, based on which group allocation was done into Cases and Controls. No significant differences were noticed between cases and controls (p>0.05) in mean age, education status, marital status, ethnicity and income level. In the final multivariate logistic model, four variables were independently associated with HIV infection: geographical region (aOR 2.4 for southern region vs northern region, 95% CI 1.6'3.4); length of injecting careers (aOR 1.6 for IDUs injecting for more than 5 years vs IDUs injecting for less than 5 years 95% CI 0.9 ' 2.8); sharing needle on last injection (aOR 1.7, 95% CI 1.2'2.5); and currently injecting heroin (aOR 1.5, 95% CI 1.0'2.0). None of the sexual practices or knowledge of HIV were found to have an independent association with a positive HIV sero-status

Conclusion(s): The HIV epidemic among IDUs in Pakistan is driven mainly by unsafe injecting practices, especially among those living in the south of the country, and are injecting heroin. There is an urgent need to scale up interventions, especially in the southern parts of the country in geographical areas of high concentration of IDUs. If Pakistan wants to avoid a massive HIV epidemic, it needs to put into place focused prevention activities and targeted interventions to address the factors identified in this study, otherwise the overall influence on the epidemic will be marginal

P-275 DOOR-TO-DOOR RAPID HIV TESTING AND HIV/STI RISK FACTORS AMONG LATINO IMMIGRANTS IN DURHAM COUNTY, NC, USA

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Objectives: Latinos represent 14% of the United States population, and North Carolina has one of the fastest growing Latino populations in the southeastern US. Nationwide, Latinos are disproportionately affected by HIV compared to Whites. Latino immigrants typically face barriers to clinic-based HIV testing due to language issues, mistrust, or non-familiarity with the local health care system. To reduce these barriers, we assessed the feasibility of 'door-to-door' rapid HIV testing among Latinos in an urban community in Durham County, NC, which had the 4th highest HIV rates in the state at 46.3/100,000 population in 2005. We also assessed the HIV/STI risk factors in this population.

Methods: We conducted HIV outreach activities door-to-door in predominantly Latino apartment complexes located in high risk neighborhoods. Promotores (lay health educators) recruited eligible participants who were at least 18 years of age, not pregnant, and reported no prior HIV test in the past month. Consenting participants completed a questionnaire about their demographics, HIV/STI risk factors and the acceptability of rapid HIV testing, and received HIV counseling from trained bilingual counselors. Confidential rapid HIV testing was performed from oral swabs using the state and national guidelines for testing procedures.

Results: To date, promotores have recruited 226 persons in 5 apartment complexes: 75 declined participation or were ineligible for the study, 39 responded to the questionnaire only, and 112 (49.6%) consented to the questionnaire and rapid HIV testing. Among all participants, the median age was 31 years; 85% were men and the majority were of Mexican origin. HIV/STI risk factors among all participants included multiple sexual partners (mean =3) and sex with commercial sex workers (47%) in the past 6 months. Although only 8% reported a prior history of an STI, 49% of the Latinos surveyed thought that they were at risk for HIV infection. Seventy-two percent of the Latino immigrants had never been tested for HIV, and 88% of all participants preferred rapid HIV testing offered door-to-door or at community meeting places over standard blood testing. A majority of participants (62%) were unaware of clinics in the area that offered free HIV/STI testing in the community.

Conclusions: Community-based rapid HIV testing conducted door-to-door is a feasible strategy to screen Latino immigrants to the US engaging in high-risk sexual behaviors who may have limited access to health care. Risk factors for HIV/STIs among this population include multiple sexual partners and sex with commercial sex workers.

P-276 USE OF A BED IGG IMMUNOCAPTURE ASSAY TO ESTIMATE INCIDENCE OF HIV AND ASSOCIATED RISK FACTORS IN A HIGH-RISK POPULATION IN LIMA, PERU

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Objectives: The BED capture enzyme immunoassay (BED) has been developed to determine longitudinal incidence of HIV infection using cross-sectional data. The accuracy and precision of BED estimates of incidence have been questioned for the evaluation of diverse viral subtypes but appear valid in evaluating HIV infections with subtype B. We applied the BED assay to a cross-sectional cohort in Lima, Peru (where the HIV epidemic is almost exclusively subtype B) to estimate HIV incidence and to determine factors associated with recent HIV infection in a high-risk population.

Methods: As part of the NIMH Collaborative HIV/STD Prevention Trial, a representative sample of men and women from social groups identified as high risk for HIV infection during a prior ethnographic analysis was selected at random from eight separate barrios in Lima. From 2002-03, participants were interviewed concerning sexual behavior and associated risk factors for HIV infection, and were tested for HIV by ELISA and confirmatory Western Blot. Serum samples were stored at '20°C, and HIV antibody-positive samples were thawed and analyzed in 2006 using the Calypte BED CEIA Assay. Samples with an Optical Density (OD) <0.8 underwent triplicate confirmatory testing and those with a mean OD <0.8 were defined as recent seroconversions. Incidence was estimated using the recently updated incidence equation and correction factors described by CDC investigators.

Results: A total of 1,088 participants in Lima underwent HIV testing, of whom 58 were confirmed positive by Western Blot, and 13 were identified as recent infections by BED analysis. Participants with recent HIV infection were more likely than HIV-negative participants to be HSV-2 seropositive (75.0% [9/12] vs. 24.5% [247/1008]; p<0.001), but there was no significant association with gonorrhea,

chlamydia, or syphilis infection (Table 1). Overall HIV prevalence was 5.33% (58/1088; 95% Confidence Interval [CI] = 4.10-6.77%), and incidence was estimated as 2.39% (CI = 1.09-3.70%) (Table 2). All (100% [8/8]) of the recently infected participants who reported information on recent sexual partners were men who had sexual contact with another man (MSM) at least once in the past six months (p=0.003), and 87.50% (7/8) were men who had sex only with other men (MSOM) in the same time period (p=0.004). Among MSM, HIV prevalence was 12.58% (39/310; CI = 9.20-16.57%) and incidence was estimated as 5.35% (CI = 1.64-9.05%) while prevalence and incidence among MSOM were, respectively, 15.32% (36/235; CI = 11.11-20.28%) and 6.21% (CI = 1.61-10.82%).

Conclusions: Estimation of HIV incidence in high-risk communities in Lima, Peru indicates a persistent concentration of risk for HIV infection among MSM. MSOM are particularly vulnerable, representing the vast majority of prevalent and incident HIV infections, with a smaller number of recent infections observed among men reporting sexual contact with both men and women. MSM should continue to be prioritized in HIV surveillance and prevention programs in Peru. Further research is necessary to determine the social, behavioral, and biological factors that promote HIV transmission between MSM but limit the spread of infection to the general population.

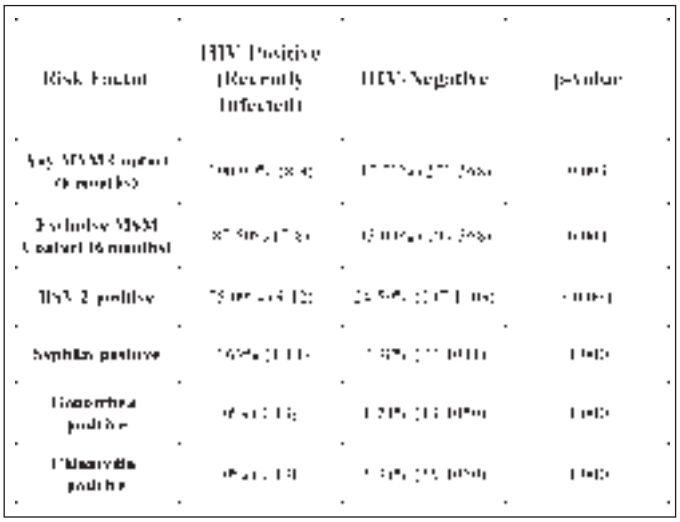

Figure 1: Factors Associated with Recent HIV Infection, Lima

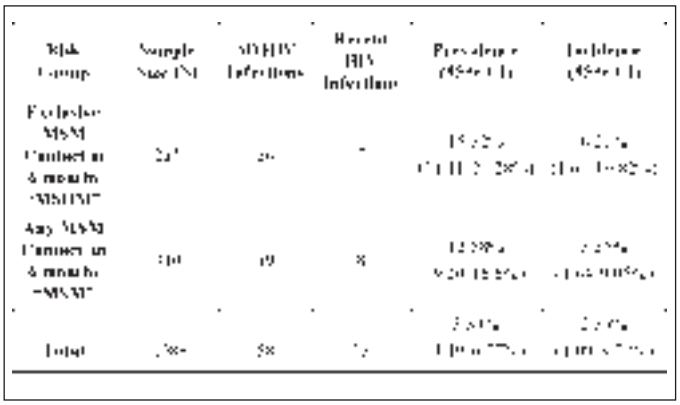

Figure 2: HIV Prevalence/Incidence; Lima, Peru, 2002-03

P-277 UNDIAGNOSED HIV INFECTION IN A COMMUNITY SAMPLE OF BLACK AFRICANS IN ENGLAND

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Objectives: To explore demographic, behavioural and service use factors associated with undiagnosed HIV infection among Black Africans attending community venues in England.

Methods: A cross-sectional community-based sexual health survey conducted in 2004. Respondents were recruited in community venues and invited to complete a short (24-item) anonymous questionnaire and provide an oral fluid sample for anonymous HIV testing using an Orasure™ device. Levels of diagnosed and undiagnosed HIV infection were calculated according to questionnaire responses regarding previous testing for HIV. Crude odds ratios were used to measure the association of behavioural, demographic and service use factors with HIV positivity and levels of diagnosed and undiagnosed HIV infection.

Results: Overall HIV positivity was 14.0% among the 1006/1359 respondents who provided a sufficient oral fluid sample. HIV positivity was associated with being over the age of 25yrs (OR 3.3); born in Eastern Africa (OR 4.0); widowed/separated/divorced (OR 3.6) and being unemployed (OR 1.8). Levels of diagnosed and undiagnosed HIV infection were 4.8% (48/1006) and 9.2% (93/1006) respectively. Compared to diagnosed respondents, undiagnosed respondents were less likely to be aged 35+ (OR 0.05, 95% CI 0.007-0.42); to have ever attended a GUM clinic (OR 0.06, 95% CI 0.02-0.2); to have ever had a previous STI diagnosis (OR 0.1, 95% CI 0.1-0.3) and more likely to have tested in general practice than a GUM clinic (OR 4.1, 95% CI 1.5-11.3). Reporting 2 or more new sexual partners in the past year was similar for the diagnosed (18.6%, 8/43) and undiagnosed (18.8%, 15/80) respondents. However, undiagnosed respondents were less likely to report condom use at last sex (OR 0.39, 95% CI 0.17-0.88). Of undiagnosed respondents, 65% (57/88) agreed or strongly agreed with the statement 'I do not believe I am at risk of catching HIV'.

Conclusions: Levels of undiagnosed HIV infection in this community sample are high. Condom use was significantly lower among respondents unaware of their HIV infection presenting the opportunity for onward HIV transmission. These respondents were also less likely to present at GUM services but more likely to test at their GP. The majority reported they did not think they were at risk of catching HIV. Our data suggests primary care could play an important role in testing for and diagnosing HIV in the black African population living in England.

P-278 P/H/O KOCHS AS A SIGNIFICANT RISK FACTOR IN HIV POSITIVE PATIENTS WITH TUBERCULOSIS AND EFFECT OF ANTI TUBERCULAR TREATMENT ON THE IMPROVEMENT OF HIV PATIENTS RECEIVING HAART

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Objectives: To find out risk of having TB as a opportunistic infection in HIV positive patients with or without past history of Koch's. To check the improvement with regards to improvement in CD4 counts of either group namely patients taking HAART only and patients receiving HAART and DOTS (anti tubercular treatment.). Method: A retrospective study of 1910 HIV reactive patients on triple drug regimen HAART, from May 2005 to December 2006was carried out. Out of 1910 patients, 705 patients had Tuberculosis as a co-infection or opportunistic infection. We subdivided the following data into patients with TB&HIV and HIV alone, and analyzed

that data for various factors like age & sex distribution, prevalence of OI's, risk factors, p/h/o Koch's, initial and last cd4 (mean) and improvement in different groups. At the end of analysis we find out the following observation.

Results: -Out of 1910 patients there were 705 patients who had HIV & TB while there were remaining 1205 patients who only had HIV. These 705 patients were subdivided into Pul. TB (261) and Extra Pul. TB (529) groups. These groups were compared for various socio demographic parameters. Past history of Koch's was found to be positive for 11pts. (0.91%) among the only HIV positive pt. group while it was 247 (94.63%) in HIV & Pul. TB group and 489 (92.43%) in HIV & Ext. Pul. TB group. Initial mean CD4 above mentioned groups were 169,130 and 142 for HIV alone, HIV & Pul. TB and HIV & Ext. PI. TB groups respectively. As far as improvement was concerned with regards to improvement in mean CD4 was almost same in all the groups. It was 96, 91, and 98 in HIV alone, HIV & Pul. TB and HIV & Ext. PI. TB groups respectively.

Conclusions: Tuberculosis is one of the most common opportunistic infection in HIV positive patients. In Tuberculosis extra pulmonary tuberculosis is more common than pulmonary tuberculosis. More than 92% patients' having either Tuberculosis had past history of Koch's suggestive of reactivation of disease rather than re infection. Patients with Tuberculosis had less CD4 counts than HIV only group suggestive of depression of immunity is aggravated by Tuberculosis in HIV positive patients. Immunological improvement was almost same in both the categories after treatment with HAART and DOTS suggestive of proper treatment can counteract immunological hamper caused by Tuberculosis.

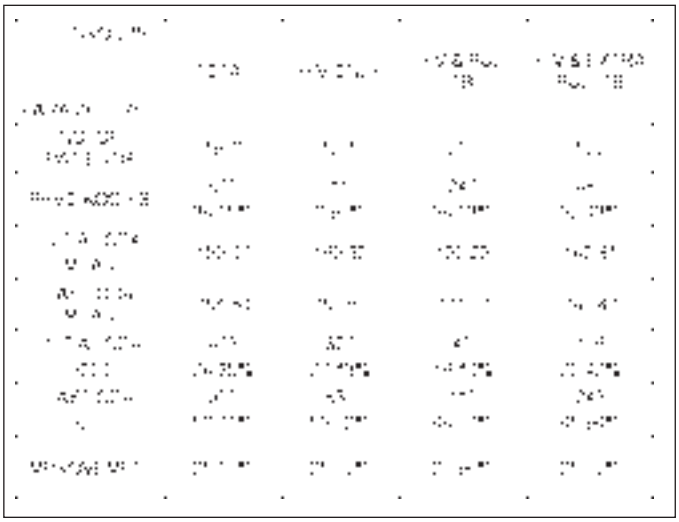

Figure 1: IMMUNOLOGICAL IMPROVEMENT

P-279 HIV SCREENING IN PREGNANCY- A STUDY OF 16,152 PREGNANT WOMEN

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Objective: To study the knowledge, awareness and prevalence of HIV/AIDS in pregnant women screened in antenatal clinic

Methods: Pregnant women coming for ANC check up in OPD were interviewed as regards their knowledge and awareness of HIV/AIDS & its transmission. Under the Prevention of Parent to Child Transmission program pregnant women were counseled by a counselor and HIV testing done if woman agreed. The results of the study were analyzed.

Results: During the period from April 2004 to Aug 2006, 43,967 antenatal registrations were done. Of these 16,152 pregnant women were counseled for HIV testing during pregnancy. A total of 62% (10,083/16152) women agreed for the HIV testing. In the first year, that is, from April 2004 to Dec. 2004 only 60% woman agreed for testing, in the second year (2005) 78% gave consent while in 3rd year (from Jan 2006-Aug 2006) 90% agreed for testing. 33 (0.32%) women tested positive for HIV. Majority of women interviewed had some knowledge about HIV (76%). 76% had heard it on television, 23% from other sources and only 1% from health workers. Regarding transmission of HIV, 15% had no knowledge, 16% knew the three routes of transmission (sexual, blood transfusion, I.V. injection), 43% had knowledge about mother to child transmission and most knew about sexual transmission (85%). The knowledge and awareness showed a significant difference in the education status of the women, literate (64%) and illiterate (12%).

Conclusion: HIV testing in pregnancy to prevent parent to child transmission is slowly gaining momentum in the Indian population. However, there is still a lack of knowledge and awareness regarding HIV and its transmission. Hence more emphasis needs to be given to provide information to all. This would go a long way in reducing transmission of this deadly infection from the society

P-280 INTER-POPULATION DIFFERENCES IN HIV TESTING PROMPTNESS INTRODUCE BIAS IN HIV INCIDENCE ESTIMATES USING THE SEROLOGIC TESTING ALGORITHM FOR RECENT HIV SEROCONVERSION (STARHS)

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Objective: Assess potential bias in HIV seroincidence estimates obtained using the Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS) by comparing them to seroincidence estimates obtained using an established cohort method.

Methods: We calculated two sets of HIV seroincidence estimates for identical groups of MSM clients presenting for HIV testing between January 1996 and October 2000. For STARHS, blood from testers identified as HIV infected by an initial EIA was retested with the Less Sensitive EIA (LS-EIA), which is reactive only to the level of antibodies produced by EIA positives a mean days or more following seroconversion on the EIA. Annual seroincidence was estimated to be the proportion of EIA-reactive, LS-EIA- nonreactive diagnostically seropositive tests among all tests, multiplied by a factor of 365/ ,_ per Janssen et al. A cohort-based method adapted from Kitayaporn et al. produced measures of disease events per unit of observed person-time.

Results: Estimates obtained using STARHS methods were greater than those from the cohort method by a factor of 1.0-2.5 depending on year of interest, and by a factor of 1.0-2.0 depending on age group. STARHS estimates were lesser than the gold-standard cohort estimator for only Latinos, characterized by long intertest intervals or no history of prior test.

Conclusions: Validity of STARHS relies on independence between dates of testing and acquisition of infection. Application of STARHS to specimens obtained in a clinical setting, in which testers select the timing of their own testing, may not fulfill that criterion. When testers choose the time of their testing STARHS-derived seroincidence estimates derived from clinical data and specimens may be confounded, particularly if testing patterns between populations vary. These findings have implications for incidence estimates obtained using the newer BED method, which also annualizes the proportion of recently-infected seropositives in a testing population.

P-281 DEFINING VIROLOGICAL FAILURE IN ANALYSES OF HIV CLINICAL COHORTS

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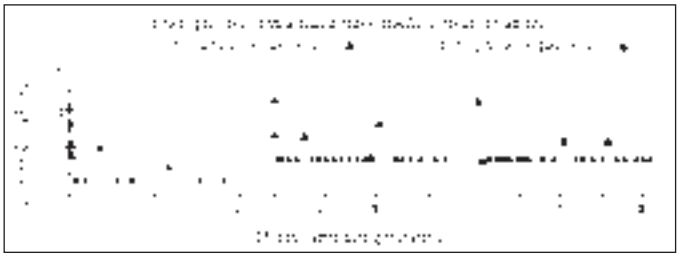
Objective: Virological failure (or rebound) is a commonly used endpoint when analysing data from treated HIV-positive patients. However there is a great deal of variation in HIV viral loads, including brief periods of high viral loads in patients who otherwise have an undetectable viral load (Figure 1). Hence the rate at which viral

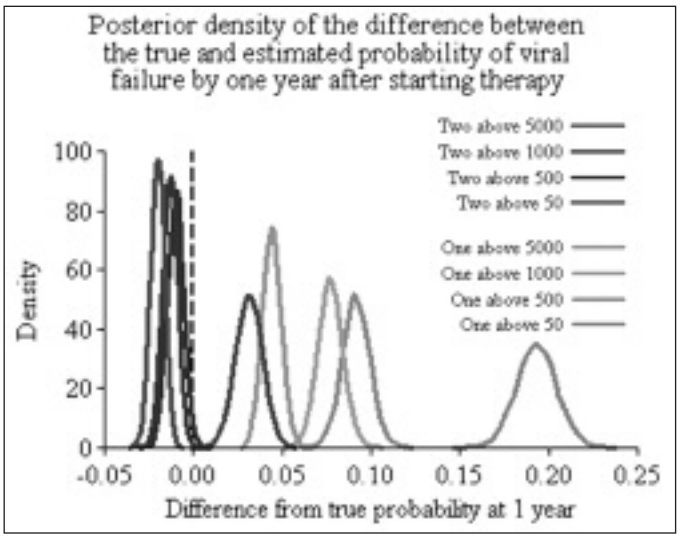
failure is estimated as occurring depends on the definition of failure used. We carried out a simulation study to find out which definitions of virological failure used in analyses of patient data best estimate the distribution of times at which control of viral replication fails.

Methods: A non-linear model was fitted to patients' viral loads outcomes following treatment initiation. The data came from the 2,198 antiretroviral-na_ve patients initiating highly active anti-retroviral therapy (HAART) between 1999 and 2003 in the Athena cohort in the Netherlands. Bayesian methods were used to incorporate information about parameter values from published sources. The estimated parameters were used to simulate datasets of patients' viral loads, with the true time of virological rebound being known in the simulated data. The following definitions of failure were assessed: viral load above 50, 500, 1000 or 5000 copies/ml after previously being below, either with or without confirmation by a second measurement. Using each definition, the probability that virological rebound had occurred by one year after starting treatment was estimated from the simulated data and compared to the true distribution.

Results: The true failure probability at one year after starting treatment was estimated as 0.063 (95% credible interval: 0.032, 0.096). Figure 2 shows the posterior distribution for the difference between each estimated probability of virological failure and the true probability. Counting a person as having failed if there was a single measurement above the threshold leads to overestimation of the failure rate, particularly with a low threshold such as 50 copies/ml. Requiring a second measurement above the threshold to confirm failure leads to underestimation of the failure rate with thresholds of 500 copies/ml or higher, if analyses are censored at a change of regimen as they are here.

Conclusions: Virological failure should not be defined as just a single measurement above a threshold, when the threshold is 1000 copies/ml or lower. Requiring confirmation by a second measurement leads to a more accurate estimate of the failure probability if the threshold is 500 copies/ml or higher. The occurrence of extended periods of low-level detectable viraemia means that according to these simulations, two measurements above 50 copies/ml is also an unreliable measure of virological failure.





P-282 ACUTE HIV INFECTION AMONG PATIENTS SEEN IN A SEXUALLY TRANSMITTED DISEASE (STD) CLINIC IN LOS ANGELES COUNTY, USA

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Objectives: Detection of acute HIV infection (AHI), using nucleic acid amplification testing (NAAT), may lower HIV transmission rates by diagnosing HIV earlier in the infection. We examined behavioral information among patients at a community STD clinic to determine whether acute HIV cases could be differentiated based on behavioral characteristics.

Methods: STD patients, who consented to HIV testing and were antibody negative by the Vironostika_ HIV-1 EIA, were reflex tested with a nucleic acid amplification test (NAAT) using either the Roche Amplicor_ Monitor HIV-1 or GenProbe Aptima_ HIV-1 Assay in a pooled test algorithm. Presumptive acute HIV infections were confirmed with a second EIA test and Western Blot. Sexual practices and other behavioral risk information was collected from patients upon their initial visit ' these characteristics and reason for clinic visit were compared between the acute HIV cases and HIV uninfected patients.

Results: From February 2006 through December 2006, 4,014 patients were screened: 189 (4.7%) were HIV EIA positive; 2,283 (56.8%) were also tested by NAAT with 2,244 (55.9%) negative for both EIA and NAAT; 5 (0.12%) patients were EIA-Ab negative and NAAT positive. Of the 2,244 EIA/NAAT negative patients, 2,022 (90.1%) were men and 1,837 (81.8%) were MSM (men who have sex with other men). All five acute HIV cases were MSM. Several other characteristics were also common to all five acute cases: a previous history of another STD, multiple sex partners in the past three months, and having engaged in oral and anal sex. Methamphetamine was the most common drug used by the acute HIV cases (three of the five acute cases). In contrast, of the 1,837 uninfected MSM: 202 (11.0%) reported methamphetamine use within the past year; 92 (5.0%) had a prior STD infection; 1,270 (69.1%) indicated multiple sex partners in the past three months; and 1,125 (61.2%) and 1,587 (86.4%) engaged in anal and oral sex, respectively. Only nine (0.5%) uninfected patients reported all the above characteristics (methamphetamine use, past STD history, multiple sex partners in past three months, anal sex and oral sex) compared to three out of five acute cases with this profile. There was no significant difference between the proportion of acute cases and uninfected patients who visited the clinic because of symptoms. The age distribution of the acute cases and the uninfected MSM was similar ' 80% of the acute cases and 73.6% of the MSM in the 21 to 40 age range.

Conclusions: Patients with acute HIV infection in this setting were more likely to have recently used methamphetamine, to have a past history of an STD, and to have had multiple sex partners in the past 3 months. The acute HIV cases detected in Los Angeles County share a similar behavioral profile that differs from that of HIV uninfected patients.

P-283 UNDERSTANDING THE IMPACT OF HIGH-RISK SEXUAL BEHAVIOUR ON HETEROGENEITY IN HIV PREVALENCE IN RURAL INDIA: RESULTS FROM MATHEMATICAL MODELLING

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Objectives: HIV prevalence in Bagalkot District, a primarily rural area in the southern Indian state of Karnataka, varies considerably by Taluka (sub-district administrative area). We developed transmission dynamics models to explore the impact of key behavioural characteristics of the population of female sex workers (FSWs)

and their clients (MCLs) in order to better understand heterogeneity in HIV prevalence among the overall populations between three Talukas (A, B, C) in Bagalkot District.

Methods: To assess the independent impact of each risk factor, model parameters were initially calibrated to observed overall 2004 prevalence in each Taluka (A=1.2% [0.6 ' 2.0]%; B=2.9% [2.2 ' 3.7]%; C=4.9% [3.6 ' 6.5]%). The range of behavioural and demographic model parameters of each Taluka was defined from FSW and general population surveys (GPS) conducted in Bagalkot in 2004. The characteristics explored included population size: overall (B=1.5-fold Talukas A and C); fraction of FSWs in the population (A: FSWs=1.6%, B: FSWs=2.0%, C: FSWs=3.6%); fraction of males reporting ever being a client (A: MCLs=11.4%; B: MCLs=13.2%; C: MCLs=18.0%). Other parameters with limited data available also varied included duration of sex work (SW) (4.5 ' 18 years) and male client risk behaviour (MCRB) (5 ' 20 years). The same number of mean MCL contacts/FSW/year was used across Talukas (~520 in 2004). FSWs/MCLs ceased high-risk behaviour after a (varied) duration of years, then adopted low-risk groups' behaviour and were immediately replaced by low-risk females or males.

Results: In each Taluka, observed 2004 HIV prevalence was difficult to reproduce unless duration of SW/MCRB was less-than-lifelong (~9/20 years); otherwise, prevalence was too low, due to low reported number of partners in the general population and low mixing probability (~12%) between low-risk females and clients. When we varied (increased) each parameter by the same amount (proportionately) in each Taluka, FSW size had the largest absolute impact on 2004 model prevalence (increased). For example, increasing Taluka A's FSW size from 1.6% to 2.0% (B's value) and 3.6% (C's value) increased 2004 model prevalence from 1.2% to 2.2% and 5.3% respectively. MCL size had the second largest total impact (decreased), followed by duration of SW (increased), MCRB (decreased) and finally overall population size (decreased).

Conclusions: Under our model assumptions, duration of SW/MCRB and overall population size were unlikely to explain differences in HIV prevalence between Talukas. Assuming the mean frequency of MCL contacts per FSW remains the same with increased FSW/MCL size, larger FSW sizes could explain a substantial fraction of differences in HIV prevalence between Talukas, since total FSW-client partnerships increased as a result. Interestingly, if total client-FSW partnerships remained fixed, increasing MCL size decreased prevalence, since the number of MCL contacts with FSWs also declined. This suggests that overall prevalence is more sensitive to the number of MCL visits to FSWs than MCL population size. This remains to be validated for parameters representative of other Talukas. Assessing the impact of high-risk group population size is complicated, as this influences the total number of FSW-client partnerships. Additional data on FSW/MCL population size would help reduce model uncertainty.

P-284 DETECTION OF TT VIRUS IN HIV-1 EXPOSED BUT UNINFECTED INDIVIDUALS AND IN HIV-1 INFECTED PATIENTS AND ITS INFLUENCE ON CD4+ LYMPHOCYTES AND VIRAL LOAD

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Objective: The TT virus (TTV) was detected for the first time by Nishizawa and Okamoto et al. in 1997 in the serum of a patient with post-transfusion hepatitis of unknown origin (non-A-non-G type). TTV was subsequently, also found in the serum of blood donors with no history of blood transfusion, although at a lower rate than among donors with a history of blood transfusion. In the present study, the percentage of TTV carriers among HIV-infected and noninfected patients was determined. The study was conducted to evaluate CD4 count and HIV viral load in 100 asymptomatic patients infected with HIV-1, 100 symptomatic patients with AIDS, 100 HIV-1 exposed but uninfected individuals and 100 normal healthy blood donors.

Methods: Following approval from the Human Ethics Committee of Londrina State University (UEL), 400 DNA samples of individuals attending the University Hospital of UEL, Parana, Brazil were evaluated. They were divided in 100 normal healthy blood donors with negative serology for HIV, HBV and HCV (G1), 100 HIV-1 exposed but uninfected individuals (G2), 100 asymptomatic patients infected with HIV-1 (G3) and 100 symptomatic patients with AIDS (G4). The statistical analysis was performed using the Student t test and Odds ratio (OR) with 95% confidence intervals (95%CI), using the software Microcal OriginTM 6.1. A P value ≤ 0.05 was considered statistically significant.

Results: No significant differences were found between groups for age and gender. In this work, the presence of TTV was investigated by nested-PCR. TTV was detected in 6% of normal donors, 12.5% of HIV-infected individuals and 21% of exposed individuals. The presence of TTV was statistically significant in the HIV-exposed individuals (21/100) compared with blood donors (6/100). ODDS RATIO = 4.16 (95%CI 1.60 ' 10.83). No inter-group relations were found for CD4 and CD8 counts or HIV viral load. In the symptomatic group, patients with TTV presented minor viral load. Genomic DNA was isolate from 5 mL of peripheral blood cells. The presence of TTV DNA was determined by nested PCR (Polymerase Chain Reaction) using a set of four primers, as described by Nishizawa et al. (1997) (GenBank Accession AB 008394). In this system, the PCR product is a DNA fragment of 197bp localized in a region of the large open reading frame (ORF-1) that has been denominated the N22 region.

Conclusions: This work demonstrated that TTV was detected in HIV-exposed individuals and no relation was verified for CD4, CD8 and viral load in the asymptomatic and symptomatic HIV patients. kagi@sercomtel.com.br

P-285 COMPUTER COUNSELING AND SELF-TESTING FOR HIV PREVENTION IN SOUTHERN INDIA

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Objectives: We conducted a qualitative study to determine the potential acceptability and feasibility of computer counseling and self-testing for HIV (CARE-India) at community internet centers in Tamil Nadu, India. It is estimated that currently over 4.5 million people in India are unaware of their HIV infection. The privacy of the CARE computer counseling tool, when coupled with self-testing, and delivered through networks of community internet centers, may help to overcome barriers to diagnosis. The CARE-India tool includes an ACASI assessment, with feedback, skill building videos, HIV test consent, guided self-test instructions, risk reduction plan development, and automated health referrals.

Methods: We conducted 8 focus groups at community internet centers in three towns outside Chennai, India. Each group included 3-8 people. In total, 5 community participant focus groups (1 group each - single women, single men, married women, married men, couples, n=27) were held. During the focus groups, CARE-India was demonstrated. Participants were asked about: 1) Priority health concerns; 2) Current HIV knowledge and testing practices; 3) HIV testing barriers and facilitators 4) Acceptability of computer counseling and OraQuick oral fluid self-testing; and 5) Recommendations for adaptation of the CARE tool for Tamil culture.

Results: Equal numbers of men and women participated. Only 3 participants (11%) had prior computer experience. Most participants had heard of HIV but few displayed complete knowledge about how to prevent it. Almost no one knew about sexually transmitted infections and their impact on HIV transmission, and very few had heard about life-prolonging treatments. None of the participants acknowledged HIV testing previously, although all thought 'everyone should be tested.' People

knew that they could get tested through government testing centers, but no one had because of stigma. Although all agreed that advertising HIV testing availability in community internet centers would turn people away, 'People would be lined up down the street' and would test, if free general health assessments were offered that incorporated HIV risk assessment and offered OraQuick Oral fluid HIV testing along with Diabetes testing. On a Scale of 1 (no) to 10 (yes) when community participants were asked whether they wanted to use the CARE-India computer counseling and rapid testing program the mean score was 9.8 (n=21). They liked the privacy of computer counseling and the convenience and speed of the rapid HIV test. Eighty six percent (18/21) of those asked indicated they would rather test themselves for HIV, although all thought that trained staff should be available for support and referrals in the event of a positive test result.
Conclusion: Computer assisted self-testing for HIV in community internet centers is highly acceptable and may be preferable to clinic-based testing among people in small towns in Southern India where HIV stigma is high. The CARE tool may help to address knowledge gaps and impact HIV risk behaviors and knowledge of HIV status. A computer assisted health worker entrepreneur model for further dissemination of computer counseling and self testing was acceptable and could profoundly increase access to HIV testing in remote villages if widely implemented.

P-286 HIV PREVENTION IN CANADIAN PUBLIC HEALTH JURISDICTIONS

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Objectives: Despite advances in HIV care, the disease continues to have a profound impact on all aspects of the infected individuals' health and well being and in addition incurs immense costs to the health care system. To address both the care and the costs, effective prevention interventions must be a high priority within the public health system. In 2006, a project was initiated to increase the use of evidence-based HIV prevention interventions in Canada. As a first step towards this goal, public health practitioners were surveyed to identify: the HIV preventions interventions currently practiced in Canada, the barriers preventing the implementation of these interventions and, the gaps existing in current HIV prevention practices.
Methodology: In collaboration with an expert working group, a survey was developed and administered by an independent contractor. All Federal, Provincial, and Territorial STI directors were contacted and asked to identify public health professionals in their jurisdiction for inclusion in the survey sample. The survey was mailed to 97 identified individuals across Canada. It included questions regarding current HIV prevention practices, the level of priority given to each intervention and the barriers to the implementation of the interventions.
Results: The response rate was 51%. Of the 49 individuals who completed the survey the majority were public health nurses (41%) followed by medical officers of health (16%) and salaried physicians (6%). Contact tracing and partner notification (88%), testing and early diagnosis for HIV by primary care providers (80%) and effective prevention program to prevent and control HIV (76%) were the interventions provided most frequently. These were also the interventions assigned the highest priority for personal practice and national concern. Interventions provided infrequently were programs to support HIV negative individuals in discordant relationships (16%) and case management for HIV positive non-adherent individuals (22%). Programs for discordant couples were also assigned lowest priority. The greatest reported barriers to the implementation of interventions were the availability of staff, funding, time constraints and training opportunities.
Conclusions: The survey has identified the need for workshops and further training for frontline public health practitioners in counseling and supporting couples in discordant relationships and to reinforce the importance and effective strategies to ensure HIV positive individuals remain in care.

P-287 ANALYSIS FOR HIV-ANTIBODY TEST RESULTS OF MEDICAL INSTITUTIONS IN BEIJIN

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Projects: To get a general idea of HIV testing ability in Beijing, to find out the working status of HIV antibody test of the medical institutions and the HIV infection level of the patients.
Methods: Hospitals of different areas and different grades were selected as the research objects in this research. The method of descriptive research was adopted in order to describe the information of people that was tested for HIV antibody in hospitals, the distribution situation of department and the infection rate of HIV. The data was inputted into EXCEL software.SPSS11.5 statistic software was used to analyze the data.
Results: Nineteen hospitals that have testing laboratory were selected in four districts. Nine was in urban and ten was in suburb. During July 2005 and June 2006, the hospitals had carried out 86277 tests and 205 were confirmed as HIV-antibody positive. The total positive rate is 0.24%. Among the people who were tested positive, there were 154 men (positive rate 0.37%) and 50 women (positive rate 0.12%).The positive rate can be listed by the sequence from high to low as follows: the skin and STD out-patient service 1.13%; infectious diseases service 0.76%; other sections 0.06%; gynecology0.02%; surgery0.005%, and those unknown sections 0.014%. The positive rate of suburb was 0.46% which was higher than that of urban. The positive rate of the infectious disease specialized hospitals and CDC were higher than that of comprehensive hospitals.
Conclusions: The research results indicated that the positive rate of all the people is in a low level. The risk of HIV infection during operational treatment is low. For the prevention of HIV/AIDS, we still should pay more attention on the high risk population.

POSTER SESSION: HPV

P-288 A PILOT STUDY OF INTRALESIONAL IMMUNOTHERAPY WITH KILLED MYCOBACTERIUM WELCHII VACCINE FOR GIANT CONDYLOMATA ACCUMINATA (BUSCHKE LWENSTEIN TUMOR)

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Background: Buschke Löwenstein tumor (BLT) or giant anogenital condyloma is a semimalignant neoplasm of anogenital region caused by Human Papillomavirus (HPV) - 6 and 11. In contrast to condylomata accuminata, BLT is characterized by locally invasive growth. Its management differs from that of CA because of its much bigger size, semi-malignant nature, and greater tendency to recur. Unfortunately, official management guidelines on STDs from CDC and WHO are silent on the treatment of BLT. Experts recommend cold knife excision and laser ablation for treatment of BLT, as medical therapies are considered to be ineffective.
Objective: To evaluate the efficacy and safety of intralesional injection of Mycobacterium welchii (Mw) vaccine as a monotherapy in an open label pilot study for the treatment of giant ano-genital condylomata (BLT).
Methods: Three Patients having giant anogenital condylomata were recruited. Patients were sensitized with 0.1 ml of Mw vaccine injected subcutaneously in the deltoid area on both shoulders. Two weeks later, 0.1 ml was injected intralesionally into the BLT, which was repeated at 2 week intervals till complete subsidence of the lesions or 22 weeks (12 injections), whichever was earlier.
Results: Age of the patients were 15, 28 and 30 years. Tumors were seen on the genitalia in 2 patients and in the perianal area in one patient. The duration of the disease was 3, 3, and 5 months respectively. All patients were seronegative for HIV

and syphilis. All patients reported mild pain and swelling for one week after the injection. This was followed by superficial necrosis and reduction in the size of the warts. All patients showed complete response after 3-12 wks and none of the patients required 12 injections (Fig. 1). Adverse events were seen in the form of reactivation of herpes infection and formation of transient subcutaneous papule at the site of injection in one patient each. No recurrence was noted in any of the patients during the follow-up of 3-6 months.

Limitations: Small sample size and uncontrolled study

Conclusions: Intralesional immunotherapy with Mw vaccine is highly successful and safe in giant condylomata and it may replace current practice of wide surgical excision for the management of this semimalignant troublesome condition, as the latter is associated with greater risk of recurrence and morbidity. The therapeutic role of Mycobacterium w vaccine needs to be evaluated in randomized placebo-controlled trials with larger sample sizes, though the rarity of the condition may be prohibitive to achieve this goal.

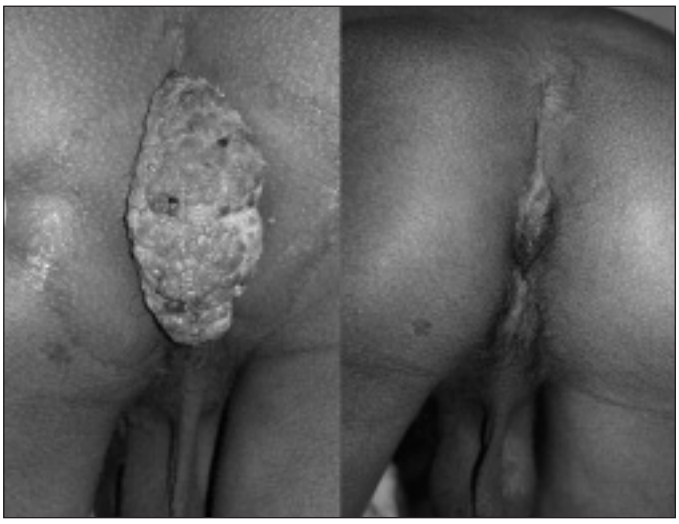

Figure 1. Before and after 6 injections

P-289 HUMAN PAPILLOMAVIRUS IN WOMEN WITH AND WITHOUT HIV-1 INFECTION ATTENDING AN STI CLINIC IN BRAZIL: PRELIMINARY RESULTS

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Objectives: Evaluate the prevalence of Human Papillomavirus (HPV) infection in HIV-positive and HIV-negative women attending an STI clinic in Vitória, Brazil, and to assess risk factors for HPV infection.

Methods: Case-control study from March to December 2006. Women attending an STI clinic in Vitória for a routine visit to the gynecologist were invited to participate in the study. All patients were interviewed after provided informed consent. Enrolled patients underwent a gynecological evaluation, and cervical scrape samples were collected for cytological analysis and HPV DNA PCR. A blood sample was obtained to determine the HIV status.

Results: HPV infection and squamous intraepithelial lesions (SILs) were studied in 279 women, 106 (38%) HIV infected and 173 (62%%) without HIV infection. HPV DNA was detected in 150 (53.8%). There was no statistical difference between two groups regarding demographics. The median age of the total sample was 31 (IQR 25-38) years, mean education was 7.7 (SD 3.5) years, and mean age of first sexual intercourse was 16.7 (SD 3.3) years. Compared with women who were HIV negative, women HIV infected reported history of STI more frequently (89.6% vs., 65.3%, P<0.05), use more condoms (77.4% vs. 62.4%, p<0.05) but did not report more drug abuse (23.6% vs. 17.9%, P =0.51) or prostitution (18.9% vs. 20.2%, p=0.32). Human papillomavirus was significantly higher in HIV-1-infected women [OR=2.01 (95% C 1.22-3.31). High-grade SILs were identified in 0.9% of women.

Conclusions: These results show high proportion of HPV in women attending an STI clinic; it suggests that similar cervical cancer screening practices may be applicable to both groups. The investigation of HIV-infected patients is of particular value because they presented a higher risk of HPV infection then sensitive detection methods are required and may have important consequences for the management of immunocompromised patients. Correspondence: espinosa@ndi.ufes.br

P-290 ANTICIPATED IMPACT OF HPV VACCINE ON STD CLINIC UTILIZATION IN NEW YORK CITY

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Objectives: In June 2006, the U.S. Food and Drug Administration approved a 3-dose Human Papillomavirus (HPV) vaccine for women aged 9 to 26 years. The New York City (NYC) Department of Health and Mental Hygiene (DOHMH) Bureau of STD Control (BSTDC) manages ten free STD clinics. This analysis examines how introduction of HPV vaccine could impact clinic utilization and estimates missed opportunities for diagnosis and treatment of non-wart STDs.

Methods: Data from October 2005-September 2006, extracted from BSTDC electronic medical records, included patient reason for visit, demographics, genital warts history, and final diagnoses. To estimate the impact on clinic utilization of offering the 3-vaccine HPV series, we identified women aged 9-26 who visited the clinic and then applied BSTDC's Hepatitis-B vaccine series completion rates (31% with initial vaccine get a second dose, and 8% with initial vaccine receive a third dose). To estimate the potential reduction in clinic visits when high rates of HPV vaccine coverage are achieved, we enumerated female visits for wart-related complaints. Visits at which wart-related complaints were the only reason for visit and no wart history was reported were considered 'first-time warts-only visits'. The frequency of select, non-wart STD diagnoses (Chlamydia/gonorrhea or 'other' infections: defined as mucopurulent cervicitis, Trichomoniasis, and Bacterial Vaginosis) were examined among female, first-time warts-only visits to quantify disease that might be missed if these women no longer presented with genital warts.

Results: Among 62,091 physician visits during the study period, 26,752 were by females. Women aged 9-26 made 14,744 clinic visits; if all these women accepted HPV vaccine, there would be 5,750 additional encounters for doses #2 and #3. Eleven percent (3,035) of all female visits had a warts-related chief complaint. Of these, 2,078 (68%) of those had no history of warts; and 1,131/2,078 (21%) were first-time warts-only visits. Among the 1,131 first-time warts-only visits, 516 (46%) were made by women in the target age for catch-up vaccination. Seven percent (84) of 1,131 visits were given a final diagnosis of genital warts, compared to 1.6% of female visits with another chief complaint (p<0.0001). Among those warts-diagnosed females, 8 (10%) had Chlamydia/gonorrhea and 32 (38%) had 'other' infections.

Conclusions: Not all female first-time warts-only visits would be eliminated with vaccine implementation; over half were older than the recommended vaccine age. Also, the small percentage of warts diagnosed among women in the first-time warts-only group suggests other diseases may have triggered the complaints. This group had limited morbidity, yet a substantial proportion of warts-diagnosed females were co-infected with Chlamydia/gonorrhea or 'other' infections. Elimination of these warts visits would result in missed opportunities for non-wart disease detection and patient education. Providing catch-up vaccination to current STD clinic attendees could result in a 21% increase in female clinic visits, not including patients drawn to the clinic specifically for vaccination purposes. This shift in clinic resources underscores the need for thoughtful integration of vaccine services as well as appropriate patient education messages surrounding continued risk and healthcare needs.

P-291 EPIDEMIOLOGY OF HUMAN PAPILLOMAVIRUS INFECTION AMONG FISHERMEN ALONG LAKE VICTORIA SHORE IN KISUMU DISTRICT, KENYA

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Objective: To determine the prevalence and determinants of Human Papillomaviruses infection among sexually active fishermen working along the shores of Lake Victoria in Kisumu district, Kenya.
Methods: This cross-sectional sought to determine the prevalence of Sexually Transmitted Infection (STIs) including HPV among fishermen working in Kisumu district, Kenya, in order to guide the design and subsequent conduct of a male microbicide trial. Beaches were sampled with probability proportional to size and fishermen were selected resulting in a self-weighted sample. A detailed structured behavioral interview gathered information on genital hygiene, migration patterns, sexual behavior and interest in participating in microbicide research. Genital specimens were obtained using two pre-wetted cotton tipped plastic shafted swabs; one over the glans and sulcus corona of the penis, and the other over the shaft of the penis, the scrotum, and the perianal region and placed in the same plastic tube containing 400 µl storage and transfer media. HPV positivity was determined by polymerase chain reaction amplification and detected by dot blot hybridization with generic HPV and beta-globin probes. HPV positive samples were genotyped using the Roche Linear array assay.
Results: The mean age of the 250 men was 31.3 years (range: 18 ' 63 years) and the majority were married (69.2%), reported no condom use in the last two sexual acts (62.8%), and were not circumcised (92.8%). All the 250 genital swabs specimens were positive for beta-globin gene and were therefore appropriate for HPV DNA analysis. Approximately, 58% of the fishermen had detectable HPV DNA and 26% were HIV seropositive. Overall, 42% were infected with oncogenic HPV types with HPV-16 detected most frequently (12%). Most men positive for HPV (73%) were infected with more than one HPV type with 14% infected with more than six different types. In bivariant analysis men who were either HIV seropositive PR = 1.49 (95% CI 1.19 - 1.86), or divorced/separated PR = 1.62 (95% CI 1.13 - 2.33) were more likely to be infected with HPV. Evaluating sexual activity with the last two most recent sexual partners, more than half (64%) of men reporting condom use at least once were infected with HPV, however this associated was not significant PR = 1.14 (95% CI 0.91 - 1.43). In multivariate analysis HIV infection PR = 1.22 (95% CI 1.01 - 1.47) was the only factor independently associated with infection with multiple types of HPV.
Conclusion: Oncogenic HPV and HIV infections were prevalent among sexually active fishermen in the Kisumu District of Kenya. Intervention strategies to reduce HIV/HPV acquisition are needed in this community. With the advent of therapeutic HPV vaccines it would be important to evaluate the prevalence of HPV among the sexual consorts of the fishermen community.

P-292 PROVIDER CHARACTERISTICS ASSOCIATED WITH PATIENT ACCESS TO CERVICAL CANCER SCREENING TECHNOLOGIES, UNITED STATES

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Objectives: Papanicolaou (Pap) screening has dramatically reduced the incidence of invasive cervical cancer in the United States over the past fifty years. Conventional Pap screening has a low sensitivity and often results in a technically inadequate specimen. Liquid-based cytology (LBC) and human papillomavirus (HPV) testing improve the sensitivity of the Pap screen and improve its performance in the detection of pre-cancerous abnormalities. The objective of this study is to determine if the number of years a clinician has provided care, clinician gender, or solo practice is associated with access to HPV DNA testing, LBC, conventional Pap screening, and the availability of colposcopy at the provider's principal practice site.
Methods: In 2004, we conducted a nationally-representative survey of 5386 U.S. clinicians in specialties offering cervical cancer screening. We received 3356 eligible surveys, and analysis was restricted to the 2980 providers (89%) who indicated that they offer Pap screening. We evaluated associations between the number of years providers had been delivering clinical care, provider gender, and practicing in a solo setting and the following outcomes: provider use of HPV DNA testing, use of LBC, use of conventional Pap testing; and patient access to on-site colposcopy. Bivariate and multivariate logistic regression analyses were performed using SUDAAN.
Results: Providers who practiced more than 30 years, compared to those who practiced 10 years or fewer, were less likely to use HPV DNA testing, although the association was not significant in the multivariate analysis (unadjusted OR (ORu) 0.58, 95% CI 0.35-0.96; adjusted OR (ORa) 0.93, 95% CI 0.55-1.57). Providers who practiced 20-30 years, compared to those who practiced 10 years or fewer, were less likely to use LBC (ORa 0.50, 95% CI 0.36-0.69), and more likely to use conventional Pap testing (ORa 1.88, 95% CI 1.29-2.73). Providers who practiced for 10-20 years were more likely than providers who practiced 10 years or fewer to have colposcopy available at their principal practice site (ORa 1.34, 95% CI 1.02-1.78). Compared with female providers, male providers were less likely to use HPV DNA testing (ORa 0.54, 95% CI 0.41-0.70), less likely to have colposcopy at their principal practice site (ORa 0.75, 95% CI 0.58-0.96), and more likely to use conventional Pap testing although the association was not significant after adjustment for years in practice and type of practice (ORu 1.51, 95% CI 1.15-1.99; ORa 1.09, 95% CI 0.78-1.52). Providers in solo practice were less likely to use HPV DNA testing (ORa 0.51, 95% CI 0.38-0.67) and to have colposcopy at their principal practice site (ORa 0.41, 95% CI 0.32-0.54).
Conclusions: More experienced providers, male providers, and providers in solo practice are less likely to use some of the newer, more sensitive cervical cancer screening technologies, and to have colposcopy available at their practice site. These groups of physicians may need targeted interventions to educate them about better cervical cancer screening options.

P-293 THE ROLE OF EVALUATION OF HUMAN PAPILLOMAVIRUSES (HPV) EXPRESSION IN DIAGNOSIS OF SOME PREMALIGNANT SKIN DISEASES

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Objective: We aimed to study the characteristics of HPV expression in patients with premalignant diseases of the skin.
Methods: We examined immunocompetent patients with premalignant lesions of the skin such as actinic keratosis and Bowen's disease. 10 patients were involved in each group. Clinical study included gross features of lesions, growth rate, colour, and size. Paraffin sections from biopsy specimens were stained by hematoxylin-eosin and von Gieson. Immunohistochemistry was performed using monoclonal antibodies against HPV, oncoprotein p53, anti-apoptotic protein Bcl-2 and proliferation marker PCNA. Strongly, moderately and weakly positive cells were counted.
Results: Actinic keratosis and Bowen's disease did not reveal specific clinical features, therefore, they cannot be diagnosed based on clinical signs only and morphological examination seems to be mandatory. The immunohistochemical study has shown that in both actinic keratosis and Bowen's disease HPV test was positive in 60% and negative ' in 40% of cases, which suggests that susceptibility to

HPV infection in these premalignant lesions is similar. Our results suggest that HPV+/p53+ types of actinic keratosis and Bowen's disease are characterized by higher proliferation activity in comparison to HPV-/p53+ types.
Conclusion: Therefore, these premalignant lesions of the skin require immunohistochemical examination on HPV with subsequent evaluation of its expression.

P-294 PREVALENCE OF GENITAL WARTS AMONG ATTENDEES OF THE SEXUALLY TRANSMITTED DISEASES CLINIC IN A NIGERIAN TEACHING HOSPITAL

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Objectives: This study sought to determine the association between Human Papillomaviruses (HPV) infection, other locally endemic sexually transmitted diseases (STDs) and the sexual behavior of patients with a view of decreasing the incidence of cervical cancers.
Methods: A seven year retrospective review of 212 case notes of patients attending the clinic was done. The case notes of patients presenting with epithelial warts were reviewed for presentation with other sexually transmitted diseases, age at initiation of sex, present number of sexual partners and overall sexual behavioral pattern. The results of laboratory tests taken by the patients were also reviewed. Data was analyzed with the use of the SPSS (version 10) data editor. Chi square tests were used to determine the level of association.
Results: Thirty-two cases of patients presenting with epithelial warts were reviewed (15.1%).The mean age at sexual initiation was 18.7 years.(SD=1.6 ,SEM=0.375).A total of nineteen cases had other sexually transmitted diseases(59.4%).A history of epithelial warts had a significant association with the presence of other sexually transmitted diseases($p<0.05$).
Conclusions: The presence of epithelial warts (HPV) infection is associated with other sexually transmitted diseases. A more aggressive management of STDs and more effective contract tracing is needed to reduce the incidence of cervical cancers.

P-295 CAN SELF COLLECTION FOR HUMAN PAPILLOMAVIRUS IMPROVE ACCESS FOR CERVICAL CANCER SCREENING IN AT-RISK WOMEN IN DEVELOPED COUNTRIES?

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Objectives: Cervical cancer screening programs are often not accessed by specific populations, and creative strategies to improve uptake of cervical cancer screening are needed. In this study, we offered HPV self sampling to street involved, marginalized women in Vancouver Canada to determine if this intervention could improve uptake of cervical cancer screening in an at-risk population.
Methods: Street involved women who lived in the downtown eastside (DTES) of Vancouver, British Columbia were recruited at women's centres, shelters, in the alleys and the streets of the DTES of Vancouver. Women were asked to provide a self collected specimen for HPV to an outreach nurse by inserting a Dacron swab intravaginally, rotating the swab three times and then removing it. Specimens were analyzed using Digene HC-II technology for high risk HPV types. Prevalence of high risk HPV was determined for the study group with 95% confidence intervals. Descriptive analysis of the study population was conducted including rates of ever having had Pap testing, timing of most recent Pap test and rates of follow up for HPV positive results. Bivariate analyses were conducted for categorical variables, with Chi square or Fisher's exact test where appropriate, comparing the characteristics of HPV positive women and HPV negative women. Student's t-test was used for continuous variables. Logistic regression analysis was conducted to calculate adjusted odds ratios to identify factors that were associated with HPV positivity. Rates of screening in participants were compared with the rest of the BC population using self reported findings from the Canadian Community Health Survey and from aggregate data available from the Cervical Cancer Screening Program respectively, which conducts all Pap smear testing for the entire province.
Results: Of the 152 women recruited between November 2004 and October 2005, all were willing to provide an HPV self collected sample. 151 specimens were available for analysis. Participants had a median age of 39 (range 18 to 62). Forty nine percent were aboriginal and 71% lived in unstable housing. Prevalence of high risk HPV was 28.3% (95%CI 21.2 ' 35.4). The outreach team was able to provide results to over 80% of the street involved women who were positive for HR-HPV (35/43). In logistic regression analysis, women who were HPV positive were significantly younger than HPV negative women (Adjusted OR 0.95 (95% CI 0.92-0.98)]. Twenty-one women of the 151 women in the study had never received a Pap test (13.8%) in British Columbia, compared to 8.3% of BC women in the CCHS ($p<0.05$). Women in the study were also significantly less likely to have had a Pap smear in the past three years (53.6% vs 62.8%, $p<0.05$).
Conclusions: Use of an innovative cervical cancer screening was acceptable and facilitated enrollment of at risk, marginalized women who had not participated in a highly functioning cervical cancer screening program. Aboriginal woman, who are at particular risk for cervical cancer, participated in this method of cervical cancer screening. Further examination of HPV self-collection and its role in improving access to cervical cancer screening is warranted.

P-296 HIGH-RISK HUMAN PAPILLOMAVIRUS (HR-HPV) INFECTION: DO WE KNOW ENOUGH ABOUT ITS DISTRIBUTION IN THE MALE UROGENITAL TRACT?

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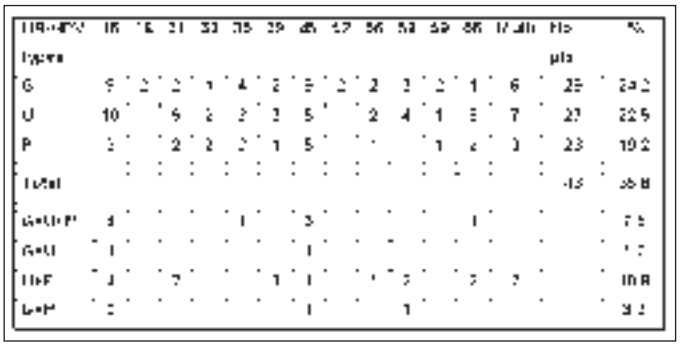
Objectives: It has been supposed that the prostate can harbor viral infections but little is known about the distribution of HPV in the gland. However, the knowledge is important for a better understanding the transmission of HPV infection, its role in prostate and cervical cancers, subsequently the exploration of HPV vaccine usefulness in prostate cancer. The goal of the study was to investigate the presence of HR-HPV types in the concordant penile, urethral and prostate samples in a Russian population.
Methods: A total of 120 heterosexual men (mean age 30.6 years; range 19-56 years; average number of sex partners 31; mean age of the beginning of sexual life 17.6 years), who were seeking to be routinely tested for sexually transmitted infections (STIs), were enrolled in the study for the prevalence of HR-HPV types in 2 urology outpatient units in St.-Petersburg from January 2006 through to February 2007. The presence of HR-HPV types DNA was investigated in the penile swabs and distal urethra (urethral brushings) samples, and expressed prostate secret (EPS), obtained after massage of the prostate. Only men with no STIs at the time of examination were included in the study. The PCR assay was used to detect viral genomes in the penile (G), urethral (U), and EPS samples. Detection of HR-HPV (16, 18, 31, 33, 35, 39, 45, 52, 56, 58, 59 and 66 types was performed with the use of type-specific PCR. All samples were tested against HPV. The presence of HPV DNA was also investigated in Amsterdam by the GP5+/6+ PCR assay.
Results: The results are presented in the Table. HR-HPV type prevalence in the study population was found to be 35.8%, with HPV 16 type detected most often (up to 39.1%). However, concordance between HR-HPV types distribution in the three anatomical sites was 7.5% only. In 2.5% men different HR-HPV types were detected compared with either penile or urethral samples. All HPV negative samples were confirmed in Amsterdam.

Conclusions: In our opinion, the prostate samples have to be in focus of the HR-HPV studies in men: additional investigation of EPS increased the number of HR-HPV positive men detected as compared to testing penile plus urethral or only penile samples: 10.8% (p = 0.3167) and 11.7% (p = 0.0177), respectively. Interestingly, more then 20 life'time sexual partners was associated with increased detection of HR-HPV types in the prostate (p < 0.0001) (24.4% men). The presence of HR-HPV types in the penile swabs, distal urethra and EPS of men with no STIs in a Russian population was investigated and compared for the first time. Comparison to the VUmc (Amsterdam) tests is in progress for the Russian HPV positive samples. The group is being extended.



P-297 HUMAN PAPILLOMAVIRUS (HPV) INFECTION: THE DISTRIBUTION IN MALE UROGENITAL TRACT IN UROLOGICAL PATIENTS

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Objectives: The prevalence of symptomless genital HPV infection among men is not well established. This is partly due to a poor understanding of which sites should be tested. Up to now there is no published study regarding the HPV distribution in Russian male population. HR-HPV types are accepted to be involved in the etiology of cervical cancer and this has lead to new vaccine approaches. The influence of HPV infection on the risk of cancers among men, i.e. prostate cancer, is still under investigations. The goal of this study was to investigate the HPV infection presence in the urethral and prostate samples in the Russian urological patients.

Methods: The urethral and prostate samples of 210 men (mean age 31.7, range 16-60 years), who visited 2 urology outpatient units in St.Petersburg, were sequentially collected from May through to October 2006 to be tested against sexually transmitted infections and HPV. No specific selection was made to the obtained this study group. The presence of high- and low-risk HPV (HR- and LR-HPV, respectively) DNA in the distal urethra and expressed prostate secret (EPS) was investigated in Amsterdam by the GP5+/6+ PCR assay followed by subsequent HR- vs LR-HPV typing using EIA (enzyme immunoassay). The oligoprobe cocktails for 24 HR-HPVs (i.e., 16, 18, 31, 33, 35) and 21 LR-HPVs (i.e., 6, 11, 32, 40, 42) were used for the group-specific detection.

Results: The results are presented in the Table. The HPV distribution in the urethra and prostate was detected as 16.2% and 13.3% for HR- and 6.2% and 5.7% for LR-HPV infection, respectively. Concordance between LR- and/or HR-HPV distribution in both anatomical sites was observed in only 20-25%. We observed 'grey zone' values in 5.7%; these samples will be re-tested.

Conclusions: The presence of HR- and LR-HPV types in the distal urethra and EPS of men was investigated and compared in this study for the first time. The total HR- and LR-HPV prevalence was detected in this group as 23.3% and 10.0%, respectively; with a low concordance rate between the two anatomical sites studied. At the moment we are in progress to: 1) determine HPV types distribution; 2) extend the study group; and to investigate the HPV distribution in men with: 3) co-infection, i.e. Chlamydia trachomatis, and 4) chronic urological disease, i.e. chronic prostatitis.

In vitro aerobic metronidazole results	Women following recommendation N	Cured from recommendation based on in vitro testing, n (%)
Susceptible	1[illegible]	10 (90.9)
Minimal	1[illegible]	10 (90.9)
Moderate	3	3 (100.0)
High	18	15 (83.4)
Total	43	38 (88.4)

Figure 1: HPV distribution in the male urogenital tract

P-298 SHOULD STD CLINICS PARTICIPATE IN CERVICAL CANCER SCREENING: (1) MEASUREMENT OF PAP ABNORMALITIES AND HPV INFECTION IN WOMEN ATTENDING STD CLINICS AND (2) SURVEY OF CERVICAL CANCER SCREENING PRACTICES

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Background: About half of the nearly 10,000 cases of cervical cancer diagnosed in the United States each year occur among unscreened women. Publicly funded STD clinics are an important venue in which to conduct cervical screening in the US as women utilizing these facilities typically receive pelvic exams. We (1) measured abnormal Papanicolaou (Pap) tests and human papillomavirus (HPV) burden in STD clinics from five U.S. cities and (2) surveyed STD clinics about cervical screening practices.

Methods: (1) Demographics, cervical specimens and routine Pap test data were collected from women aged 14-65 years attending STD clinics in 5 US cities (Boston, MA; Baltimore, MD; Seattle, WA; Denver, CO; Los Angeles, CA), between 2003-2005, as part of the HPV Sentinel Surveillance (HSS) study. A Pap test was performed and cervical specimens were tested for high risk (HR) HPV with the Digene Hybrid Capture 2_ assay (Gaithersburg, MD) at each clinical site. (2) The Centers for Disease Control and Prevention's 66 STD program area managers identified 2471 facilities as providing STD care services. In 2004 these facilities were mailed a survey inquiring about HPV and Pap testing practices.

Results: (1) There were 2,992 women enrolled in HSS at STD clinics. Among those with Pap test results, 16% (455/2814) had abnormal *Results:* atypical squamous cells of undetermined significance (ASC-US) 8%; atypical squamous cells-cannot exclude high-grade lesion (ASC-H) 0.5%; low-grade squamous intraepithelial lesion (LSIL) 6%; high-grade squamous intraepithelial lesion (HSIL) 0.6%; atypical glandular cells of undetermined significance (AGUS) 0.2%; adenocarcinoma in situ (AIS) 0.02%; and Other 0.6%. Additionally, among all enrolled women, 787 (26%) had a history of abnormal Pap tests and 336 (11%) had a history of cervical treatment. HR-HPV prevalence among women <30 years of age was 40% (775/1960) and 18% (181/1021) among those ? 30 years. HR-HPV prevalence was: non-Hispanic Whites 37% (378/1029); non-Hispanic African Americans 28% (315/1133); Hispanics 32% (175/545); Asians 28% (33/117); and Other (includes multiethnic) 37% (46/126). HR-HPV prevalence was: Boston 32% (190/603); Baltimore 29% (141/485); Seattle 33% (171/524); Denver 38% (281/743); and Los Angeles 28% (175/637). (2) In the first wave of the survey, 1355 facilities completed surveys and 600 identified their primary mission as providing STD care services. Among the 600, 49% reported providing Pap services and 20% reported use of adjunctive HPV testing.

Conclusions: A substantial prevalence of HR-HPV was observed among women attending STD clinics in different age groups, race/ethnicity groups and cities. A large proportion of women had either an abnormal Pap test, history of an abnormal Pap test or history of treatment on the cervix. Despite identification of a large proportion of women at increased risk for cervical cancer, less than 50% of STD clinics participate in cervical cancer screening.

P-299 PREVALENCE OF HUMAN PAPILLOMAVIRUS TYPES DETECTED BY DIGENE HIGH-RISK AND LOW-RISK HPV DNA TESTS AMONG A NATIONALLY REPRESENTATIVE SAMPLE OF FEMALES IN THE UNITED STATES

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Background: Human papillomaviruses (HPVs) are the cause of genital warts and cervical cancer. There are over 100 virus types; sexually transmitted HPV types are grouped as high-risk or low-risk based on their association with cervical cancer. Two Digene HPV DNA tests are currently available: one for qualitative detection of the 13 most common high-risk HPV types (vaccine types 16 and 18 and types 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, and 68) and another for the 5 most common low-risk HPV types (vaccine types 6 and 11 and types 42, 43, and 44) in cervical specimens. The Digene tests detect groups of high- and low-risk HPV types, but cannot be used to determine type-specific HPV infection. The high-risk HPV test has been approved by the FDA to triage women with equivocal Pap test results to colposcopy or as primary cervical cancer screening in conjunction with a Pap test for all women over the age of 30.

Objectives: To examine the prevalence of HPV infection as detected by the high-risk and low-risk Digene Hybrid CaptureR 2 (hc2) HPV tests in a nationally representative sample of females in the United States.

Methods: From 2003-2004, self-collected vaginal swab specimens were obtained from females aged 14-59 years as part of the National Health and Nutrition Examination Survey (NHANES) which uses a representative sample of the civilian, non-institutionalized population. DNA extracts from the vaginal swabs were used in the Digene hc2 assay with the high- and low-risk probe sets [Digene Corporation, Gaithersburg, MD]. We used the manufacturer's cut-off value for detection of 1pg/ml. Demographic and sexual behavior information was obtained from all participants during a personal interview.

Results: The overall prevalence of HPV as determined by the Digene test was: high-risk 12.3% (95% confidence interval [CI], 10.1%-14.9%); low-risk 7.8% (95% CI, 6.1%-10.0%). Prevalence of both HPV types was highest in the 20-24 year age group: high-risk 19.9%; low-risk 14.8%. Prevalence of both HPV types was highest in non-Hispanic blacks compared to other racial categories: high-risk14.8%; low-risk 8.8%. Age, marital status, ever having had sex, age at first sex, and number of lifetime partners were significantly associated with a positive high-risk HPV test while number of lifetime partners was the only factor significantly associated with a positive low-risk HPV test.

Conclusions: The overall prevalence of high risk HPV among females 14-59 years in the US was 12% by the hc2 test. Prevalence of hc2 high-risk HPV types was higher than the prevalence of low-risk HPV types. Both high and low risk types were highest in 20-24 year olds. As expected, the HPV prevalence as estimated by both hc2 tests was lower than that reported by a previous study in the same population using a polymerase chain reaction (PCR) assay due to known differences in assay sensitivity and the number of types detected. The age distribution was similar for both hc2 and PCR detection.

P-300 A RANDOMIZED CONTROLLED EVALUATION OF HUMAN PAPILLOMA VIRUS (HPV) TESTING FOR CERVICAL CANCER SCREENING. THE HPV FOCAL STUDY

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Objectives: Infection with high-risk HPV (HR-HPV) is now established as the etiology of cervical cancer. Therefore, it has been proposed that testing for HR-HPV as a primary screen for cervical cancer, followed by cytology testing could improve screening for cervical cancer. The HPV FOCAL trial will establish the efficacy of HR-HPV testing as a stand-alone screening test with liquid based cytology (LBC) triage of women having a positive test compared to the accepted standard of cervical cytology, within the context of an organized screening program. Additional objectives of the trial are: to establish the appropriate screening interval for HPV negative women and to determine cost-effectiveness of HPV testing.

Method: A randomized controlled three-armed evaluation of the conventional pap smear using LBC compared to HPV testing with LBC triage of HPV positive women over 2 years (2-year safety check arm) and over 4 years (4-year intervention arm) funded by the Canadian Institutes of Health Research. 33,000 women in the Greater Vancouver area, recruited through Family Practitioner clinics, between the ages of 25 and 69 receiving routine screening through the BC Cervical Cancer Screening Program are eligible. Exclusion criteria are: pregnant; history of cervical cancer; no cervix; HIV positive or on immunosuppressive treatment; HPV vaccinated; unable to provide consent. Control: LBC sample will be processed for cytology and followed according to existing provincial guidelines. This cohort will be recalled at 2 years for their second routine screen and at 4 years for their exit screen utilizing both HPV testing and cytology with those positive on either test referred for colposcopy. Two-year Safety Check: Sample tested only for HPV. HPV negative women recalled at 2 years for the exit screen using only cytology (to correlate with control arm). Those HPV positive will have the residual specimen tested with cytology and be managed the same as those HPV positive women in intervention arm. 4-Year Intervention: Sample tested only for HPV. HPV negative women recalled at 4 years for the exit screen (earlier if deemed by DSMC), using HPV and cytology testing and those positive on either test referred for colposcopy. HPV positive women will have the residual specimen processed for cytology; a) if cytology negative, recalled at 6 month intervals for HPV/cytology testing and referred to colposcopy if ≥ASCUS-US at any recall or persistently HPV positive after three recalls; B) if cytology is ≥ASCUS-US, immediately referred to colposcopy and managed according to those results.

Results: Histologically confirmed ≥CIN3 detected over the 4 years post-recruitment in the control and intervention arms (earlier if DSMC requires) will be evaluated and compared as a surrogate marker for estimating eventual reductions in the incidence of cervical cancer that could be achieved. Trial recruitment is slated to begin in July 2007.
Conclusions: The trial will demonstrate whether or not the use of HPV testing as primary screening within an organized cervical cancer screening program will provide reductions in cervical cancer incidence, allow the screening interval to be extended and improve the cost-effectiveness of cervical cancer screening.

P-301 GENOTYPING OF HPV IN WOMEN OF REPRODUCTIVE AGE GROUP PARTICIPATING IN A VAGINAL MICROBICIDE STUDY IN SOUTH AFRICA

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Objective: This study was undertaken to determine the prevalence and type distribution of HPV DNA in 159 dry cervical samples obtained from women who were attending a vaginal microbicide clinical trial.
Methods: The study was conducted over a 5 month period and all cervical samples from women with abnormal cytology, women that were HIV positive and a random sample of HIV negative women with normal cytology were tested by Roche's linear array typing system.
Results: Overall 89/153 (58%) samples were HPV positive, the remaining 64/153 (42%) were HPV negative. Of the positive cervical specimens 45/89 (51%) had only one HPV genotype and 44/89 (49%) contained multiple HPV genotypes. The test identified 20 high risk HPV genotypes and 6 low risk genotypes. High risk HPV prevalence was 69/153 (45%) of the total study population and 69/89 (78%) of positive cervical samples. A strong association was found between HPV positivity and presence of squamous intraepithelial lesion (SIL). The overall prevalence of HPV among women with abnormal cytology (HIV positive and negative) was 89% compared to 40% women with normal cytology (HIV positive and negative). The distribution of HPV types was variable within the SIL categories. HPV 35 was the most prevalent genotype in HIV negative women with LSIL and HSIL, HPV18 in women with ASCUS, and HPV 58 and in women with ASCUS-H. In the HIV negative women without SIL, HPV 16 was the most prevalent genotype. In the HIV positive group, HPV 18 was the most prevalent genotype in women with SIL while HPV 16 in women without SIL.
Conclusions: This study showed a very high prevalence of high risk (HR) HPV genotypes in women volunteering to be participants in a vaginal microbicide study. As expected HR genotypes were significantly higher in women with abnormal cytology and those that were HIV positive. The unusual findings were HPV 58 being more prevalent in women with ASCUS-H and HPV 35 in those with LSIL and HSIL. The linear array genotyping assay was useful in typing dry cervical specimens and showed a high degree of sensitivity and could be useful for genotyping of HPV for epidemiological studies.

P-302 PREVALENCE AND RISK FACTORS FOR ANAL HUMAN PAPILLOMAVIRUS IN MEN WHO REPORT SEX ONLY WITH WOMEN

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Objectives: An increase in anal cancer rates in the United States suggests the importance of gathering data about prevalence of HPV at anal sites in men and understanding more about transmission mechanisms to those sites. Few data exist on the prevalence and risk factors for HPV infection at anal sites, especially among men who report no history of sex with men.
Methods: HPV testing by PCR and reverse line blot genotyping for 37 types was conducted for all samples in 253 men, ages 18-40, from two U.S. cities. Participants completed supplementary questions within a larger study of 463 men that was restricted to men who did not have a history of genital warts and who did have a history of sexual intercourse with a woman in the past year. Specimens for HPV testing were obtained from the glans/corona, penile shaft, scrotum, urethra, perianal area, anal canal, and semen; anal HPV was defined as detection at either the perianal area or anal canal. Potential risk factors for anal HPV were assessed by bivariate and multivariate logistic regression.
Results: Among 222 men who reported no sex with men, 55 (24.8%) were positive for anal HPV. Oncogenic HPV types at anal sites were present in 13 of 222 men (5.9%). Prevalence of nononcogenic types was 13.1% and prevalence of unclassified types was 7.7%. By bivariate analyses, factors significantly associated with increased risk for anal HPV were younger age (under age 30 years: odds ratio [OR] 3.53, 95% confidence interval [CI] 1.43-8.71), increased number of lifetime female sexual partners (6-10 partners: OR 2.80, 95% CI 1.03-7.60; 11-20 partners: OR 3.58, 95% CI 1.22-10.44), and alcohol consumption of more than two drinks per day (OR 4.57, 95% CI 1.60-13.03). In multivariate analyses, younger age (under age 30 years) and an increased number of lifetime female sexual partners (greater than 10 lifetime partners), were independently associated with anal HPV detection.
Conclusions: Prevalence of HPV, including oncogenic HPV, is high (24.8%) in the perianal and anal canal regions among men reporting no history of sex with men. Risk factors independently associated with anal HPV in these men were age and lifetime number of female partners. These findings suggest a need for research to understand behavioral and biological mechanisms that result in HPV infection at anal sites. For questions: nyitray@email.arizona.edu

P-303 THE COST-EFFECTIVENESS OF HPV VACCINATION IN THE UNITED STATES: ESTIMATES FROM A SIMPLIFIED MODEL

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Background: Markov models and dynamic transmission models have been used to estimate the potential impact and cost-effectiveness of HPV vaccination in the United States. To augment these existing approaches, we applied a simplified model to estimate the cost-effectiveness of HPV vaccination of 12-year-old girls in the context of current cervical cancer screening practices in the United States.
Methods: We estimated the potential benefits of HPV vaccination (averted treatment costs and quality-adjusted life years [QALYs] saved) using current, age-specific incidence rates of HPV-related outcomes obtained from population-based cancer registries and other sources. Estimated costs and lost QALYs associated with HPV-related health outcomes (e.g., cervical cancer, cervical intraepithelial neoplasia, genital warts) were obtained from the literature. Base case parameter values included: 100% vaccine efficacy, lifelong duration of protection, 70% vaccine coverage, $360 cost per vaccine series (3 shots), 100-year time horizon, and a 3% annual discount rate.
Results: Under base case parameter values, the estimated cost per QALY gained by HPV vaccination of 12-year-old girls ranged from $2,697 to $14,024 (2005 US$), depending on factors such as whether or not herd immunity effects were assumed, the types of HPV targeted by the vaccine, and whether or not the benefits of preventing anal, vaginal, and vulvar cancers were included. In sensitivity analyses, when several key parameter values were varied simultaneously, the cost per QALY ranged from <$0 (cost-saving) to $138,000. Results were most sensitive to changes in the discount rate and the time horizon.

Conclusions: Including the potential benefits of preventing anal, vaginal, and vulvar cancers offers nontrivial improvements in the estimated cost-effectiveness of HPV vaccination. The estimated cost per QALY gained by HPV vaccination based on this simplified approach was consistent with published studies based on Markov models and dynamic transmission models when key assumptions, such as vaccine duration, efficacy, and cost, were similar. This consistency is reassuring, as models of various degrees of complexity will be essential tools for policy makers in the development of optimal HPV vaccination strategies.

P-304 RESPONSE AND CHARACTERSITSICS OF PERIMENOPAUSAL WOMEN RETURNING AN AT-HOME, SELF-COLLECTED VAGINAL SWAB SPECIMEN: RESULTS FROM THE HPV IN PERIMENOPAUSAL (HIP) PILOT STUDY

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Objectives: To determine the at-home sampling follow-up response rate among perimenopausal women who enrolled in an HPV study.
Methods: A pilot study using self-collected vaginal specimens was conducted to investigate HPV prevalence and short-term natural history in perimenopausal women (median age = 49; range 40 ' 60). Women collected the specimen in the restroom of gynecologists' offices (from which they were recruited) and completed a brief questionnaire. Participants were asked to collect a second sample in their home 8 weeks after enrollment and return it in supplied and pre-paid packaging either via FedEx or the United States Postal Service, or drop off the second specimen at the clinic where they were recruited for the study. Participants received reminders to collect the second sample via telephone calls or letters only if they requested to be reminded. Chi-squared and t-tests were used to determine differences between those who returned the second specimen ('respondents') and those who did not ('non-respondents'). A p-value ≤0.05 was considered statistically significant.
Results: Three participants of 178 enrolled were dropped because of incomplete demographic information (N=175). Eighty-two participants (46.9%) returned the second specimen. Among the 175 enrolled women, 112 (64.0%) requested and received a reminder telephone call or letter to return the second specimen. These 112 women could not be linked to the women who responded. A majority of the women returned the sample via FedEx or the United States Postal Service instead of clinic drop-off (92.8%). Responders were more likely to have previously had an abnormal Pap test (48.8%; p-value 0.05) and been treated for an abnormal Pap result (57.8%; p-value 0.03). Older women were more likely to collect and send a second specimen, but the trend was not statistically significant (p-value 0.07). Other non-statistically significant trends among respondents included more likely to use hormones (p-value 0.08) and HRT (p-value 0.08). There was no difference in respondents by clinic, race, education level or HPV infection status.
Conclusion: Perimenopausal women enrolled in a self-collected vaginal specimen study of HPV infection completed and returned a second specimen collected at their homes at a reasonable rate. The women who returned the second specimen were more likely to have been aware of their cervical health, but were overall not dramatically different than women who did not return the second specimen. These data suggest that home-based follow-up by vaginal self-swab collection is a feasible design for studying the natural history of HPV and potentially other STIs in an adult female population.

P-305 PREVALENCE OF HIGH RISK HUMAN PAPILLOMA VIRUS TYPES AND HUMAN IMMUNODEFICIENCY VIRUS IN A CROSS-SECTIONAL SURVEY OF KENYAN FEMALE SEX WORKERS

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Objectives: To determine prevalence of both high risk human papilloma virus (HPV) types and human immunodeficiency virus (HIV) among female sex workers in Mombasa (Kenya), and to assess the relation between type specific HPV viral load and HIV infection.
Methods: This community-based cross-sectional study enrolled 820 female sex workers (FSW) between October 2005 and January 2006 in the Kisuani and Chaani divisions of Mombasa. FSW were recruited using snowball sampling. HIV status was determined using a parallel HIV rapid tests algorithm with Determine and Unigold. High risk HPV (HR-HPV) DNA was determined on liquid based cervical cytology samples, using real-time PCR. Both HPV typing (HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 53, 56, 58, 59, 66 and 68) and cellular viral load were assessed. Samples were considered HPV-infected if viral load was higher or equal to 1 copy/cell.
Results: Of 797 women, 278 (34.9%) tested HIV seropositive, and 416/795 women (52.3%) had any HR-HPV infection. Two hundred and five of 777 women (26.4%) were both HPV and HIV-infected. Prevalence of HPV was significantly higher among HIV seropositive women compared to HIV seronegative ones, with 205/271 (75.6%) versus 201/506 (39.7%) of women HPV infected, P<0.001. Twenty-four women had at least a high-grade lesion on cytology: 12/260 (4.6%) among HIV seropositive compared to 12/491 (2.4%) among HIV seronegative FSW (P=0.1). All these lesions were HR-HPV positive. Distribution of most prevalent HPV types in HIV negative women was, in decreasing order of prevalence, HPV 16, 35, 51, 52, 53 compared to most prevalent cases in HIV positive women, HPV 52, 16, 35, 53, and 51. Higher mean HPV viral load was seen among HIV seropositive compared to seronegative FSW for types 16, 35 and 51 (P=0.003; 0.04 and 0.02, respectively).
Conclusion: High prevalence of both high risk HPV and HIV infection were found in this group of female sex workers. HIV seropositive women were significantly more likely to have HPV infection and had a trend towards more precancerous lesions as compared to HIV seronegative ones.

P-306 DYNAMIC TWO-MONTH NATURAL HISTORY OF CERVICOVAGINAL HPV DETECTION IN PERIMENOPAUSAL WOMEN: RESULTS FROM THE HPV IN PERIMENOPAUSE (HIP) PILOT STUDY

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Objectives: To determine the frequency of new, persistant, and cleared high- and low-risk cervicovaginal HPV detection among perimenopausal women.
Methods: A pilot study using self-collected vaginal specimens was conducted to investigate HPV detection in perimenopausal women aged 40 ' 60 years. Women were recruited from GYN clinics where they provided a self-administered vaginal swab and completed a brief questionnaire. Participants were asked to collect a second vaginal swab specimen in their home 8 weeks after enrollment and return it. Cervicovaginal specimens were collected using the Digene sampler kit in standard transport medium (STM) and DNA extracted by proteinase K digestion and ethanol precipitation. HPV genotype was determined using PGMY09/11 consensus primer

PCR and reverse blot hybridization (Roche prototype line blot assay). The z-test statistic was used to determine a difference in proportions and a p-value<0.05 was considered statistically significant.

Results: 178 women were enrolled in the study and three were dropped because of incomplete demographic information (n=175). Three additional participants were dropped because lack of beta-globin amplification on the baseline specimen, resulting in 172 participants in the enrolled cohort for this analysis. Eighty-two participants (46.9%) returned the second specimen ('responders'). Among responders, four matched pairs were dropped because of lack of beta-globin amplification on one of the two specimens, leaving 78 specimen pairs in the analytic dataset. The prevalence of any HPV type among responders was 21.8% (17/78) which was similar to the baseline HPV prevalence in the total enrolled cohort (34/172 or 19.8%) (p= 0.71). Similarly, prevalence of high-risk HPV types was 5.1%(4/78) among responders and 6.4% (11/172) among the fully enrolled cohort (11/172 or 6.4%) (p= 0.71). Cumulative prevalence of any HPV type after 2 months was 26.9% (21/78) and of high-risk types was 7.7% (6/78) among responders. The 2-month incidence rate of one or more newly detected HPV types was 6.4% (5/78). Of the five women with newly detected HPV types, 2 women were infected with at least one high-risk HPV type. Of the 22 baseline infections among the responders, 13 (59.1%) persisted and 9 (40.9%) cleared.

Conclusion: Cervicovaginal HPV detection was dynamic over a 2-month interval in a sample of 78 perimenopausal women (median age = 49). Future studies will examine whether the fluctuating HPV DNA detection in adult women is a result of new exposures, reactivation of latent virus infection, or both.

P-307 SEROPREVALENCE AND RISK FACTORS OF HUMAN PAPILLOMAVIRUS IN AMSTERDAM, THE NETHERLANDS: A POPULATION BASED STUDY

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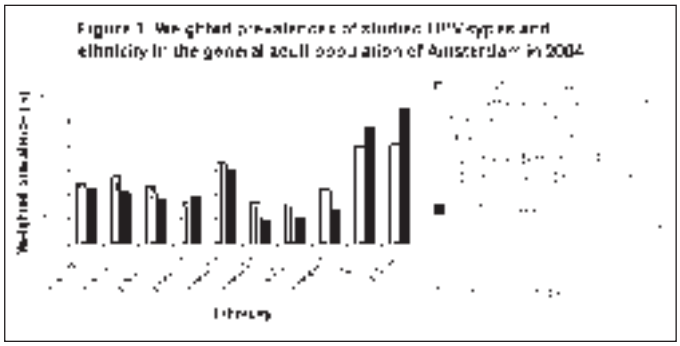
Objectives: Human papillomavirus (HPV) is associated with cervical and anogenital cancers. Recently, a vaccine which prevents infection with HPV-types 16 and 18, which cause more than 70% of cervical cancers, has been introduced. In order to determine whether this vaccine sufficiently covers the oncogenic types circulating, we need more information about the prevalence of HPV-types in the general population by ethnicity and sexual orientation. Therefore we conducted a population based study in Amsterdam. In addition we studied risk factors for HPV infection.

Methods: In 2004, we interviewed and obtained serum samples in a representative sample of 1368 inhabitants of Amsterdam aged ≥ 18 years. We tested for antibodies against L1 capseid proteins of 20 HPV-types using a luminex multiplex assay: described here are all known oncogenic types (type 16,18,31,33,35,45,52 and 58) and the most frequent non-oncogenic types (type 1 and 4). To determine risk factors for HPV, a Poisson regression model with a robust error variance was used, weighted by age, sex and ethnicity to be representative for the general adult Amsterdam population.

Results: In Amsterdam, 93.2% of the population has antibodies against ≥1 studied HPV-type. The weighted population prevalence is 24.0% (type 16), 24.1%, (type 18), 21.0%, (type 31), 18.5% (type 33), 31.4% (type 35), 13.3% (type 45), 13.9% (type 52), 17.6% (type 58), 44.2% (type 1) and 49.0% (type 4). Of the persons with antibodies against type 16 or 18 (27.1 %), 71.3% and 70.9% respectively have antibodies against other oncogenic types. Figure 1 shows the weighted prevalence of all HPV-types by ethnicity. HPV prevalence in non-Dutch ethnic groups was significantly higher for type 45, and significantly lower for type 1 and 4 compared to the Dutch ethnic group. Apart from antibodies against type 35, antibodies against all other oncogenic HPV-types were significantly more common among men having sex with men (MSM) and women compared to heterosexual men. Persons with a self-reported history of sexual transmitted infections (STI) were at increased risk of type 16 compared to persons without a self-reported history of STI. Types 16, 33 and 58 were more common among persons aged ≥ 35 years compared to persons < 35 years. Educational level was not associated with any of the HPV-types except for types 35 and 52 which were more prevalent among higher educated persons.

Conclusions: The overall prevalence of antibodies against oncogenic HPV-types was high in Amsterdam. Remarkable was the high prevalence of oncogenic HPV-types among homosexual men and the small difference in seroprevalence between ethnic groups (except type 45). Of the persons with antibodies against types 16 or 18, more than 70 % also has antibodies against other oncogenic HPV-types. Therefore, from our data it appears that apart from types 16 and 18, also other oncogenic HPV types are widely circulating.



P-308 HIGH RATES OF INTRAEPITHELIAL NEOPLASIA IN ANAL/PERIANAL CONDYLOMATA ACUMINATA IN HIV ANTIBODY POSITVE AND NEGATIVE MEN. ARE GENITAL WARTS REALLY A BENIGN CONDITION?

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Introduction: The incidence of anal cancer is rising worldwide, particularly among HIV (human immunodeficiency virus) infected men. High-grade intraepithelial neoplasia (IN) occurs in cervical warts, but there are few reports on the rate in anal warts. Genital warts are generally thought to be a benign condition due to low-risk human papillomavirus (HPV), and are treated for aesthetic reasons despite mixed infection with low and high-risk HPV types being common.

Methodology: A retrospective review of surgically excised perianal/anal warts in patients attending the Royal Perth Hospital, Sexual Health Clinic from December 1995 ' December 2004, was undertaken to study the prevalence of perianal intraepithelial neoplasia (PAIN) and anal intraepithelial neoplasia (AIN) using the same grading criteria as for cervical IN. The clinic receives the majority of patients for treatment of perianal/anal warts in the hospital catchment area. The warts were treated surgically by a scissor excision technique by a single Sexual Health Physician. The anal and perianal warts were placed into separately labelled containers at the time of surgery. No material was discarded.

Results: 185 patients had surgery and 32 were excluded. Of those remaining, 115 were males and 38 females. Twenty-seven males and 2 females had HIV infection. IN (PAIN or AIN) or was found in 78% (52% high-grade) of men with HIV, and 33% (20% high-grade) of men without HIV. 8.5% of women had dysplasia (2.8% high-grade). The rate of PAIN or AIN 2-3 was 53.8% for homosexual/bisexual men. In multivariate logistic regression analysis comparing those with any degree of IN, risk of intraepithelial neoplasia was increased with HIV positive status (OR 6.5, 95%CI 2.12-20.17) p=0.001, and homo/bisexual preference (OR 3.3, 95%CI 1.25 ' 8.90) p=0.016 independent of age, sex, and smoking.

Conclusions: The high rates of PAIN or AIN2-3 within warts, (reaching 52% in men with HIV) are disturbing, and predict a substantial increase in anal cancer. Given the rates of genital warts are increasing in many countries, this data is predictive of a serious epidemic of anal cancer in the future. A sub-population of HIV-infected men have been identified who are at particular risk. All HIV infected men who have sex with men should be assessed for the presence of perianal/anal warts. Scissor excision to obtain material for long-term prognostic purposes should be promoted as a treatment and may reduce the risk of cancer. Further studies to evaluate the frequency of IN in genital warts in immmunocompetent and immunoincompetent men needs to be undertaken to further evaluate the possible importance of genital warts in the promotion of genital cancer development. This data suggests that vaccination of men to prevent infection with genital HPV is important.

P-309 HPV TYPING OF CERVICAL SPECIMENS FROM CHINA USING A NOVEL HYBRID CAPTURE SAMPLE PREPARATION METHOD COMBINED WITH GP+ PCR AND MULTIPLEX DETECTION ON LUMINEX XMAP

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Objective: To evaluate the prevalence and distribution of high-risk human papillomavirus in three provinces in China using our novel Hybrid Capture_ sample preparation with GP+ PCR and Luminex_ 100 detection.
Method: 279 patients from the Shanxi Province, 183 patients from the Jiangxi Province, and 141 patients from the Gansu Province with known histology were tested for HPV by Hybrid Capture_ 2 (hc2) (Digene Corporation) and by a new PCR genotyping method. Samples were obtained from Kaiser Permanente and generously provided by J. Sellors M.D., (PATH) and You-Lin Qiao, M.D., Ph.D., (CICAMS).A total of 603 samples in Digene's Specimen Transport Medium™ (STM) were tested. DNA-specific sample preparation was performed using magnetic beads conjugated with Hybrid Capture_ antibody. DNA on magnetic beads was directly amplified using HPV L1 consensus GP5+/GP6+ PCR and then genotyped with Luminex xMAP_ bead-microarray technology using hybridization to type-specific oligonucleotides for seventeen high-risk HPV types 16, 18, 26, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, 73, 82 and Internal Control.
Results and Conclusions: 96% (432/449) of hc2 positive samples were efficiently genotyped. The most common HPV types identified in the Shanxi province were HPV 16 (43%), HPV 52 (11%), and HPV 58 (10%). Similarly, the most common HPV types identified in the Jiangxi and Gansu province were: (Jiangxi/Gansu) HPV 16 (29%/32%), HPV 58 (20%/19%), and HPV 52 (13%/8%). The most common HPV types identified in CIN2+ patients from Shanxi and Jiangxi provinces were: HPV 16 (63%, 41%), HPV 58 (14%, 27%) and HPV 52 (13%, 15%). HPV types identified in CIN2+ patients from the Gansu province were: HPV 16 (57%), HPV 58 (18%) with HPV 18 and 31 next (both 6%). Our new sample prep method is sensitive, efficient and has almost perfect agreement with hc2 (kappa=0.870).

P-310 HUMAN PAPPILOMA VIRUS (HPV) INFECTION AMONG FEMALE COMMERCIAL SEX WORKERS IN IBADAN, NIGERIA

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Objective: Genital Human Pappiloma Virus (HPV) infection is usually asymptomatic and is most frequently recognized as genital warts when symptoms are present. The infection is highly prevalent occurring in as many as 20-40 % of sexually active adults. HIV infection and its associated immunosuppression are known to alter the course of HPV infection and its associated diseases .This study was undertaking to evaluate the prevalence of genital warts and its interaction with HIV infection among female commercial sex workers in Ibadan, Nigeria.
Methods: This is a cross sectional study carried out in Ibadan municipality, Nigeria using a multi-stage sampling technique. 250 female commercial sex workers who are brothel-based and had been in the profession for at least one month and signed informed consent forms were recruited into the study. Physicians performed complete pelvic examinations for signs of sexually transmitted infections (STIs). The diagnosis of genital warts was based on the clinical findings of typical lesions on the external genitalia, vaginal, cervix or perianal region. High vaginal and endocervical swabs were taken from each of the subjects to establish diagnosis of other sexually transmitted infections (STIs). 5-10mls of their venous blood were tested for HIV antibody using ELISA, and repeatedly reactive samples were confirmed with western blot assay.
Results: The mean age of the FCSWs was 25.88 years (15-55 yrs). A total of 64 (25.6%) of the CSWs were positive for HIV-1, 7(2.8%) had dual HIV-1/2 infection. The prevalence of HPV infection was 6.4 %. Bacterial vaginosis was the commonest STI diagnosed as it occurred in 80 (32.0%) of those screened. Only three (18.75 %) of the CSWs with genital warts had HIV-1 infections. ($P > 0.05$). The odds ratio of genital warts for HIV infection in this study was 0.654 (95% CI = 0.28-1.86). The prevalence of HPV was 4.3 times higher in HIV sero-negative CSWs. Other STIs in order of frequency were vaginal candidiasis, trichomoniasis, gonorrhea, chancroid, syphilis, tinea cruriz and scabies. Genital warts was found to be significantly associated with Non-gonococcal urethritis in this study ($P = 0.002$). Multivariate logistic regression analysis of the risk factors for HIV infection showed that the adjusted odd ratio for genital warts was inversely related to the acquisition of HIV.
Conclusions: Even though this study showed that there is an inversely-related risk association with HIV and Human Pappiloma Virus infections, women who exchange money for sexual services should be identified and encouraged to participate in pap smear screening and HPV vaccination programme.

P-311 CHANCROID: A DISAPPEARING ACT?

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Chancroid has been an important sexually transmitted infection (STI) and cause of genital ulcer disease (GUD) in much of the world for the past century. It has persisted in societies in which many men are uncircumcised, substantial numbers of men visit sex workers, and STI control is inadequate. Chancroid facilitates transmission of HIV by increasing both infectiousness of and susceptibility to the virus. Over the past decade, chancroid has unexpectedly disappeared from most regions of the world where it was once endemic. No Haemophilus ducreyi have been isolated in Kenya since 1999 despite an ongoing search in populations where it was common. Explanations for the disappearance of chancroid are speculative but may be due in part to the exquisite susceptibility of H. ducreyi to the quinolones and the absence of any source or reservoir other than GUD in humans. The emergence over the past decade of Herpes simplex 2 as the major cause of genital ulcer disease in most countries, together with the disappearance of chancroid, has implications for the syndromic management of GUD. Guidelines may need to be revised. Regardless of the burden of disease, H. ducreyi continues to be a fascinating microorganism and the ongoing study of its biology is essential for science as well as potentially to prevent new epidemics.

P-312 CO-SHEDDING OF EBV AND HIGH-ONCOGENIC RISK HPV IS ASSOCIATED WITH LESS RESOLUTION OF AN ABNORMAL PAP SMEAR IN HIV+ WOMEN

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Objectives: HIV-infected women are at higher risk for persistent HPV infection, cervical abnormalities and cervical cancer. Although many HIV+ women are infected with HPV relatively few women progress to cervical abnormalities indicating that HPV infection is necessary but not sufficient for development of cervical cancer. Thus, other cofactors must augment the oncogenic potential of HPV. Previous studies has shown an increase in cervical dysplasia in HIV+ women who co-shed EBV and high-oncogenic risk HPV from their cervix as compared to women shedding only HPV. The goal of this study was to examine the progression or resolution of cervical dysplasia in these HIV+ women.

Methods: The medical records, Pap smears and cervical biopsies from women previously shown to be shedding EBV and high-oncogenic risk HPV were compared to those women shedding only HPV. EBV was detected in the first cohort in CVLs by a generic, less sensitive PCR assay and in the second cohort in cervical swabs by a more sensitive specific PCR assay. HPV was detected in cervical swabs by the Roche reverse line blot assay. Pap smears and cervical biopsies were classified by Bethesda and routine pathological diagnoses.

Results: In this first cohort, 14 women were found to be shedding EBV and high-oncogenic risk HPV from their cervix, 12 of these had an abnormal Pap smear and 10 of these had significant follow up of at least 1 year. Four women had progression of their cervical disease and 6 had stable disease. There was no woman who had resolution of disease. Two women who had a normal Pap smear on entry developed ASCUS within 2 years of EBV detection. In contrast, of the 88 women with HPV alone, only 50 had an abnormal Pap smear. Of these 44 had significant follow up with 3 showing progression of disease, 24 showing stable disease and 17 showing partial or total resolution of disease. Of the 38 women shedding only HPV DNA and having a normal Pap smear on entry, 27 had significant follow up with 7 showing new cervical abnormalities and 20 demonstrating persistently normal Pap smears. Taken together, the women shedding EBV and HPV were less likely to resolve their cervical disease (0%) or more likely to develop cervical disease (100%) than those women shedding HPV alone (38% resolve, p=.02, 25% develop, p=.01). The second cohort demonstrated similar trends but in less dramatic fashion. Twelve of 18 women shedding EBV and HPV had significant follow up and only 1 of these showed resolution of cervical disease whereas 2 of 5 women with normal Pap smears at entry developed disease.

Discussion: The detection of cervical shedding of EBV in combination with high-oncogenic risk HPV not only shows an increase risk of cervical dysplasia in HIV+ women but also predicts development of cervical disease and lack of resolution of current disease. The role of EBV in this process is not clear and is currently under investigation. Further studies with longitudinal collection of cervical samples in HIV+ women is underway.

P-313 CERVICAL CANCER SCREENING PROGRAMS IN PUBLIC STD CLINICS ARE FEASIBLE FOR CLINICAL MANAGEMENT OF HIGH-RISK WOMEN AND PROVIDE OPPORTUNITIES FOR SURVEILLANCE OF HPV INFECTION OUTCOMES

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Objectives: Women attending public STD clinics are at increased risk of cervical dysplasia associated with human papillomavirus (HPV); screening with Pap testing has shown to have high yield in this setting. However, screening is not currently offered at all STD clinics. With HPV vaccine coverage increasing, establishing screening in STD clinics allows monitoring for expected decreases in the prevalence of cervical dysplasia in a high-risk population. We describe the demographics of patients tested, prevalence of abnormal cytology, and rates of follow up in San Francisco's public STD clinic.

Methods: From 2004-2006, Pap screening was offered to eligible women who reported no prior Pap test in the past year. Screening tests were defined as Pap tests in women who were not presenting for follow up of an abnormal Pap and who had a chlamydia test on the day of visit. Using Pearson's chi-square test, we compared the likelihood of screening eligible patients for the clinicians trained in family planning versus those who were not. Abnormal Pap results were defined as ASCUS, LGSIL, HGSIL or higher. Demographic characteristics of those who had abnormal Pap results were compared to those with normal tests using chi-square and t-tests. Patients with abnormal results were followed up with three letters followed by a phone call. The follow up rate was assessed for the first abnormal screening Pap result from 133 women seen in 2004-05, and was defined as one or more visits for repeat Pap or colposcopy, as indicated, within the following 12 months.

Results: There were 10,275 eligible visits, of which 21% (2158) included Pap screening. Clinicians trained in family planning were more likely to perform Pap screening (1075/4257 (25.3%)) [p<0.0001], but more tests overall were performed by non-family planning clinicians (1083/6018 (18.0%)). Of 2158 specimens, only 11 (< 1%) were rejected as unsatisfactory. Of the remaining tests, 9.5% (203/2147) had abnormal results, with 124 (5.8%) reported as ASCUS, 68 (3.2%) LGSIL and 11 (0.5%) HGSIL. Patients with abnormal Pap results were significantly younger, with mean age 25.5 years, versus 28.2 for those with normal Pap tests (p<0.001). There was no difference in frequency of abnormal test results by race (p=0.57). On site colposcopy was performed at 134 follow up visits. The rate of follow up after an initial abnormal Pap was 68.4% (91/133).

Conclusions: Our data support that cervical cancer screening should be performed in STD clinics, given the high percentage of abnormal tests found, particularly in younger women. Frequency of abnormal cytology was on the high-end of the limited recent literature reported in STD clinic settings. Performing routine screening is feasible, and can result in >99% satisfactory specimens. Clinicians who are not specifically trained in family planning may benefit from ongoing training or reminders to screen. Resources to support cervical screening programs in public STD clinics provide immediate benefit to high-risk women. In addition, Pap screening data from STD clinics could be a useful surveillance tool to evaluate the coverage and effectiveness of HPV vaccine.

P-314 WILL USE OF THE HPV VACCINE IMPACT DETECTION OF BACTERIAL STDS AMONG PERSONS PRESENTING ONLY WITH GENITAL WARTS

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Objectives: To assess differences in bacterial STD rates identified through screening among clients presenting with a new episode of genital warts compared to those presenting with no symptoms in order to assess the potential impact of more widespread use of the HPV vaccine and the subsequent reduction in clients presenting with a new episode of genital warts.

Methods: We performed a retrospective electronic medical record review of patients presenting to the Denver Metro Health Clinic, the STD clinic in Denver, Colorado. We identified clients presenting for evaluation of a first episode of genital warts as their chief complaint and compared them to clients who presented to the STD clinic without complaints of symptoms. All patients were screened for gonorrhea (GC) and chlamydia (CT) as part of their examination. GC and CT testing were performed using either urine or cervical swabs (SDA technology, Becton

Dickinson and Company, Sparks Maryland). MSM and HIV positive clients were excluded. Analyses were performed assessing differences in behavioral characteristics and STD prevalence rates for GC and CT.

Results: Between August 2005 to December 2006, 12,994 new problem visits were reviewed of which 279 (2.2 %) visits were associated with a diagnosis of a new episode of genital warts and 12,715 (97.8 %) presented without any symptom complaints. Comparing those with genital warts to those with no initial symptoms, there were 87 (1%) female visits in the genital warts group versus 6,333 (48%) female visits in the asymptomatic group. Among men, there were 192 (2%) visits in the genital warts group versus 6382 (49%) visits in the asymptomatic group. Among those with genital warts, 15.4% were positive for CT compared with 12.6% among those presenting with no symptoms (p = 0.17). For GC, those with genital warts had a 3.2% prevalence rate of GC compared with 4.1% among those clients seen for routine screening (p=0.46). Stratifying by sex, no differences were seen. No differences were identified in rates of prior GC infection among those with genital warts compared to those with no symptoms (10% vs. 11.5%, p=0.46) or in rates of prior CT infection (22.6% vs. 22.3%, p=0.91). Comparing various behavioral characteristics, no differences were seen among the two groups in terms of numbers of recent or life time sexual partners, condom use rates, or in condom use errors.

Conclusions: Similar rates of GC and CT were detected in clients presenting for initial genital wart treatment compared to those presenting without identified symptoms, indicating similar risk behaviors between the two groups. Additionally, no differences were identified in self-reported behavioral characteristics between the two groups. With increasing use of the HPV vaccine and subsequent decline in symptomatic genital warts, fewer individuals previously seen for genital warts and identified with bacterial STDs will be seen, limiting asymptomatic GC and CT infections being identified. Alternative strategies for screening clients who previously would have presented with genital warts and then opportunistically identified with an STD will need to be developed. Grace.Alfonsi@dhha.org

P-315 CERVICAL SHEDDING OF EBV AND HPV LEADS TO INCREASED CERVICAL DYSPLASIA IN HIV+ WOMEN ENROLLED IN THE WIHS

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Objectives: Although HIV-infected women are at higher risk for HPV infection and subsequent cervical cancer, few women actually progress to cervical dysplasia. Previously studies on the New Orleans cohort of HIV+ women demonstrated increased cervical dysplasia in women shedding EBV and high-oncogenic risk HPV from their cervix as compared to HPV alone. The goal of this study was to examine a second HIV+ women population, namely women enrolled in the Woman's Interagency HIV Study (WIHS).

Methods: Since its inception in 1993, the WIHS has enrolled over 2800 HIV+ women and 800 HIV-negative women and has followed these women at 6 month intervals for an average of 8.3 years. The WIHS clinical sites include New York, Washington, DC, Chicago, Los Angeles and San Francisco. A pilot study of approximately 10% (n=308) of these HIV+ women was studied at time point #2. Stored cervicovaginal lavage (CVL) fluid from these women were obtained and tested for the presence of EBV utilizing a sensitive specific PCR assay. These results were compared to the previously obtained HPV DNA status on the same CVLs, the concomitantly obtained Pap smear, the HIV viral load and CD4 cell count and other demographic data.

Results: The demographics of this pilot study showed that the population was 55% African-American, 74% single, and 66% had a 12th grade education of better which is distinctly different from the New Orleans cohort. Overall, 48% of the women had EBV detected in their CVL, 28% had high-oncogenic risk HPV detected, and 31% had an abnormal Pap smear. Forty-four women (14%) had EBV and HPV detected and 41 women (13%) had only HPV detected in their CVLs. There was a statistically significant increase in cervical dysplasia seen in women co-shedding EBV and HPV (67%) as compared to only HPV (54%, p=.04). These 2 populations did not significantly differ in peripheral HIV viral loads (132,287 vs 112,765), peripheral CD4 cell count (363 vs 355) or age (36.1 vs 35.4). Combining this with the data from the New Orleans cohort, 75% of the women co-shedding EBV and HPV had an abnormal Pap smear as compared to 53% of women shedding only HPV (p=.0016, OR 2.61, CI 1.27-5.0). Removing ASCUS from this analysis still showed significant findings with cervical dysplasia occurring in 67% of the co-shedders and 46% of those shedding only HPV (p=.007, OR 2.39, CI 1.19-4.8).

Conclusions: Similar to that seen in the New Orleans HIV+ cohort, women enrolled in the WIHS who are shedding both EBV and high-oncogenic risk HPV are at increased risk for cervical dysplasia. The role of EBV in this process is currently under investigation. The temporal relationships of these 2 viral infections are being studied in the women who developed cervical dysplasia in the WIHS.

P-316 PARENTAL ATTITUDES TOWARDS HPV VACCINATION: A NATIONAL STUDY

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Objectives: HPV vaccine strategies will be aimed at adolescents before their sexual debut. Because HPV is a sexually acquired virus, there are concerns that parents may be reluctant to vaccinate their children, as they may believe that this vaccine could promote earlier and more frequent sexual activity. As such, it is essential to ascertain the parental attitudes and beliefs towards the HPV vaccine, in order to provide direction for implementation of an HPV vaccination program. The goal of this study was to assess current parental attitudes and beliefs to the HPV vaccine in Canada, and to determine factors associated with parental intention to vaccinate their children against HPV.

Methods: Men and women 19 years of age or older, who were parents of children aged 8-18 were recruited through random digit dialing across Canada. The survey was developed inductively using the Theory of Planned Behaviour (TPB) model. The survey elicited data that included: demographics; cervical cancer-, HPV- and HPV vaccine-related knowledge; attitudes, subjective norms, perceived behavioural control with respect to HPV vaccination; and intention to vaccinate their preteen children. Descriptive analysis of demographic characteristics of the sample was conducted. Backwards stepwise logistic regression was used to calculate adjusted odds ratios (AOR) to identify the factors that were associated with parents' intention to vaccinate children against HPV.

Results: Between July 2006 and February 2007, 31,075 households were called from all ten provinces and three territories in Canada, of which 2,486 (8%) were eligible to respond to the survey. Of the eligible households, 51% completed the survey. 825 of the 1268 households had female children. 71.8% of parents intended to vaccinate their daughter(s) against HPV. Factors predicting intention to vaccinate with adjusted odds ratios and 95% CI are listed below.

Conclusions: The majority of Canadian parents of girls aged 8-18 intended to vaccinate their daughters against HPV. Predictors of intention to vaccinate girls against HPV were related to overall attitudes towards vaccines, attitudes towards girls having vaccines, social norms as established by the medical profession and educators, perceived behavioural control, attitudes towards cancer as a serious illness, perceived HPV vaccine safety, the need for girls to receive the HPV vaccine before initiating sexual intercourse and impact of the vaccine on sexual debut.

Strongly held religious beliefs, ethnicity, and geographic regions were not predictors of parental intention to vaccinate. Public health messaging should focus on vaccine safety and effectiveness against a serious illness, endorsement by health professionals and the lack of evidence for the vaccine influencing early sexual activity.

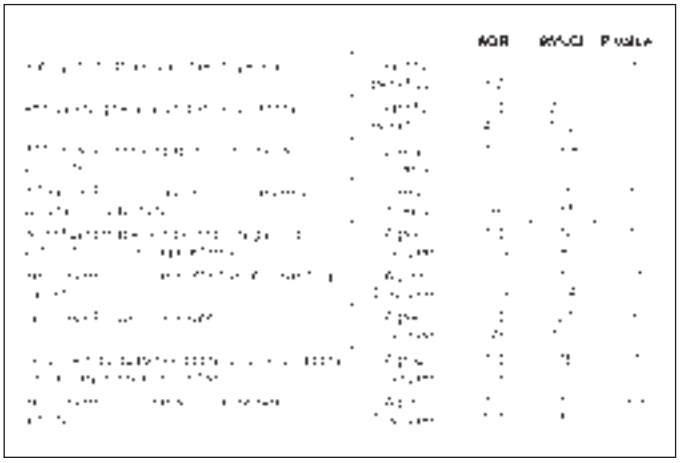

Figure 1: Factors Predicting Parental Intention to Vaccinate

POSTER SESSION: HSV / HIV INTERACTIONS

P-317 MODELING HIV PREVENTION STRATEGIES IN UGANDAN AND KENYAN FEMALE SEX WORKERS: GENITAL HSV SUPPRESSION, CONDOM USE AND SEROSORTING

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Objective: Define HIV transmission in Kenyan and Ugandan female sex workers (FSWs) along the Trans-African highway using individual level data in a stochastic simulation model. Using the transmission model explore how the fraction of prevalent disease that is acute infection contributes to new infections and to predict the impact of prevention strategies for FSW HIV acquisition; condom use and genital herpes suppression, condom use and serosorting.

Methods: FSW diaries provided data on transactional sex including number and types of clients, numbers of liaisons, sexual acts, and condom use. Twenty eight day diaries were completed by a snowball sample of sex workers at selected hot spots of transactional sex. A stochastic simulation model of HIV transmission based on the data was constructed to predict HIV transmissions in Kenyan and Ugandan FSWs. HIV and HSV status were randomly assigned to FSWs and partners with an estimated prevalence of 20% and 70% respectively for each of 1000 transmission simulations per data point. Alternative HIV prevalence were also explored. Simulations of a range of HSV 2 shedding in FSWs, condom use and serodiscordance were performed. Models were also constructed with varying distributions of acute versus chronic stage HIV infection in sources.

Results: Overall 578 diaries were analyzed, 403 from Kenya and 175 from Uganda. Overall condom use per liaison was higher in Kenya compared to Uganda (78.2% versus 73.9%, P<0.0001) with the greatest difference seen with regular partners. Kenyan FSWs had more sex acts with similar partner numbers (50 versus 45 sex acts per month, P=0.03). For a stable incidence of FSW HIV the sources would have a 4% fraction of acute HIV that cause close to a third of all infections. Without condom use Kenyan transactional sex would result in more HIV acquisitions (18.4 versus 16.3/1000 susceptibles per month) but at current usage Ugandan FSWs had a higher acquisition rate (5.6 versus 5.2/1000 susceptibles per month). Condom use reduced FSW HIV acquisitions at different rates for each country with a reduction of 1.7/ 1000 susceptible FSWs for each decile increase in usage of condoms in Uganda and 2.0/1000 in Kenya. Decreasing serodiscordance with regular partners to 10% lowered acquisition in Ugandan and Kenyan FSWs to 3.5 and 3.1/ 1000 susceptibles per month respectively. An absolute reduction of 10% in the number of FSWs with genital HSV shedding results in a 0.3/1000 reduction in HIV acquisition per month by Kenyan FSWs and a 0.2/1000 reduction in Ugandan FSWs. A maximal effect with complete HSV suppression in FSWs resulted in a rate of acqusition of 4.9/1000 suceptible FSWs per month in Uganda and a 3.8/1000 in Kenya.

Conclusions: Transmission of HIV in FSWs remains high and requires ongoing efforts to minimize the effect of this high risk group as a nidus for HIV spread in East Africa. Condom availability and use remains a mainstay of prevention. Standard HIV testing for FSWs and regular partners could significantly reduce transmission if serosorting occurred. Targeted suppression of HSV 2 shedding provides another option for a prevention measure.

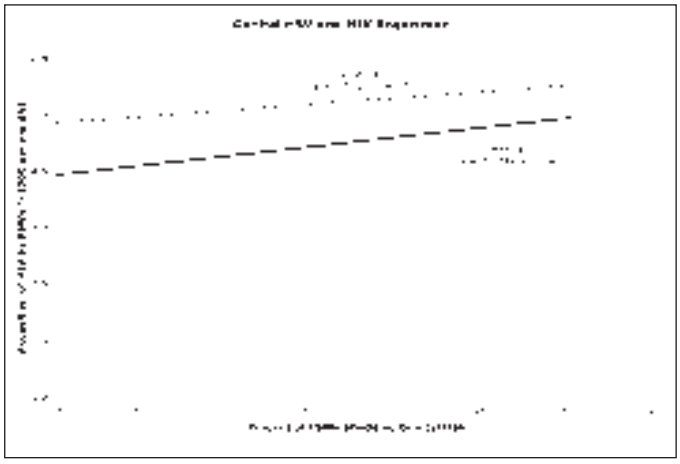

Figure 1: Genital HSV Shedding and HIV Acqusition

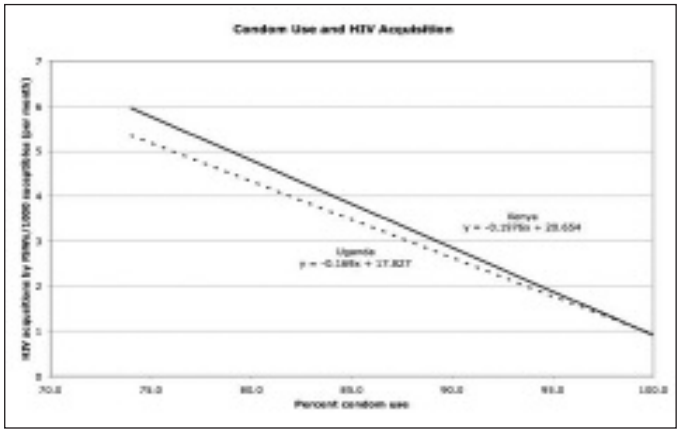

Figure 2: Condom Use and HIV Acquisition

P-318 GENITAL SYMPTOMS AND HERPES SIMPLEX VIRUS TYPE 2 REACTIVATIONS AMONG HIV/HSV-2 CO-INFECTED WOMEN IN THAILAND

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Objectives: Little is known about the type and frequency of genital HSV symptoms among women with HIV and HSV-2 co-infection. We evaluated genital symptoms and genital shedding among 67 women enrolled in a randomized, placebo-controlled crossover trial of suppressive acyclovir in Chiang Rai, Thailand.
Methods: We enrolled women who were co-infected with HIV and HSV-2, with CD4 counts >200 cells/_L and not on antiretroviral therapy. At screening, women were asked about their history of symptoms consistent with genital herpes (genital pain, itching, tingling, burning, or presence of a sore). At weekly study visits, women were asked about genital symptoms during the previous week and HSV-2 shedding was assessed by detection of HSV-2 DNA by Taqman-based realtime PCR in cervicovaginal lavage. Findings from participants observed during one month taking placebo and one month of washout are presented by woman and by study visit; data from the period when women were taking suppressive acyclovir are excluded. Odds ratios and 95% confidence intervals for the association between symptoms and HSV-2 shedding were generated using generalized estimating equation logistic regression to account for repeated measures in study participants.
Results: Among 67 enrolled women, 21 (31%) were aware they had herpes before the study and 32 (48%) had a history of symptoms consistent with genital herpes. During the study observation period, 66% of women reported genital symptoms and 78% shed HSV-2 at least once. Twelve women had a symptomatic HSV genital lesion (ulcer, fissure, or abrasion) and four had an asymptomatic HSV-2 lesion. Among 390 total study visits, women reported symptoms at 22% of visits and HSV-2 shedding was identified at 23% of visits. Symptoms of itching or a genital sore were most frequently reported, followed by pain, burning and tingling. Reported genital symptoms were associated with an increased odds of HSV-2 shedding (Table).
Conclusions: Herpes shedding reactivations were frequent in this population, and while only a third of the women were aware they had herpes prior to enrollment, most women had herpes reactivations including 66% reporting genital symptoms and 78% shedding HSV-2 at least once during study observation. Genital symptoms were significant predictors of HSV-2 shedding; genital pain was most strongly associated with shedding. A clearer understanding of the relationship between specific genital symptoms and HSV-2 reactivations can assist in the development of study instruments and in counseling HSV-2 seropositive persons to recognize reactivations.

Symptom reported in the week prior to clinic visit	All study visits (N=390)	Visits with HSV-2 shedding (N=90)	Visits without HSV-2 shedding (N=300)	
		n (%)		OR (95% CI)
Any symptom	87 (22)	30 (33)	57 (19)	2.0 (1.0-4.1)
Pain	15 (4)	7 (8)	8 (3)	5.7 (1.0-17.0)
Tingling	4 (1)	2 (2)	2 (1)	3.6 (1.1-11.5)
Genital sore by self-report	52 (13)	21 (23)	31 (10)	3.0 (1.0-5.2)
Burning	13 (3)	6 (7)	7 (2)	3.0 (1.4-6.2)
Itching	64 (16)	20 (22)	44 (15)	2.1 (1.3-3.3)

Figure 1: Genital symptoms by HSV-2 shedding at study visits

P-319 GENITAL HERPES HAS PLAYED A ROLE UNLIKE ANY OTHER SEXUALLY TRANSMITTED INFECTION IN FUELING HIV PREVALENCE IN AFRICA

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Objective: Characterize qualitatively and quantitatively the role that genital herpes (HSV-2) has played in the HIV epidemic.
Methods: We constructed a deterministic mathematical model to describe HIV and HSV-2 dynamics and interactions at the population level. The parameter values of the model were chosen according to the best available empirical evidence of the biology, epidemiology, and interaction of the two diseases utilizing experimental data on HSV-2 and HIV seroprevalence in Kisumu, Kenya. The nature and key features of the epidemiologic synergy were explored.
Results: We estimate that in settings of high HSV-2 prevalence, such as Kisumu, Kenya, more than a quarter of incident HIV infections may have been attributed etiologically to HSV-2. About half of this impact is attributed to the enhanced HIV acquisition in HSV-2 seropositive persons while the other half is due to the enhanced infectiousness of dually infected subjects. Genital herpes has also functioned as an accelerant of the HIV epidemic by facilitating spread from high-risk groups to persons in the general population. We found that HSV-2 explains one-third of the differential HIV prevalence among the cities of the four-city study. Though the impact of HSV-2 on HIV is considerable, we estimate that HIV had only a marginal impact on HSV-2 prevalence.
Conclusions: Our model suggests a substantial role for genital herpes in fuelling the HIV epidemic in sub-Saharan Africa and that this role is qualitatively distinguished from that of other sexually transmitted infections (STIs) such as gonorrhoea or syphilis. HSV-2 role as a biological cofactor in HIV acquisition and transmission facilitated the spread of HIV among the low-risk general population with stable long sexual partnerships. This finding suggests that prevention of HSV-2 infection via a vaccine or suppression through an anti-HSV-2 antiviral may be an effective intervention both in nascent epidemics with high HIV incidence in the high risk groups as well as in established epidemics where the majority of HIV transmissions are in stable partnerships. Email: laith@scharp.org (L.J. Abu-Raddad)

P-320 MODELING THE INTERACTIONS BETWEEN HSV-2 AND HIV: IMPLICATIONS FOR THE HIV EPIDEMIC IN SOUTHERN INDIA

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Objectives: Herpes simplex virus type 2 (HSV-2) may play an important role in the HIV epidemic, increasing both HIV acquisition and infectivity; and perhaps conversely, with HIV potentially increasing HSV-2 infectivity and acquisition. A model describing the interactions between HSV-2 and HIV was developed to estimate how much HSV-2 contributes to HIV transmission, and vice versa, from clients to female sex workers (FSWs) in a southern Indian setting.
Methods: A dynamic HSV-2/HIV interaction model was used as a FSW cohort model for the first five years of sex work, assuming constant client prevalences and modeling one-way transmission to FSWs. The model was parameterized using data from the literature for biological inputs such as the natural history of HSV-2, and behavioral and epidemiological data from FSWs in Mysore, Karnataka, India (collected within the monitoring and evaluation of Avahan, the India AIDS Initiative) and

on clients from Karnataka/India. The data estimate 26% of Mysore FSWs are HIV-infected, 64% are HSV-2-infected, and 79% of those HIV-infected are coinfected with HSV-2. Ranges were estimated for each input and Latin Hypercube Sampling was used to select 10,000 parameter sets. The model was run for each parameter set to identify simulations producing prevalences fitting within the 95% CIs on the HSV-2, HIV and coinfection prevalence data among FSWs. 'Least chi-squared' error was used to select the best-fit, and the remaining fits produced 95% CIs on the predictions. Incidence values output by the model were used to calculate the population attributable fraction (PAF) of HIV infections that were due to HSV-2 and vice versa. Multivariate sensitivity analysis and multilinear regression analysis were used to explore the robustness of the findings and determine which of the interaction inputs the PAFs were most sensitive to.

Results: 401 input parameter sets produced model prevalences fitting within the 95% CIs of the data. The model predictions suggest about 33% (95% CI 22-62%) of HIV infections among FSWs were due to HSV-2, mostly through increased HIV susceptibility among HSV-2+/HIV_ FSWs, but also from increased HIV infectivity among coinfected clients. HIV may have also increased the HSV-2 incidence among FSWs by about 42%, mostly due to the increased rate of asymptomatic HSV-2 genital shedding and heightened HSV-2 infectivity among coinfected clients. Asymptomatic HSV-2 shedding appears to contribute much more to HIV transmission than symptomatic recurrences. The PAFs change by less than 10% for a 20% change in any of the best-fit interaction inputs, and are most sensitive to changes in the cofactors increasing the per sex act probability of HIV transmission in the presence of HSV-2 and vice versa. For HSV-2 incidence, the cofactors for increased HSV-2 shedding rates among those coinfected with HIV are also key contributors.

Conclusions: The analysis stresses the significance of HSV-2 to the HIV epidemic in an Indian context, suggesting that about a third of HIV infections among FSWs may be attributable to HSV-2, mostly due to asymptomatic HSV-2 shedding. The results also highlight the more neglected issue that HIV may be substantially contributing to the HSV-2 epidemic.

P-321 ATTITUDES AND BELIEFS TOWARDS HIGHLY ACTIVE ANTIRETROVIRAL THERAPY ARE ASSOCIATED WITH HSV-2-SEROPREVALENCE FOR WOMEN IN KISUMU, KENYA

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Objective: To determine whether knowledge, attitudes, and beliefs towards highly active antiretroviral therapy (HAART) are associated with HSV-2 seroprevalence, a marker for high risk sexual behavior, in a population with relatively recent access to HIV care and treatment services.

Methods: We conducted a cross-sectional population-based study of 1,655 persons (906 women and 749 men) aged 15-49 in Kisumu, Kenya. Participants were interviewed about their knowledge, attitudes and beliefs toward HAART and sexual risk behaviors. HSV-2 serological testing was performed. Multivariable analysis was performed using logistic regression.

Results: Sixty five percent of women and 38% of men were HSV-2 seropositive. HSV-2 seropositivity was associated with men (49% vs. 35%, p<0.01) and women (78% vs. 61%, p<0.000) who believed that HAART cures HIV, and with men who believed that HIV is a less serious threat (41% vs. 31%, p<.03) and among women who agreed they are more willing to take a chance of becoming HIV infected now that HAART is available (92% vs. 65%, p=0.04). After controlling for age, educational status and Luo ethnicity, only the belief that HAART cures HIV remained significantly associated with increased HSV-2 seroprevalence among women (Adjusted (A)OR=1.7, 95% CI 1.0-2.5) but not among men (AOR=1.7, 95% CI .9-3.3).

Conclusions: Inaccurate information about HAART and perception of reduced HIV threat appear associated with increased HSV-2 seroprevalence, especially for women. With HSV-2 as a marker for high-risk sexual exposure, these data suggest that sexual disinhibition could occur due to misinformation and optimism about HAART in the general population. Longitudinal studies are required to measure the potential impact of HAART availability on HIV risk perception, sexually transmitted infections and sexual behaviors as HAART scale-up progresses.

P-322 POSITIVE HSV-2 AVIDITY TEST ASSOCIATED WITH HIV INFECTION AMONG MEN IN MUMBAI, INDIA

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Objective: Herpes simplex virus, type 2 (HSV-2) is a major cause of genital ulcer disease worldwide and a significant risk factor for HIV infection. Persons with incident or recent HSV-2 infection are at greater risk for HIV acquisition than those with prevalent HSV-2. Previous studies have used seroconversion to determine HSV-2 incidence, but with the development of the HSV-2 avidity test (Morrow et al, STD, 2004, 31(8): 508-515), newly infected patients can be identified within 6 weeks of HSV-2 acquisition by testing a single serum sample. To determine the usefulness of the avidity test, we evaluated Indian men at high risk for HIV, who were HSV-2 IgG positive at baseline or who seroconverted on follow-up.

Methods: Men were seen as part of a randomized controlled trial of a behavioral intervention to reduce HIV/STD incidence in Mumbai, India. Subjects either had STD symptoms or came for HIV testing. Sera were screened for HIV with the Vironostika-BioKit EIA (Organon Teknika) and confirmed by western blot using either the Recombinant Strip Immunoassay (Chiron Corp) or the Lav Blot kit (BioRad). HSV antibodies were detected with the Focus HerpeSelect HSV-2 ELISA IgG assay (Focus Technologies, Cypress, CA). HSV-2 positives (index value >1.1) were then avidity tested using Morrow's protocol. Briefly, sera were retested 2x with the Focus ELISA, treated with and without sodium thiocyanate. Avidity was calculated based on the two OD readings; a positive value was _ 40.

Results: We initially evaluated avidity test performance. Among 49 HSV seroconverters (HSV-2 negative at baseline and positive on a follow-up visit), 28.6% (14) were avidity positive. Results for 10 of these avidity positive subjects were confirmed by retesting available sera 6 months later; all turned avidity negative. Subjects with established HSV-2 infection (HSV-2 positive at baseline and follow-up) were also tested. Of these, 4 follow-up samples were avidity positive, resulting in 97.3% (144/148) test specificity. The parent study had a cohort of 3289 subjects; baseline HIV prevalence was 15%, and HSV-2 seroprevalence was 45%. Avidity test performance was evaluated on a subset of 2431 men (19.4% HIV positive; 26.7% HSV positive). The proportion who were HSV-2 avidity positive was higher among those who were HIV infected versus HIV uninfected (2.12% vs 0.87%; OR=2.47 (95% CI 1.12-5.43). Among 27 HSV-2 avidity positive samples at baseline, 37% were HIV infected. During follow-up, 9 men HIV seroconverted. One patient was avidity positive and two HSV seroconverted at 6 months.

Conclusions: The HSV-2 avidity test is a useful tool for identifying incident HSV-2 infection in developing countries. We found good test performance with sera from patients with recent and established HSV infection. Among known HSV-2 seroconverters, 28.6% acquired HSV within 6 weeks of blood draw. The number of incident HIV infections was too small to evaluate an association with HSV acquisition, although 1/3 of known HIV seroconvertors, had recently become HSV2 infected. Among those HSV-2 positive at baseline, a positive avidity test was significantly associated with HIV.

P-323 IMPACT OF SUPPRESSIVE THERAPY ON GENITAL AND PLASMA HIV-1 RNA AFTER STUDY DRUG WITHDRAWAL IN THE ANRS 1285A RANDOMISED TRIAL AMONG HIV-1/HSV-2 CO-INFECTED WOMEN IN BURKINA FASO

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Background: The ANRS 1285a trial of suppressive HSV therapy conducted among HIV-1/HSV-2 co-infected women in Burkina Faso has demonstrated that women receiving valacyclovir (1.0g daily) for 3 months experienced significantly lower frequencies of genital HIV-1 RNA shedding and reduced quantities of both genital and plasma HIV-1 RNA. The aim of this study was to assess whether this effect persisted a few months after discontinuation of study drugs.
Methods: Participants who had completed trial outcome evaluation were invited to attend a post-trial visit approximately 6 months after discontinuation of study drugs. Similar procedures were followed: enriched cervico-vaginal lavages were collected for the detection and quantitation of HIV-1 RNA and HSV-2 DNA using real-time PCR; plasma HIV-1 RNA levels were measured using real-time PCR. We compared rates of detection of genital HIV-1 RNA and HSV-2 DNA at the post-trial visit according to initial randomisation group. We adjusted for values found at the randomisation visit, which took into account differences in outcomes during the pre-randomisation phase of the trial, using a Poisson regression model with robust standard errors. Plasma and genital HIV-1 RNA levels were compared using linear regression models.
Results: The post-trial visit was performed among 120/136 (88%) initially enrolled women, at a mean 26 weeks after study drug withdrawal. At this visit, 31/60 (51.7%) women in the valacyclovir arm and 35/60 (58.3%) women in the placebo arm had detectable genital HIV-1 RNA (risk ratio [RR]=0.89; P=0.47). Adjustment for detection of genital HIV-1 RNA at randomisation visit reduced this difference further (RR=0.95, P=0.75). Among women with detectable genital HIV-1 RNA, the mean quantity was similar (3.59 vs. 3.54 log10 copies/mL in valacyclovir and placebo arms respectively, P=0.78). Preliminary data on 70 women (35 on valacyclovir) showed similar mean plasma HIV-1 viral loads (4.10 and 4.17 log10 copies/mL) in the two groups, with no evidence of a lasting impact of valacyclovir, after adjustment for plasma viral loads obtained at the randomisation visit (-0.24 log10 copies/mL, P=0.26). Finally, 6/59 (10.2%) and 12/59 (20.3%) women in valacyclovir and placebo arms had detectable genital HSV-2 DNA with a (non-significant) trend for a sustained impact of valacyclovir 4 months after drug withdrawal, adjusting for randomisation visit values (RR=0.54, P=0.18).
Conclusions: The impact of valacyclovir on HIV-1 replication found in the ANRS1285a trial did not appear to persist 4 months after drug withdrawal. Although this effect should best be evaluated using several measurements to allow for the variability of HIV-1 genital shedding, the corresponding lack of sustained effect noticed on plasma HIV-1 RNA (less prone to variations) supports our interpretation. Our data indicate that the immunologic or virologic mechanisms underlying the impact of HSV suppressive therapy disappear soon after drug withdrawal, suggesting that therapy should be sustained if HIV-1 replication is to be controlled, although some effect on HSV-2 genital shedding may persist.

P-324 CHARACTERISTICS ASSOCIATED WITH TREATMENT OF HERPES SIMPLEX VIRUS (HSV) INFECTIONS IN PEOPLE WITH HUMAN IMMUNODEFICIENCY VIRUS (HIV)

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Background: Almost all HIV-infected individuals have HSV-1 infection, and most are also infected with HSV-2. While many of the HSV infections are clinically silent, severe and persistent mucosal ulcerations have also been noted in persons with advanced HIV. Patterns of antiviral therapy for HSV treatment and suppression in this population have not been characterized.
Objectives: To describe characteristics associated with receiving treatment for HSV among persons with HIV.
Methods: Data were abstracted from medical records of HIV-infected individuals enrolled in the Adult Spectrum of HIV Disease Project in Seattle/King County between 1998 and 2004. HSV medication prescription was defined as any prescription for acyclovir, valacyclovir, or famiciclovir, which, in aggregate defined treatment (including suppressive treatment) of HSV. Records with active herpes zoster diagnoses were excluded to prevent misclassification. A Cox proportional hazards model was used to assess the association between HSV treatment and HSV outbreaks, patient demographics and clinical characteristics.
Results: There were 2,262 people contributing 7,521 person-years included in the analysis. HSV was clinically diagnosed in 21% of the population during follow-up and 73% of diagnosed episodes received treatment. HSV prescriptions were given in 26 per 100 person-years of follow-up; overall 29% of the population received one or more prescriptions for HSV antiviral medications. Characteristics associated with HSV treatment in multivariate analysis adjusted for HSV diagnosis included: being a man who had sex with men (adjusted hazard ratio (AHR) 1.28, 95% confidence interval (CI) 1.05-1.55), AIDS diagnosis (AHR 1.40, 95% CI 1.18-1.67), highly active antiretroviral treatment or HAART (AHR 1.32, 95% CI 1.12-1.55), and having two or more outpatient visits in a six month period (AHR 2.14, 95% CI 1.73, 2.63).
Conclusions: Clinically recognized HSV infections are frequent in this population. HIV disease progression and HAART therapy increase the likelihood of receiving HSV treatment, perhaps though increased clinical recognition of clinical disease and patient acceptance of medication regimens. Infrequent care seeking is associated with lower rates of HSV treatment.

POSTER SESSION: BEHAVIORAL DETERMINANTS II

P-325 HELPING WOMEN UNDERSTAND HPV AND THEIR HPV/PAP TEST RESULTS IN THE CONTEXT OF CERVICAL CANCER SCREENING: FINDINGS FROM QUALITATIVE RESEARCH WITH WOMEN, AGES 30-65 YEARS

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Objectives: As the use of HPV DNA testing with cervical cytology expands as a cervical cancer screening tool for women ages 30 and older, many women are now learning about HPV for the first time when they are diagnosed as 'HPV positive,' upon receiving their cervical cancer screening results. Prior research has shown that this diagnosis may compound the anxiety, distress and fear experienced by women with abnormal Pap test results; elicit patient reactions of guilt, shame, anger, and concern about partner fidelity; and exacerbate patient confusion about results, which may reduce likelihood of follow-up. While studies have suggested that accurate HPV information may alleviate such negative reactions and confusion, there are currently no such materials for women with low literacy skills. This

research sought to test low-literacy English and Spanish materials to help women understand HPV and their HPV/Pap test results; reduce associated distress and partner concerns; and promote appropriate follow-up.

Methods: Low-literacy (<8th grade) English and Spanish brochures and booklets were tested with 30-to-65 year-old African-American, White, and Hispanic women who had no higher than a high-school education, were predominantly of low-income status (defined as household income <200% of the federal poverty level), and had received a Pap test in the last three years. A total of ten focus groups (N=90), segmented by age (30-45 years; 46-65 years) and language (English/Spanish), were conducted by professional moderators in three U.S. cities. Moderator guides were designed to assess participants' general awareness and knowledge of cervical cancer and HPV, reactions to material content (e.g., emotional response, perceived usefulness/clarity of information, unanswered questions, appropriateness of length and terminology, key take-home points, and participant intentions after reading content), and reactions to material designs. Each group was audio-taped and transcribed, with at least two observers taking notes. Results were analyzed using a notes-based strategy with three independent reviewers.

Results: Overall, participants were aware of HPV and cervical cancer but had very little knowledge of either. They felt the information was important, useful, and easy to understand. Many felt it would reduce anxiety if they received abnormal HPV/Pap test results, and motivate them to follow up. Participants also felt the information could be useful to all women to encourage routine cervical cancer screening. As such, they reported that they would ask their doctors for screening and share the information with friends and family members. Participants had many partner-related questions and appreciated information addressing these concerns. Confusion arose regarding certain aspects of HPV, including natural history, severity, transmission, types, treatment, and testing guidelines. Completeness of information (addressing all questions) was more important than brevity.

Conclusions: HPV, cervical cancer screening, and HPV/Pap test results are complex and challenging topics to communicate to low-literacy audiences, even in the absence of an abnormal diagnosis. Several concepts are inherently counterintuitive to women and must be carefully explained to ensure that patients understand their test results; do not experience unnecessary fear, anxiety, or stigma; and return for needed follow-up. Recommendations are made for meeting these patient needs.

P-326 BARRIERS TO MODERN CONTRACEPTIVE USE AND IMPLICATIONS FOR WOMAN-CONTROLLED PREVENTION OF SEXUALLY TRANSMITTED INFECTIONS IN MADAGASCAR

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Objectives: Globally, unplanned pregnancies and sexually transmitted infections (STIs) persist as significant threats to women's reproductive health. Since barriers to modern contraception may also inhibit uptake of woman-controlled STI prevention, both family planning and STI program planners would benefit from understanding barriers to modern contraception. We conducted a qualitative study among women in Madagascar to identify barriers to contraceptive use that may inhibit future acceptability of woman-controlled STI prevention methods. The research was conducted in the context of a study assessing the hypothetical acceptability of the diaphragm, a woman-controlled barrier contraceptive device when used with spermicide that also holds promise of protecting against STI/HIV.

Methods: Women consecutively seeking care for vaginal discharge at a public health clinic in Antananarivo, Madagascar were recruited for participation in a semi-structured interview (SSI) or focus group discussion (FGD) on contraceptive use. Participants also responded to a brief, structured face-to-face questionnaire assessing socio-demographic characteristics and contraceptive method use. Audiotaped SSIs and FGDs were transcribed, translated, and coded for predetermined and emerging themes. Univariate means and prevalences of quantitative indicators were determined.

Results: Among 46 participating women (median age: 25 years; median years of schooling: 12; percentage married: 46%), 70% reported occasional male condom use, mostly for pregnancy prevention during their most fertile days. The majority (86%) reported using another contraceptive method in addition to condoms. While knowledge of hormonal methods was generally good, only 14% of women reported hormonal method use (oral contraceptive pills or injections). The majority relied on traditional methods, including counting days (61%) or withdrawal, exclusive breast-feeding, or herbal tea (11%). Three barriers to modern contraceptive use emerged from SSIs and FGDs. First, women lacked knowledge about the range of hormonal and barrier contraceptive method choices. Second, misinformation and negative perceptions prevented use of some contraceptive methods. The most common concern was worry about weight gain with hormonal contraceptive use. Finally, women expressed concern about social opposition to contraceptive use, mainly by male partners. Some women reported that their male partners opposed limiting fertility, while others indicated that their partners did not like the available contraceptive method choices or were uncomfortable with women's covert use of contraceptive methods. Most women believed that male partners expected to be consulted before women started or changed a contraceptive method. Many women did not use contraception covertly because they were afraid that their partner would discover it, which may have resulted in mistrust, conflict, and/or separation.

Conclusions: These findings indicated that family planning and STI prevention programs should improve women's knowledge of modern contraceptive and STI prevention method choices and dispel misinformation and negative perceptions of methods. Though the increased development and accessibility of woman-controlled contraceptive and STI prevention are vital for the further empowerment of women and improved reproductive health, alienation of men is a potentially costly risk. Involvement of men will likely be a critical component of increased uptake of woman-controlled pregnancy and STI/HIV prevention methods and improved health.

P-327 VAGINAL DOUCHING IN THE UNITED STATES: TRENDS IN RACE/ETHNICITY, AGE, EDUCATION, AND REGION OF RESIDENCE

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Objectives: To determine demographic trends and socio-demographic characteristics of white, African American, and English-speaking Hispanic women in the United States (US) who continue to douche.

Method: A computer-assisted telephone interview (CATI) regarding vaginal douching was conducted June 2002-December 2003 with N=2,604 US women between the ages of 18-44. We purposely over-sampled African American and Hispanic women in an effort to make meaningful comparisons of douching practices by race/ethnicity, age, education, and region of the US where women who douche reside.

Results: Of the total sample, 17.8% (n=464) reported 'regular' douching (defined as douching at least once a month for the past 6 months); 99% reported having only heterosexual sex. The proportion of women who douched was significantly higher for those who self-identified as being African American (66%, n=290) compared with white (23%, n=102) and Hispanic women (11%, n=46) (p=.001). Women who douched were more likely not to be married (67%) than non-douchers (p=0.001) and to have less than a high school/GED education (p=0.001). Women who douche and did not obtain a high school diploma/GED were also more likely to engage in sex before the age of 17 (p=0.02). Current douchers were older (25-44 yrs; p=0.001) with more African American women who douche in the oldest age group (35-44; p=0.001). Older women were more likely to douche before sex (p=0.001), after sex (p=0.004), and douched more frequently than their

younger counterparts (p=0.01); younger women (18 -24) douche primarily after menses (p=0.03). The proportion of women who douched, and particularly the proportion of African American women who douched, was highest in the Mid-west (29%; p=0.001) followed closely by the South (28%). The smallest percentage of women who douched was in the Northeast (19%; p=0.001); nearly half (45%) of all white women who douched resided in the South (p=0.01); while 35% of all Hispanic women who douched resided in the West (p=0.001). Women who douched reported history of any STD (chlamydia, gonorrhea, and trichomoniasis combined) at a higher rate than non-douchers (21% vs. 15%, p=0.003). Among women who douched, more African American women (25%) reported any STD history that either white (13%) or Hispanic women (10%) (p=0.005). Women who douched and lived in the Midwest were more likely to report a history of STDs (27%) than women in the South (13%; p=0.04). All (100%) Hispanic women, 95% of white and 88% of African American women reported having no intention to stop douching any time in the foreseeable future (next 6 months) demonstrating that a larger proportion of African American women were seriously thinking about stopping the practice as compared to the other two racial/ethic groups (p=0.05); no age, educational, or regional differences associated with readiness to stop douching were found.
Conclusion: Although the prevalence of douching has declined nationally, the demographic characteristics of women who continue to douche are fairly similar to those found in the past. Interventions designed to increase motivation among women who douche to stop the behavior are strongly encouraged. dgrimley @uab.edu

P-328 ARE WOMEN IN THE UNITED STATES AWARE OF HEALTH RISKS ASSOCIATED WITH DOUCHING AND WHO IS ADVISING THEM TO DOUCHE?

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Objective: Using a national sample, the goals were to: (1) compared the level of awareness among women who douche and those who do regarding the health consequences associated with douching; (2) determine who advised them that they should douche; and (3) determine the prevalence of an STD history among women who do and those who do not.
Method: Using computer-assisted telephone interview (CATI) methodology, N=2,604 women between the ages of 18 to 44 living in the United States (US) were assessed on issues related to vaginal douching. African American and English-speaking Hispanic women were over-sampled to make meaningful comparisons across white, African American and Hispanic women.
Results: Of the total sample, 17.8% (n=464) reported 'regular' douching: 66% was African American, 23% white, and 11% Hispanic. A small proportion of all women were aware of the associations between douching and infertility (non-douchers 7% vs. douchers 6%), cervical cancer (14% vs. 10%), or premature births (5% vs. 3%, respectively) (all p-values >0.05). However, women who did not douche were more knowledgeable of the link between douching and PID (25% vs. 20%, p=0.01) and that douching can hide the signs and symptoms of certain STDs (24% vs. 15%, p=0.001) than women who reported regular douching. Among women who douched, being older (p=0.03), African American, (p=0.04), and living in the South (p=0.03) were related to lack of awareness of the consequences associated with douching. Women who douched were more likely that non-douchers to 'agreed' or 'strongly agreed' with the statement, 'Douche products are safe, otherwise they would not be on the market' (71% vs. 50%, p=0.00001). When asked, 'Who told you that you should douche?' Thirty percent of all women reported that a doctor or nurse had talked with them about douching and of these women 13% of non-douchers vs. 33% (151/464) douchers were told that they should douche (p=0.001); significantly more African American women (68%) were told by a provider to douche than white (23%) or Hispanic (10%) women who reported current douching (p=0.0001); no significant differences were found for age, education, or region of the US. Older women (35-44), however, were also more likely to be told by their mother, grandmother, or teacher that they should douche than younger women who douche (18-34; p=0.0001). Women who douched were more likely than non-douchers to report a history of gonorrhea (6.7 vs. 3.7%, p=.005) and trichomoniasis (8.2 vs. 5. 7%, p=0.04); no statistically significant differences were found for chlamydia (p=.24) or PID (p=.81)
Conclusions: Women who douche were less aware of the association of douching and PID or that douching can mask the signs/symptoms of STDs than non-douchers. Women who douche were also more likely to perceive douching products as being safe and to report a history of gonorrhea and trichomoniasis than women who do not douche. Particularly troubling is the fact that across all age groups, providers continue to advise women, particularly African American women, that they should douche. Based on these findings, behavioral interventions targeting both women and providers are needed. dgrimley@uab.edu

P-329 SEXUAL VIOLENCE AND INFLUENCE OF RELATIONSHIP TO PERPETRATOR ON HIGH-RISK SEXUAL BEHAVIORS IN A COMMUNITY-BASED SAMPLE OF AFRICAN AMERICAN WOMEN IN BALTIMORE, MD

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Objectives: Sexual violence is increasingly cited as an important determinant of women's HIV/STD risk. However, exploratory research on the prevalence of sexual risk behavior by relationship to sexually violent perpetrator is limited. This study examined the association between sexual violence and high-risk sexual behaviors and the prevalence of these behaviors by relationship to perpetrator (biological relative, intimate, friend, or stranger), among women in Baltimore, Maryland, USA.
Methods: A cross-sectional face-to-face survey was administered to 397 African American women recruited through targeted outreach in areas with high levels of prostitution and drug activity in Baltimore. These data were collected from April 2000 through June 2002. The survey included assessment of demographic characteristics, sexual violence history, relationship to perpetrator, HIV status, and sexual risk behaviors including multiple, casual or exchange, and high-risk partners, as well as, unprotected sex and alcohol or drug use. Logistic regression analysis was used to assess the independent effect of sexual violence on sexual risk behaviors. Prevalence estimates of sexual risk behaviors were calculated and stratified by relationship to perpetrator.
Results: Of 397 female participants, 252 reported recent male sexual partners and whether or not they experienced sexual violence. Among these women, 56% were ages 33 to 42 years, 44% did not graduate from high school, and 76% were unemployed. Half (47%) reported a lifetime experience of sexual violence; sexual violence in the past 12 months was 8%. A history of sexual violence was associated with multiple sex partners in the past 3 months (adjusted odds ratio [OR], 1.96; 95% CI, 1.11-3.46), sex with casual or exchange partners in the past 3 months (adjusted OR, 1.98; 95% CI, 1.11-3.52), and a self-report of HIV positivity (adjusted OR, 1.88; 95% CI, 1.00-3.59). Of 120 female participants who reported experiences of sexual violence, 70% named their relationship to the perpetrator during the last sexual assault. A large proportion of the perpetrators were biological relatives (35%) and friends or someone the woman knew (29%). A stranger accounted for 19% of the last sexual assaults followed by a current or former spouse or boyfriend, known as intimates (17%). The prevalence of multiple and casual or exchange sex partners was highest among women who reported a friend as the perpetrator (50% and 46%, respectively) and lowest among those who reported an intimate as the perpetrator (43%). HIV-positivity was highest among women who reported a stranger as the perpetrator (40%). Self-report of a high-risk partner and the use of alcohol or drugs in the past 6 months had equivalent prevalence estimates by relationship to perpetrator.

Conclusion(s): Sexual violence is highly prevalent among women in Baltimore and is associated with risk behaviors that increase the risk of contracting HIV and STDs. In addition, the relationship to sexually violent perpetrators may influence future risk behaviors. Interventions incorporating the spectrum of perpetrators should be appropriately targeted to women and the community in efforts to reduce sexual risk behaviors. Also, these findings warrant further investigation into the possible effect relationship to perpetrator may have on high-risk sexual behaviors.

P-330 METHAMPHETAMINE USE PREDICT VIRAL LOAD IN CHRONIC HIV INFECTION

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Objective: This study examines the relationships between behavioral risk and drug use factors and viral load and CD4 counts among chronically HIV-infected men followed in the Multicenter AIDS Cohort Study (MACS). The MACS is a prospective natural history study of HIV infection among a cohort of 5000+ gay/bisexual men in the United States.

Methods: The analysis was restricted to data collected between October 2002 and November 2005 from the Los Angeles site and included 313 HIV positive subjects who self reported having sexual activity with men during the study period and had viral load and CD4 count measured. Outcome measures included viral load (detectable defined as >=500 copies/ml and undetectable as <500 copies/ml), and CD4 count categorized as high if >= 350 cells/µl and low if <350 cells/µl. An unconditional logistic regression model assessed associations between these two outcomes and behavioral and drug use factors. Behavioral risks included the number of sex partners, having unprotected anal intercourse (UAI), and number of drugs used since their last visit. Subjects were grouped into three categories according to their drug use experience since last visit, including no drug use, non-methamphetamine drug use, and methamphetamine use. Treatment non-adherence was also examined and defined as not taking their HIV medication for least two consecutive days.

Results: Among the 313 subjects the mean age was 45 years, most were White (51%), followed by 31% Hispanic, and 17% African American. A strong correlation between drug use and treatment non-adherence was observed (r=0.20, P<0.01). An univariate analysis showed that subjects reporting methamphetamine use were significantly more likely to report not taking their HIV medications for at least two consecutive days compared to those reporting no drug use and non-methamphetamine drug use (39.5% vs. 13.5%, X2(1)=10.75, P<0.01, and 39.5% vs. 15.4%, X2(1)=8.93, P<0.01, respectively). In a multivariate model, the following were significantly associated with undetectable viral load: non-adherence (OR 8.37, 95%CI 3.65-19.17) and methamphetamine use (OR 1.94, 95%CI 1.02-3.72). Non-methamphetamine drug use was not significantly associated with viral load. Non adherence was also significantly associated with low CD4 count (OR 5.65, 95%CI 2.47-12.97) in another multivariate model although methamphetamine use and non-methamphetamine drug use were not. Number of sexual partners and having UAI were not associated with either viral load or CD4 count in multivariate analysis.

Conclusions: The results suggest that those reporting methamphetamine use were less treatment adherent resulting in poorer viral load control. Clearly reported adherence to HIV medication impacts both CD4 count and viral load, standard measures of how well their HIV is controlled.

P-331 PREVALENCE OF REPORTED SEX WORK AND CHLAMYDIAL AND GONOCOCCAL INFECTION IN THREE POPULATIONS, SAN FRANCISCO, 2005-2006

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Objectives: Persons engaging in sex work (SW) might be at high risk for chlamydia and gonorrhea. Sex workers might not have access to medical care and those that do might not disclose their occupation to providers. Because of the difficulty in identifying sex workers, little data are available about STD prevalence in this population. We examined frequency of reported sex work and STD prevalence in three populations in San Francisco: (1) arrestees screened for STDs in adult detention; (2) STD clinic patients; and (3) patients attending an occupational health clinic serving current and former sex workers.

Methods: Data from 2,331 arrestees screened at the intake jail, 6,135 STD clinic patients (July-December, 2006 only), and 498 SW clinic patients with STD testing visits during 2005 and 2006 were included in the analysis. Sex worker status was defined as SW related booking charges in arrestees; self report of receiving money or drugs for sex in the past three months in STD clinic patients; or SW clinic attendance. Chlamydia (CT) and gonorrhea (GC) prevalence was defined as infection at one or more anatomic sites. Urine specimens from the jail and urine, pharyngeal and rectal specimens from the STD and SW clinics were tested with nucleic acid amplification tests. Chi-square and Fisher's exact tests were used to compare differences in proportions.

Results: Frequency of SW was high for female (22.2% (287/1,293)) and transgender arrestees (16.7% (4/24)), but low for males (1.9% (20/1,014)). Female SWs had higher prevalence of CT (16.7% vs 7.0%, p<0.01) and GC (5.9% vs 2.6%, p<0.01) than non-SWs. Too few male and transgender SW arrestees were available to calculate prevalence. Among STD clinic patients, reported SW was higher among transgender (18.4% (7/38)) and female patients (3.0% (47/1,560)) than among males (1.2% (54/4,537)). Male SWs had higher prevalence of both CT (22.2% vs. 9.3%, p<0.01) and GC (23.1% vs. 14.5%, p=0.08) compared to non-SW males. Female SW were more likely to have GC (6.5% vs. 2.7%, p=0.13) and less likely to have CT (2.1% vs. 5.9%, p=0.2), but these differences were not statistically significant. Too few transgender patients were available to calculate prevalence. At the SW clinic, transgender patients had the highest STD prevalence (n=39, 5.7% CT and 15.4% GC)), followed by males (n=202, 3.0% CT and 6.0% GC)), and females (n=238, 1.7% CT and 0.8% GC).

Conclusions: In San Francisco, females arrested for SW had higher prevalence of CT and GC than SWs seeking sexual health services. Type of SW, lower rates of health care seeking behavior, non-disclosure of SW status, and no recent engagement in SW might explain lower prevalence at the clinics. Estimates from these convenience samples may not be generalizable to all SWs. However, the high STD prevalence in SW arrestees supports the need for consensual STD screening for SW in detention settings. High prevalence in males at the STD clinic and transgender patients at the SW clinic demonstrate that SWs are at risk for STDs regardless of gender, and should be screened at exposed anatomic sites.

P-332 ARE THE YOUNG GROWING MILD OR ARE THE OLD GOING WILD? DECREASING AGE DISPARITIES IN SYPHILIS AND GONORRHEA INCIDENCE RATES IN THE UNITED STATES, 1981-2005

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Background: Compared to older age groups, teenagers and young adults in the United States are at high risk of acquiring sexually transmitted diseases (STDs). Although the disparity in STD rates across age groups is well-documented,

changes in the degree of disparity in STD rates across age groups over time have not been examined in detail. The purpose of this study is to examine changes in the ratio of STD rates in younger age groups to older age groups from 1981 to 2005.
Methods: We examined age- and race-specific incidence rates of syphilis and gonorrhea in the United States (excluding New York owing to incomplete age- and race-specific data in the early 1980s) from 1981 to 2005. STD rates in younger age groups (ages 15 to 29 years) were compared to STD rates in older age groups (ages 40 to 64 years) for each year over the 25-year period. We used regression analyses to examine the trend in the age rate ratio (STD rate in the younger age group divided by STD rate in the older age group) over time, adjusting for autocorrelation. We examined age rate ratios for nine population groups: 3 race categories (all, white, black) x 3 sex categories (total, male, female).
Results: The age disparity in syphilis and gonorrhea declined from 1981 to 2005 for all nine population groups we examined ($p<0.01$). The estimated annual decline in the age rate ratio was 5.7% for syphilis and 2.3% for gonorrhea for all races overall, and was most pronounced in white males. The disparity in syphilis and gonorrhea between the younger and older age groups was more pronounced for females than males.
Conclusions: The age disparity in syphilis and gonorrhea declined from 1981 to 2005, primarily because of declines in STD rates in younger persons. Future research is needed to determine why STD rates in younger persons declined relative to STD rates in older persons and to inform programmatic responses to the changing age disparity in STD rates.

P-333 COMPARISON OF CHARACTERISTICS AND BEHAVIORS BETWEEN MSM ACTIVELY USING THE INTERNET FOR SEX IN SEATTLE, WA AND MSM NOT ACTIVELY USING THE INTERNET FOR SEX

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Objectives: To compare characteristics and behaviors of MSM using the internet for sex to MSM that meet sex partners in other venues in Seattle & King County, Washington, while accounting for homogeneity and/or differences of these characteristics by website and sex partner type.
Methods: A cross sectional survey administered through internet websites and at local gays bars from the end of June through October 2006 included demographic information, HIV/STD testing history and frequency, STD transmission, internet use for sex, and involvement in the gay community, and behavioral and attitude differences by sex partner type. Comparisons were made between MSM using the internet for sex (IMSM) and non-internet using MSM (non-IMSM) In addition to distributing surveys, profiles and advertisements on five popular websites for gay/bisexual men were examined in order to determine the variance or homogeneity of behaviors, demographics, and disclosure variables by website. Disclosure variables recorded included: self-HIV status; request of partner HIV status; age; drug use; and safe/unsafe sex behavior.
Results: Of the 308 completed surveys,the majority of IMSM (84%) were recruited from the online sample. IMSM reported significantly higher rates of recent STD transmission than non-IMSM: Gonorrhea 13% vs 4%, Chlamydia 12% vs 5%, All of the syphilis cases in the total sample were within the IMSM group (5%). IMSM were significantly more likely to go online to meet sex partners in person (90% vs 46%); meet new friends in person (81% vs 38%); have cyber-sex (36% vs 19%); to get paid for sex (7% vs <1%); and to hire someone for sex (3% vs 0%). The frequency of condom use was significantly lower with primary sex partners than internet and non-internet sex partners. The lack of trust with internet and non-internet sex partners potentially resulted in increasing levels of condom use and the greater levels of trust with primary sex partners potentially led to less frequent condom use. While trust was significantly greater with primary sex partners, one-third of those who never used condoms with their primary sex partners had concurrent internet and non-internet sex partners. Half of this group used condoms with these concurrent partners and half did not.
Conclusions: The frequency of recent STD acquisition (gonorrhea, Chlamydia, and syphilis) was significantly greater in the IMSM group than the non-IMSM. IMSM reported greater efficiency and ease of meeting, finding, and having sex partners leading to a significant preference of meeting sex partners on the internet as opposed to other venues in person. Findings from this needs assessment show no significant differences in risk behaviors (condom use, disclosure, drug use etc) between internet and non-internet sex partners. However, in observing profiles/ads across multiple popular websites, there is significant variance for each of these behavioral risk factors reported depending on the website. Because demographics vary by site, potential prevention interventions may also vary by target MSM population. The results of research investigating IMSM could therefore vary depending on what websites were targeted for recruitment.

P-334 PREVALENCE AND CORRELATES OF CONDOM USE AMONG FEMALE SEX WORKERS IN KARACHI, PAKISTAN: IMPLICATIONS FOR HIV TRANSMISSION

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Objectives: With an emerging HIV/AIDS epidemic in Pakistan, female sex workers form the core group which could play a major role in sustaining the epidemic. Available data reports that FSW's in Pakistan practice inadequate prevention/risk reduction measures for the prevention of STI's including HIV/AIDS, with significantly lower levels of condom use. To our knowledge, no study has been conducted in Pakistan, which looks at the factors associated with the non use of condom. This study was therefore conducted to estimate the prevalence of condom use and also factors associated with its use among female sex workers
Methods: Data were collected from January 2006 to May 2006, from a total number of 300 FSWs distributed into 03 identified typologies of FSWs in Karachi i.e., Brothel, Street and Home/Kothi based on a proportional allocation method. Multiple sampling techniques including multistage cluster sampling for street based FSW, systematic random sampling for brothel based FSWs and network sampling for Home/kothikhana based FSWs was used to achieve a representative sample of the study population. Interviewers were provided 03 days of training on data collection, recruitment process, taking informed consent, interviewing technique, data management and ethical considerations. Data were collected on a pre-tested, structured format, which gathered information on various socio-demographic characteristics, sex work, condom use and knowledge of HIV and STIs. Data after editing was double entered into a data base, and was analyzed using SPSS 12.0. Initially a descriptive analysis of all study subjects was done, followed by a case control analysis after a case control assignment was done based on the response elucidated for the dependant variable
Results: Condom use was defined as 'the use of a condom on the last sexual intercourse' which was shown to be 44.6%. Based on this definition 166 cases were 'non condom users' while 134 controls reported of a 'condom use' on the last sexual intercourse. Results of the Multivariate analysis highlighted various factors independently associated with non use of a condom including non availability of condoms (aOR 4.8, 95% CI 2.9-7.5), practicing sex work for more than 5 yrs (aOR 2.1, 95% CI 1.0-4.2), FSWs aged more than 35 yrs (aOR 2.7, 95% CI 1.6'3.4), sex with a regular partner (aOR 3.8, 95% CI 1.5-8.1), use of alcohol at last sex (aOR 2.8, 95%CI 1.2-5.0), lack of knowledge that condoms can protect from HIV (aOR 2.5, 95% CI 1.2-6.2), not associated with any interventions (aOR 1.8, 95%CI 0.9-3.3) and non establishment based sex work (aOR 6.0, 95% CI 2.2-16.5). No biologically plausible interactions were found significant

Conclusion(s): This study has helped significantly to enhance our understanding on the use of condom among FSWs in Pakistan and has highlighted some important factors associated with the non-use of condom. The findings of this study can be utilized in designing and improving the various service delivery programs for FSWs in Pakistan. There exists an urgent need to develop comprehensive service delivery programs for FSWs, with a scaling up of the existing services

P-335 THE BEER-HALL STUDY: AN ALCOHOL AND HIV RISK REDUCTION INTERVENTION IN HARARE ZIMBABWE

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Background: HIV prevalence in Zimbabwe is one of the highest in the world. In 2003, when this study began, the HIV prevalence was 25%, the third highest in the world. Alcohol is widely used in Zimbabwe, especially among men, and a study among factory workers found that beerhall attendance in the last week was an independent risk factor for prevalent HIV infection (adjusted OR: 2.3), and 43% of factory workers had visited a beerhall in the previous week. We undertook this study to assess the efficacy of an intervention based on the IMB model where men were trained to protect their drinking buddies for sexual risk.
Methods: A randomized control trial design was used with 24 beerhalls and a total of 1200 participants randomized to either an intervention or control condition. Participants were recruited using time-spatial procedure, where a calendar of 4-hour visit times was created, beerhalls were randomly ordered and slotted into the calendar and an interception zone established outside the beerhall entrance. Every third man to come the entrance was invited to participate. The primary outcome measure was sex while intoxicated with casual partners. A secondary outcome was an assessment of recent HIV seroconversion using the BED assay. The intervention was implemented for 12 months after a baseline survey, with post-intervention surveys at 12 and 24 months.
Results: There was an 80% acceptance rate of men invited to participate. Findings from the baseline survey indicated that there was a HIV risk behavior was high among the beerhall patrons with nearly half having multiple partners in the past six months, and nearly one third have unprotected sex with casual or commercial partners. HIV infection was consistently associated with number of days per month alcohol was consumed and days per month alcohol was consumed to intoxication. Prevalence of HIV infection among Harare beerhall patrons was steady for 4 years (2002-2004), at 29%.
Conclusions: The beerhall patrons were a suitably sexually risky population, the intervention has the potential to make a difference.

P-336 MALE PARTNER CHARACTERISTICS AMONG COUPLES RECEIVING ANTENATAL HIV PREVENTIVE CARE IN NAIROBI

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Objectives: Couple counseling and partner notification have been found to improve uptake of interventions to prevent mother-to-child HIV transmission (MTCT) in resource-poor settings. Male partner characteristics were examined to identify novel strategies for increasing male involvement in the antenatal setting and compared against women's reports to determine agreement between partners.
Methods: In a study of antenatal couple counseling, women were encouraged to invite male partners for VCT and return with partners two weeks after testing. Questionnaires were administered to male and female partners. Characteristics were analyzed using Chi-squared, Fisher's exact, and Wilcoxon signed-rank tests. Partner responses were compared using percent agreement, kappa, McNemar's test, and Pearson correlation coefficients.
Results: Among 1,991 men informed by female partners of HIV testing availability, 313 (16%) accompanied their partners to the clinic. Seventy-one (23%) attended their first clinic visit on Saturday and 297 (95%) received HIV testing, of whom 31 (10%) were HIV-seropositive. Of 296 couples for which both partners received HIV testing, 114 (39%) were post-test counseled as a couple and 170 (57%) men returned for the follow-up visit. Men who accompanied their partners were aged 19-53 (median 28, IQR 26-30), had completed at least primary school (99%), were in a monogamous marriage (97%), and lived with their partner (98%). Salaried jobs were held by 51%, with 32% self-employed and 16% casual laborers. Age at sexual debut ranged from 8-30 (median 17) and men had a median of 4 lifetime sexual partners (IQR 2-6). Of the 313, 30 (10%) men reported current condom use with their partner, 25 (8%) had other sexual partners, 127 (41%) had prior history of STI, and 45 (14%) had previously been tested for HIV. Overall, 263 (87%) accompanied their partners because they wanted HIV testing. Men knew a median of 3 of 3 modes of MTCT and 3 of 6 methods for preventing MTCT. Men who participated in post-test counseling with their partners were younger ($p=0.046$), had fewer children ($p=0.003$), and were less knowledgeable about modes of MTCT ($p=0.041$) and methods for preventing MTCT ($p<0.001$) than men who received post-test counseling alone. They did not differ in HIV status, sexual history, or couple characteristics. Partner reports regarding couple characteristics (marital status, cohabitation, relationship duration, condom use, SES indicators) agreed a high percentage of the time (median 88%, IQR 66-92%; $r>0.74$). However, men were significantly more likely than their female partners to report ever condom use and previous discussions regarding HIV testing, family planning, personal health, and finances ($p<0.02$). Female partners were reliable reporters of male partners' age ($r=0.91$), education, employment, and prior HIV testing (agreement≥70%), but were significantly less likely than their partners to think men would share HIV test results if positive ($p<0.001$).
Conclusion: This is one of few studies in an African antenatal setting to interview male partners and provide information about male characteristics relevant for development of programs targeting men and couples. There was reasonable correlation between male and female partner responses, suggesting women's reports may at times be acceptable surrogates for male responses.

P-337 BARRIERS AND FACILITATORS TO HIV TESTING: IMPLICATIONS FOR PREVENTION

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Objective: Testing for hiv is not common among risk groups in the Netherlands, compared to other countries. To identify barriers and facilitators for hiv testing an international literature review was performed. This review was performed in order to improve an internet intervention (www.soatest.nl) which provides tailored advise on HIV and STI testing .
Methods: To investigate what factors facilitate testing and what factors work as a barrier a comprehensive literature review was performed. We selected a total of 2446 publications in Pubmed and Psychline using the search terms hiv test, hiv testing, or hiv screening. After selection of these publications a total of 38 studies could be used. A selection was made in post HAART articles, from industrialized countries among healthy, non institutionalized adolescents and adults.
Results: Hiv testing is more common among women then men, and more among ethnic minorities then non ethnic minorities. The review showed that older people tend to test more then youngsters. Except for the influence of age no significant relationship was established between testing and other socio demographic characteristics. Important barriers to hiv testing were the observed stigma and discrimination, and more importantly fear of the test result and social consequences, in

particular the loss of a partner. Sexual risk taking alone turned out to be no facilitator for hiv testing. It seems that risk taking isn't always perceived as such and that people underestimate there personal risk.

Conclusions: An important conclusion of this review is that there's little recent research into barriers and facilitators for hiv testing, especially in the Netherlands. The data that are available is mostly descriptive or cross sectional. The conclusions are sometimes ambiguous or even contradictory. However, the review does suggest that in promoting hiv testing policies and interventions need to address the psychological and social processes and acknowledge peoples lay perspective. A major barrier to hiv testing is the perceived personal risk. People tend to seriously underestimate their personal exposure to hiv and the likelihood to get infected with hiv. They don't perceive their behaviour to be at risk for hiv. Making people aware of personal risk behaviour may be a prerequisite for individuals to request hiv testing. Another, less important barrier to testing is fear of a positive test result and the negative social consequences of testing positive. High perceived costs limit the number of people who get tested. Treatment wasn't a motivator to get tested. Also practical reasons are reported for not testing for hiv. Having tested before, not being offered testing, or lack of provider endorsement are reported. Routinely offering hiv testing and relieving stigma and discrimination which is still associated with hiv testing are important factors to improve testing. Balancing the scale between perceived costs and actual benefits of testing for hiv would improve testing.

P-338 SEXUAL RISK BEHAVIOURS OF CLIENTS ATTENDING STI AND HIV COUNSELLING AND TESTING SERVICES IN HAMILTON AND WATERLOO, ONTARIO, CANADA

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Objective: In the province of Ontario, Canada, public health units are required to ensure the provision of specific prevention interventions with the intent to reduce the incidence of Sexually Transmitted Infections (STIs), HIV/AIDS, and Hepatitis C. However, there is limited empirical evidence demonstrating the cost-effectiveness of these interventions. As an initial step to determine the economic impact of primary prevention interventions, this project measured the sexual risk behaviour of clients requesting STI and HIV counselling and testing services from two health units in Central West Ontario, Canada.

Methods: One-hundred and twenty participants were recruited from among new clients requesting services from four STI and HIV clinics in two health units. All clients who consented participation completed a 15-minute self-administered questionnaire responding to questions related to (i) socio-demographic characteristics; (ii) sexual risk behaviours; (iii) injecting drug risk behaviours; (iv) risky behaviour in the previous six months; (v) history of STI; and (vi) information about HIV prevention accessed in the past six months. Clients who completed the questionnaire were compensated with $20 worth of incentives (coffee or grocery gift certificates).

Results: The following results are based on the sexual risk behaviour of clients since there was not drug injection activity in the group. Most of the participants were male (53%), 93% identified themselves as being heterosexual, 68% had some higher education, and the average age was 28 years. Of the total number of clients (N = 120) only 87 had engaged in penetrative sex (vaginal and/or anal sex) in the previous 30 days. As shown in the graph below, most of these clients (80%) had engaged in unprotected intercourse, however, a majority (59%) of them had had sex only with regular partners, while 41% had sex with casual partners in the past month. With respect to the sexual related behaviours of clients in the previous six months, 34% reported impaired judgment by alcohol or drugs, 27% experienced condom breakage, 25% reported no condom use and 33% reported multiple sex partners (two or more). In relation to history of STI, 39% of the participants reported having had at least one STI in their life time with chlamydia being the most widespread STI among this population, experience by 16% of the respondents, followed by genital warts experienced by 9% of the clients. Most (78%) of the chlamydia cases were reported by females between 19 and 48 years of age. Thirty-four percent of all clients reported being exposed to HIV/AIDS and/or STI prevention related information in the previous six months through the television, 16% through health care professionals and family or friends, and 11% through printed media.

Conclusion: The up-to-date information about sexual risk behaviours of clients visiting the STI and HIV prevention interventions can produce accurate estimates for use in policy analysis and resource allocation decision-making. This in turn can allow public health units to be in a better position to make efficient use of the limited prevention resources.

P-339 HIGHER LEVELS OF HIV-RELATED RISKY BEHAVIOUR REPORTED IN POLLING BOOTH SURVEYS COMPARED TO FACE-TO-FACE INTERVIEWS IN A GENERAL POPULATION SURVEY IN MYSORE DISTRICT, KARNATAKA STATE, SOUTHERN INDIA

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Objectives: To estimate levels of HIV-related risky behaviours in the general population of Mysore district using different interviewing techniques, in the context of the monitoring and evaluation of a large preventive intervention targeting vulnerable populations (Avahan, the India AIDS Initiative of the Bill & Melinda Gates Foundation).

Methods: This study was carried out from 10/2005 to 11/2006. We used a stratified two-stage sampling method to randomly select 6000 subjects equally distributed between rural and urban areas (clusters) and between men and women aged 15 to 49 (randomly selected from each cluster). After providing informed consent, each participant was administered a face-to face interview (FTFI), and blood and/or urine samples were taken for HIV/STI testing. A separate sample of 3000 subjects was drawn using the same sampling frame for conduct of polling booth surveys (PBS). In PBS, a group of respondents answer a simple set of yes/no questions by putting voting cards in different colour-coded boxes corresponding to 'yes', 'no' and 'not applicable' answers. Responses are anonymous and not traceable to individuals, since the data are subsequently analysed only for the group as a whole. Between 14 and 19 questions were asked to separate groups of 15-20 unmarried and married men and women (four groups).

Results: The response rate was 81% for the FTFI (4663/5732) and 65% (2013/3100) for the PBS. The lower response rate for the PBS was primarily due to the difficulty of gathering groups of sampled individuals together at the same time, rather than to refusals. Tables 1 and 2 show statistically significant differences in rates of reporting of HIV-related risky sexual behaviour between these two methods. Consistently higher rates of sex with different partner types were reported in all groups in PBS vs. FTFI. For example, 6% vs. 2% of unmarried males, and 8% vs. 2% of married males, reported ever having had sex with a female sex worker (FSW), respectively. 7% vs. 2% of unmarried males, and 5% vs. 0.5% of married males, reported ever having had anal sex with a man, respectively. Both married men and women reported higher rates of extra-marital sex for themselves and their spouse in the PBS. Married women also reported more frequently thinking that their husband had ever had sex with an FSW (12% vs. 2%).

Conclusions: The results of this survey strongly suggest significant rates of under-reporting of HIV-related risky behaviour in a general population survey in Southern India using face-to-face interviewing techniques. This is likely to be due to the strong social proscription of pre- and extra-marital heterosexual sex, anal sex and homosexual sex in this culture. These results are borne out by the biological test results, where 6 cases (out of 43 in the whole study) of C. trachomatis and 2 cases (out of 5) of N. gonorrhoeae were found among subjects reporting no sexual experience in the FTFI. Increasing the confidentiality/anonymity of the interview setting may aid in achieving more accurate rates of reported sexual behaviour in Southern India.

Table 1	Unmarried women		Unmarried men	
	FTFI	PBS	FTFI	PBS
Ever taken HIV test	0.6%	2.5%	2.6%	1.7%
Vaginal/urethral discharge last year	3.4%	20.8%	0.5%	7.9%
Genital ulcer last year	0.5%	7.7%	0.5%	7.9%
Ever seen a condom	30.5%	47.7%	57.4%	76.4%
Ever had heterosexual sex	0.8%	2.4%	5.7%	20.9%
Ever been paid for sex/paid for sex with FSW:	0.0%	0.4%	1.3%	6.2%
Ever had anal sex with a man	0.0%	0.4%	1.7%	6.8%

Table 2	Married women		Married men	
	FTFI	PBS	FTFI	PBS
Ever taken HIV test	6.4%	14.6%	3.4%	6.0%
Vaginal/urethral discharge last year	4.0%	2.5%	0.3%	10.5%
Genital ulcer last year	1.5%	1.2%	0.1%	6.1%
Pre-marital/extra-marital sex	0.5%	10.3%	16.2%	16.9%
Ever been paid for sex/paid for sex with FSW	0.05%	0.1%	2.4%	7.5%
Husband/wife ever had extra-marital sex	0.0%	20.8%	0.5%	2.7%
Husband ever had sex with FSW	1.9%	12.4%	NA	
Ever had heterosexual anal sex	0.4%	4.4%	3.7%	1.6%
Ever had homosexual anal sex	NA		0.5%	5.4%

P-340 EXPOSURE TO VIOLENCE AND STI/HIV INFECTION AMONG ADOLESCENT ORPHAN GIRLS IN ZIMBABWE

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Objectives: Violence in its many forms has been associated with increased HIV/STI risk and infection among women globally, and in particular among young women in sub-Saharan Africa. Adolescent orphans are at increased vulnerability for both HIV/STI infection and violence. In this analysis, we characterized the experience of violence among adolescent orphan girls in Zimbabwe participating in a combined life skills and vocational training intervention designed to decrease economic vulnerability and HIV risk. We then investigated the association between exposure to violence and prevalent infection with HIV and/or Herpes Simplex Virus-2 at baseline.
Methods: A convenience sample of 326 adolescent girls/women aged 16 to 19 was recruited through community events and referrals. All participants were orphaned (having lost at least one parent), out of school, and living in Chitungwiza ' a poor urban area outside of Harare. Participants were interviewed using a combination of Audio Computer Assisted Self Interview (ACASI) techniques to collect background and behavioral information, and face to face interviews to collect health history, and information on exposure to violence. Exposure to violence was categorized as physical, sexual (unwanted touching without penetration), forced penetration (rape) and/or household-level (any form experienced by another in the household). All participants were also tested for HIV and HSV-2.
Results: Overall, 13% of participants had ever experienced at least one form of violence. Five percent experienced physical violence; 9% experienced sexual violence; and 8% experienced forced penetration. In addition, 9% of participants reported that one or more of their household members had been exposed to at least one form of violence. Girls who experienced violence of any kind were more likely to have missed one meal or more in the past week (67% vs. 49%, p<0.01); were less likely to have completed secondary education (50% vs. 75%, p<0.01); were more likely to have reported the initiation of sexual activity (74% vs. 24%, p<0.01) and to report having had 3 or more lifetime sexual partners (26% vs. 3%, p<0.01). Five percent of participants were infected with HIV, 8% with HSV-2, and a total of 11% were infected with either one or both. HIV and/or HSV-2 infection was associated with physical (33% vs. 10%, p<0.01) and sexual (21% vs. 10%, p<0.01) violence, and forced penetration (28% vs. 10%, p<0.01) in bivariate models. However, these associations were not sustained in multivariate logistic regression models controlling for age, education and number of lifetime partners.
Conclusion(s): A large number of adolescent orphan girls in Zimbabwe experience physical, sexual and/or household level violence, which was found in this analysis to be associated with increased HIV/STI risk in terms of initiation of sex and number of partners. Girls who experienced violence were also those most vulnerable to food insecurity and early termination of school. Although our power to detect associations between exposure to violence and HIV/STI infection in multivariate models was limited, this analysis suggests that interventions among this population should address issues of violence when targeting HIV/STI prevention.

P-341 WHAT FACTORS UNDERPIN PERCEPTIONS OF RISK, PARTNER SAFETY AND CONDOM USE AMONG YOUNG PEOPLE IN LONDON

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Objectives: To describe expectations of risk, perceived partner safety and condom use among young people in North West (NW) London. This qualitative research is part of a project that involves translating an effective behavioural intervention, Project Safe (PS), which successfully reduced Sexually Transmitted Infection (STI) re-infection among African-American and Mexican-American women in San Antonio, Texas, into an intervention suitable to young urban women in NW London.
Methods: In-depth interviews (n=37) and focus groups (n=10) were conducted in NW London with men and women age 15 to 24 years of different ethnic backgrounds. Participants were recruited from youth clubs, schools, addiction services, employment programs, football clubs and the genitourinary medicine clinic (November 2006 to February 2007). Interviews were recorded, transcribed verbatim and analysed using Framework.
Results: Expectation of risk: Awareness of the consequences of not using condoms was high but perceived vulnerability varied. Participants were aware that STIs can be asymptomatic, but spoke of 'vibes', 'feelings they get about people' and 'knowing' who is and is not 'clean'. Such knowledge was regarded as sufficient to reduce STI risk. Non-consistent condom users' expectation of risk depended on percep-

tions of casual and regular partners and circumstances. Casual partners, or 'links' and sex outside relationships were considered to require condoms. However, unprotected sex in these cases still occurred, and categorisation of sexual encounters was clearer to men; some women discovered they were regarded as links only after sex. Perceived partner safety: Among men, girlfriends were thought to be safe and faithful while girls who agreed easily to sex, had sex with guys with a reputation or were known to have many partners required condom use. Women expressed concern about boyfriends' fidelity. Concerns about cheating partners and pregnancy were major reasons to use condoms. Despite concerns, women were persuaded into unprotected sex because: they did not want to spoil the moment; trusted that older men knew what they were doing; partners removed condoms during sex; and they found insisting on condoms difficult after non-use. Poor condom negotiation skills were evident among younger women in particular. Condom use: Men chose not to use condoms even under self-defined risky circumstances. Reasons were: enjoyment; getting caught up in the moment; and not having condoms at the time. Women reported decisions not to use condoms when they felt comfortable, trusted their partner, were drunk or were 'young, restless and unwise'.
Conclusions: Although risk awareness may help promote condom use with high-risk partners, young people are still taking risks and experiencing STIs. They are aware it is impossible to see who has an STI but unable to recognize the flaws in their methods of identifying risk, selecting partners and deciding about condom use. While men made conscious decisions about condom use, women experienced persuasion and deceit, suggesting power imbalance and need for condom negotiation skills. The findings correspond with the Project Safe formative work that the conceptualisation of realities is an important factor in behavior modification, particularly how reviews of partner safety are guided by perceptions of similarity and closeness.

P-342 BARRIERS TO STI TESTING AMONG YOUTH IN A CANADIAN OIL AND GAS COMMUNITY

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Background: Communities in Northeastern British Columbia (BC), Canada, are undergoing rapid and massive changes associated with the in-migration of young people attracted by the 'booming' oil and gas industries. Concomitantly, sexually transmitted infection (STI) prevalence is high and rising across the country - in particular among youth living in these communities, where Chlamydia rates exceed the provincial average by 32%. Currently, the health and social impacts of the booming oil and gas sector on communities in North America are under-explored, particularly in relation to STIs.
Objectives: To document young people's experiences with STIs and STI testing in an oil and gas community in Northeastern BC, and to make recommendations in order to improve the accessibility of testing services in remote, resource-extraction communities.
Methods: In addition to documenting STI rates and service provision patterns, the study included 8 weeks of ethnographic fieldwork, including 30 in-depth interviews with youth (ages 15-25) and 18 interviews with health and social service providers. The data were used to develop detailed descriptions of the barriers and facilitators to youth access to STI testing.
Results: Serious mismatches exist between available services and youth's needs for STI testing. Study participants identified 5 key barriers to STI testing for youth in this setting: 1. Limited opportunities for youth to access STI testing (e.g., only 4 appointments/week for STI testing at public health unit; family doctor shortage; few options to be seen by a female physician; STI testing services are not offered during evenings or weekends); 2. Geographic inaccessibility of clinics (e.g., males working at oil/gas camps cannot access services in town; public health unit is located outside the downtown core; youth who live in town lack transportation to access the public health unit); 3. Local social norms (e.g., STIs are stigmatized; oil/gas 'riggers' are stereotyped as hyper-masculine, sexual risk takers; local women are stereotyped as 'gold diggers' who are willing to engage in unprotected sex, particularly when they are binge partying with 'riggers'); 4. Lack of information regarding STIs and testing options (e.g., few youth were aware that STI testing was available at the public health unit; most youth lacked information about STI symptoms, testing procedures and treatment options); 5. Negative interactions with service providers (e.g., youth who had been tested were unsure about what STI they had been tested for; service providers and youth indicated that the current models of service provision did not facilitate the establishment of rapport and shut down opportunities for youth to ask questions, seek advice, and/or develop skills related to STI prevention).
Conclusions: In a place that is experiencing an unprecedented pace of economic development, immediate action is needed to address youth's needs for STI testing. University researchers, Northern Health Authority, OPTions for Sexual Health, and oil/gas industry representatives are planning interventions, including nursing outreach to camps, condom distribution, expanded STI clinic hours, and increased public awareness.

P-343 TRAUMATIC OR TRIVIAL: COMPARING PATIENTS AND PROVIDERS PSYCHOSOCIAL PERCEPTIONS OF A GENITAL HERPES DIAGNOSIS

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Objectives: Patients and healthcare providers (HCPs) report significantly different psychosocial perceptions of genital herpes (GH). Stigma may prevent people from getting tested and prevent HCPs from diagnosing herpes. This in turn prevents adequate treatment that may perpetuate transmission. This study measured and compared perceptions to inform future patient and provider educational efforts.
Methods: Two previously validated scales, the 20-item Recurrent Genital Herpes Quality of Life Instrument (RGHQoL) and the 14-item Hospital Anxiety and Depression Scale (HADS), were used to measure perceptions. HCPs (physicians specializing in Internal Medicine, Family Practice, General Practice, and Nurse Practitioners) were recruited from email lists purchased from AMA-affiliates and professional associations. Fifty HCPs and three of each of their patients (n=150) were surveyed to compare ratings of the psychosocial impact of a GH diagnosis.
Results: The majority of patient participants were female, 25 to 34 years of age, non-Hispanic, White, and recently diagnosed using more than one method. Patients and HCPs did rate some of the 20 RGHQoL items differently; however, contrary to our hypothesis, many did not vary. Patients reported significantly higher levels of depression than the HCP's. While there was no significant difference on overall anxiety scale scores, individual items varied.
Conclusions: This study provides important information about the specific concerns of patients that are different from HCPs perceptions. Bridging the gap will accomplish several Objectives: First, reacting appropriately to a GH diagnosis (from the public health, patient, HCP, and press perspectives) will normalize the condition and reduce the stigma surrounding GH. Presumably, reducing stigma will encourage both patients and providers to increase rates of testing. Knowing the concerns of patients will enable HCPs to offer effective, focused education, emotional support, and appropriate referrals to reduce stigma and encourage rapid psychosocial adjustment.

P-344 MOTHERS ACCOUNT OF SELF REPORTED STI SYMPTOMS BY THEIR ADOLESCENT GIRLS AND THEIR HEALTH SEEKING BEHAVIOURAL PREFERENCE IN AN URBAN MARKET, LAGOS, NIGERIA

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Objectives: The objective of the study is to determine the frequency of STI symptoms reported to mothers by their adolescent girls and to determine their health seeking behavioral preference in the presence of STI symptoms.
Methods: This was a cross-sectional study carried out using structured questionnaires administered to mothers of adolescent girls in a market. 400 women between the ages of twenty and sixty year were randomly selected and self-reported symptoms of STI such as vaginal itching, discharge and genital ulcer mothers got from their daughters were recorded.
Results: The mean age of respondents was 43±9.75 years and 64.7% were Christians, 31.8% Muslims and 3.5% of the respondents practice African traditional religion. Also, 68.1% of the women were married, 14.9% are single parents and 12.4% are widowed. Greater proportion of respondents (58.3%) had secondary education while 13.1% had no formal education. Majority of women (61.9%) were in high socio-economic class. Analysis of STI symptoms received by mothers revealed that 58 (16.1%) of 360 respondents received complaint of vaginal itching, 74 (19.9%) of 372 respondents received complaint of vaginal discharge, and 8 (2.2%) of 320 respondents received the complaint of genital ulcer. Also, 62.5% of respondents will treat the STI symptoms of their daughter in a hospital or clinic, 29.8% will visit quack or engage in self-medication while 7.7% will use herbs or traditional medicine. Factors that will determine the choice of treatment option among these women are mainly religious belief, with 104 (40%) of 259 women who are Christians preferring hospital and 14 (10%) of 141 of women who are either Muslim or traditionalist preferring traditional medicine (p-value<0.0001). Eighty two percent of 348 women with formal education whose daughter have STI will visit hospital compared to 38% of 52 women with no formal education. (P-value <0.0001).
Conclusion: The study revealed that there is considerable self-reporting of STI symptoms by adolescents girls to their mothers. Also significant proportion of respondents will either use self-medication or herbal concoction, revealing the need for scaling-up STI control program in this population. Furthermore respondents socio-demographic characteristics, especially their religion and education plays an important part in their health seeking behaviour therefore women education on STI control is very important.

P-345 AFFECTIVE DISORDERS AND HERPES SIMPLEX VIRUS INFECTION

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Affective disorders are a group of clinical states, characterized by decreased mood, the loss of energy, lack of emotions control, subjective feelings of acute or chronic suffering. These disorders are characterized by poor concentrating, anhedonia, disturbances in sleep and appetite, decreased sexual activity and some others symptoms, which lead to difficulties in interpersonal relationships, social functioning and professional activities. It is well known that patients with herpes simplex virus (HSV) infection tend to display depression up to attempts to commit suicide.
Objectives: To estimate incidence and nature of affective disorders in HSV patients. Methods. For the study of prevalence and clinical structure of the depressive disorders in HSV patients, we conducted a randomized clinical and psychological study of 44 outpatients (26 men and 18 women, mean age 31,2) with frequent HSV recurrences (more than 6 times a year). To estimate affective disorders we used Hamilton scale [HDRS-21] for assessment of depression, the Social and Occupational Functioning Scale - SOFAS [DSM-IV, APA] and Clinical Global Impression scale Severity - CGI-S. To estimate patients' life quality, we used the 36-item Medical Outcome Study Short-Form Health Survey - MOS-SF-36. The study was conducted in accordance with the ICD-10 diagnostic criteria.
Results: Our screening data revealed depressive disorders in 32 (72,7%) out of 44 patients. Recurrent depressive disorder, current episode mild was diagnosed in 15 patients (46,9%) [F33.0]; Recurrent depressive disorder, current episode moderate in11 cases (34,4%) [F33.1]; and dysthymia in 6 patients (18,8%) [F34.1]. In addition, 40,9% of all patients (n=44) had a recurrences of genital herpes after sexual contacts and 20,5% of patients had fear of sexual contacts. Our study revealed that there were more frequent recurrences among men than among women.
Conclusion: The obtained results show that majority of patients with recurrent genital herpes suffer from affective disorders, and consulting by psychiatrists may be recommended to add corrective treatment to antiviral therapy.

P-346 ASSOCIATION OF STI RISK AND PREVENTION BEHAVIORS WITH SEXUAL RELATIONSHIP SATISFACTION AMONG ADOLESCENT WOMEN

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Objective: Sexual exposure to multiple partners increases STI risk. Among adults, sexual satisfaction is associated with several factors associated with decreased STI risk but little is known about the role of sexual satisfaction in adolescent relationships. The objective of this research is to examine relationship-specific sexual satisfaction in association with factors linked to increased STI risk.
Methods: 265 women (ages 14 ' 21 years) completed 1,309 quarterly face-to-face interviews (for up to 3 years) reporting on 1,583 partners. Outcome variable was partner-specific sexual relationship satisfaction (5 items; range = 5 to 35; alpha = 0.88) reported at each interview. Satisfaction scores were dichotomized at the median to emphasize distinctions between lower and higher relationship-specific sexual satisfaction. Predictor variables representing STI risk and prevention behaviors included subject or partner marijuana use before sex, subject or partner alcohol use before sex, ease of communication about sex, contraception, and condoms (3 variables), sexual control, partner-specific coital frequency in the previous 3 months, and partner-specific condom use (proportion of unprotect events) in past 3 months. Data analysis used multivariable logistic regression with random subject intercept to account for multiple within-subject observations. Backward elimination was used to eliminate variables with $p > 0.20$.
Results: Median number of partners reported per interview was 1 and less than 1% reported 3 or more partners in the past 3 months. Overall, higher level of sexual satisfaction was reported for 90.1% of relationships. In univariate analyses, marijuana use before sex was reported for 56.7% of relationships with lower levels of sexual satisfaction, compared to 45.6% for those with higher levels. Alcohol use before sex was also higher among relationships with lower sexual satisfaction. Communication about sex and contraception were higher among those with greater sexual satisfaction. Condom non-use was higher among those with greater sexual satisfaction (63.1% vs. 54.1%). Final multivariable model showed that marijuana use before sex (_=-0.87; p<0.01) remained associated with lower levels of relationship-specific sexual satisfaction. Ease of communication about sex (_=1.68; p<0.01), ease of communication about contraception (_=1.40; p<0.01), sexual control (_=1.10; p<0.02), and coital frequency (_=0.05; p<0.01) were independently associated with greater relationship-specific sexual satisfaction.
Conclusions: Sexual aspects of relationships of adolescent women are linked to relationship factors such as communication and sexual control associated with increased relationship stability and decreased STI risk. Increased coital frequency and decreased condom use demonstrates the complex ways sexual satisfaction may influence STI risk.

P-347 TEST-RETEST RELIABILITY OF AN AUDIO COMPUTER-ASSISTED SELF-INTERVIEW AMONG HIGH-RISK MEN WHO HAVE SEX WITH MEN

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Objectives: To determine the reliability of an audio computer-assisted self-interview (ACASI) designed to collect information on sexual behavior, substance abuse, mental health, and early sexual experiences among men who have sex with men (MSM).
Methods: One hundred and two MSM recruited from a public health STD clinic or an HIV clinic in Seattle between December 2006 and March 2007 completed an initial ACASI; ninety-eight completed the ACASI a second time within approximately two to five days. The ACASI inquired about the participant's sexual behavior in the previous six weeks as well as egocentric sexual network data. We measured test-retest reliability using intra-class correlation coefficients for continuous outcomes, and kappa and weighted kappa statistics for categorical outcomes.
Results: The average age of MSM in this sample was 38 years. Sixty-six percent were white, and 66% earned less than $15,000 per year. Test-retest reliability of the number of anal sex partners, the number of unprotected anal sex partners, and the number of unprotected anal sex partners of non-concordant HIV status in the last six weeks was substantial (intra-class correlation coefficients: 0.85-0.95). The kappa statistics for the number of events of unprotected anal intercourse and the number of events of unprotected anal intercourse with a partner of non-concordant HIV status in the last six weeks (0, 1-5, 6+ events) were 0.83 (95% confidence interval [CI]: 0.70, 0.91) and 0.71 (95%CI: 0.52, 0.85), respectively. Classification of whether a respondent engaged in any non-concordant unprotected anal intercourse in the previous six weeks was associated with a kappa of 0.72 (95%CI: 0.54, 0.90). In this population, the mental health inventory (MHI)-5 had a reliability of 0.90 (95%CI: 0.86, 0.94). Age of first sex with a male partner and whether that first experience was perceived as sexual abuse also exhibited substantial reliabilities of 0.97 (95%CI: 0.95, 0.98) and 0.81 (95%CI: 0.67, 0.96), respectively. Among the 18 men who used methamphetamine in the previous six weeks, direct questions regarding the number of days since last use and the number of quarters consumed had reliabilities of 0.98 (95%CI: 0.95, 0.99) and 0.96 (95%CI: 0.94, 0.99), respectively.
Conclusions: Our ACASI reliably collects data on sexual behavior, substance use, mental health, and early sexual experiences in MSM recruited from a public health STD clinic and an HIV clinic.

P-348 CONTEXT AND DISTINCT PATTERNS OF SEX WORK IN ANDHRA PRADESH AND KARNATAKA: LESSONS FROM THE FIELD AND IMPLICATIONS FOR THE AVAHAN INDIA INITIATIVE

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Objectives: The Avahan India AIDS Initiative seeks to prevent HIV/AIDS among high-risk marginalized populations of sex workers (SWs), their clients, men having sex with men (MSM) and injection drug users. Our case study analyzes the socio-epidemiologic dynamics of four sex work scenarios encountered in Andhra Pradesh and Karnataka.
Methods: Unstructured qualitative interviews were conducted on 17 field visits among approximately 100 clinic users, peer educators, outreach workers, staff of clinics and partner NGOs, and the target population. Clinic facilities, drop-in centers, workplaces and dwellings of sex workers were observed. Four distinct sex work scenarios were encountered among others: (a) dhaba (food stall) based sex work; (b) occult seasonal brothel; (c) female sex worker having two regular partners; and (d) MSM sex worker married to female.
Results: Sex work at dhabas employed a built-in hiding place for SWs during police raids; new condoms were concealed by burial. The mobile health team faced difficulty in clinical examination since dhaba owners feared exposure if the team visited them. In occult seasonal brothels linked to trade and agriculture, sex workers from neighboring villages stayed at an agent's house in a residential neighborhood for 2-12 weeks and returned to their family post-season. Female sex workers with two regular partners (husband and pimp) and MSM sex workers married to a female did not report use of condoms with their spouses and desisted from bringing them for partner treatment since spouses were unaware of their sex worker status.
Conclusions: The secretive nature of sex work, fear of authority, and unwillingness to bring spouses for partner treatment were major hindrances for clinical service utilization and condom use among SWs. Mobility of sex workers complicates follow-up for clinical management and induction of behavioral change. To deal with the situation, Avahan has developed a flexible model for advocacy among police, building of confidence among SWs, and development of local leadership for specific strategies.

P-349 UTILIZATION OF HEALTH SERVICES FOR DIAGNOSIS AND TREATMENT OF SEXUALLY TRANSMITTED INFECTIONS BY FEMALE SEX WORKERS IN LIMA, PERU: CURRENT PATTERNS AND FUTURE OPTIONS

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Objectives: This qualitative study examined how female sex workers (FSW) describe their experiences with sexually transmitted infections (STI)-related health services, FSW attitudes towards rapid STI testing and workplace-based STI service delivery, and STI service provider attitudes towards STI services for FSW in Lima, Peru.
Methods: We conducted 25 semi-structured interviews and 3 focus groups with a convenience sample of FSW from unauthorized sex venues in metropolitan Lima and 15 semi-structured interviews with service providers from four of the seven government sponsored STI referral centers (CERITS) in metropolitan Lima. FSW venues included: Type 1 (apartment, appointment houses), Type 2 (night club, telephone-based escort), and Type 3 (parks, streets). STI health centers included the two largest FSW volume clinics (CERITS Patruco and CERITS Barton) and two smaller clinics (CERITS Tahuantinsuyo and CERITS Calcuta). All focus groups and interviews covered current utilization of STI services, attitudes towards on-site STI/HIV testing, and attitudes towards on-site rapid STI/HIV testing. Service providers were also asked about STI service delivery and attitudes toward provision of STI services to sex workers.
Results: A total of 39 FSW participated in the study; 65.0% of FSW invited to participate and all service providers approached agreed to participate. Data was not collected on reasons for refusal. FSW demographic data did not differ by venue type (1,2,3). Qualitative data was categorized into seven principle domains based on reproductive health and international human rights literature: availability and accessibility, acceptability, quality of care, cost, stigma, perception of alternative STI testing technologies, and disease perception. Both FSW and service providers identified similar factors as influencing perception of alternative STI delivery services (on-site testing and rapid testing). Quality of care, stigma, and availability of services (providers, medications, and laboratory diagnostics) were frequently identified as barriers to CERITS utilization. On-site testing was considered acceptable by many sex workers and providers, but stigma, privacy, and confidentiality during testing and when results were given were major influences in respondent opinions about on-site testing. FSW from Venue Type 3 (street/park), sex workers who had experience with on-site rapid testing secondary to participation in an on-site HIV rapid test pilot study, and service providers with experience using a rapid syphilis or HIV test at the STI clinics more often described on-site rapid testing as acceptable.

Conclusions: On-site and rapid STI and HIV testing were complex alternative testing technologies in the Peruvian context. On-site STI and HIV testing was desirable for many respondents. However, in order to implement on-site testing it would be essential to incorporate lessons learned from CERITS that have on-site testing experience and examine the feasibility of minimizing the barriers that currently affect low utilization of CERITS clinics. This study, in addition to the recent HIV rapid test pilot study conducted on-site at sex venues (CBVCT) show potential for acceptability of HIV and STI rapid tests by FSW and service providers in Lima. Further studies should evaluate the acceptability of other STI rapid tests as alternative technologies become available.

P-350 UNDERSTANDING NEGOTIATION AND USE OF FEMALE-CONTROLLED BARRIER METHODS AMONG SEX WORKERS AND MALE PARTNERS IN DOMINICAN REPUBLIC

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Objective: Female-controlled methods to prevent STI transmission could be a useful tool to prevent STI transmission. Preliminary results of a prior five-month longitudinal study show a high acceptability of female condoms and diaphragms among sex workers in Dominican Republic. We conducted a qualitative study to better understand how sex workers negotiated use of female-controlled methods with clients and their experiences and opinions concerning the methods. We also explored knowledge, experiences and opinions of male partners about female-controlled methods.
Methods: We conducted 19 in-depth interviews with a subgroup of participants who completed a 5 months longitudinal acceptability study of female condom and diaphragm, and 16 in-depth interviews with male clients of sex workers. During the study, participants attended monthly visits where they received 30 female condoms, 30 male condoms and a diaphragm along with proper counseling about their use. Interviews were conducted in a period of three months after the completion of the longitudinal study. The sex workers were interviewed at the two clinical sites of the study. The male participants were contacted in 8 sex establishments where the majority of study participants worked.
Results: Ten women had good experiences with the diaphragm, using it as a back-up protection against STIs in case the male condom breaks or when the sexual partner is unwilling to use any method. Others used it during menstruation. Most sex workers did not negotiate the use of the diaphragm, placing it secretly. Five sex workers felt uncomfortable with the method, because it has to stay inside six hours after the sexual relation, physical discomfort and the lack of protection against HIV. Twelve women (also) liked female condoms. They felt having the control to protect themselves against STI's. Moreover, the female condom cannot break and is comfortable. They reported that many sexual partners felt satisfied using the method. Some sex workers negotiated the use of the female condom, others used it in secret. Six women disliked the female condom because of its size, the visible outside ring, the amount of lubricant gel and the sound produced during sexual intercourse. All male clients interviewed reported having had sexual intercourse with the female condom. Only six had experience with women using the diaphragm. All clients reported a high satisfaction using the female condom, and all but one reported that for this reason they prefer the female condom above the male condom. Some of them mentioned they feel protected against STIs because the material of female condom is more resistant compared to male condom. Three participants did not feel protected against STIs with the diaphragm and preferred female condoms.
Conclusions: The introduction of female-controlled methods improved women's options to have protected sex since they were able to negotiate their use with clients who refuse to use male condoms. Both sexual workers as clients reported the major advantage of the female condom, compared to the diaphragm, because its better protection against STIs. Women used the diaphragm as a secret back-up protection that offers some protection against STIs.

P-351 RISK FACTORS FOR CONDOM USE IN SEXUAL INTERCOURSE AMONG MALE SUBJECTS WITH GONORRHEA IN SHANGHAI

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Objectives: Following the rising rates of sexually transmitted infections (STI) within China, condom use is becoming an increasingly important strategy for STI prevention and control. We examined factors associated with condom use among Chinese men with gonorrhea.
Methods: Gram positive, symptomatic males seeking treatment at the Shanghai Skin Disease and STD Hospital were invited to participate in the study, which involved completing a detailed questionnaire on their STI history, sexual behaviors; socio-demographic factors and similar proxy information for each nominated recent sex partner. The analysis was based on three specific questions, in which male participants defined their condom use (1) in general, (2) with specific partners, and (3) at most recent episode of sexual intercourse ' all within the previous three months. Participants who did not report any condom use in any of the three questions were considered a non-users, whereas participants who reported some condom use in at least one of the questions was considered a user. In addition to this, the overall prevalence of condom use was calculated. The associations between demographics and condom use were calculated through chi-squared tests, as performed by SAS (v. 9.1).
Results: A total of 342 eligible males responded to the surveys, although 12 were missing some independent or outcome variables. The prevalence of condom use at the most recent episode of sexual intercourse was 22%. Older age ($p<0.01$); low education level ($p<0.01$), and migrant work or being unemployed were important factors associated with lack of condom use ($p= 0.02$). Those who reported discussing HIV (though not STI) with sex partners were more likely to use condoms ($p=0.06$); and condom usage increased with higher numbers of sex partner in the last three months ($p=0.008$), as found in developed nations.
Conclusions: Older age and low socioeconomic status determined by both education and employment are important indicators of lack of condom use in this high risk population. Both of these groups may be less likely to be exposed to STI and condom use information campaigns resulting in their being unaware of STI and HIV risk. Lack of condom use in the unemployed and in migrant workers may be an indicator of inability to buy condoms, therefore STI prevention and control strategies should include both education and condom distribution.

P-352 DETERMINATION OF CULTURAL AND ORGANIZATIONAL BARRIERS TO INTRODUCE THE RAPID TEST FOR SYPHILIS IN THE STREET POPULATION OF SO PAULO CITY

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Aims: To determine the organizational and cultural barriers to introduce the rapid test for syphilis in the street population of São Paulo city
Methods: An extensive literature review on street populations was conducted. Attendance to a seminar discussing identification of health services for street populations, lodgings, community restaurants, day time shelters and co-operative soci-

eties to recycling paper. Contact to health services to find adequate room in its premises to provide pre and pos-test counseling, biological collection for the rapid test and presentation of a questionnaire. This questionnaire contained questions on: socio-demographic characteristics, knowledge and prevention of STDs, history of having STDs, access to health services, sexual and drug use behaviors and safe sex behavior. Field research was coordinated by the Coordenação Estadual de DST/AIDS de São Paulo (São Paulo State STD/AIDS Coordination). The study was conducted by medical and nurse students, a social work, a physician, a biologist and nurses by the São Paulo State STD/AIDS Coordination.

Results: Twenty-five heath services were contacted with. Two have not agreed to take part in the study. From October 2006 to March 2007, 1527 street people were accessed. Of those, 36 have not end the study process. Reasons for that were: fear of blood taking and refuse to answer the questionnaire

Conclusion: Living in the streets is an extreme social condition not explained by a single factor. It involves several aspects such as: mental disease, familiar dysfunction, personality disturbs, use of alcohol and other drugs, crime, and unemployment. Studies have shown that street people have a proper 'life style'. '… that may seems chaotic but has social organization and proper sub-culture, being the only support system to the individuals, and providing them values and expectations …'(1). This organization is one of the factors that may explain the high participation in the study. Providing the rapid test is another factor that may have helped adherence to the study as the test allows the individuals to have prompt access to the result and to be tested in their own environment. STD treatment and prevention units should establish strategies to reach this population in its own environment. Doing this is to recognize the complexity of living in the streets and not a disbelief in social transformation for inclusion. Public health policies should consider that this 'life style' is part of the street people personal experience and because of this services and strategies not merely compensatory should be created. *(1) Edwards, Griffit. O tratamento do alcoolismo: um guia para profissionais da saúde/ Complicações sociais do beber excessivo. 5 (73) Trad. Maria Adriana Veríssimo Veronese ' 3 ed. ' Porto Alegre: Ed. Artes Médicas Sul Ltda. 1999

P-353 SEXUAL BEHAVIOUR AND SEXUALLY TRANSMITTED INFECTIONS AMONG SECONDARY SCHOOL STUDENTS IN AN OIL RICH NIGER DELTA CITY IN NIGERIA

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Background/Objective: The oil rich Niger Delta area of Nigeria is a flash point for abject poverty, environmental degradation from oil spillage and gas flaring, youth restlessness and incessant socio-political crises. STIs are important public health issues in adolescents and young adults with particularly increased susceptibility in an unstable sociopolitical terrain. The objective was to determine sexual behaviour characteristics and STI prevalence among secondary school students in Warri, Nigeria.

Methods: It was a cross sectional study conducted in six secondary schools in Warri between September and November 2006. 520 students were randomly interviewed by structured questionnaires. After both oral and written consent was obtained and strict ethical guidelines observed, sexually active (SA) boys were asked to submit early morning urine samples for Leucocytes Esterase Dipstick (LED) test and SA girls invited for vaginal and/ or cervical smear tests.

Results: Those participated in the study were 273 girls (median age 16 years) and 247 boys (median age 17 years). 202 (81.7%) of boys and 212 (77.6%) were SA with a median age at sexual debut for both sexes of 14 years. Condom was used at last sexual intercourse by 37 (14.9%) and 35 12.8%) of boys and girls respectively. 50 (20.2%) of boys and 47(17.2%) of girls said they had more than one sexual partner. A history suggestive of STI was reported by 94 (38.1%) of boys and 59 (21.6%) of girls. A positive LED test was identified in 21% of boys' urine samples and was associated with no condom use at last sexual intercourse ($p = 0.001$). The prevalence of cervical infection was 21%.

Conclusions: The study shows that an alarmingly large proportion of the students studied are SA and engage in risky sexual behaviour. While there is no end in sight to the hydra-headed sociopolitical, environmental and economical problems in the Nigeria's oil rich Niger Delta, efforts should be made to intensify and scale up STI/HIV/AIDS preventive messages and services in secondary schools in the oil-rich Niger Delta.

P-354 THE INDIVIDUAL, SOCIAL, AND ENVIRONMENTAL DETERMINANTS OF SEXUALLY TRANSMITTED INFECTIONS AMONG COMMUNITIES IN MONTANA: A FORMATIVE EVALUATION

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Objectives: Despite a growing awareness of sexually transmitted infections (STIs) and the factors that contribute to the transmission of STIs among young people in the United States, there is a paucity of knowledge regarding STI dynamics in rural and frontier populations. Our objective was to examine the individual, social and environmental determinants of STI transmission among communities in Montana.

Methods: Our initial step in this process was to conduct key informant interviews. Thirty-nine public health nurses were mailed a letter of introduction and invited to participate in key informant interviews. A semi structured interview format was used to collect local knowledge on the individual, social and environmental factors influencing STIs. Due to travel conditions and distances in Montana some interviews were conducted face-to-face and others were conducted over the phone. The interviews were 45 to 60 minutes in length. Responses were recorded into a computer. The interview transcripts were analyzed for common themes.

Results: Individual determinants that influenced STI transmission included: alcohol and drug use with an emphasis on methamphetamine use, depression, lack of empowerment, lack of sexual health education in the schools, sexual negotiation skills, and parenting. Social determinants identified were: historic trauma among American Indian populations, polymorous and serial monogamous relationships, social capital, attitudes towards pregnancy, and religious and cultural beliefs. Common environmental factors discussed were: accessibility and distance of health care services, local politics, community events such as Pow Wows, rodeos and basketball tournaments.

Conclusions: Heterogeneity in communities existed due to varying economic and social resources as well as religious and cultural practices. The presence of STIs in rural and frontier populations is a public health indicator of more complex social issues such as alcohol and drug use, social norms towards sex and pregnancy, community cohesiveness, historic abuse, and poverty or the attitude of poverty. In order to prevent STI transmission and facilitate healthy sexual behavior in rural and frontier populations further community-based research such as in-depth interviews and focus groups are needed to examine the strengths and assets present in these communities.

P-355 ANALYZING RELATIONSHIP BETWEEN STIS AND CONDOM USE WITH PARTICULAR REFERENCE TO THE SOCIO- CULTURAL PERSPECTIVE OF PAKISTAN

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Objectives: To high light the factors responsible for low use of Condom among the man and female sex workers in Pakistan Share the experiences with others specially with a low prevalence country whose HRG population have a highly risky behaviors

Method: 3,134 FSWs and a total of 3,350 MSWs (1,781) and Hijiras (HSW=1569) defined as any male or female who undertakes sex activity in exchange for money or any other financial benefit, between the ages of 15 to 49 were recruited from 8 major cities of Pakistan. Blood samples were collected through DBS and each of them was also interviewed on a structured questionnaire with questions focusing on their risky behaviors. The sampling approach based on probability sampling was devised and multiple techniques were combined for different groups to obtain a representative sample of the study population. A geographical sampling provided the sampling frame helping identify geographical sites and hot spots.

Results: Only 6 FSW were HIV + , for an overall prevalence of 0.2%(95% confidence interval, 0.07-0.4%) Among the MSWs 8 out of 1,781 were +, an estimated HIV prevalence of 0.4%(95% interval,0.2-0.9) while 12 of 1,569 tested positive ,an estimated prevalence of 0.8% (95% CI, 0.4- 1.3%). Biological results are not considered convincing/alarming by sex workers to persuade themselves for using condoms? Thus in a low prevalence country not as yet having a concentrated epidemic among the Sex workers, the behaviors of these HRGs is likely to continue to be remain risky till a very strong BCC campaign is put in place. Among FSWs; 64.1% had heard about HIV/AIDS while 77.9 % had received treatment for sexually transmitted diseases. 64% of the 3134 FSWs responded that condom could stop HIV/AIDS but only 18% reported always using condom and only 28% perceived any risk to themselves. 70% of both the Hijras and MSWs had heard about HIV/AIDS. Over 50% had received treatment for STIs yet only 10% always used condoms and only 22% perceived any risk of STIs to themselves In a series of focus group with various groups of sex workers in all the 8 cities of Pakistan revealed that sex workers have very strong religious/fatalistic predisposition and most believed and insisted that everything happens with the will of GOD. Fatalism came out as the reason number 1. The focus group discussions with MSWs and Hijiras and the results of their responses on behavioral questionnaires reveal that over 80% of the risk taking is done in open fields and places like toilets, standing bogies of the train etc and the acts has to be very quick, and thus does not let allow the habit of using condom installed in them. Other reasons came out were: clients don't like it; they break easily; we are not afraid of pregnancies (MSW/Hijiras); we don't enjoy it; condoms not easily available etc

Conclusion: A very strong Behaviors Change Communication with the involvements of the peers needs to be taken up at each SDP for both male and female sex workers.

P-356 SEROSORTING IN CONTEXT: HIV POSITIVE GAY MEN IN LONDON

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Objectives: In recent years, some gay men have adopted strategies for reducing the risk of HIV transmission while having unprotected anal intercourse (UAI) with a casual partner. One such strategy is 'serosorting' where gay men (usually HIV positive) only engage in unprotected anal intercourse with casual partners of the same HIV status. While this does not present a risk of HIV transmission to an uninfected person, it does present a risk for the transmission of other sexually transmitted infections such as syphilis, hepatitis C and LGV. While some HIV positive gay men report serosorting, others report 'high risk sexual behaviour' ie UAI with casual partners of unknown or discordant HIV status. This presents a risk of HIV transmission. The aim of this analysis was to compare serosorting on the one hand and high risk sexual behaviour on the other among HIV positive gay men in London.

Methods: Data were collected from two samples of HIV positive gay men (i) gay men with diagnosed HIV infection attending National Health Service (NHS) treatment clinics in north east London between June 2004-June 2005 (n=715, response rate 73%). In the UK, an NHS clinic sample is broadly representative of all those living with diagnosed HIV; (ii) gay men using central London gyms surveyed annually between 1998-2005 (total n=5416, estimated response rate 50-60%). Of the 5416 men, 853 (14.5%) were HIV positive. In both samples, information was collected on HIV status, UAI in the previous 3 months, type (main or casual) and HIV status of partner for UAI.

Results: In the NHS clinic sample, just over a quarter of the HIV positive men (25.9%, 185/715) reported UAI with a casual partner in the previous 3 months; 9.2% (66/715) of the men reported UAI only with a casual partner who, like themselves, was also HIV positive (serosorting) while 16.1% (115/715) reported UAI with a casual partner of unknown or discordant HIV status (high risk sexual behaviour) (data on casual partner's HIV status not available for 4 men) ($p<0.05$). In the gym sample, between 1998-2005, the percentage of HIV positive men reporting UAI only with a partner of the same HIV status (serosorting) increased from 6.8% (8/118) to 17.7% (14/79) ($p<0.01$). However, in all years, the percentage of HIV positive men reporting UAI with a casual partner of unknown or discordant HIV status (high risk sexual behaviour) exceeded the percentage who reported serosorting; the differential narrowed in recent years, eg 1998, 15.3% v 6.8%; 2001, 38.8% v 11.2%; 2005, 20.3% v 17.7% ($p<0.05$).

Conclusion: Among HIV positive gay men surveyed in London, some have adopted serosorting as an HIV risk reduction strategy increasingly so over time. However, a larger proportion of HIV positive men reported unprotected anal intercourse with a partner of unknown or discordant HIV status ' highlighting the continuing risk for HIV transmission in this group of men. Interventions addressing high risk sexual behaviour among HIV positive gay men in London should be given priority.

P-357 HIV/STI RISK BEHAVIORS AMONG LATINO MIGRANT WORKERS IN NEW ORLEANS, LOUISIANA POST HURRICANE KATRINA

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Objectives: Since Hurricane Katrina, an estimated 10,000-50,000 Latino migrant workers have come to find work in New Orleans. Many of these men are paid in cash and are unaccompanied by their primary sex partner potentially placing them at high-risk for HIV/STIs. The purpose of this study was to assess sexual risk behavior among Latino men who migrated to New Orleans to work in the reconstruction after Hurricane Katrina.

Methods: A cross-sectional study using cluster quota sampling method targeted Latinos who had come to New Orleans after Hurricane Katrina. Men were administered an anonymous, structured interview in a mobile unit and urine tested for Chlamydia trachomatis (CT) and N gonorrhea (GC) using NAAT. All informed consent and interviews were conducted in Spanish.

Results: Surveys were conducted with 181 men in August and September 2006; all agreed to be screened for CT/GC. Participants were 18-79 years old (mean = 33). Most men were born in Honduras (49.7%) and Mexico (25.4%); had arrived to New Orleans from another US state (61.9%); were married (63.5%, only 6.1% were living with spouse) and had children (67.4%, only 4.9% were living with children). Most did not understand (94.5%) or speak (96.1%) English; and 91.2% had undocumented legal status. One third (34.2%) reported drinking alcohol at least 3 days in the prior week. Men reported use of marijuana (16.6%), cocaine (5.5%), crack (1.7%) and pills (1.1%) at least once in the prior week. No men reported injection drug use. Self-reported history of STI/HIV included: syphilis (15%), CT or GC (16%), and HIV (10%). No men tested positive for GC and 5 (2.8%) tested positive for CT. Respondents reported the following sexual risk behaviors in the past month: paid for sex (69.9%), practiced unsafe sex (67.2%), or had >1 sex partner (66.4%). Nearly three fourths of men (74%) reported at least one of those behaviors in the past month and were considered as 'high sexual risk'. Factors associated with being 'high risk' in multivariate logistic regression were: being single or not in a long term relationship (OR 2.72, 95% CI 1.23 - 6.02; p=0.02), <7 years

of schooling (OR 2.26, 95% CI 1.10 - 4.67; p=0.03) and early arrival to New Orleans (in the first six months after the hurricane vs. the next six months) (OR 2.82, 95% CI 1.31 - 6.07; p=.01). Other factors considered but not found to be associated with high sexual risk were: age, income and type of laborer (skilled vs. unskilled).
Conclusion: Latino migrant workers in New Orleans reported risky sexual behaviors, a high percentage of self-reported HIV, but had low prevalence of CT and GC. Possible explanations for this incongruity are self-treatment and sexual network characteristics. Given the potential for high transmission in this vulnerable population, more services and interventions are needed.

P-358 MENTAL HEALTH, SOCIAL SUPPORT AND HIV/STI RISK AMONG ADOLESCENT ORPHAN GIRLS IN ZIMBABWE

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Objectives: Poor mental health has been established as both a consequence of and a risk factor for HIV infection. There are over one million orphans in Zimbabwe; previous research has shown that HIV/STI prevalence is high among female orphans. Currently, there is limited data regarding mental health morbidity in this population, it is however, likely to be significant and may contribute to sexual risk taking. In addition, poor mental health may hinder participation in activities that contribute to resiliency and well-being. Here, we assess the prevalence of mental health symptoms and explore associations between mental health, social support, sexual debut, and infection with either HIV or Herpes Simplex Virus-2 infection among a sample adolescent orphan girls in Zimbabwe participating in an HIV prevention program.
Methods: A convenience sample of 326 females ages 16 to 19 was recruited through community events and referrals. All participants were orphans (having lost at least one parent), out of school, and living in Chitungwiza ' an urban area outside the capitol city of Zimbabwe. Interview techniques included Audio Computer Assisted Self Interviews (ACASI) and face-to-face interviews to collect background, health and behavioral information. The 14 item indigenously developed Shona symptom questionnaire (SSQ) was adapted to assess mental health symptoms that were experienced 'always', 'sometimes' or 'never' over the past week. Based on previous research, a score of 14 or more was considered high. Poor social support was defined as having 'none or too few people' to listen to problems, to help with small favors, to lend money in an emergency or to take care of children. Participants were tested for HIV and HSV-2 infection. Only one participant had previously tested positive for HIV.
Results: The median SSQ score was 11 (range 1 to 24 of possible 28) with 27% scoring 14 or higher. Suicidal ideation was reported by 35% and poor social support by 65%. Participants with poor mental health were more likely to be sexually active (42% vs 26% p-value 0.01) and positive for HIV and/or HSV-2 (17% vs 9% p-value 0.04). Participants with poor social support were more likely to have poor mental health (32% vs 19% p-value 0.01) and to be sexually active (34% vs 23% p-value 0.05). In multivariable logistic regression models controlling for age and education, greater social support was associated with not having had sex (OR 0.52, 95%CI 0.29, 0.92) but not HIV or HSV-2 status. High SSQ score, although not statistically significant, was associated with sexual activity (OR 1.66, 95% CI 0.96, 2.90) and with HIV or HSV-2 infection (OR 1.73, 95%CI 0.82, 3.66).
Conclusions: Poor mental health and poor social support are common among adolescent orphan girls and may result in higher risk for sexually transmitted infection. High risk behavior and infection may also contribute to poor mental health and social support. Prospective research is needed to understand the interrelationship of these factors. We will continue to assess mental health as part of our ongoing work with this population.

P-359 PARENT-ADOLESCENT COMMUNICATION ON ACQUISITION OF CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE INFECTION IN INNER-CITY HIGH SCHOOL STUDENTS

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Objectives: Higher level of parental monitoring and parental-adolescent communication has been associated with lower sexual risk behaviors and new sexually transmitted infections (STIs) in minority female adolescents. However, little is known about which specific attributes of parental monitoring and communications impact the reduction of STIs. Therefore, we conducted a prospective study in an STI/HIV risk reduction intervention program to determine the association between specific elements of parental monitoring and parental adolescent communication and acquisition of STIs in high school students.
Study Design: Focus on Kids (FOK), a small friendship-group session format, community-based HIV prevention intervention, has successfully reduced high risk behaviors of youths for HIV infection. We implemented a modified safe-sex FOK intervention program platform, Focus on Teens (FOT), in six inner-city high schools. A set of questions on parental monitoring (6 items), parent-adolescent communication (19 items), and STD knowledge (16 items), along with demographics and sexual behaviors, were collected from confidential surveys at baseline, post-intervention, 6 and 12 months post-intervention. A subset of sexually active participants also participated in the urine-based chlamydia and gonorrhea testing at the School Based Health Centers (SBHCs). Responses for questions on parental monitoring (6 items), parent-adolescent communication were measured on a 5-point Likert scale. 'Reported unreserved, (good) communication between parents and adolescents' was defined for participants who stated that their parents were good listeners and they could discuss everything with their parents. 'Having reported thoughts about things that should not have been said' (considerate communication) was defined for participants who reported that their parents and they both had a tendency to say things that should not have been said. Bivariate analysis was first performed to explore the association of specific question on parental monitoring and parent-adolescent communication with chlamydia and gonorrhea infection. Multivariate logistic regression analysis using generalized estimating equation (GEE) approach was performed to examine parental-adolescent communication and acquisition of chlamydia and gonorrhea infection with controlling for gender and STD knowledge.
Results: Overall, 1190 ninth and tenth graders were enrolled over successive school semesters (waves). Among them, 312 (26%) students, who reported to SBHCs as being sexually active and who participated in the urine-based testing at least twice. None of questions that measure the level of parental monitoring were associated with acquisition of chlamydia or gonorrhea. However, participants who had unreserved, good communication with parents and participants who had reported thoughts about things that should have not been said were less likely to have chlamydia or gonorrhea at the second time point after adjusting for gender and STD knowledge (OR=0.18, p=0.02; OR=0.25, p=0.03).
Conclusions: Strategies to improve parent-adolescent communication especially about improving free bi-directional communication, as well as increasing feelings about consideration of the other party's feelings, should be considered to lower the incidence of STIs in adolescents.

P-360 RISK BEHAVIORS OF FEMALE INJECTION DRUG USERS WITH DIFFERENT TYPES OF SEXUAL PARTNERS

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Objectives: In injection drug users (IDUs), multiple sex partners and inconsistent condom use are important risk factors for HIV. Previous research has suggested that risk behaviors differ by type of partner. Our purpose was to compare the condom use and HIV disclosure by female IDUs when they had sex with main compared to non-main partners. We also evaluated the IDU's needle sharing behavior and their knowledge of their partners' HIV status.
Methods: This was an anonymous, cross-sectional surveillance project. During 2005, we used respondent driven sampling to recruit current female IDUs from high-risk areas of Houston, Texas. Data were collected by face-to-face interviews using handheld computers. In the survey, a main partner was defined as someone you have sex with and feel committed to above all others. A non-main partner included casual partners, someone you have sex with but do not feel committed to or know very well, and exchange partners, someone you have sex with in exchange for money or drugs. This study was approved by the University of Texas IRB. All participants provided verbal informed consent.
Results: 206 current female injectors were interviewed; 75% were Black and 85% were 30 years or older. 93% reported a non-main partner in the last year. Although 56% of subjects reported discussing their HIV status and that of their partners before having sex for the first time; 62% of respondents who reported a main partner knew their partners' HIV status at the time of their last sexual encounter, compared to 34% of respondents with a non-main partner. The subjects reported condom use with main partners of 35% for vaginal sex and 24% for anal sex; for non-main partners, condom use was 63% for vaginal sex and 69% for anal sex. 75% of women reported sharing a needle with a sex partner in the last 12 months; 75% shared with three or more partners; and 70% reported that their last non-main partner was an injector.
Conclusions: Studies have shown that women with exchange partners will use condoms with non-main partners but not with their main partners because they consider themselves to be monogamous in that relationship. Among these IDUs, condom use was significantly greater with non-main partners then with main partners. Their knowledge of the HIV status of both types of partners was inadequate, especially because they injected and shared needles with both types. These data suggested that public health interventions for this population must focus on partner-specific risk reduction plans.

P-361 HIV PREVALENCE AND RISK BEHAVIORS AMONG CLIENTS OF FEMALE SEX WORKERS IN GONAIVES AND ST-MARC, HAITI

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Objectives: To examine socio-demographic and behavioural characteristics of clients of female sex workers in the region of Artibonite in Haiti, and to estimate their prevalence to HIV, and the associated risk factors.
Methods: A cross-sectional survey among clients of female sex workers in the cities of Gonaives and St-Marc, Artibonite, Haiti. Clients were recruited from commercial sex venues and data were collected using a structured questionnaire and a blood sample.
Results: A total of 378 clients agreed to participate, and 351 (92%) provided a blood sample. Eighty-five percent of them were younger than 30, and 94% were single or not currently married. At the last commercial sex encounter, 73.5% of the clients reported using condoms, and 59% reported that they always used condoms with sex workers. Only 32.7% reported always using condoms with their stable sex partners and 44.8% always used condom with their casual sex partners. Clients of sex workers had a high number of sex partners; 29.8% reported having more than ten different partners in the last three months. The prevalence of HIV-1 among clients was 7.2%, three-fold higher than in the general population of the region of Artibonite. However, only 17.2% had ever undergone a HIV testing. Older age, a positive Treponema pallidum serology, and more than ten visits to sex workers during the last three months were significantly associated with HIV infection in multivariate analysis.
Conclusions: HIV prevalence was remarkably high among clients of sex workers of Gonaives and St-Marc, and most of them were unaware of their serological status. These men had a high number of sex partners and condom use differed regarding the category of partner. Clients of sex workers are likely acting as a bridge population and facilitate the spread of HIV infection throughout the general population in Haiti.

P-362 INCARCERATION AND RISKY SEXUAL PARTNERSHIP AMONG AFRICAN AMERICANS IN THE SOUTHERN UNITED STATES

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Objectives: African Americans (AA) in the US are disproportionately infected with HIV. Incarceration, endemic in many AA communities, may contribute to the racial disparity in HIV infection by disrupting stable sexual partnerships and promoting high-risk partnerships. The purpose of this analysis was to measure the association between incarceration and risky sexual partnership among AAs in North Carolina (NC).
Methods: We carried out a weighted analysis of data from the NC Rural Health Project (RHP), a population-based case-control study conducted to identify risk factors for heterosexually-transmitted HIV infection among AAs. Interviewers administered a structured face-to-face questionnaire assessing sexual partnerships, incarceration, socio-demographic characteristics, and substance abuse. We measured gender-stratified associations between risky sexual partnerships (RSP: multiple partnerships, concurrent partnerships, or transactional sex in the past year) and three incarceration exposures: time since the respondent's most recent incarceration (≤5 years ago, 6-10 years ago, or never); cumulative duration of incarceration in the past 10 years (≥1 month, <1 month, never); and number of respondent's three most recent sexual partners who had ever been incarcerated (2-3 , 1, or no partners incarcerated).
Results: Among RHP cases and controls from 13 counties (N=115 men, 205 women), multivariable binomial regression adjusting for age and socio-economic indicators revealed that RSP were reported more often by men who also reported incarceration within the past 5 years (adjusted prevalence ratio [aPR]: 1.4, 95% confidence interval [CI]: 0.8-2.5) and 6-10 years ago (aPR: 1.7, 95% CI: 1.0-2.8) than by men reporting no incarceration. Likewise, RSP were much more likely among women reporting incarceration within the past 5 years (aPR: 4.3, 95% CI: 2.6-7.2) than by women reporting no incarceration. (Too few women had been incarcerated 6-10 years ago for evaluation of RSP.) We did not observe dose-response increases in aPR and 95% CI with increasing incarceration duration. Among men, RSP were associated with short-term incarceration (<1 month, aPR: 1.9, 95% CI: 1.2-2.9) but not with long-term incarceration (≥1 month, aPR: 1.1, 95% CI: 0.5-2.5) versus no incarceration. RSP were more likely among women reporting short-term incarceration (aPR: 3.7, 95% CI: 1.5-8.9) and long-term incarceration (adjusted PR: 2.5, 95% CI: 0.9-6.6), versus women reporting no incarceration. RSP were associated with incarceration history of a recent sex partner (men: aPR: 1.5, 95% CI: 0.9-2.7 for one of past 3 partners, aPR: 2.3, 95% CI: 1.0-5.5 for 2-3 partners; women: aPR: 2.4, 95% CI: 1.2-4.8 for one partner, aPR: 1.9,

95% CI: 0.9-4.3 for 2-3 partners) versus those reporting no partner incarceration. When adjusted for substance abuse, most associations between RSP and incarceration remained but were attenuated due to high correlations between incarceration and substance abuse.

Conclusion: Incarceration appeared to act independently and in tandem with substance abuse to negatively affect the relationships and health of AAs in NC. HIV prevention programs should target currently- and formerly-incarcerated individuals and their sexual partners and should strengthen substance abuse prevention and treatment programs for this population to help decrease HIV transmission in AA communities with high incarceration rates.

P-363 FACTORS ASSOCIATED WITH EVENT LEVEL CONDOM USE DURING ANAL SEX AMONG ADOLESCENT WOMEN

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Objective: Unprotected anal sex is associated with increased STI risk, yet little is known about event-level factors are associated with condom use during anal sex. Our objective was to evaluate intrapersonal, situational and partnership factors are associated with event-level condom use during anal sex among adolescent women

Methods: Data, extracted from self-report daily sexual diaries, were drawn from on ongoing, longitudinal cohort study of young women in Indianapolis, IN. Participants (N=393, aged 14-17 at enrollment) were recruited from primary care adolescent clinics serving primarily lower- and middle-income patients. The outcome variable was condom use during anal sex (no/yes). Predictor variables were chosen to reflect situational, interpersonal, and behavioral characteristics, including age (in years), vaginal bleeding (no/yes), alcohol use (no/yes), marijuana use (no/yes), positive mood (3-item scale, _=0.86, scored as low, medium, or high positive mood), negative mood (3-items, _ =0.83, scored as low, medium, or high negative mood), same-day condom-protected coitus (no/yes), recent condom-protected coitus (past 7 days: no/yes), recent condom-protected anal sex (past 7 days: no/yes), partner support (4-items, _=0.93, scored as low or high), partner negativity (5-items, _=0.83, scored as low or high), feeling in love (1 item), sexual interest (1 item), same-day male-centered noncoital behaviors (fellatio and/or touching partner's genitals; scored as neither, either fellatio or genital touching, or both) and same-day female-centered noncoital behavior (cunnilingus and/or having genitals touched by partner; scored as neither, either cunnilingus or having genitals touched, both). Analyses were performed using generalized estimating equation logistic regression in SUDAAN.

Results: Subjects contributed 99,715 total diary days, 11,353 coital events and 211 anal sex events. The majority (180/211) of anal sex events occurred as part of a larger within-day repertoire of coital and noncoital (fellatio, cunnilingus, touching a partner's genitals or having genitals touched) behaviors. Only 22% (48/211) of anal sex events were condom-protected; of these, 56% occurred on days when condom-protected coitus was also reported. Significant predictors of condom use during anal sex included: younger age (OR=0.65[0.44'0.94]), decreased positive mood (OR=0.16[0.03'0.78]), increased negative mood (OR=5.07[1.06-24.20]), same-day male-centered noncoital behaviors (OR=2.91[1.22-6.94]), recent condom-protected anal sex (OR=45.25[9.32-222.32]) and same-day condom-protected coitus (OR=7.15[1.10-46.54]). Vaginal bleeding, marijuana use, alcohol use, sexual interest, feeling in love, partner support, partner negativity, recent condom-protected coitus and within-day female-centered behaviors were not associated with condom use during anal sex.

Conclusions: Anal sex is a relatively rare sexual activity of adolescent women, but most often occurs in this population without condom protection. When condom use does occur, however, it is non-randomly associated with specific characteristics of a given sexual event. In particular, condom-protected anal sex was more likely with recent condom protected anal sex, same-day condom protected coitus and same-day male centered noncoital behaviors. These findings suggest explicit avenues of focus in the design and implementation of interventions targeted to adolescent women.

P-364 ADOLESCENTS AND THEIR SEX PARTNERS: A COMPARISON OF NEIGHBORHOOD CONTEXTS

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Objectives: Neighborhood context influences behaviors that place adolescents at risk for STIs. There has been limited information, however, about the types of neighborhoods in which the sex partners of adolescents reside. Given that STI risk is in part determined by the behavior of one's partner, it may be important to examine the neighborhood context of adolescents' sex partners. The objective of this study was to describe the extent to which adolescent sex partner's live in the same or similar neighborhoods.

Methods: Sexually active 15-19 year olds and their sex partners were recruited for a longitudinal study between August 2000 and June 2002 from two urban clinic populations. Interviewers collected information on participants and their most recent sex partners in the previous three months including primary residential address information. Participant's addresses were geocoded to a Baltimore City census block group (CBG) using MapInfo. The CBG of the address was used to represent the neighborhood. We obtained neighborhood measures of socioeconomic status from the Census 2000, gonorrhea rates for 2001 from the Baltimore City Health Department, and juvenile arrest rates from the Baltimore City Police Department Univariate statistics were calculated to describe neighborhood characteristics of adolescents and their partners. MapInfo was used to measure the distance in miles between partners. Neighborhood variables were divided into quartiles, and contingency tables were examined for trends using Fisher's exact tests.

Results: We limited our study to the 84 adolescent couples who identified each other as a partner and characterized their relationship as the same partner type. After excluding couples in which at least 1 partner lived outside of Baltimore City (10), we retained 93% (69/74) of couples that provided geocodeable residential addresses for the analysis. 30% of sex partners lived in the same or adjacent CBG as the adolescent, with an average residential difference of 0.09 miles. 70% of partners lived in peripheral CBGs with an average residential distance of 2.79 miles. On the whole, adolescents and their sex partners tended to live in similar types of neighborhoods. Greater than 70% of adolescents and their sex partners lived in CBGs with similar levels of poverty. Adolescents and their sex partners tended to live in CBGs with similar proportions of 15-24 year olds and unemployed individuals. Differences between neighborhood characteristics for adolescents and their sex partners were as follows: 54.6% lived in CBGs with levels of poverty that were quartile discordant ($p<0.00$); 53.6% lived in CBGs with quartile discordant proportions of vacant housing ($p<0.00$); 60.9% lived in CBGs with quartile discordant gonorrhea rates ($p=0.03$); and 63.8% lived in CBGs with quartile discordant rates of juvenile drug arrests.

Conclusions: The sex partners of adolescents tended to live in more geographically distant neighborhoods. The neighborhoods, however, tended to be very similar in terms of general characteristics. Nevertheless, there were a substantial proportion of adolescents who had sex partners living in neighborhoods with dissimilar characteristics. The findings have potential implications for sex partner mixing patterns and STI transmission and acquisition patterns.

P-365 CHLAMYDIA PREVALENCE AND ASSOCIATED BEHAVIORAL RISKS AMONG URBAN HIGH SCHOOL STUDENTS

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Objectives: The purpose of this study was to assess Chlamydia prevalence and sexual risk behaviors related to infection among a sample of urban high school students. Voluntary self-selected school-based Chlamydia screening in New Orleans, San Francisco, and Philadelphia indicate prevalence ranging from 3.9% to 9.7% of females and 0.8% to 4.0% among males (Cohen et al., 1998; Kent et al., 2002; Asbel, 2006). Information on school-based prevalence of Chlamydia among a scientifically selected sample and connections with a variety of sexual risk behaviors is lacking.
Methods: The data presented here were collected as part of an intervention study underway in a large, urban, public school district in California. Twelve high schools were selected in catchment areas with high rates of Chlamydia and live births among adolescents. Students were recruited through a randomly-selected classroom-based sample. The analysis presents baseline survey data and urine-based Chlamydia testing.
Results: Of the 4080 students with usable urine samples, 2.2% tested positive for Chlamydia. Females had greater odds of testing positive than males (3.6% of females vs. 0.7% of males, OR= 5.7, 95% CI= 3.2-10.4, p<.001) and Black students were more likely to have a positive result than Latinos (8.0% of Blacks vs. 1.4% of Latinos, OR=6.0, 95% CI=3.8-9.4, p<.001). Among sexually experienced students (n=2035, 54%), those who had four or more sexual partners had 2.6 times the odds of a positive test (95% CI=1.5-4.5, p<.001) compared to those who had fewer than 4 lifetime partners. Those who used a condom at last sex had almost half the odds of a positive result (OR=.54, 95% CI=.32-.90, p<.02) compared to those who did not use a condom. Among recently sexually active students, those who used condoms consistently had less than half the odds of a positive result (OR=.40, 95% CI=.22-.75, p<.001) than those who did not use a condom at all or used them inconsistently. In further analyses, sexual risk behaviors related to Chlamydia infection did not vary consistently with racial/ethnic and gender differences in Chlamydia infection.
Conclusion: Prevalence of Chlamydia infection is lower in this school-based systematic sample than in previous clinic-based samples, but infection follows similar patterns (Williams et al., 2002; Kahn, 2005). Similar to non-school samples, multiple partners and condom use were significantly related to a positive Chlamydia test (Sayegh, 2005; Robertson, 2005; Paz-Bailey, 2005) and should be addressed as part of school-based STD prevention. Strategies to decrease numbers of lifetime partners have not been widely developed and should be given more focus.

P-366 THE SEXUAL TRANSMITTED INFECTIONS AND HIV VULNERABILITY OF THE HOMELESS LIVING IN SO PAULO METROPOLITAN CENTRAL AREA-BRAZIL

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Introduction: In the last decades, the management of homeless people healthcare has become a Public Health challenge, especially in the central region of metropolitan areas, such as São Paulo city, in Brazil. In general, this population has poor quality of life, including difficulties in access to health care services that is made worse by the stigmatization held against them. In order to best tackle the health care to homeless, it is necessary to diagnose the needs of health including their vulnerability to the Sexually Transmitted Infection including HIV/AIDS. The aim of this study was to evaluate the knowledge, attitudes and practices (KAP) regarding sexually transmitted infection and HIV infection in a homeless population.
Methodology: This study was undertaken in a primary health care attention service located in a central district of the São Paulo metropolitan region, Brazil. Homeless people who have sought a primary care service from December 2005 to March 2006 constituted one group of study population (clinic). Homeless reached in the streets in São Paulo center city have constituted another study group (street). The information was collected by using a standardized questionnaire, which was filled out by trained interviewers, during routine health attendance or in the streets. The Ethical Committee has approved this study.
Results: It was interviewed 350 homeless, 165 in the primary care service and 185 in the streets. Of those interviewed we found 77% of men, 74% self-referred themselves as having skin color as black; 60% had gone to school for four-years, and only 7,3% were married or had steady partners. Moreover, 49% of the people interviewed had been attended in a health care center at least once. More than 90% of this population reported a correct knowledge of the HIV types of transmission and no difference has been found according the interview group (clinc or street). Some of them (22%) reported sex relation with a good appearance person as a way to protect them of acquiring HIV infection. Using condom always in the last six months has been referred by 28%. Only 26% reported that they had not used condoms in the last six months. The use of any illegal drug has been referred by 44%. More than a half of the interviewed use alcohol. Surprisingly we have found 71% who has done a previous HIV testing.
Conclusion: These findings revealed that this population might be more vulnerable to STI due to the high alcohol consumption as well the high rate of using illegal drugs. However the unexpected result about the high frequency of HIV previous test could be a consequence of this primary care approach to this population we should also take into account that shoud be a result of this population stigmatization.

P-367 WHAT CAN WE LEARN FROM THE NEW SOUTH WALES EXPERIENCE OF SUSTAINED DECLINES IN NEW HIV DIAGNOSES AMONG MEN WHO HAVE SEX WITH MEN (MSM)?

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Objective: In Australia, each year about 40% of HIV diagnosis notifications occur in New South Wales (NSW). Each year in NSW, more than 85% of new HIV diagnoses are in men with a history of homosexual contact (MSM). From a peak in 2003, NSW has experienced small, but steady annual declines in new HIV diagnoses, particularly among MSM, and at a time when neighbouring states have substantial increases. This study investigated the declines in new HIV diagnoses in NSW, in the context of a mature HIV epidemic among MSM.
Methods: The study adopted an ecological analysis and data sources according to principles of second generation HIV surveillance. Having confirmed current diagnosis numbers also represented a significant decline in HIV incidence in MSM, analysis shifted to possible explanations. We investigated trends in sexual and other HIV risk behaviours, trends and patterns of HIV and STI diagnoses and undertook policy and programme reviews of the HIV sector, with particular reference to prevention collaborations between state and local-level providers, researchers and non-government organizations (NGO). Results from a state and a national review of financial returns on prevention investment were also included.
Results: Overall new HIV diagnoses in NSW declined from 413 in 2003 to 367 in 2007 (12.5%), whereas neighbouring states experienced increases of more than 20%. Levels of HIV testing in NSW were high, and remained so over the study period (i.e.>70% of non-HIV-positive MSM reported testing for HIV in the last year). Over the study period there was an 11% decline in newly acquired HIV infections (i.e. seroconversion in the last 12 months). Median age at diagnosis among MSM increased from 33 in 2003 to 36 in 2006. Key sexual risk behaviour indicators showed significant changes. Proportions reporting unprotected anal intercourse with regular partners (UAIR) was high and remained stable, however there was a

significant downward trend in proportions reporting any unprotected anal intercourse with casual partners (UAIC) (p=0.01). There was an increasing trend towards men being in exclusive relationships (i.e. monogamous) with partners of the same HIV-status and significant reductions each year in the proportion reporting >10 sexual partners in the last 6-months (p=0.001). From a peak in 2004, MSM diagnoses of infectious syphilis declined steadily, but with no similar trend in other STIs. Key prevention policy initiatives included: establishing numerous task-focused inter-agency working groups (e.g. STI screening in MSM); a continued focus on HIV prevention in the broader context of GLBT health by the state AIDS council (ACON), and funding the local HIV-positive NGO (PLWHA - NSW) to expand its sexual health promotion work with HIV-positive MSM. The prevention programme review highlighted: willingness of sector professionals to collaborate on task-focused working groups; sustained investment by the state health department, and more health education campaigns targeting MSM with data and clear calls to action as key prevention developments over the period.
Conclusion: Using an ecological analysis and second generation HIV surveillance principles we were able to enumerate factors allowing NSW to successfully control its HIV epidemic among MSM. Contact: j.imrie@unsw.edu.au

P-368 THE IMPORTANCE OF CONTINUOUS USE FOR ACHIEVING CONSISTENT PROTECTION: A MIXED-METHOD ANALYSIS OF THE DIAPHRAGM USED WITH A CANDIDATE MICROBICIDE FOR THE PREVENTION OF STI

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Objectives: The diaphragm is a cervical barrier with promise for preventing gonorrhea, chlamydia, and other sexually-transmitted infections (STIs). In preparation for a large-scale trial, a randomized 4-week study of the diaphragm with microbicide was conducted. We used qualitative and quantitative information to generate measures of distinct diaphragm use patterns. We assessed the relationships between these measures and the outcome of consistent (100%) use during sex with non-regular partners.
Methods: High-risk Malagasy women (N=192) were randomized to use the diaphragm with microbicide, diaphragm with placebo gel, microbicide alone, or placebo alone. Diaphragm arm participants (n=96) were counseled to wear it continuously (except for daily cleaning). Quantitative data were collected weekly from all participants. Half of diaphragm arm participants (n=48, randomly selected) participated in qualitative interviews at the final visit. Analysis of qualitative interviews led to the identification of key themes, and each qualitative participant was categorized accordingly ('qualitative categorization'). A predictive algorithm was developed that used quantitative data from a subset of qualitative participants (n=16) to predict qualitative categorization on a single theme''discontinuous' diaphragm use. This predictive algorithm was applied to all diaphragm arm participants. Resulting 'quantitative categorizations' were entered into logistic regression models (with generalized estimating equations) of consistent (100%) diaphragm use during sex with non-regular partners.
Results: The qualitative theme of 'discontinuous' diaphragm use was defined as women's efforts to adapt to continuous use and adapt continuous use to their daily routines. Three distinct diaphragm use patterns became apparent from review of the 48 qualitative interviews: continuous, daily with time off (wearing for certain hours of the day'usually from early evening until morning), and coitally-dependent (preparing for sex on an act-by-act basis). Three quantitative questionnaire items (removing and reinserting the diaphragm more than once daily, typical insertion time, and typical removal time) were combined to discriminate between the 3 diaphragm use patterns. For the subset of 16 participants whose qualitative interviews were used to develop this predictive algorithm, concordance between qualitative categorization and quantitative categorization was 96%. When the predictive algorithm was applied to all diaphragm arm participants (n=96), 72% were categorized as continuous users during at least one week of follow-up. However, only 28% were categorized as such across the entire study. Thirty-one percent were categorized as daily-with-time-off users during at least one week of follow-up; 6% adopted this pattern throughout the study. The corresponding percentages for coitally-dependent use were 47% and 4%. In multivariable models (adjusted for demographics and key covariates), continuous use was more than 4 times as likely as coitally-dependent use to lead to consistent diaphragm use (OR:4.2, 95% CI:2.1-8.1). Daily-with-time-off users were no more likely than coitally-dependent users to achieve consistent use (OR of 1.6, 95% CI of 0.5-5.1).
Conclusions: Continuous use of the diaphragm was associated with a four-fold increase in consistent (100%) use during sex with non-regular partners. If the diaphragm proves effective against STI, continuous use may help women achieve optimal levels of coverage.

P-369 MOVING BEYOND THE MYTHS: PERSPECTIVES ON THE 'DOWN LOW' FROM YOUNG BLACK MEN IN THE AMERICAN SOUTH

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Objectives: Black Men Who Have Sex with Men (BMSM) in the US continue to be disproportionately impacted by the HIV epidemic. The term 'Down Low' (DL) has emerged to describe BMSM who may also have sex with women. These men have been implicated as the primary cause of rising HIV infection rates in black women. Little research has been done to quantify the contribution of DL men to HIV infections among women or to describe the lives of young HIV + BMSM. A cohort study of young HIV+ BMSM (N=20) was done as part of an ongoing initiative to diagnose, link, and retain HIV+ BMSM in clinical care.
Methods: Baseline interviews were conducted from 6/06-1/07 with HIV+ BMSM ages 17-24. (N=20) Participants were recruited through area HIV clinics and testing events. Data were analyzed using SPSS.
Results: Sixty percent (N=12) of the men in the sample identified as Gay, 15% bisexual. None self identified as heterosexual or reported sex with women in the last 3 months. Sixty percent (N=12) reported being strongly attracted to men and not attracted to women while 40% (N=8) reported being strongly attracted to men and slightly attracted to women. Eighty-five percent reported being either comfortable or very comfortable with their sexual orientation.
Conclusions: Our study findings contradict the pervasive narrative of BMSM on the DL as the primary cause of increased HIV transmission to black women. Future research should explore other social and sexual networks to explain the high HIV rates in the black community.

P-370 ERRORS IN CONDOM USE AND RISK OF GONORRHEA AND CHLAMYDIAL INFECTION AMONG YOUNG ADULTS ATTENDING URBAN STD CLINICS

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Objective: Errors in condom use may explain the paradoxical increase in risk for sexually transmitted infections (STIs) among condom users found in some observational studies. The relative importance of type of error may vary by context. We assessed the association of two types of errors in condom use with the likelihood of testing positive for gonorrhea and chlamydia in three geographic locations. We hypothesize that errors in condom use resulting in direct genital contact will increase the likelihood of testing positive for gonorrhea and chlamydia.

Methods: Young adults, ages 18-25 years, attending three STD clinics located in Seattle WA, St. Louis MO, and New Orleans LA, participated in a multi-city cross-sectional study from January 2002 to April 2004. Males (n=460) and females (n=562) presenting with symptoms of infection or contact with an infected partner were interviewed using computer assisted self-interview about sexual behaviors and partnership characteristics, including detailed questions about condom use and errors. Participants were evaluated by clinicians and tested for gonorrhea and chlamydia. In New Orleans, N. gonorrhoeae (GC) and C. trachomatis (CT) were detected by the PACE-2 assay (Gen-Probe) using urethral and cervical swab specimens. GC and CT were detected by the APTIMA COMBO 2 assay (Gen-Probe) using urethral and cervical swab specimens in males and females in St. Louis, and urine specimens in males in Seattle. For females in Seattle, GC and CT were detected by culture from cervical swab specimens. Condom use errors were defined as direct errors when unprotected penile-vaginal contact could occur (condom breaking or slipping off during intercourse) or indirect when unprotected genital contact was less likely (putting the condom on inside out and then flipping it over and using it or losing an erection during intercourse once the condom was already on).

Results: Analyses were restricted to condom users reporting at least one episode of vaginal intercourse in the past 30 days (n=463). The prevalence of gonorrhea differed significantly by site, with New Orleans having the highest prevalence (19%), followed by St. Louis (9%) and Seattle (2%). The prevalence of chlamydia was the same in New Orleans (16%) and St. Louis (16%) and lower in Seattle (6%). Among these condom users, 77% (357/463) reported one or more errors in the preceding 30 days with 66% (305/463) reporting condom use errors resulting in direct genital contact. Of condom users reporting errors resulting in direct genital contact, condom use error was significantly associated with testing positive for gonorrhea in the New Orleans clinic (adjusted OR 3.04 (95% C.I. 1.09, 8.48)). This association was not found in the St. Louis or Seattle clinics; however these sites had relatively few cases of GC. Chlamydial infection was not associated with condom use errors in any of the three clinics.

Conclusions: In populations with lower gonorrhea prevalence, the risk of being infected with gonorrhea was not significantly increased by condom use errors. However, in a high-GC-prevalence population condom errors resulting in direct genital contact were significantly associated with gonorrhea infection.

P-371 AIDS PREVENTION IN MEN AND THE IMPACT OF SEXUALLY TRANSMITTED DISEASES AND INTRAVENOUS DRUG USE IN THE USA

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Objectives: Poor sexual health and intravenous drug use are known risk factors for acquiring HIV. Men who have sex with men (MSM) are the biggest category affected by HIV. The objective of this study was to explore if State to State differences to prevent AIDS in Men in the USA may be explicable by differences in risk factors and the size of the MSM category.

Methods: AIDS diagnoses were used as an outcome measure for the State prevention programmes. The AIDS case rates per 100,000 were obtained between 1995-2004 for each State and the District of Columbia (DC) for Men from the Center for Disease Control and Prevention (CDC) (www.cdc.gov/hiv). Using male population estimates from the 2000 US census, the numbers of AIDS cases per year were calculated in each State. This data was fitted using Poisson regression to calculate an incidence rate ratio (IRR). Gonorrhoea diagnoses in Men and sexually transmitted disease (STD) data were obtained from CDC. STD includes chancroid, chlamydia, gonorrhoea, primary and secondary syphilis. Illicit drug use was obtained from the '2002/2003 National survey on drug use and health' document from the US Department of Health and Human Services. AIDS cases linked to MSM and intravenous drug users (IVDU) cumulative to 2005 were obtained from the Kaiser Family Foundation (www.statehealthcarefacts.org). The AIDS IRR was compared to these variables by linear regression.

Results: The median (range) AIDS IRR per year over the decade in Men in these 51 regions was 0.916 (0.832 ' 0.993). The table below summarizes the linear regression correlations and significance levels.

Conclusion: In men poor sexual health correlated with the inability of States to reduce AIDS diagnoses. These poor performing States have less illicit drug users and an equivalent proportion of AIDS cases linked to IVDU and MSM. From this ecological study it appears that STD diagnoses and treatment are essential for an effective State AIDS prevention strategy.

Relationship to AIDS IRR in Men across 50 States and DC	Correlation (r)	p value
[illegible]	[illegible]	[illegible]
Illicit drug use	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

P-372 AIDS PREVENTION IN MEN AND THE IMPACT OF RACE, INSURANCE STATUS, POVERTY AND RURAL POPULATION

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Objectives: The US HIV epidemic has been shown to differentially affect minority groups and the poor. The objective of this study was to explore the impact of race, insurance status, poverty and the size of the rural population on State to State differences to prevent AIDS in Men.

Methods: AIDS diagnoses were used as an outcome measure for the State prevention programmes. The AIDS case rates per 100,000 were obtained between 1995-2004 for each State and the District of Columbia (DC) for Men from the Center for Disease Control and Prevention (www.cdc.gov/hiv). Using male population estimates from the 2000 US census, the numbers of AIDS cases per year were calculated in each State. This data was fitted using Poisson regression to calculate an incidence rate ratio (IRR). The racial profile of the State (2000), the numbers living below the federal poverty level [FPL] (2002-2004), population with no insurance (2002-2004) and rural population (2000) were obtained from the US Census Bureau (www.census.gov). Only three racial groups have been shown. These variables were compared to the AIDS IRR using linear regression.

Results: The median (range) AIDS IRR per year over the decade in Men in these 51 regions was 0.916 (0.832 ' 0.993). The table below summarizes the linear regression correlations and significance levels.

Conclusion: There was no relationship between States performance at reducing AIDS cases and the percentage with no insurance. The States which performed least well in reducing AIDS cases have a significantly increased African-American

/ Black population and fraction living below the FPL. From this ecological study it appears that poverty alleviation and targeted HIV / AIDS prevention to this group may be valuable strategies to reduce State to State differences.

Relationship to AIDS IRR in Men across 50 States and DC	Correlation (r)	p value
1995 AIDS case number	-0.147	0.303
White non-Hispanic population (%)	-0.164	0.263
African American / Black population (%)	0.120	0.402
Hispanic population (%)	-0.150	0.298
No insurance (%)	0.113	0.419
Poverty (%)	0.340	0.030
Rural population (%)	0.200	0.153

P-373 AIDS PREVENTION IN WOMEN IN THE USA AND THE RELATIONSHIP WITH RACE, INSURANCE STATUS, POVERTY AND RURAL POPULATION

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Objectives: The US HIV epidemic has been shown to differentially affect minority groups and the poor. The objective of this study was to explore the relationship of race, insurance status, poverty and rural population on State to State differences to prevent AIDS in Women.
Methods: AIDS diagnoses were used as an outcome measure for State prevention programmes. The AIDS case rates per 100,000 were obtained between 1995-2004 for each State and the District of Columbia (DC) for women from the Center for Disease Control and Prevention (www.cdc.gov/hiv). Using female population estimates from the 2000 US census, the numbers of AIDS cases per year were calculated in each State. This data was fitted using Poisson regression to calculate an incidence rate ratio (IRR). The racial profile of the State (2000), the numbers living below the federal poverty level [FPL] (2002-2004), population with no insurance (2002-2004) and rural population (2000) were obtained from the US Census Bureau (www.census.gov). Only three racial groups have been shown. These variables were compared to the AIDS IRR using linear regression.
Results: The median (range) AIDS IRR per year over the decade in Women in these 51 regions was 0.993 (0.887 ' 1.076). The table below summarizes the linear regression correlations and significance levels.
Conclusion: There was no relationship between States performance at reducing AIDS cases and the percentage with no insurance. The States which performed least well in reducing AIDS cases had a non-significant increase in African-American and Black population, a significantly lower number of AIDS cases in 1995, an increased fraction living below the FPL and rural population. From this ecological study it appears that poverty alleviation and targeted HIV / AIDS prevention to this group may be valuable strategies to reduce State to State differences.

Relationship to AIDS IRR in Women across 50 States and DC	Correlation (r)	p value
1995 AIDS case number	0.313	0.026
White non-Hispanic population (%)	0.100	0.488
African American / Black population (%)	0.170	0.239
Hispanic population (%)	-0.340	0.015
No insurance (%)	0.126	0.840
Poverty (%)	0.334	0.017
Rural population (%)	0.380	0.006

P-374 AIDS PREVENTION IN WOMEN IN THE USA AND THE IMPACT OF SEXUALLY TRANSMITTED DISEASES AND INTRAVENOUS DRUG USE

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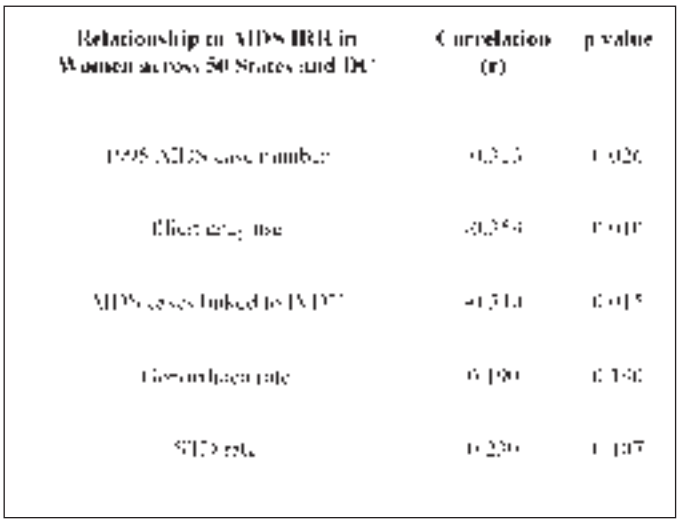
Objectives: Poor sexual health and intravenous drug use are known risk factors for acquiring HIV. This study objective was to explore if State to State differences to prevent AIDS in Women in the USA are explicable by differences in these risk factors.
Methods: AIDS diagnoses were used as an outcome measure of State prevention programmes. The AIDS case rates per 100,000 were obtained between 1995-2004 for each State and the District of Columbia (DC) for women from the Center for Disease Control and Prevention (CDC) (www.cdc.gov/hiv). Using female population estimates from the 2000 US census, the numbers of AIDS cases per year were calculated in each State. This data was fitted using Poisson regression to calculate an incidence rate ratio (IRR). Gonorrhoea diagnoses in Women and sexually transmitted disease (STD) data were obtained from CDC. STD includes chancroid, chlamydia, gonorrhoea, primary and secondary syphilis. Illicit drug use was obtained from the '2002/2003 National survey on drug use and health' document from the US Department of Health and Human Services. AIDS cases linked with intravenous drug users (IVDUs) cumulative to 2005 were obtained from the Kaiser Family Foundation (www.statehealthcarefacts.org). The AIDS IRR was compared to these variables by linear regression.
Results: The median (range) AIDS IRR per year over the decade in Women in these 51 regions was 0.993 (0.887 ' 1.076). The table below summarizes the linear regression correlations and significance levels.
Conclusion: In Women, poor sexual health correlates non-significantly with the inability of States to effectively prevent AIDS. In these States there is significantly less illicit drug use and AIDS cases linked to IVDU. From this ecological study it appears that State AIDS prevention strategies need to focus on Women through the provision of comprehensive sexual health services.



Relationship to AIDS IRR in Women across 50 States and DC	Correlation (r)	p value
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

P-375 INTERNET AND EMAIL USE AMONG STD CLINIC PATIENTS

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Objectives: To assess Internet and email use among STD clinic patients to evaluate the possibility of using both for research and clinical care communication.
Methods: An anonymous cross-sectional survey of patients aged ≥18 years entering the Seattle, Washington STD Clinic during March 13'22, 2006. Pearson chi-square tests were used to examine characteristics associated with Internet use.
Results: Of 497 study period patients, 251 (51%) completed the questionnaire. Participants had a median age of 30 (range 18'66) years and were 69% male, 56% White, 19% African-American, 9% Hispanic, and 7% Asian. 72% had at least some post-secondary education but 47% reported an annual income of less than US$15,000. Of all 251 participants, 200 (80%) reported using the Internet from a private location at least once a week, 189 (75%) had their own email that they checked at least 3 times a week, and 144 (57%) were willing to receive an email reminding them to come back for a follow-up appointment if diagnosed with an STD. Of 233 persons who reported any Internet access, 126 (54%) felt comfortable going to a password-protected website to enter information such as date of last sexual intercourse and condom use, 77 (33%) were willing to provide the information only on paper, and 30 (13%) would decline participation in a study that required such information. MSM were more likely than women and heterosexual men to use the Internet from a private location at least once a week [49 of 51 (96%) versus 134 of 175 (77%), p = 0.002] and to have met a sex partner over the Internet during the past year [35 of 51 (69%) versus 19 of 172 (11%), p < 0.001]. Higher educational level and income, but not age or gender, were also associated with Internet use, as was racial/ethnic background (88%, 63%, 77%, 100%, and 71% of Whites, African-Americans, Hispanics, Asians, and others respectively, p = 0.001).
Conclusions: Internet and email use are common and acceptable to many STD clinic patients for research and clinical purposes.

P-376 SEX PARTNER GANG MEMBERSHIP AND STI RISK AMONG FEMALE ADOLESCENTS IN A LATINO NEIGHBORHOOD IN SAN FRANCISCO, CALIFORNIA, USA

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Objectives: Street gangs shape the social structures and geographic mobility of youth in many U.S. urban neighborhoods, and, thereby, influence the risk environment in which sexual partnerships are formed and sexual risk taking occurs. We examined whether gang membership among sexual partners was associated with sexually transmitted infection (chlamydial infection (CT) and Herpes Simplex Virus-2 (HSV-2)) and pregnancy risk among female adolescents in a predominantly Latino neighborhood in San Francisco. We also evaluated the mediating roles of partnership characteristics, contraceptive use practices, pregnancy intentions, and relationship power.
Methods: Among a cohort of 237 sexually active females aged 14-19 years recruited from community venues in San Francisco's Mission District we examined the relationship between gang exposure and STI and pregnancy risk over two years of follow-up. Generalized estimating equations (GEE) were used to assess the association between gang exposure and STI incidence (n=781 visits). Discrete-time survival analysis was used to examine the relationship between gang exposure and the first occurrence of pregnancy during the follow-up period (n=600 visits). CT and pregnancy were determined by urine-based testing (LCR and Clearview HCG, respectively). Blood specimens were tested for HSV-2 using the Focus ELISA.
Results: Seventy-seven percent of participants were Latinas and 20% were born outside of the U.S. At baseline, 17.4% reported having a sexual partner who was in a gang and nearly 30% had close friends in a gang. The cumulative incidence of CT was 5.5% and of HSV-2 was 3.4%, with 8.9% testing positive for either infection. One-quarter (27.4%) became pregnant over follow-up. Having a sexual partner who was in a gang increased the odds of CT (OR=3.6; 95% CI=1.4, 9.0) and HSV-2 (OR=2.2; 95% CI=1.3, 3.7) and increased the hazard of pregnancy (HR=1.90; 95% CI=1.1, 3.3). Pregnancy intentions and having a partner in detention each diminished the effect of partner's gang membership on pregnancy risk. However, partnership characteristics did not minimize the effect of partner's gang membership on STI risk.
Conclusions: Increased STI and pregnancy risk among young women with gang-involved sex partners points to the importance of integrating reproductive health prevention into programs for gang exposed youth. In addition, high pregnancy rates overall, and the increased pregnancy risk among young women with partners who spent time in detention, points to unprotected sexual activity and a heightened need to address STI prevention among this vulnerable population of youth.

P-377 CONDOMS: NOT JUST FOR CLIENTS--CONDOM USE AMONG SENEGALESE COMMERCIAL SEX WORKERS

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[2]University of Dakar, DAKAR, Senegal

Objective: To Assess the seroprevalence of HIV among registered female commercial sex workers (CSWs) in Senegal and investigate their condom usage; To examine the association between previous HIV testing and knowledge of HIV serostatus and condom utilization with both regular sex partners and clients among Senegalese CSWs.
Methods: We studied condom use among 1052 Senegalese registered CSWs between 2000 and 2004. CSWs were interviewed regarding their previous HIV testing history and their sexual behaviors with clients as well as their regular partners.

We examined the potential effects of previous HIV testing and knowledge of HIV serostatus on condom utilization using multivariable log-binomial models.
Results: The overall HIV prevalence was about 20% in this study population. Over 95% of the CSWs reported always using a condom with clients, but only 18% reported always using a condom with their regular partners. A history of previous HIV testing was not associated with change in condom use with the clients (Adjusted prevalence ratio, APR=0.98, 95% confidence intervals, CI: 0.90-1.06). However, previous HIV testing was associated with decreased condom use with their regular partners (APR=0.44, 95% CI: 0.28-0.69), especially in women who tested HIV negative (APR=0.17, 95% CI: 0.08-0.36).
Conclusion: Condom use with regular partners is low among the registered CSWs in Senegal, and a prior HIV negative test is associated with even less condom use with regular partners. Therefore, intervention efforts to increase condom utilization with regular sexual partners are needed.

P-378 ALCOHOL AND NON-INJECTION DRUG USE ASSOCIATED WITH SEXUAL RISK BEHAVIOR IN THREE PERUVIAN CITIES

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Objectives: While the role of alcohol and non-injection drug use in increasing HIV/STI risk has been documented, there have been limited efforts to describe various culturally determined patterns of alcohol and drug use and explore their relationship with levels of HIV/STI risk behavior, particularly in countries in the South with no transmission due to injection drug use. Sponsored by UNAIDS, an exploratory study was designed with this purpose in three metropolitan areas in Peru: Lima/Callao (the Capital area), Chiclayo (commercial city in the northern Coast) and Iquitos (in the Amazon rainforest). The study included a behavioral survey in a household probability sample and ethnography in members of the general population.
Methods: A survey was implemented in a three-stage household probability sample of men and women 18-30 years old in Lima-Callao, Chiclayo and Iquitos, by using a structured, interviewer-administered questionnaire, focused on patterns of alcohol and drug (i.e. cocaine, cocaine paste, marijuana, meta-amphetamines, inhalants) use; use of alcohol/drugs with sex in respondent or in partner; sex with various partner types; and condom use by type of partner (steady/occasional). Focus groups were conducted with members of these populations, and key informants were interviewed.
Results: 1739 individuals (51% female) were interviewed in the three domains, mostly high school graduates. Differences were found across the three domains regarding substance use, with higher figures en Chiclayo than in Lima and Iquitos. Reported use of alcohol in last 30 days was over 70%, higher in Chiclayo, where all participants had ever tried alcohol. Marijuana was the most commonly used drug, followed by cocaine paste and cocaine. Prevalence of recent use for various drugs was always highest in Chiclayo and lowest in Iquitos, and always higher in men. 30% in Iquitos; 35% in Lima/Callao, and 49% in Chiclayo reported having had sex under the effects of alcohol or drugs. Twenty percent of respondents, most commonly men, had sex without consistent condom use with occasional partners in the last 3 months. When analyzed by alcohol/drug use, this variable is significantly higher when recreational drugs were used in the last year and also when weekly alcohol use was reported. The effect of alcohol and drugs is higher in Chiclayo, among men and among the youngest. In multivariate analysis, inconsistent condom use with non-steady partners in last three months was predicted by weekly alcohol use (OR 1.5 [95% CI 1.06, 2.1]); use of drugs in last year (OR 2.3 [95% CI 1.4, 3.6]); use of alcohol or drugs by partner before/during sex (OR 1.8 [95% CI 1.3, 2.4]); being from Chiclayo (OR 3.6 [95% CI 2.7, 4.8]); and being a male (OR 1.4 [95% CI 1.02, 1.9]).
Conclusions: New ways to approach culturally sanctioned high use of alcohol and drugs are needed to improve HIV/STI prevention. These needs within Peru vary across gender (males being more vulnerable) and geography (where in places like Chiclayo alcohol and drugs seem clearly an element of fun and sex). Other factors explaining independent risk associated with Chiclayo need further exploration.

P-379 HIV/STI AND SEXUAL HISTORIES OF AFRICAN-AMERICAN MSM LIVING IN A SOUTHERN STATE

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Objective: The purpose of this study was to assess the HIV/STI risk behaviors of men who have sex with men (MSM) who live in a Southern state.
Methods: As part of a syphilis investigation, focused interviews were conducted with MSMs living in a county in South Carolina that experienced increased syphilis morbidity (County A). A sample of MSMs from a matched comparison county (County B) was also interviewed. Using ethnographic assessment techniques, men were recruited by staff from two community based organizations that serve at-risk populations in the respective counties. The inclusion criteria was MSM self identification. Interview questions included: STI/HIV knowledge, risk perceptions and behaviors, and sexual partnerships. The interview concluded with an opportunity for risk reduction information exchange.
Results: Forty-seven men, all African-American, between the ages of 22-45, were interviewed. Twenty-four of the men were from County A; 23 were from County B. A previous HIV+ diagnosis was reported by 83% (n=20) of men from County A, and 61% (n=14) from men in County B. One fifth (n=10) of the 47 men reported a previous syphilis diagnosis. All 10 of the previous syphilis cases self - reported being HIV+. Six of the 10 were from County A. Half of the men with syphilis histories also reported up to three additional previous STIs including herpes, gonorrhea, and hepatitis C. HIV+ men reported the fewest partners in the three months prior to interview (mean=.81, range=0-3). Equal numbers of HIV+ men had zero (n=13) or one (n=13) sexual partner in the 3 months prior. HIV- men reported significantly more partners (range=0-5) in the same time period (mean=2.39; median=2). Five men (3 HIV-, 2 HIV+) reported sex with women in the previous three months in addition to male partners. Although a plurality of men reported inconsistent condom use, HIV+ men more frequently reported consistent condom use during receptive anal intercourse, while HIV- men more frequently reported inconsistent to non-condom use during insertive anal intercourse and sex with women.
Conclusion: The results of this initial formative study with African-American MSM in South Carolina suggest that more primary and secondary HIV/STI prevention and intervention efforts are needed that target MSMs of color living in Southern states. However, given that more men in County A reported an HIV+ diagnosis, a history of syphilis and other STIs, more sexual partners, and inconsistent condom use frequency, tailored health education and risk reduction (HE/RR) approaches which reflect the socio-culture dynamics within specific geographical areas are essential. Additionally, preliminary outcomes indicate a contradiction between living in a conservative geographical environment and the incidence of self-reported high risk MSM behavior. Participants' suggestions for intervention strategies included, flexible social marketing approaches (i.e. print, phone, and internet), as well as outreach at local social settings (i.e. malls, house parties, clubs) and frequent travel destinations, particularly strategies that transcend county lines.

P-380 REDUCING TIME SPENT EDUCATING GENITAL HERPES PATIENTS WHILE INCREASING PATIENT AND PROVIDER SATISFACTION

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Objectives: While millions of people in the US have been diagnosed with genital herpes (GH), millions more have herpes and do not know it. Healthcare providers (HCPs) have reported a reluctance to test patients because the ensuing dialogue is often lengthy and emotional. These constraints leave patients who are HSV+ with unanswered factual questions and unresolved emotional issues. This study was designed to test the utility of a one-page Frequently Asked Questions (FAQ) sheet in terms of reducing the amount of time spent ' as well as increasing physician and patient satisfaction -- during the initial diagnostic visit.
Methods: Thirty HCPs were asked to counsel five newly diagnosed GH patients each. All were asked to complete a pre-test survey that consisted of demographic and diagnosis information (e.g., test types and amount of time spent educating and counseling), as well as satisfaction with thirteen topics discussed, physician's affect, and resources received. Physicians received the FAQ sheet and materials to give their patients. The same thirty physicians were each asked to counsel an additional five newly diagnosed GH patients and all were asked to complete post-test surveys. Pre- and post-test survey data were compared by groups (physicians and patients) to assess the effectiveness of the FAQ sheet.
Results: Time spent educating and counseling newly diagnosed GH patients dropped significantly from pre-test reports of more than 15 minutes to post-test reports of 11 to 15 minutes when the FAQ sheet was used. Topics discussed before versus after using the FAQ sheet were significantly different as were the resources and referrals offered.
Conclusions: Physicians and the patients found the FAQ sheet to be a valuable tool to use when educating and counseling newly diagnosed GH patients. Not only did it reduce the amount of time spent in educating and counseling newly diagnosed GH patients, but also levels of satisfaction rose among patients and HCPs. Lisa Gilbert: LisaGilbert@ashastd.org

P-381 HIV, STD AND RISK BEHAVIORS AMONG MEN WHO HAVE SEX WITH MEN, FEMALE SEX WORKERS, AND INDIGENOUS GARFUNA POPULATION IN HONDURAS

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Background: Honduras is the only country in Central America with a generalized HIV epidemic, with prevalence among antenatal care attendees at 1.35% in 1998 and 0.46% in 2004. Nonetheless, the Honduran epidemic is concentrated among groups at high risk of transmission. A study done in 2002, surveyed a convenience sample of female sex workers (FSW) and men who have sex with men (MSM), and reported a prevalence of 10% and 13%, respectively. We present preliminary findings from a behavioral surveillance survey which included HIV and STD biomarkers among groups at high risk of transmission.
Methods: We used audio computer assisted interviews to survey participants from three at-risk groups: MSM, FSW, and Garífunas (an ethnic group of mixed African and Indigenous ancestry), in the cities of Tegucigalpa, San Pedro Sula, Ceiba and Comayagua. The questionnaire covered demographics, risky behaviors and access to health care. We used respondent-driven sampling (RDS) sampling for FSW and MSM. RDS is useful for populations that are hard to reach, and allows the description of networks within the population. We used household based sampling for Garífunas. The target sample size was 800 per group. Tests performed included HIV (Determine/Oraquick in series) and herpes (HSV-2 Herpes Select) serology. Data collection was done from June through September 2006. Analyses are unweighted and unadjusted so confidence intervals and associations are not calculated.
Results: We enrolled a total of 2256 participants from the four participating cities. The median age of participants was 27 years for FSW (N=838); 22 for MSM (N=613); and 34 for Garífunas (N=815). The HIV prevalence was 2.3% (19/811) among FSW, 6.9% (42/613) among MSM, and 4.6% (37/813) among Garífunas. HSV-2 sero-prevalence was 61.4% for FSW (496/808); 27.9% for MSM (160/574); and Garífunas 56.2% (451/802). Of sexually active participants, reported condom use was 80% among FSW with the last client. For MSM and Garifunas, condom use with last casual partner was 79% and 57%, respectively.
Conclusions: We detected a moderate prevalence of HIV among the three risk groups studied. This was lower to what was reported in the 2002 survey, and might be due to differences in sampling methodology. We found very high rates of HSV-2 seropositivity, which may increase the vulnerability of these populations to HIV in the future. New intervention strategies should include condom promotion programs, specifically targeting the Garifuna population.

P-382 BRIDGING BEHAVIOUR OF MEN WHO HAVE SEX WITH MEN (MSM) IN BANGALORE

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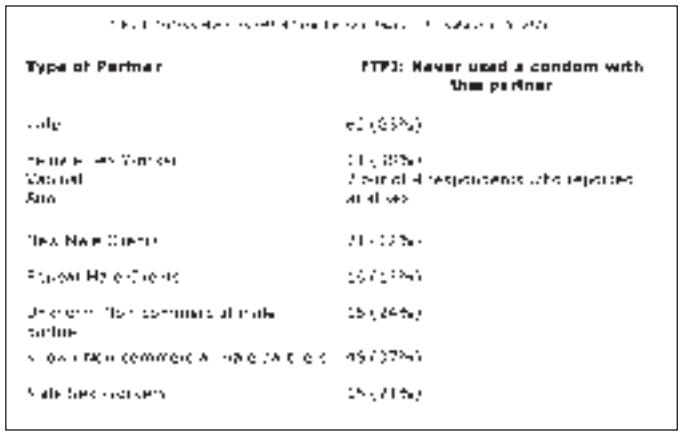
Objective: HIV prevention efforts working with MSMs in India have generally focused on sexual risk behaviour associated with male-to-male relationships. However, less consideration has been given to understanding their sexual relations with women, which could result in missed opportunities for HIV/AIDS-related intervention. The objective of this study is to investigate sexual behaviour of MSM in Bangalore and their relations with women.
Methods: Homosexual and bisexual behaviour of 525 MSM in Bangalore city were collected using face-to-face-interviews (FTFI) and informal confidential voting interviews (ICVI). A total of 85 cruising sites/clusters were selected in Bangalore urban. Eight clusters were hammam-based sex work sites (hammams are where Hijra sell sex to men) and 77 clusters were in public locations where a time-location cluster sample strategy was used to identify crusing MSM (men aged 18 or older who had ever had sex with another man).
Preliminary Results: This survey was carried out under Avahan, the India AIDS Initiative. A total of 111 (21%) were currently married to women, 22 (4%) were widowed, divorced or separated and 18% (N= 68 from FTFI only) had children. Among those currently or previously married, 83% (N= 88 from FTFI only) reported that the decision to marry was their family. Of those currently married 73 (96%) reported vaginal intercourse with their wife regularly every month and 83% (N=62 from FTFI only) had never used a condom with their wife. Seventy-five (14%) respondents had paid to have sex with a female sex worker in the last year. In the FTFI sample, 38% of men paying for sex with FSW (N=11) had never used a condom. Furthermore, 16 (12%) had never used a condom for anal sex with new male clients, 19 (18%) with repeat male clients, 61 (36%) known non-commercial male partners, 23 (24%) with unknown non-commercial male partners, and 19 (19%) male sex workers.

Conclusion: Findings suggest that in India a large proportion of MSM become husbands and commit to fatherhood. Moreover there are high rates of non-condom use with wives as well as male sex partners, particularly known non-commercial male partners. This high rate of unprotected sex by MSM with both men and women suggests that MSM constitute a bridge population for HIV transmission to the general population of women. Thus HIV preventive interventions among MSM in Bangalore are of the utmost priority.



Type of Partner	FTP1: Never used a condom with this partner
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[illegible]	[illegible]
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[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

P-383 ONLINE STD TESTING: THE USE AND EFFICACY IN AMSTERDAM OF FREE OF COST AND ANONYMOUS SYPHILIS TESTING THROUGH THE INTERNET

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Objectives: The aim of this study was to determine the feasibility and usage of the intervention and its efficacy in detecting men who have sex with men (MSM) with a syphilis infection. In addition, we examined the effect of Implementation Intentions (II) by way of a randomised trial (RT). II is a self-regulatory strategy that promotes the intention of goal directed behaviour by creating 'practical intentions' towards a certain behavior: planning in advance when, where and how one will complete a self-assigned goal.
Methods: The study was conducted over 15 months. Active recruitment took place only in the first 4 months by way of banners motivating men to visit the website www.syfilistest.nl (presently still available). The website provided the possibility to download a referral letter with which MSM could get tested for syphilis, free of charge and anonymously in a non-clinical setting. A week after the test, participants could retrieve their results online. To determine feasibility and efficacy of the intervention we compared the online sample with a sample of the STD clinic. For the RT, participants were divided in a group that received the II referral method and a group that received a standard referral method.
Results: During 15 months the website received 25671 visitors, 898 downloaded a referral letter and 10.4% (93/898) got tested, with a monthly average of 15 tests in the bannered period opposed to three tests in the non-bannered period. Of the testers, 96% (90/93) obtained their test results online. Of the testers, 15.1% (14/93) had a positive serology versus 21.9% (1284/5852) at the STD clinic. Among the testers, 35.7% (5/14) had an early syphilis and 14.3% (2/14) a (late) latent syphilis, compared to 20.7% early and 4.6% (late) latent syphilis at the STD clinic. Resulting in 50% (7/14) of the men tested online receiving treatment compared to 24.8%(319/1284) in STD clinic. Of those tested positive, 33% (3/10) never visited the STD clinic before. The men who completed the II referral method and downloaded a referral letter had a 2.7(CI 1.73 - 4.19) higher chance to get tested.
Conclusion: The online testing for syphilis is feasible and successful in detecting men with an early or (late) latent syphilis. Furthermore, the concept of II could contribute more efficient STD testing online by selecting the participants with more serious test intentions. In the near future a complete online STD screening on HIV, Syphilis, Hepatitis B, Chlamydia and Gonorrhoea will also be available in this online project.

POSTER SESSION: MYCOPLASMA GENITALIUM

P-384 MYCOPLASMA GENITALIUM INFECTION DETECTED BY TRANSCRIPTION MEDIATED AMPLIFICATION ASSAY IS ASSOCIATED WITH CHLAMYDIA BUT NOT GENITOURINARY SYMPTOMS IN ADOLESCENT FEMALES

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Objectives: Newer molecular methods have improved our ability to detect Mycoplasma genitalium (MG), a sexually transmitted infection (STI) that is associated with cervicitis and genitourinary symptoms in adult women. However, prior studies rarely include adolescent women who are at high risk for STIs such as Chlamydia trachomatis (CT), Neisseria gonorrhea (GC), and Trichomonas vaginalis (TV). Our objectives are to describe the prevalence of MG in sexually active adolescent women; and to explore the associations of MG with sexual behaviors, genitourinary symptoms, physical and laboratory findings, and other STIs.
Methods: Females aged 14-21 years (n=331) were recruited from a teen health center or emergency department to participate in a cross sectional study. Each subject completed an interview that assessed sexual behaviors (condom use, contraceptive use, number of sexual partners) and genitourinary symptoms (vaginal symptoms, dysuria, abnormal bleeding and pelvic pain). Physical findings during the pelvic exam (abnormal discharge, mucopurulent cervicitis or pelvic tenderness) were recorded. Endocervical swabs were tested for CT using strand displacement assay (SDA) (BDProbetek ET_), and for GC using either culture or SDA. Vaginal swabs were tested for TV by wet mount, culture, and rapid antigen test (OSOM TV_). After subject recruitment was complete, stored vaginal swabs were tested for TV and MG using transcription mediated amplification (APTIMA_ analyte specific reagents). Any positive TV test was considered evidence of TV infection. Chi-square tests and multivariable logistic regression were performed to assess for significant associations.
Results: The mean age of participants was 17.7 years, 82% were black, 64% described current vaginal symptoms, 62% reported a prior STI and 48% used condoms at last sexual intercourse. MG was detected in 74 (22.4%), CT in 79 (24.4%), TV in 62 (18.7%) and GC in 35 (10.7%) subjects. Those with MG were more likely to report using no contraceptive method at last sexual intercourse (69 vs 55%, p=.04) and >1 sexual partner in the last 3 months (35 vs 23%, p=.04) than those without MG. Genitourinary symptoms were not associated with MG infection in the full sample or in women without other infections. No physical findings or wet mount results (such as white blood cells or clue cells) predicted MG infection. CT was the only STI associated with MG; 34% of young women with CT were co-infected with MG compared to only 18.4% of those without CT (p=.003). In logistic regression, the odds ratio (OR) and 95% confidence interval (CI) of variables independently associated with MG were current CT infection (OR 2.3, CI 1.3 -4.2), absence of dysuria (OR 2.3, CI 1.0 - 5.0) and >1 sexual partner in the last 3 months (OR 1.9, CI 1.0 - 3.4).
Conclusion: M. genitalium was as common as CT in high risk sexually active adolescent women. In contrast to studies of adult women, MG was not associated with genitourinary symptoms but was highly correlated with current CT infection. Further studies are needed to assess the role of MG as an etiology of genitourinary symptoms or other adverse reproductive outcomes in young women.

P-385 ROLE OF GENITAL MYCOPLASMAS INCLUDING MYCOPLASMA GENITALIUM IN HIV POSITIVE MEN WITH NON GONOCOCCAL URETHERITIS

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PGIMER,, CHANDIGARH, India

Objective: To study the association of genital Mycoplasma in HIV positive men with non gonococcal uretheritis

Methods: First voided urine samples and endouretheral swabs were obtained from one hundred men with symptoms of uretheritis attending the HIV and STD clinic of Nehru hospital attached to PGIMER, Chandigarh India .Case patients were defined as Men having uretheral discharge showing > 5PMNL/HPF with absence of any gonococcus on smear examination and absence of growth on culture. Urine samples were subjected to PCR for detection of Mycoplasma genitalium and ELISA for detection of Chlamydia trachomatis antigen (Microtrak, trinty biotech, Ireland).M.genitalium DNA was obtained fron Staten serum Institute,Denmark which served as positive control.. Endocervical swabs and urine were inoculated into PPLO broth for isolation of Ureaplasma urealyticum & Mycoplasma hominis.The PPLO broth was then incubated at 37oc with 5% CO2 for 15days. The organisms were quantitated and identified according to standard methods.

Results: Of total 100 patints (70HIV + & 30 HIV negative), Chlamydia trachomatis was most common being found in 21% patients altogether, followed by Ureaplasma urealyticum in 13% cases and M.genitalium and M. hominis in 6% each. In HIV patients, C. trachomatis was found in 23%(16/70) of patients , U.urealyticum in 18.5% (13/70) M. genitalium was detected by PCR in 7.1% among HIV positive with NGU .However no significant association between HIV status of individual and with detection or isolation of Genital Mycoplasma was found

Conclusion: The study suggests that besides C,trachomatis,U.urealyticum and M.hominis, Mycoplasma genitalium is an important cause of NGU in men and it should be routinely sought whenever NGU is suspected in clinical practice irrespective of HIV status of the indviduals

P-386 PREVALENCE OF MYCOPLASMA GENITALIUM IN VOCATIONAL SCHOOL STUDENTS IN JAPAN

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Objectives: In Japan, Chlamydia trachomatis is common in the younger population. It has been reported that C. trachomatis is detected from about 10% of female teenagers. Most of these women were asymptomatic which may lead to continuing spread of the infection. Like C. trachomatis, Mycoplasma genitalium is a cause of male non-gonococcal-urethritis (NGU). M. genitalium has been detected from about 20 % of men with NGU, but it has been reported that the prevalence rates of M. genitalium were 0 % or 1% among pregnant females in two Japanese studies. The objective of this study was to determine the prevalence of M. genitalium infection in the genitalia of vocational school students in Japan and to determine risk factors for this infection.

Methods: This study was conducted between October 2005 and January 2006. Urine specimens and questionnaires were collected from students of 3 vocational schools in the Miyazaki prefecture, Japan. Following an educational lecture on sexually transmitted diseases, the students received oral explanations about the survey design, self-collection of specimens and questionnaires. Each student collected about 10 ml of first voided urine after getting up in the morning and brought it with a questionnaire to school. Informed consent was obtained in writing from each student. This study was approved by the ethics committee of University of Miyazaki prior to complementation. C. trachomatis was detected from urine specimens with Amplicor PCR (Roche Molecular Systems) according to the manufacture's instruction (Mitsubishi Chemical BCL, Japan). M. genitalium was detected from the same urine specimens with inhibitor controlled real-time TaqMan PCR using primers detecting the M. genitalium MgPa adhesion gene at the Division of Urology, Department of Surgery, Faculty of Medicine, University of Miyazaki,Japan. All positive specimens were re-examined with a PCR detecting the 16S rRNA gene of M. genitalium for a confirmed PCR. Risk factors associated with M. genitalium or C. trachomatis infections were analyzed with Fisher's exact test.

Results: Among 298 female and 31 male students who submitted both urine specimens and completed questionnaires, 249 (84%) and 26 (84%) students had had intercourse, respectively. The average age was 20.4 for females and 20.6 for males. No student reported genital symptoms at the time of specimen collection. The prevalence of M. genitalium was 2.8% in females and 0% in males and the corresponding prevalence of C. trachomatis was 7.6% and 7.7%, respectively. Three female students had dual infections with M. genitalium and C. trachomatis. All M. genitalium PCR positive students had more than 5 lifetime sexual partners. For C. trachomatis, more than 3 lifetime partners and more than 1 partner within the last 6 months were identified as risk factors for infection in females.

Conclusions; The prevalence of M. genitalium was 2.8% in female students in Japan. A risk factor for infection with M. genitalium was more than 5 lifetime sexual partners.

P-387 ASSOCIATION OF URETHRITIS RELAPSES WITH HSV OR MYCOPLASMA GENITALIUM

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Standard regimens for nonspecific urethritis treatment are azythromycine 1,0 g and doxycycline 0,1 bid within 7 days. However, insufficient knowledge about etiology of this disease, presence of mixed infections and complications may cause urethritis relapses. Experience of treatment of this disease testifies to clinical recovery only in 70-80% cases. Among other reasons of treatment failure the resistance of etiological infectious agents causing urethritis is of special concern.

Objectives: to identify infectious agents, credibly associated with recurrences after treatment of acute urethritis.

Materials and methods: 113 patients with urethritis underwent supervision over no more than 1 month. All patients were subjected to an expanded clinical laboratory investigation: microscopy, Mycoplasma DUO, PCR (a Liteh test), bacteriological investigation for aerobic flora, and virologic study. In order to exclude any urethral anatomical abnormalities we applied uroflowmetry, urethra ultrasound investigation during miction, and urethroscopy. In all cases we applied an updated virologic study that included a rapid culture method, which allows identification of HSV types 1 and 2 within 26-28 hours after taking urethral smears. For bacterial urethritis treatment we prescribed the standard treatment with azythromycine, doxycycline or ceftriaxon, while in HSV-positive cases we prescribed valacyclovir 2,0 g twice in 12 h interval. For the purpose of description of the microbial agents, which may cause treatment failure, all patients were divided into two groups: those who recovered successfully after a single regimen (n=88) and those who had a recurrence (n=25).

Results: Etiological spectrum of urethritis was represented by N. gonorrhoeae (4.4 %), C. trachomatis (6.2 %), T. vaginalis (1.8 %), U. urealyticum (22.1 %), M. hominis (2.7 %), M. genitalium (12.4 %), M. pneumoniae (1.8 %), HSV (35.4 %), aerobic bacterial flora (25.7 %). The rate of latent urethral pathogen identification after treatment is shown in table.

Conclusions: statistical analysis of the obtained data shows that there is a strong association of M. genitalium (odds ratio - 27.5, 95 % confidence interval 1.4 - 540.1) and HSV 1 and 2 types (OR - 7.1, 95 % CI 1.6 - 31.6) with failures of urethritis treatment. There is no data showing that U. urealyticum and opportunistic flora play a causative role in urethritis relapses. Correspondence to: r V. Kovalyk, e-mail: kovalyk@mail.ru

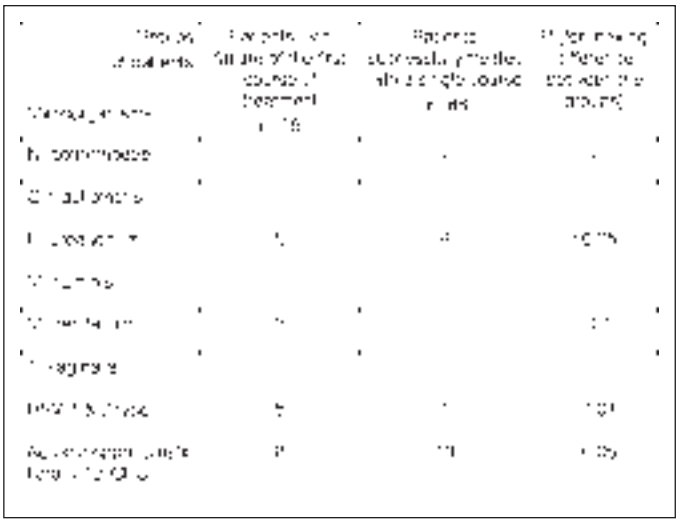

Figure 1: The rates of viral and bacterial agents

P-388 DIFFERENTIAL ASSOCIATION OF UREAPLASMA UREALYTICUM AND U. PARVUM WITH NONGONOCOCCAL URETHRITIS IN HETEROSEXUAL MEN

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Objective: To evaluate the controversial association of ureaplasma species (U. urealyticum and U. parvum) in nongonococcal urethritis (NGU) in heterosexual men
Methods: Ureaplasma genes including the urease gene for all 14 serovars were aligned and primers specific to U. urealyticum and U. parvum were selected for their respective ' specific PCR assay. A U. urealyticum and U. parvum ' specific probes were designed and used in Southern blot detection assays. Analytical specificity of these assays was evaluated using representative type strains and sensitivity determined by 10-fold serial dilutions of known amounts of U. urealyticum and U. parvum genomic DNA. Relationship of U. urealyticum and U. parvum with NGU was assessed using urine/urethral specimens previously collected in an NGU case-control study of heterosexual men attending the Seattle STD clinic. Cases were defined as men with visible urethral discharge on examination and ≥5 PMNs/1000X microscopic field; controls were men without urethral discharge and <5 PMNs/1000X field. The association of both species with NGU was assessed by univariate and multivariate analysis.
Results: The U. urealyticum and U. parvum specific PCR assays specifically detected U. urealyticum (serotypes: 2, 4, 5, 7, 8, and 9) and U. parvum type strains (serotypes: 1, 3, and 6), respectively, with an analytical sensitivity of ≤10 genomes per reaction. U. urealyticum was detected in 31 (26.0 %) of 119 cases and 19 (16.2 %) of 117 controls, (OR 2.3, 95% CI, 1.1'5.0, P=0.035) after adjusting for age, race, history of prior urethritis and other NGU pathogens (C. trachomatis, M. genitalium, and T. vaginalis). The association of U. urealyticum and NGU was strongest in white men <28 years of age, (OR 7.3, 95% CI, 1.3-50). Among men negative for C. trachomatis, M. genitalium, and T. vaginalis, 20 (33 %) of 61 cases and 17 (16%) of 109 controls were positive for U. urealyticum; (OR 2.8, 95% CI, 1.2'6.4, P = 0.017). In contrast, U. parvum was detected in 17 (14%) of 119 cases and 36 (31%) of 117 controls. Therefore, U. parvum was detected more often in controls than in cases, (OR 0.5, 95% CI (0.3'0.8, P <0.01). Among the controls, prevalence of U. urealyticum (16%) was higher than the prevalence of C. trachomatis (3.4%) or M. genitalium (4.3%), P <0.05 in each comparison.
Conclusion: U. urealyticum was positively associated and U. parvum was negative associated with NGU among heterosexual men. The high prevalence of U. urealyticum in controls is puzzling, but may be suggestive of variability in virulence among U. urealyticum serotypes, host susceptibility, or acquired immunity. Email address: raphao@u.washington.edu.

P-389 AN IMPROVED MEDIUM FOR GROWTH OF MYCOPLASMA GENITALIUM: ISOLATION OF A TETRACYCLINE-RESISTANT CLINICAL STRAIN

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Because of the difficulties in cultivation of Mycoplasma genitalium, only a few genetically distinct clinical isolates are available. We sought to develop improved media that might increase efficiency of isolation and permit the determination of antibiotic susceptibility by agar dilution methods. The effect of pH, osmotic pressure, atmosphere, serum type and temperature were determined by measuring the growth of the organism by plate count or color change assays. Susceptibility of strains to antimicrobial agents was determined by the agar dilution method where the endpoint was the least amount of antimicrobial agent that prevented the formation of 30 to 300 colonies on an inoculated spot. The optimum growth conditions for M. genitalium strains were: pH 7.2 -7.4, osmotic pressure of 250 - 400 mOsm, aerobic atmosphere with a requirement for 2.5% carbon dioxide, and a temperature of 36 C. Horse serum was superior to fetal bovine serum. Tightly sealed culture flasks for agar culture were necessary to prevent dehydration of media and resultant increase in osmotic pressure which would prevent growth. A new culture medium formulation was devised which contained soy peptone, fresh yeast dialysate, PPLO broth, commercial yeast extract, 5 mM TES buffer at pH 7.3, 30 mM MgSO4, 30 mM NaCl, 5 mM glucose, 20% horse serum and an osmotic pressure of 290 mOsm. Two new strains of genetically distinct M. genitalium were isolated. The first isolate (Sea-1) was isolated by enrichment in Hep-2 cell cultures and then growth in our usual soy peptone broth. The second isolate (Sea-2) was recovered directly on agar using the new medium. The susceptibilities of 7 genetically distinct M. genitalium strains to tigecycline (a glycylcycline), tetracyclines and moxifloxacin were determined by agar dilution on the new medium (Table 1). Six strains were classified as susceptible with 50% minimal inhibitory concentrations (MIC50s) of 0.5 µg/ml for tigecycline, doxycycline and minocycline, 1.0 µg/ml for tetracycline and 0.5 µg/ml for moxifloxacin. One strain (Sea-1) was resistant to tetracycline (16 µg/ml), doxycycline(4.0 µg/ml) and minocycline (4.0 µg/ml). Its susceptibility to tigecycline was 2.0 µg/ml. The susceptibility of Sea-1 to moxifloxacin was the same as those for tetracycline-susceptible strains. We have produced a new medium, which grows M. genitalium well, however it still does not permit reliable isolation of strains from clinical samples. Apparently, M. genitalium strains show considerable variability in their ability to be grown in culture media. The recovery of a strain resistant to tetracyclines may explain some of the treatment failures in treatment of M. genitalium infections with tetracyclines. kennyg@u.washington .edu This study was supported in part by grants from the Public Health Service: AI-31448 and AI-48634 and from Wyeth Laboratories (Collegeville, PA)

Table 1. Susceptibilities of *Mycoplasma genitalium* to tigecycline, tetracyclines and moxifloxacin as determined by agar dilution

Strain	Susceptibility µg/ml				
	Tig**	Tet	Doxy	Mino	Moxi
G-37	0.5	1.0	0.5	0.25	0.5
Sea-1	2.0	16.0	4.0	4.0	0.5
Sea-2	0.5	0.5	1.0	0.5	0.25
M2288*	0.5	1.0	0.5	0.5	0.25
M2282*	0.5	0.25	0.25	0.25	1.0
M2321*	0.5	1.0	0.5	1.0	1.0
M2300*	0.5	0.5	0.5	0.5	0.25
MIC_{50}	0.5	1.0	0.5	0.5	0.5

* Danish strains
** Tigecycline, tetracycline, doxycycline, minocycline and moxifloxacin

P-390 PREDICTORS OF STI SCREENING BEHAVIORS AMONG HIGH-RISK YOUNG WOMEN IN ORISSA, INDIA

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Sexually transmitted disease (STD) testing among sexually active young women is essential in preventing and controlling the STD epidemic. STD testing is critical because infections such as Chlamydia trachomatis and Neisseria gonorrhoeae are primarily asymptomatic in women. If women do not routinely test for STDs, this can facilitate the spread of these diseases and lead to serious sequel. The problem is more significant in India, a country with more than 1 billion population and currently going through the phase of globalization. The present research explores the socio-demographic, psychosocial, and health-related factors that may be associated with young women's STD testing behaviors. The Health Belief Model (HBM) provides the theoretical framework for explaining the relationships that exist between background factors, HBM perceptions of STDs and STD testing, and the total number of STD tests completed during the two-year study. The population studied for this research is a sample of 14 '29 year old women, of both Urban and Rural Orissa province in India. Univariate regression analysis between background factors and the outcome indicated that age, economic condition, education, having symptoms of an STD at baseline, current antibiotic use, and having condom problems were associated with an increasing number of STD tests completed. A similar analysis between HBM perception variables and the outcome showed that only perceived severity was significant. A multivariate stepwise linear regression model of significant background and perception factors revealed that having symptoms at baseline, current antibiotic use, and having condom problems were significant to an increasing number of total STD tests completed. These findings demonstrate that an assessment of behaviors and current health status of young women can be helpful in understanding utilization of STD services. The results also suggest that the HBM may not be sufficient in characterizing STD testing behaviors, however, improved measures of these constructs can better assess trends in the data. The public health significance of this study is that it provides theoretical and empirical attention to factors associated with STD testing behaviors, an area of research that has received limited consideration in Indian context.

P-391 TWENTY-SIX YEARS OF AIDS EPIDEMIC IN BRAZIL

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Introduction: In Brazil, 433067 aids cases have been reported through June 2006.
Objective: To describe the trends in the AIDS epidemic, by sex, age and exposure category, from 1980-2005.
Method: All aids cases reported to the MoH through June 2006 were analyzed. Incidence rates/100,000 by sex and age group, the proportions by exposure category and race, and annual percentage variation were calculated.
Results: By June 2006, 290917 aids cases were reported among men and 142138 among women. With higher rates among men through the period, the aids incidence increased 47% per year from 1986 to 1992. MSM, IDU and cases due to blood transfusion were the most important exposure category. From 1992 to 1998, the rates increased slowly among male cases (6% per year), but increased 20% among females. From then on, stabilization was observed among male cases, mainly due to decrease of IDU and stabilization of MSM exposure categories. Nonetheless, persistent annual increase of 5% among female aids cases were observed, together with an increase of the heterosexual transmission in both sexes. The sex ratio fell from 15M:1F to 1.5M:1F. A decline in the rates among men in the age group 13-34 was also observed. Among females, stabilization was only observed in the 13-24 year age group. After 2000 while 53.4% of the general population reported as been white, the proportion of white aids cases has been decreasing from 64% to 55%.
Conclusion: The aids epidemic has stabilized among male cases, mainly due to reduction of IDU and stabilization of MSM exposure categories. The recognition of a persistent increase in female aids cases and among non-whites is important to establish prevention and control measures.

P-392 SOCIAL INEQUITY IN AIDS MORTALITY IN BRAZIL

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Introduction: In Brazil, 183074 aids deaths occurred since 1980.
Objective: To describe the aids mortality by sex, age and race, from 1980-2005.
Methods: All deaths due to aids were analyzed from 1980 to 2005, by sex, age and also by race. Mortality rates were calculated by sex, race and the median age by sex in all of the periods, with the addition of race during the last period.
Results: The aids mortality rate increased to 9.7/100000 inhabitants in 1995, with a sharp decrease until 1999, with stabilization afterward, especially among male's deaths, when decreased from 15.1/100000 inhabitants in 1995 to 8.1 in 2005. Among females, the decline was less pronounced, falling from 4.8 in 1996 to 4.0 in 2005. The median age increased by 4 to 5 years during the period. The proportion of aids deaths among male whites decreased from 64.8%, in 1998, to 56.9%, in 2005. Among female whites it decreased from 58.9% in 1998 to 51.8%, in 2005. it was observed a consequent increase among non-white deaths. Among white male deaths, the median age increased from 35 to 39 years, and from 35 to 37 years among non-white male deaths. Among white female deaths, the median age increased from 34 to 38 years and from 34 to 36 among non-white female deaths during the same period.
Conclusions: The AIDS mortality rate in Brazil decreased significantly after 1995 with the introduction of HAART. Nonetheless, the reduction was less pronounced among female and non-white deaths, revealing gender and racial inequities.

P-393 THE EFFECT OF GRAPHICAL PRESENTATION OF HPV RISK INFORMATION ON MOTHERS' ATTITUDES AND INTENTIONS TOWARD HPV VACCINATION FOR DAUGHTERS: AN EXPERIMENT

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Purpose: It is important that parents understand the risks of HPV infection and the protective benefits of the new HPV vaccine. However, traditional (numerical) presentations of risk information are often difficult to understand. This study develops, and tests the efficacy of, a graphical presentation of the risks and benefits associated with HPV infection and vaccination.
Methods: An experiment examined the effect of HPV risk information format (graphical vs. statistical vs. no- risk-information control) on mothers' intention to have their daughters receive the HPV vaccine, as well as other attitudes regarding the vaccine and HPV. The experiment was conducted online, with a national sample of 490 mothers of girls ages 11-16. The participants were 20% Hispanic, 21% African-American and 51% with a high school diploma or less. Each participant was provided with basic information about HPV, then was randomly assigned to either a graphical presentation depicting the numbers of girls that would get HPV if they were and were not vaccinated against HPV, a statistical presentation of the same risk information, or a no-risk-information control condition. All other aspects of the three conditions were held constant. Random assignment to the three conditions was delivered though a randomization program in the web survey. After viewing the stimuli, participants reported their perceptions of HPV vaccine effectiveness, their daughter's vulnerability to HPV and cervical cancer, the ease of understanding the information, their intentions to have their daughter receive the HPV vaccine, as well as information on demographics and past behavior.
Results: Sixty-four percent of the mothers reported having heard of the HPV vaccine. About 93% of mothers of girls ages 11-13 stated that their daughter had 'definitely not engaged in sexual activity' at the time of the survey, compared to 63% of mothers of 14-16 year-olds. There were no significant effects of race, daughter's age, daughter's perceived level of sexual activity, HPV awareness or mother's education on any of the dependent variables. An ANOVA examined the effects of HPV risk presentation format (graphical vs. statistical vs. control) on each of the four dependent variables. This analysis revealed that those mothers who saw the graph felt that the information was easier to understand (p=.023), felt their daughters were more vulnerable to the effects of HPV (p=.024) and were more likely to intend to have their daughters receive the three-shot HPV vaccine series (p=.002) compared to those who saw the same statistical information without the graphical depiction. Those who saw the graphical information also believed that the HPV vaccine was more effective at fighting HPV than those who saw the no statistical control information (p=.023).
Conclusions: Mothers viewing graphical risk information on the HPV vaccine found this information easier to understand, and expressed stronger intentions to get their daughters vaccinated, compared to mothers who viewed the same information without the graphical presentation. This suggests that graphical presentation may be a useful tool to help parents understand the risks associated with HPV infection and motivate them to adopt the HPV vaccine.

P-394 KNOWLEDGE ON HIV/AIDS AND HIV PREVENTION IN IMMIGRANTS FROM THE FORMER SOVIET UNION IN GERMANY: CONTROLLED PILOT SURVEY

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Objectives: More than 2 mill. of Immigrants from Former Soviet Union (IFSU), German resettlers, Jewish immigrants, and their relatives were assimilated in Germany during 1991 to 2005. The immigration process is going on. Because of HIV epidemic in FSU countries, it is very important to investigate the knowledge on HIV/AIDS and HIV prevention in IFSU. We are presenting the results of pilot German survey on HIV/AIDS knowledge in IFSU population.
Methods: The anonym postal based questioning of IFSU (328 German resettlers, and 107 Jewish immigrants; 18-65 y. o.) was performed in autumn 2005 in Munich and in German's Federal State Bavaria. The questioning was controlled by German responders (n=347, 18-65 y.o), who were patients of general out-patient dermatological clinic.
Results: 435 and 347 questionnaires from IFSU and from Germans were completed and admitted for analysis, respectively. IFSU vs. control feel to be informed about HIV/AIDS (in %; p<0.001): 'very good' ' 11.3 vs. 21.0; 'good' ' 66.0 vs. 66.2; and 'bad' ' 22.7 vs. 12.8. IFSU being compared with control apologized that HIV/AIDS should more affect (in %; p<0.001): drug users (89.8 vs. 54.0), prostitutes (76.8 vs. 39.3), and homosexuals (68.8 vs. 48.2). The most IFSU were well informed about HIV transmission by needle sharing (96.5 vs. 95.3 %), vaginal intercourse (83.4 vs. 87.4 %), and from HIV positive mother to her child (78.5 vs. 78.2 %), but not sufficiently, and also less than Germans in questions about HIV transmission (p<0.001) during anal (67.0 vs. 79.5 %), and oral intercourse (49.7 vs. 61.8 %). Significantly more IFSU than control mentioned hairdressing/ manicure (35.8 vs. 6.0 %), insect bites (21.9 vs. 11.0 %), kissing (17.6 vs. 8.5 %) as HIV transmission ways. Most IFSU and control knew about HIV protection using condom (91.8 and 97.8 %), and single needles and syringes (81.5 and 76.2 %). 68.0 % of IFSU comparing with 58.0 % in control group chosen 'being faithful to the sexual partner' as a HIV preventive measure. More IFSU than control have misconceptions about HIV prevention in HIV vaccination (16.6 vs. 4.1 %).
Conclusion: IFSU were generally less informed than Germans about HIV/AIDS, and HIV prevention. Mostly of IFSU mentioned that HIV/AIDS is affecting the specific social group as drug users, prostitutes, and homosexuals, but not the other people. Both groups, IFSU and Germans knew sufficiently about HIV transmission by needle sharing, vaginal intercourse and from infected mother to child, but insufficiently in questions about anal and oral HIV transmission. More IFSU believed in social HIV transmission by using of public places (WC, swim pool, sauna), or by hairdressing. Being faithful to the partner is more important for IFSU than for Germans in HIV prevention. This survey shows the IFSU have some knowledge gap about HIV transmission and prevention. The special HIV education program for immigrants coming from HIV high prevalence former Soviet Union countries should be established and implemented for protection of immigrants they self and the German population. (laura.kouznetsov@med.uni-muenchen.de)

P-395 IN SEARCH OF OPTIMAL GENITAL HERPES MANAGEMENT AND STANDARD OF CARE (INSIGHTS) - AN INTERNET SURVEY OF PHYSICIANS AND PATIENTS PERCEPTIONS OF GENITAL HERPES

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Objective: To compare and contrast physician and subject attitudes and behaviours regarding genital herpes (GH) and its' management.

Methods: A 15 minute self-administered questionnaire to explore GH knowledge, attitudes and perceptions was developed and field tested. There were 4 main themes ' importance/seriousness, emotional impact, treatment preferences and risk of transmission. The on-line survey was carried out in Canada by Ipsos Reid, a company that maintains a data base of individuals self identified with GH and physicians. Both groups were invited to participate with enrollment controlled for sample size and regional distribution for physicians only. Study participants received nominal financial compensation. The study was approved by the Research Ethics Board, University of Alberta.

Results: Only aggregate data for each group was analyzed. Two hundred family physicians and 400 individuals with GH completed the questionnaire. Sixty four percent of physicians were male, 68% practiced in a city with a population exceeding 100,000 population and had been in practice for a mean of 14.7 years. The mean subject age was 44.4 years, 60% were female and 66% were partnered. The mean duration of GH was 13.2 years, 23% were diagnosed in the past 4 years and the average number of recurrences was 2.3 per year. Both groups underestimate the incidence of GH with physicians estimating 44% and subjects 36%. When asked what proportion of transmission can be attributed to asymptomatic shedding, knowledge was equally poor ' physicians estimate 45% and subjects 51%. Both physicians and subjects indicate that GH is simple to diagnose (70% and 77% respectively). Physicians tend to overestimate the emotional impact of GH relative to subjects. Subjects with GH for longer and those with fewer recurrences reported less emotional impact. While physicians estimate that 75% of their patients are using pharmacotherapy for GH, only 28% of subjects report taking GH prescription medication. Number of recurrences is the key factor related to the use of medication. While physicians cite cost as the main reason for not offering prescription therapy, subjects cite lack of severity and/or few recurrences as the main reasons for non-treatment. Only 40% of subjects were aware that suppressive anti-viral therapy can reduce the risk of disease transmission. The main determinant for physicians to prescribe suppressive therapy is number of recurrences rather than risk of transmission. Further reasons not to offer suppressive therapy included cost and perceived poor compliance. Subjects who had discussed suppressive therapy with their physician, but were not taking it, cite infrequent outbreaks, cost, physician didn't think it was warranted and potential side effects as reasons for not taking anti-viral medications. Most subjects willing to take suppressive therapy would do so for symptom relief rather than reducing the risk of transmission.

Conclusions: While physician and subjects attitudes and behaviours regarding GH coincide in a number of areas there are many areas of misalignment. This presents opportunities for education and improvement in the management of genital herpes

P-396 WHAT IS SEX EXACTLY? USING COGNITIVE INTERVIEWING TO IMPROVE VALIDITY OF SEXUAL BEHAVIOR REPORTING AMONG YOUNG PEOPLE IN RURAL ZIMBABWE

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Objective: Self reports of sexual behavior, particularly from young people, are subject to social desirability bias. This study aimed to improve validity of questionnaire responses through cognitive interviewing of rural Zimbabwean adolescents to better understand their underlying thought processes when responding to sexual behavior questions.

Methods: A questionnaire, which included sexual behavior questions, was developed in English, translated into Shona (indigenous language), then back translated. Three rounds of cognitive interviewing were conducted with 65 adolescents. Data were coded and analyzed using grounded theory.

Results: Female respondents reported that the wording of sexual questions should use the passive tense to legitimize women's participation; 'Have you ever been kissed by…?' rather than 'Have you ever kissed a boy or a man?' Polite Shona terms for vaginal sex are both contextual and euphemistic allowing girls to 'misinterpret' the meaning of questions in order to avoid answering them. Respondents recommended describing vaginal sex anatomically in addition to using the terms to make the meaning less elusive. Since women are not expected to initiate sex, 'vaginal sex' refers to both consensual and non-consensual sex, but not forced sex or rape. Respondents recommended asking about forced sex and rape in separate questions. In Shona, there is no term for anal sex. Adolescents suggested using a colloquial term - rather than describing the activity anatomically as this made it too embarrassing to answer.

Conclusions: Cognitive interviewing was useful in exploring the underlying thought processes and cultural context behind question responses. Subtle changes in question wording were suggested by respondents ' even for 'standard' questions that are frequently used in surveys of sexual behavior within Zimbabwe. Properly exploring underlying cultural and societal norms within the study population is key to obtaining valid responses to sensitive questions. webster@uz-rds.co.zw

P-397 THE PSYCHOSOCIAL BURDEN OF CHLAMYDIAL INFECTION: RESULTS OF FORMATIVE QUALITATIVE RESEARCH

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Objective: Although Chlamydia trachomatis is the most commonly reported infectious disease in the United States, few studies have evaluated the psychological and social impact of being diagnosed with chlamydial infection. We undertook formative qualitative research to assess the psychosocial domains of concern among women who were undergoing chlamydia testing or who had recently been diagnosed with chlamydia in family planning clinics in a Midwestern US city.

Methods: Women age 16 years or older attending three family planning clinics in St. Louis, Missouri were recruited to participate in focus groups and in-depth qualitative interviews regarding the psychological and social effects of chlamydial infection. Subjects were eligible if they had recently been tested for endocervical infection and results were still unknown (UNK), or if they had a positive endocervical chlamydia test in the previous month (POS). Focus groups and interviews addressed the ways in which a chlamydia diagnosis might affect psychological and social well-being, or might otherwise affect interpersonal relationships. All interactions were tape-recorded, transcribed verbatim, and analyzed for thematic content (The Ethnograph v5.0) to identify primary domains of psychosocial concern about chlamydia.

Results: A total of 34 women (16 UNK, 18 POS) participated in four focus groups and 24 in-depth extended interviews (mean age: 20.7 ± 4.0 years; race/ethnicity: 74% African American, 26% white). Six primary domains of psychosocial concern about chlamydia were identified by respondents: 1) stigma and shame of having an STD; 2) perception of personal responsibility for sexual health; 3) impact on self-esteem and self-worth; 4) partner fidelity and trust within the relationship; 5) impact on future reproductive health and medical consequences; and 6) impact on future sexual relationships. Many respondents reported that a chlamydia diagnosis would have a positive impact on future healthcare seeking behavior. Impact on expected future condom use was variable. Younger patients were generally less knowledgeable about chlamydia, while older patients expressed greater degrees of concern about their ability to establish meaningful interpersonal relationships in the future. There were no overt differences among respondents with regard to infection status or demographic characteristics.

Conclusion: A diagnosis of chlamydia raises substantial psychological, social, and interpersonal concerns among reproductive-age women. Although chlamydia is curable, it is stigmatizing and disrupts trust and confidence within sexual partnerships. Future research will clarify the magnitude and correlates of the psychosocial burden of a chlamydia diagnosis.

P-398 SEXUAL NETWORKS AND NEIGHBORHOOD SOCIOECONOMIC ENVIRONMENT

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Objective: To estimate the association between neighborhood socioeconomic environment and sexual network position.
Methods: A population-based sample of urban African American adolescents (n=166) was enrolled, and respondent-driven sampling was used to recruit their partners and their partners' partners. Sexual network position was calculated based on partnerships reported by initial participants as well as on those reported by partners and partners' partners. In bivariate analyses, network position was categorized as conferring low STI risk if participants were in a confirmed monogamous relationship, moderate risk if they had only one partner who was potentially or actually linked to someone else, and high risk if participants had multiple partners. Network position was dichotomized as low vs. moderate or high risk in multivariate analyses. Census block groups (CBGs) were used as a proxy for neighborhoods. Measures of socioeconomic environment from the 2000 US census included percent poverty, percent employed, percent female headed-households and the ratio of young adult males to teenage females. Bivariate associations between each measure of neighborhood socioeconomic environment and sexual network position were evaluated with chi-squared tests. Multivariate associations were examined using logistic regression models with cluster robust standard errors to account for correlated outcomes among residents of the same CBG.
Results: Of the four measures of neighborhood socioeconomic environment, only poverty was statistically significantly associated with sexual network position. Residing in the highest tertile of CBG poverty was associated with decreased odds of being in the low risk as opposed to the moderate or high risk network positions (OR: 0.15, 95%CI: 0.05-0.46). Residing in the middle tertile of poverty also decreased the odds of being in the low risk position but not statistically significantly. The relationship between CBG poverty and network position seemed to differ for those who changed CBGs between baseline and the 12 month follow-up, but not for those who remained in the same CBG. Associations of sexual network position with employment and family structure were qualitatively similar but weaker and not statistically significant. Living in a CBG with an uneven ratio of young men and women appeared to be associated with a higher likelihood of being in a low risk network position, however the differences were not statistically significant.
Conclusions: Higher neighborhood poverty, but not employment, family structure or the sex ratio, was associated with being in a sexual network position linked to higher STI risk. However further studies are needed to determine if this is a contextual or compositional association, and to identify causal pathways between neighborhood socioeconomic environment and network structure.

P-399 ASSESSING THE VALIDITY OF SELF-REPORTED CONDOM USE AMONG PERSONS ATTENDING NEW YORK CITY DEPARTMENT OF HEALTH SEXUALLY TRANSMITTED DISEASE CLINICS

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Objective: Inaccurate self-reported condom use affects measures of condom effectiveness for preventing sexually transmitted disease (STD). To determine the validity of such reports, we evaluated responses to questions about condom use in a population with laboratory-confirmed Neisseria gonorrhoeae (GC).
Methods: We extracted data from electronic medical records accrued at 10 New York City STD clinics during an 18-month interval. Patients with laboratory-confirmed GC (cervical-nucleic acid amplification test (NAAT), urethral-NAAT, or anal culture), who reported at least 1 sex partner and quantified condom use during a 3-month referent period were included. Only the first visit resulting in laboratory-confirmed GC was retained for analysis. Before GC testing, patients were asked the following questions; history of same-sex partner (lifetime), number of male/female partners in referent period, type of sexual contact (vaginal/anal), and whether anal sex was insertive and/or receptive. Men reporting both insertive and receptive anal intercourse were included in both groups if urethral and anal GC was reported. Condom use during the referent period was ascertained separately with respect to vaginal and/or anal sex by asking 'during intercourse did you use a condom Always/Inconsistently/Never?' Analytic groups were defined by sex, sex of partner, and type of sexual contact. To increase the specificity of condom use, we examined a subset of individuals reporting only 1 sex partner and all analytic groups were stratified by presence or absence of symptoms at clinic visit.
Results: Among women with cervical GC, 9.1% (65/712) reported 'always' using condoms; compared to 11.8% (164/1,387) of men-who-have-sex-with-women (MSW) with urethral gonorrhea. Restricting these two groups to persons who reported 1 sex partner, 7.1% (31/440) of women and 10.3% (46/445) of MSW reported 'always' using condoms. Among men-who-have-sex-with-men (MSM), 40.8% (227/556) of insertive partners diagnosed with urethral GC and 37.3% (47/126) of receptive partners diagnosed with anal GC, reported 'always' using condoms. Limiting MSM to those reporting only 1 partner had little effect on 'always' reporting condom use: insertive 37.8% (51/135); receptive 34.5% (10/29). Women with 1 sex partner were the only group where 'always' reporting condom use differed significantly by symptomatic status (p=0.0056).
Conclusions: In this population of MSM, self-report does not appear to provide a credible measure of condom use. The observation that MSM with GC report 'always' using condoms may be attributable to infection acquired before the referent period, poor recall of condom use due to drug use during sex, condom use that is consistent but incorrect, social desirability bias, and omission of oral sex in this analysis as a potential source of GC infection. Misclassification of self-reported condom use by MSM could lead researchers using this measure to underestimate the protective effect of condoms for preventing STDs in MSM. Validity of self-report among heterosexuals in this population appears to be much higher than that by MSM.

CONDOM USE VALUES FOR MEN AND WOMEN DIAGNOSED WITH GONORRHEA, BY TYPE OF SEX AND NUMBER OF SEX PARTNERS

[illegible]	Anal Sex	Men Only	Vaginal Sex	
[illegible]	Receptive	Insertive	Males	Females
>1 Sex Partner				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]
1 Sex Partner				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]

CONDOM USE VALUES FOR MEN AND WOMEN DIAGNOSED WITH GONORRHEA, BY TYPE OF SEX, SYMPTOM STATUS AND NUMBER OF SEX PARTNERS

	Symptomatic				Asymptomatic			
[illegible]	Anal Sex – Men		Vaginal Sex		Anal Sex – Men		Vaginal Sex	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
>1 Sex Partner								
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1 Sex Partner								
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

P-400 A SURVEY REGARDING AIDS KNOWLEDGE, BEHAVIOR, ATTITUDES, AND PERCEIVED RISK AMONG HAITIAN CITIZENS

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Objectives: Haiti has the highest prevalence of AIDS outside sub-Saharan Africa. This study's purpose was to determine northwest Haitians' knowledge about AIDS, their perceived risk, and to assess attitudes and behaviors that contribute to the spread of AIDS. We tested for gender differences and differences based on survey location as well as other differences in demographics and responses.

Methods: A 43 question survey was given in St. Louis du Nord, Haiti. Participants ages eighteen to seventy were randomly selected from clinic patients and from the town to take the survey. The surveys were conducted out of the range of hearing of all but the principal investigator, translator, and participant.

Results: One hundred and fifty three people participated. Participants displayed some knowledge on AIDS transmission and prevention with misconceptions regarding the asymptomatic phase of AIDS, transmission from mosquitoes and transmission through urine. One third of participants had no knowledge of condoms. Men were significantly more likely to recognize condoms but only 27% of all participants had ever used one. Gender did not impact knowledge scores nor did where one was surveyed and if one was more likely to care for someone with AIDS. Participants' attitudes regarding condoms did not significantly correlate with condom use. Many Haitians were worried about getting AIDS but only 26% had been tested. Perceived risk of obtaining AIDS did not correlate with condom use. Females at the prenatal clinic are more likely to worry about getting AIDS and more likely to have been tested for AIDS than those who were surveyed at the primary care clinic. Interestingly, one's attitude regarding condoms and condom accessibility did not significantly correlate with condom use.

Conclusions: We need to delve into what factors can change AIDS preventative measures in this area. Perceived risk of obtaining AIDS did not correlate with condom use. Interventions are needed to increase knowledge and prevention of AIDS in northwest Haiti. Condom awareness must increase and future research must be conducted on why preventative measures against AIDS are not taken. Many people need to hear about condoms, other prevention methods, and AIDS transmission though education alone is not sufficient but it is a beginning towards prevention interventions as similar studies noted (Pinkerton et al, 2003, Wutoh et al, 2006). Prevention education is needed and received affirmation from people in the area.

P-401 SUCCESS OF RESPONDENT DRIVEN SAMPLING IN HIGH RISK AREAS TO IDENTIFY HETEROSEXUALS AT HIGH RISK OF HIV: DEMOGRAPHIC RESULTS FROM THE HOUSTON SITE OF THE NATIONAL HIV BEHAVIORAL SURVEILLANCE PROJECT

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Objectives: The National HIV Behavioral Surveillance Project (NHBS) was initiated by the CDC to track changes in HIV risk behaviors in three high risk populations: men who have sex with men, injection drug users, and heterosexuals living in high risk areas. High risk areas were identified as city census tracts with high rates of poverty and HIV infection. Thus, high risk was defined by area rather than by individuals. In Houston, the high risk areas coincided with census tracts with a majority Black population. The disparity between people of color and Anglos HIV and STI rates is widening. It is likely that culture, poverty, and access to medical care play important roles in this disparity, although their specific mechanisms of action have not been fully described. We report on demographic and economic factors from the Houston NHBS-HET survey.

Methods: This anonymous, cross-sectional surveillance project used respondent driven sampling (RDS) to recruit heterosexuals living in 133 high-risk census tracts. RDS is a modified snow-ball sampling method that allows for population estimates of risk factors. Each individual who is interviewed is invited to recruit up to 3 peers into the study; there are dual incentives, one for the interview and up to three incentives for successfully recruiting peers. The survey was developed through a cooperative agreement between the CDC and state health departments. The survey included questions about sexual behaviors, drug use, and previous HIV testing. The interviewers provided HIV testing using OraQuick for screening and OraSure for confirmation. The study was approved by the University of Texas IRB; participants provided verbal informed consent.

Results: We interviewed 442 heterosexuals; 97% were Black, 65% were female, and 67% were less than 35 years of age. Eleven percent reported that they had been homeless and 5% were currently homeless; 57% had never married; 35% had less than a 12th grade education; 47% had graduated from high school or had a GED; and 17% had some college. 56% reported that they were currently unemployed or disabled for work, and 68% made less than $10,000 per year. The median age of sexual debut was 14 for males and 16 for females (difference significant, $p<0.001$). 65% of males and 58% of females reported more than 1 partner in the last year ($p=0.13$). Only 43% reported current health insurance. 79% with health insurance reported visiting a health-care provider in the past year compared to 49% of those without health insurance ($p<0.001$). Fewer than expected reported gonorrhea (2%) or chlamydia (5%) infection in the last year. 16% had never been tested for HIV. We have confirmed HIV infection in 11 individuals (2.5%) and 8/11 (72%) were unaware of their infection at the time of testing.

Conclusions: We established that our heterosexual population was at high risk of HIV; their prevalence of 2.5% is more than expected. Therefore, our sampling approach using RDS in high risk areas was successful in identifying high risk individuals. Not surprisingly, our population was young, poor, poorly educated, mostly unemployed, uninsured, and usually single.

P-402 GETTING THROUGH TO RISK GROUPS! HOW INTERNET CAN IMPROVE CONTACT WITH TARGET GROUPS FOR STI AND HIV PREVENTION

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Objective: The objective of this study was to identify characteristics of visitors of www.soatest.nl in order to improve the website.
Methods: The website www.soatest.nl is online since September 2004 and provides visitors with a tailored advise on HIV and STI testing. Annually over 40.000 people receive advice on HIV and STI testing. We investigated the characteristics of 72.288 visitors of the website. The data were collected from August 2004 until May 2005 and form January until October 2006.
Results: Of all the visitors the majority were heterosexual women (35.7%) and heterosexual men (33.6%). Also men who have sex with men (MSM) were well represented, a total of 24.2% of the visitors identified as MSM. Bisexual men (4.3%) and bisexual women (1.5%) and women who have sex with women (WSW, 0.6%) used the website as well. Of these visitors the vast majority was sexually active, and visited the website with a specific reason. For all the risk groups a perceived sexual risk and worry were the most important reasons to consult www.soatest.nl Another important reason was physical complaints, which was reported by 22.3% of the visitors. Of all the visitors 28.6% reported a previous STI test, and 26.3% were tested for hiv in the last 6 months. Chlamydia was diagnosed in 8.1%, and gonorrhoea in 2% of all cases. The overall prevalence of hiv was 1.4%, and was considerably higher among MSM (4.3%) and bisexual men (2.6%). Striking is the high reported hiv rate among WSW (3.8%) and bisexual women (2.4%).
Conclusions: The website www.soatest.nl is visited by more then 40.000 people per year, and has a relatively high coverage among risk groups. This is an excellent opportunity for prevention. People consult the website with a variety of reasons, mainly because of sexual risk behaviour, worries and /or physical complaints. For MSM physical complaints were no important reason for consulting the website, only 6.3% reported this as reason compared to 26.5% of heterosexual and 20.1% of bisexual men. Among MSM worry about sexual risk wasn't a main reason to consult www.soatest.nl (14.1% compared to 41.6% of heterosexual men). The number of gay and bisexual men who used the website is high, compared to the estimated number of gay people living in the Netherlands. No extra activities were undertaken to motivate these groups to use the website, apart from banners on general information sites. The number of people that were tested for STI and/or HIV is high for Dutch standards. Of these people a relatively large proportion was diagnosed with an STI and/or HIV. Chlamydia was found especially among women and gonorrhoea mainly among MSM. Both these factors lead to believe that people self select in using www.soatest.nl

P-403 CHLAMYDIA SCREENING IN URBAN HIGH SCHOOLS: MAKING THE MOST OF LIMITED RESOURCES IN NEW YORK CITY

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Objectives: Surveys of NYC high-school students show that 48% have ever had sexual intercourse. To improve rates of Chlamydia trachomatis (CT) screening, and identify cases of asymptomatic disease among sexually active adolescents, the New York City Department of Health and Mental Hygiene (NYCDOHMH) began a CT education, screening and treatment program for male and female students in NYC public high-schools during spring 2006. Initially, voluntary CT screening was implemented in five schools without an existing clinical care infrastructure. Since September 2006 the program has expanded to 10 NYC public high-schools which have school-based health centers (SBHCs) that provide comprehensive clinical services, including reproductive health services. This analysis compares disease detected in non-SBHC pilot schools to that in SBHC schools, to help determine whether the program should continue targeting schools with SBHCs.
Methods: The non-SBHC pilot schools were in two neighborhoods selected by the NYC Department of Education for early implementation, had a balanced gender distribution, and a racial distribution reflective of NYC schools overall. SBHC schools targeted during expansion were selected for location within high CT morbidity neighborhoods, with the expectation that SBHC staff would facilitate program implementation and ensure continuity of care for students testing positive. We compared CT positivity, median age, sex and racial distribution of students testing at non-SBHC schools (n=5) to that of SBHC schools (n=10). CT positivity rates were stratified by sex, age, and race, and treatment rates for the program are reported.
Results: Students testing at non-SBHC and SBHC schools had the same median age (16.0 years) and most were black non-Hispanic or Hispanic (non-SBHC schools: 53% black, 37% Hispanic; SBHC schools: 47% black and 44% Hispanic). Overall CT positivity was 5.6% (64/1144; Range 3.0%-9.3%) at non-SBHC schools and 3.9% (55/1412; Range 3.0%-6.2%) at SBHC schools. Among females, CT positivity was significantly higher at non-SBHC schools (8.5%; 50/589) than at SBHC schools (5.4%; 35/644; $p<.05$). Among males, CT positivity was similar for non-SBHC schools (2.5%; 14/555) and SBHC schools (2.6%; 20/768). CT positivity generally increased with age. CT positivity among black students at non-SBHC schools was 6.4%, significantly higher than CT positivity among black students at SBHC schools (3.6%) ($p<.05$). For Hispanic students, there was no significant difference in positivity by school type. Since the program began, 109 students have tested positive for CT; 95% (104/109) have been treated, and the remainder are being followed to ensure treatment.
Conclusions: Assuming a fixed cost for program delivery, we should consider targeting resources toward schools that do not offer urine CT testing or comprehensive reproductive health services, and monitor results to determine program direction. Lower prevalence among girls at SBHC schools may be due to students' access to in-school reproductive health services, though may result from other school or student body variations. Higher CT positivity among females at non-SBHC schools suggests that young women at schools without SBHCs may not have had previous opportunities to be screened for CT or may have higher rates of disease for other reasons. Contact: Meighan Rogers: mrogers@health.nyc.gov

P-404 USING DAILY ELECTRONIC DIARIES TO CAPTURE VARIABILITY IN STD-ASSOCIATED PERCEPTIONS AND BEHAVIORS WITHIN ADOLESCENT RELATIONSHIPS - A PILOT STUDY

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Objectives: Recent evidence suggests that STD-associated perceptions and behaviors vary over time within adolescent romantic relationships. More frequent data collection is necessary to establish stronger causal inferences about associations between relationship perceptions, sexual and condom use behaviors, and incident STDs within adolescent romantic relationships. There were two objectives to this pilot study. First, we examined the feasibility of daily electronic diary collection with weekly STD collection among high risk urban adolescent girls. Second, we evaluated whether partner-specific behaviors and perceptions varied meaningfully from day-to-day by comparing the extent of daily variation reported in the daily diaries to the summary measures reported at the monthly follow-up.

Methods: Sixteen African American adolescent girls (mean age 17.9 yrs), recruited from two Baltimore City Health Department STD Clinics were enrolled. Three did not return for follow-up, leaving 13 girls who were followed for 4 weeks. Participants completed a baseline assessment, daily electronic diaries for four weeks, and a final (4-week) assessment. All data was collected using a personal digital assistant. The daily electronic diary assessed partner-specific perceptions and behaviors, including measures of trust, closeness, perceptions of STD risk, perceptions of partner concurrency and condom use. Participants were instructed to report on all their sex partners each day, regardless of whether they saw that partner or not. A research assistant made weekly home visits to upload the electronic data and collect specimens (self-collected vaginal swabs) for STD testing.

Results: Participants completed daily diaries on the majority of study days; completing 72% of diaries with a mean (median) of 5 (5) per person per week. Using GEE, there was no evidence that the number of completed diaries declined with time in the study (_ = -0.28, p = 0.11). Participants completed 95% of weekly home visits and specimens were submitted at every completed follow-up visit. Eight participants provided both daily data and 4-week summary measures on a total of ten partners. Daily data showed 78% of relationships included both condom protected and condom unprotected sex acts. While many participants reported a predominant partner-specific perception, there was substantial fluctuation within a week. Partner-specific feelings of trust varied daily in 70% of relationships. Thus while 30% of relationships would have been accurately classified by the 4-week summaries, feelings of trust would have been misclassified for the remaining 70% of relationships for whom aberrant perceptions occurred over the 4-week period. Similarly, using only 4-week summaries would have misclassified 50% of relationships with respect to amount of closeness they felt toward their partner, 40% of relationships regarding their perceptions of STD risk, and 70% of relationships for their perceptions of their partners' concurrency.

Conclusions: Daily electronic diary collection with weekly home visits and STD testing was shown to be feasible with urban adolescent girls. This pilot study captured day-to-day changes in all our partner-specific perception measures as well as changes in condom use with the same partner. Our analyses indicated that if we had relied on retrospective summaries we would have missed important variations in these key STD-associated constructs.

P-405 PATTERNS OF HIV TESTING AND KNOWLEDGE OF HIV SEROSTATUS AMONG INJECTION DRUG USERS IN ST. PETERSBURG, RUSSIA

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Background: Since 1996, Russia has experienced one of the fastest growing HIV epidemics in the world that has been largely concentrated among injection drug users (IDU). HIV testing is important for linking individuals to care and services and for preventing further transmission in the community, but little is known about patterns of HIV testing or accurate knowledge of HIV serostatus in St. Petersburg. The purpose of this study was to describe patterns of HIV testing and knowledge of HIV serostatus among IDU in St. Petersburg, Russia.

Methods: As part of a NIDA (USA) funded study, drug users were recruited from November 2005 through December 2006 using respondent driven sampling. Data collection included audio-computer assisted survey interviewing that ascertained previous HIV testing history, and biological testing using ELISA, Western Blot and BED Capture assays for prevalent and recent HIV infection.

Results: Of the 412 IDU recruited in this study, 75% (n=310) reported having ever been tested for HIV, of whom 73 (24%) self-reported their HIV status was positive (18% of entire sample). Among those who had been tested, 31% had only been tested once, 26% had not been tested in the past 12 months, and 12% had not received their test result. Overall, 194 participants (47%) tested HIV-positive at the study visit, including 9% (n=36) who were recently infected as determined by detuned assay. Among those who self-reported a negative test result, 22% were HIV-positive; among those who had not received their test results, 57% were HIV-positive; and among those who had never been tested, 51% were HIV-positive. The kappa statistic for agreement between self-report and biologically-confirmed HIV status was 0.62, and the sensitivity of self-report for assessing biologically-confirmed HIV status was 61%. Among participants with recent HIV infection as determined by detuned assay (n=36), 13 (36%) had not been previously tested, and 14 (38%) had been tested but did not know they were infected. Only 9 (25%) were aware of their serostatus.

Conclusions: Despite widespread availability of testing, many IDU in St. Petersburg Russia had never been tested for HIV or received test results, and this proportion was higher among individuals with recent HIV infections. Accuracy of knowledge about serostatus was poor; 22% of individuals who thought they were negative were actually infected and only 25% of those recently infected were aware of their positive serostatus. Efforts are needed to increase testing participation rates among drug users as HIV continues to spread rapidly among IDU and perhaps to the general population. In this setting of high HIV incidence, frequent testing to identify individuals with early infections and high viral loads will be important to interrupt the chain of transmission.

P-406 EMPOWERING THE PUBLIC TO MAKE INFORMED DECISIONS ABOUT HPV VACCINATION: LESSONS LEARNED FROM CDC FORMATIVE RESEARCH

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Objectives: The successful introduction of an HPV vaccine will require public acceptance of the vaccine, which should be based on informed consumer decisions. Everyday in the United States (U.S.), the public is exposed to HPV vaccine messages in the news and advertising media. The public-health community must provide objective, scientifically accurate and readily-consumable information to enable the public to assess their own level of vaccine risk and benefit, and to distinguish truth from misinformation in the media. This research sought to explore the public's awareness/understanding of HPV and information needs for vaccine decision making; and to test concepts and messages to effectively reach the public with HPV information.

Methods: Between 2003 and 2005, the U.S. Centers for Disease Control and Prevention (CDC) conducted 35 exploratory (N=315), 14 concept-testing (N=117), and 15 message-testing (N=134) focus groups across the U.S. with White, African-American and Hispanic men and women >18yrs to determine HPV information needs and preferences. Focus groups were segmented by age, geography, language (English & Spanish), and gender, and led by professional moderators. Each group was audiotaped & transcribed, with one observer taking notes. Results were analyzed for each set of focus groups using a notes-based strategy. The findings were used to guide CDC's HPV and preliminary HPV-vaccine communication efforts.

Results: Exploratory research revealed that, for informed HPV vaccine decision making, participants needed basic information about the vaccine's safety, efficacy, side effects, degree/duration of protection, and cost, as well as basic information about HPV, including personal risk/susceptibility. Yet the provision of basic HPV information may not be simple or straight-forward. Concept and message testing revealed that certain aspects of HPV information (e.g., its generally harmless yet potentially life-threatening nature, its incurable yet transient nature, and the notion of a 'low-risk' virus) seem inherently contradictory to the public, causing confusion, frustration, anxiety, stigma and fear. Awareness of HPV prompted a desire to get tested for HPV (to 'know one's status') and audience suspicion about why they had not previously been informed about HPV.

Conclusions/Implications: Raising public awareness of HPV may have unintended consequences if messages are not strategically crafted. Vaccine communications must be carefully crafted so as not to inadvertently cause audience confusion; anxiety among sexually active adults who lack access to or cannot benefit from the vaccine; unnecessary HPV test-seeking behaviors; and suspicion about a new vaccine for a 'new virus'. Audience research should be used to determine optimal HPV and vaccine messages that accurately convey HPV risk and create appropriate demand for the vaccine, without creating undue anxiety or stigmatizing HPV, cervical cancer, or those who seek vaccination and screening. Specific CDC message strategies will be shared, and future research needs identified.

P-407 RACE-RELATED DIFFERENCES IN KNOWLEDGE AND ATTITUDES ABOUT HPV VACCINATION IN THE RURAL SOUTHERN UNITED STATES

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Objective: In 2006, a vaccine against human papillomavirus (HPV) capable of preventing ~70% of invasive cervical cancer was licensed and recommended for 9-26 year old females in the United States. Because African American and rural women are disproportionately affected by cervical cancer, their adoption of the vaccine is critical for prevention efforts. Our aim was to evaluate race-related differences in knowledge, attitudes and information seeking about HPV, cervical cancer and the HPV vaccine in women from a U.S. rural area with a large African American population.
Methods: Consecutive women attending a public health clinic and a hospital-based OB/GYN office were interviewed in Person County, a rural area in North Carolina in April, 2006. Race-related differences were examined using linear and logistic regression analyses controlling for age, clinic site, and socioeconomic status (SES). For SES, we created a composite variable that combined data for education, working for pay and financial status.
Results: Of 190 women invited to participate, 91 African American and 47 white respondents completed surveys. Respondents' mean age was 42 years (range 18-84). Most respondents (85%) had at least one child, and a high school education or greater (80%). More white respondents had heard of HPV (57% vs. 24%, p<.001) and scored higher on an HPV knowledge scale (42% vs. 29%, p=.03) than African American respondents. More African American than white respondents believed they had no chance of getting cervical cancer (41% vs. 21%, p=.05). African Americans were more likely to believe that vaccines have negative consequences than white respondents (p=.02) and were less likely to believe that vaccines are beneficial (p=.02). While most African American respondents (63%) thought the ideal age for administering the HPV vaccine was over 17 years of age, most (60%) white respondents preferred the opposite: 17 years or under (p=.01). About half of all respondents reported paying some attention to health and medical topics on television and radio, in newspapers and magazines and about one third on the Internet. Respondents from both racial groups preferred to get information about the HPV vaccine from their health care provider. Unadjusted analyses on intentions to vaccinate self or daughter with the HPV vaccine also differed by race.
Conclusions: This study is the first to identify notable differences by race in awareness, knowledge and some attitudes about HPV, cervical cancer and the HPV vaccine that remained even after accounting for SES. These findings suggest that communication strategies designed for African American women in the rural United States (a population at elevated risk for cervical cancer) may need to emphasize different information to maximize the benefits for cervical cancer prevention.

P-408 YOUNG ADOLESCENTS ATTITUDES TOWARD CONDOMS: DIFFERENCES BY RACE AND GENDER

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Objective: Studies have shown that attitudes toward condom use predict condom use behavior. This study assessed condom attitudes among young adolescents, most of whom are not yet sexually active.
Methods: An in-home longitudinal survey was conducted with approximately 1,000 black and white adolescents from14 middle schools in the southeastern United States. Questions on sexual attitudes and behavior were part of a project funded by the National Institute of Child Health and Human Development to study the effects of media on adolescents' sexual health. Each teen was interviewed at baseline when she or he was 12 to 14 years old and again two years later using a computer-assisted self-interview (Audio-CASI) to ensure confidentiality. Three questions on attitudes toward condom use by persons having sex in the same age group as respondents formed a personal norms scale (_=.86).
Results: At baseline, white males (n=243) were the least likely to support the use of condoms, compared to white females (n=240), black males (n=259), and black females (n=260) [f(3, 991)=14.57, p<.001]. At follow up, white males remained the least likely to support the use of condoms [f(3, 1002)=21.10, p<.001]. On all three questions, white males were the least likely to 'strongly agree' that condoms should be used (Table 1). Personal norms became less supportive of condom use over time for all groups except black females.
Conclusions: Although most younger adolescents have positive attitudes toward condom use, certain subpopulations are less enthusiastic. These differences need to be considered when developing strategies to promote condom use. The decline in support for condom use as adolescents mature also warrants increased attention.

Table 1. Frequency of response "strongly agree" to condom use by young adolescents

Question	% strongly agree (baseline/follow up)			
	White males (n=243)	White females (n=240)	Black males (n=259)	Black females (n=260)
Condoms should always be used	85/6*	88/78	78/88	83/87
Condoms should always be used even if girl uses birth control pills	83/49	82/70	72/86	81/82
Condoms should always be used even if the two people in love each other very well	83/58	84/75	59/80	82/82

For all questions, p<.001

P-409 STD WIZARD: AN INNOVATIVE ONLINE TOOL FOR STI SCREENING

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Early detection of sexually transmitted infections (STIs) through screening can prevent or minimize many STI consequences. About 19 million Americans are infected with an STI annually and many are unaware of their infection. Despite this enormous public health problem, physician uptake of STI screening is poor. To help

address these problems and take advantage of the public's desire to seek health-care information on the Internet, we have developed an innovative 'STD Wizard' interface for the public. This online tool collects demographic and behavioral risk information and provides screening recommendations based on CDC guidelines. Objective: To evaluate the usability of the STD Wizard and its impact on reported screening uptake in college students.

Methods: The STD Wizard was evaluated in college students using an intervention/nonintervention, pre-test/post-test design. 468 students from 52 undergraduate classes in two universities completed an online pre-test and were randomly assigned to an STD Wizard intervention or a nonintervention group. Post-tests were administered to all students at two weeks and two months.

Results: 292 (62%) females and 176 (38%) males participated in the study. 100% of the intervention group found the STD Wizard easy to use; most (81%) also found it useful. 45% (97/216) of the students who went through the STD Wizard received screening recommendations. 57% (55/97) of students who received recommendations had seen (21%) or intended to see (36%) a doctor in the near future.

Conclusion: The STD Wizard is an easy-to-use and effective online tool for the promotion of STI screening.

P-410 DOES HIV-SYPHILIS CO-INFECTION FUEL TRANSMISSION OF HIV: EVIDENCE FROM A SEXUAL NETWORK IN RURAL NORTH CAROLINA, USA

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Objectives: Endemic syphilis has remained substantially higher in the southeastern United States primarily among heterosexuals. By 2001, following an intensive statewide effort to eliminate syphilis, the absolute number of incident cases in North Carolina reached a historical low. Between 2003-2006, Cumberland County, NC experienced dual outbreaks of syphilis and HIV infection among young men (ages 18-30) who have sex with men (MSM). The outbreak centered around Fayetteville; a military town located in a mostly rural region of the state. Disease Intervention Specialists (DIS) determined that the outbreak was tied to a single trailer park frequented by African American MSM. We investigated whether co-infection with syphilis and HIV fueled HIV transmission within this sexual network.

Methods: State surveillance records were abstracted for all new diagnoses of HIV infection among males 18-30 years old between January 2000 and March 2006. Using a standardized form, abstractors reviewed medical data and narratives recorded by DIS to document clinical, behavioral, and demographic information and to record the list of their sex partners. Whenever possible, the files for sexual contacts were also abstracted (including female cases). The sexual network was compiled of all index cases from Cumberland County and cases from other counties connected to index cases for sexual network analysis.

Results: A total of 141 cases were part of this network, including 22 additional contacts from other counties; 75 (53%) records were available for abstraction. The majority of cases were male (80%) and African American (89%). The median age was 24 years with 25%-75% (interquartile range) of cases between ages 21 to 27. The number of newly diagnosed HIV infections nearly tripled from 37 between 2000-02 to 101 between 2003-early 2006. Prior to the outbreak, one case was co-infected with syphilis and one case had acute HIV infection (defined as HIV antibody negative, RNA positive). During the outbreak, 11 newly diagnosed cases of HIV infection (11%) were co-infected with syphilis and 7 (7%) had either acute (n=2) or recent (n=7) HIV infection (defined as a negative antibody test followed by a positive test within 6 months). By early 2006, the network comprised 27 components, the largest involving 53, 15, and 9 individuals (Figure). Among the 75 cases for whom data were complete, 60% were in closed cycles: 32 (43%), 9 (12%), and 4 (5%) were members of 2-cores, 3-cores, and 4-cores respectively. Cases co-infected with syphilis were in the largest component and held prominent positions in the network, as all but one case were either members of a 3-core or 4-core.

Conclusions: As seen in urban areas with high populations of MSM (e.g., San Francisco, Amsterdam), syphilis has now drifted into the MSM population in a mostly rural area of the US. Though it is not clear if the re-emergence of syphilis preceded or followed the HIV outbreak in Cumberland County, the extent of co-infection among central network members suggests expedited growth of the HIV epidemic in this population of young men.

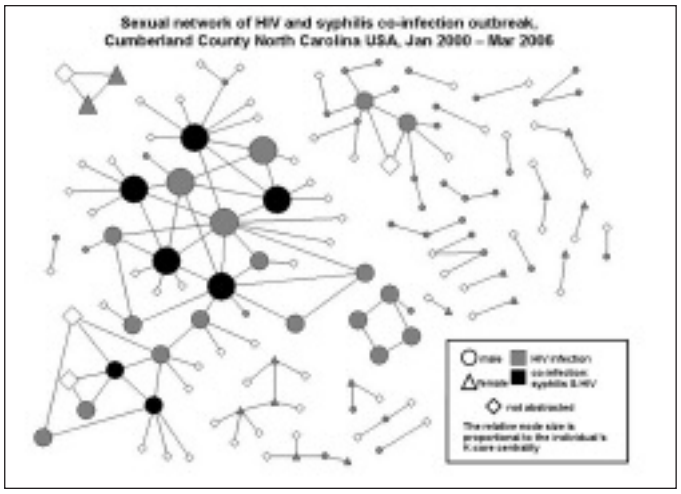

Figure 1

P-411 PATIENT VIEWS ON COMPUTER ASSISTED SEXUAL HEALTH INTERVIEWS: A QUALITATIVE STUDY

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Objective: To examine patients' and medical practitioners' perceptions and experience of using computer-assisted sexual history taking and its effect on the sexual health consultation.

Methods: Patients were sampled purposively from the 2353 participants enrolled from two London sexual health clinics in the Computer-Assisted Sexual Health Interview (CASHI) randomized trial between November 2005 and March 2006. The CASHI study is a comparison trial of three methods of sexual history taking in sexual health clinics: 1) computer-assisted self interview (CASI), 2) computer-assisted physician interview (CAPI) and 3) traditional pen-and-paper face-to-face interview (PAPI). The computerized interviews were designed to collect a similar dataset to clinic proformas used in each clinic. Brief qualitative semi-structured interviews were conducted with twenty patients and twenty clinicians. Interviews were transcribed verbatim and transcripts were analyzed by two researchers for recurrent themes using a systematic framework approach.

Results: Patients had generally positive attitudes towards computers, thought that they could improve the service by speeding up the clinic visit, and thought the CASI was the quickest of the three methods. Many patients felt that they were more likely to disclose additional and sensitive information through the CASI than PAPI and were comfortable with this. Levels of confidence in technology ranged from those who did not worry at all, to those who outright distrusted computers. Some patients expressed feelings of awkwardness during the CAPI due to technical difficulties and what they saw as irrelevant and/or repetitive questioning by the clinician. Several suggested that their confidence in CAPI would increase if clinicians were adequately trained and more comfortable using it themselves. Clinical staff disliked the CAPI as it required them to make substantial changes to their preferred consulting style. They saw the value of CASI as a triage tool that might allow doctors to focus on patients with more complicated problems, but felt they needed to ask patients additional questions.

Conclusions: CASI was largely acceptable to both patients and staff, was seen as potentially decreasing clinic waiting times and increasing disclosure. For those patients who were uncomfortable with computers and lacked confidence with technology, CAPI could be presented as an optional method of sexual history taking.

P-412 WILLINGNESS TO PARTICIPATE (WTP) IN FUTURE HIV VACCINE TRIALS: A MULTI-STAGE INVESTIGATION

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Background: The development of a HIV vaccine will necessitate large scale vaccine trials that require large samples from populations among whom the incidence of HIV infection is high. To this end, it is imperative to understand the factors that promote willingness to participate (WTP) in future HIV vaccine trials.
Goals: (1) Develop a reliable and valid psychometric measure of WTP (WTP scale) in future HIV vaccine trials; (2) test the Theory of Planned Behaviour's (TPB) ability to predict WTP in future HIV vaccine trials; and (3) identify additional psychosocial factors that predict WTP in future HIV vaccine trials.
Methods: A convenience sample of 300 participants will be drawn from two South African Aids Vaccine Initiative (SAAVI) sites between 1April 2007 and 31May 2007. Anticipated *Results:* (1) the WTP scale will be a reliable and valid measure of WTP in future HIV vaccine trials; (2) the TPB will be an appropriate theoretical framework for investigating WTP in future HIV vaccine trials; and (3) additional psychosocial factors that predict WTP in future HIV vaccine trials will be identified.

P-413 AGREEMENT OF SELF-REPORTED STD HISTORY WITH ARCHIVED DIAGNOSTIC LABORATORY RESULTS

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Objective: Minors under age 18 may autonomously seek diagnosis and treatment of STDs. Since adolescents may have little experience with such care, they may misrepresent their STD history either intentionally or unintentionally. We examined the relationship between self-report of history of infection with C. trachomatis (CT), N. gonorrhoeae (GC) and T. vaginalis (TV) and pre-enrollment laboratory results documented in an electronic medical record.
Methods: We studied 386 women aged 14 to 17 years recruited from urban primary care clinics to a longitudinal study. Using a self-administered questionnaire at enrollment, each participant reported whether they 'never', or 'once/more than once' had CT, GC and TV. History of each specific infection was recorded separately. Each participant's existing laboratory data, obtained as part of routine clinical care prior to enrollment, was recovered from an electronic medical record serving the clinics and associated acute care venues. These venues are located within central Indianapolis and represent almost all non-private STD testing facilities. Laboratory methods included those in clinical use at the time of care and comprised culture or DNA amplification tests for CT and GC, and wet preparation microscopy for TV. Agreement between laboratory-documented prior infection and self-reported organism-specific history was assessed using percent agreement, and to control for chance agreement, the kappa statistic. Kappa agreement of >0.5 is considered 'good'.
Results: The cumulative laboratory-documented prevalence of infection prior to enrollment was 32.2% (CT), 11.2% (GC), and 11.5% (TV). Percent agreement and kappa for CT was 85.9%, 0.67; for GC 89.6%, 0.51; and for TV, 82.8%, 0.19. Under-reporting (self-report of 'never' for a given infection but with documented infection), occurred for CT in 34/274 (12%), for GC 17/334 (5%) and for TV 31/335 (9%). Over-reporting (self-report of 'once/more than once' for a given infection but no documented infection) occurred for CT in 20/260 (8%), for GC 23/340 (7%) and for TV 35/339 (10%).
Conclusions: In this population of adolescent women who receive most clinical care within an integrated healthcare system, there was generally good agreement between self-reported history and documented prior infection. The results were most robust for CT and GC; however, all kappa statistics were significant. Although relatively infrequent, disagreement between self-report and laboratory documented infection may have several sources. For example, some subjects may have obtained care outside of the system, contributing to the 7-10% with self-report of infection but no laboratory confirmation within the electronic medical record. Conversely, subjects may have received messages from caregivers such as 'PID' or 'pelvic infection' rather than organism-specific information, contributing to the 5-12% with self-report of no infection but with laboratory documentation of infection. Nevertheless, our findings suggest that self-reported STD history in adolescent research subjects may be more accurate than commonly supposed for these common organisms.

P-414 THE INVESTIGATION OF SEXUALLY TRANSMITTED INFECTIONS AMONG AMERICAN INDIANS IN MONTANA: A COMMUNITY BASED PARTICIPATORY RESEARCH APPROACH

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Objectives: Our understanding of sexually transmitted infections (STIs) in the United States is based on investigations conducted primarily in urban and suburban environments, and the rural south using quantitative research methods. Less is known about the dynamics in rural and frontier populations and other sparsely populated environments. What is known about STI prevention strategies from urban environments is not likely to be generalizable to northern communities in the United States. Furthermore, northern populations comprise a large proportion of American Indians and Alaskan natives. Little is known about how to approach sexual health issues in these communities or how to design effective and culturally sensitive intervention and prevention strategies. Our objective was to build the capacity in Montana's rural and frontier communities to examine the individual, social and environmental determinants of STI transmission among American Indians using community-based participatory research (CBPR).
Methods: A literature review and 10 key informant interviews were conducted among public health professions, American Indian tribal liaisons, and state, county, and tribal health officials about successful and unsuccessful research techniques for examining STIs in American Indian populations in Montana.
Results: Common themes from interviews included: preserving Indian self-determination; addressing historic trauma; issues around research mistrust, confidentiality, ownership of research data, and communicating research findings back to the community; need for cultural translation; capacity building; and the importance of building community ownership to ensure project support and sustainability.
Conclusions: We concluded that quantitative research methods alone are inadequate to address the sexual health disparities in Indian country and that the use of CBPR approaches are necessary to investigate STIs among American Indians in rural and frontier environments. Necessary CBPR approaches include: introductory letters to tribal leaders; community planning boards to help direct the research; utilizing community members to execute research plans; ongoing meetings with appropriate public health officials, practitioners and community stakeholders to exchange information and make project recommendations; having key informants serve as cultural mentors; and discussing research findings with the community.

P-415 LOST IN TRANSLATION? MAINTAINING FIDELITY WHEN TRANSLATING AN INTERVENTION TO REDUCE SEXUALLY TRANSMITTED INFECTIONS IN YOUNG BLACK (BME) WOMEN FROM THE UNITED STATES TO THE UNITED KINGDOM

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Objectives: In the United Kingdom (UK), interventions are urgently needed to address increasing diagnoses of sexually transmitted infections (STIs) among young BME women, but none have yet been proven effective in experimental evaluation here. This study aims to translate Project SAFE (an intervention demonstrated effective in randomised trials to reduce STI re-infection in African-American and Mexican-American women in San Antonio, Texas) into an intervention suitable for young women in North West (NW), London. This paper reports the practicalities of maintaining fidelity to the core elements of the original Project SAFE (PS) intervention whilst adapting aspects of its content and delivery required for translation to the UK setting.

Methods: Core and modifiable elements responsible for PS' efficacy were derived from: the AIDS Risk Reduction Model underpinning the intervention design; ethnographic research used to develop PS; and results of the experimental evaluations of PS' efficacy. These were reviewed alongside content analysis of PS intervention materials; observation of the intervention; and discussions with PS creators, facilitators and participants. Exploration of dimensions of PS requiring adaptation prior to implementation in the UK comprised: 16 focus group discussions with community representatives, sexual health providers and young people; 37 in-depth interviews with females and males age 15-24 years recruited from youth settings and a sexual health clinic between November 2006 and February 2007; observation in these settings; and visits to London from PS team members to observe and advise. An adaptation workshop in London reviewed findings and refined aspects of PS requiring adaptation before piloting in NW London in mid-2007.

Results: An essential component of PS is the use of cultural cues relevant to each ethnic population to reinforce commitment to behaviour change, for example the importance of not shaming family. However, UK service providers requested that the group sessions used to deliver PS should be inclusive of all BME women rather than the single ethnic group sessions used in the original version. Also, concern was expressed by BME community members that surveillance data indicating young black Caribbean women have high STI rates placed emphasise on ethnic variation at the expense of other explanations for poor sexual health. These findings appeared to challenge our attempts to maintain fidelity to an important aspect of PS. However, qualitative work with young people in NW London revealed that although some concepts of sexual risks and partner safety were strengthened by ethnically derived values, cultural cues that were common across different ethnic groups were also highly influential, for example the importance of reproduction. Similarities with the PS ethnographic research findings were also found.

Conclusions: Successful intervention translation depends on maintaining fidelity of elements responsible for an intervention's efficacy, but identification of elements contributing most to behaviour change is difficult. Verification of these core elements requires additional data. In this case, observation of the original intervention and qualitative data from the Texas and London target populations helped us understand the intervention's core elements, how these can be delivered in practice and what aspects can be changed whilst maintaining the intervention's integrity.

P-416 PREGNANCY PREFERENCES AND UNMET NEED FOR CONTRACEPTION AMONG SEX WORKERS IN MADAGASCAR

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Objectives: Unmet need for contraception is high in Madagascar. We measured pregnancy preferences and factors associated with unmet need for contraception among Malagasy sex workers with high coital frequency and self-reported intention to prevent pregnancy.

Methods: This cross-sectional analysis was conducted using enrollment data from participants in a randomized, prospective pilot trial that assessed the acceptability of the diaphragm and a candidate microbicide for potential use as a female-controlled STI prevention method. Clinicians recruited consenting women from health clinics in four cities. Eligibility requirements included: aged 15-55 years; >3 sex partners in the past month; <100% condom use in the past two weeks; not pregnant or planning pregnancy in the next two months; and no physical abnormality that precluded diaphragm use. At the baseline visit, interviewers administered a structured face-to-face questionnaire assessing socio-demographic characteristics and family planning indicators, including pregnancy history and preferences, knowledge and use of contraception, and unmet need. We used multivariable binomial regression to estimate prevalence ratios (PR) and 95% confidence intervals (95% CIs) for the associations between unmet need and socio-demographic and reproductive variables, adjusting for age and study site.

Results: Recruited women (n=192 overall, n=48 per study site) had a median age of 29 years and a median of 10 sex acts per week. Many women reported prior unwanted pregnancy (range: 30% to 75% across sites) and at least 1 induced abortion (range: 25% to 63% across sites). The majority of women reported that preventing pregnancy was 'moderately' or 'very' important (86%). During the last sex act, 24%, 37%, and 3% of women used long-term modern methods, short-term modern methods, and traditional methods, respectively, while 36% used no method. Of women reporting that preventing pregnancy was 'moderately' or 'very' important (n=165 of 192), 32% used no modern or traditional contraceptive method at last sex; these women were categorized as having 'unmet need' for contraception. Multivariable binomial regression analyses indicated that factors associated with unmet need included contraceptive misinformation (belief that no method was effective in preventing pregnancy or that pills, injectables, and/or implants were not highly effective) (age- and site-adjusted PR: 2.4, 95% CI: 0.9, 6.2) and low condom use self-efficacy, defined as report of 'none' or 'a little bit' of control over condom use at last sex (age- and site-adjusted PR: 1.8, 95% CI: 1.0, 3.4). Unmet need was not associated with prior unwanted pregnancy, whether the current number of the respondent's children equaled or exceeded the reported desired family size, or having a high number of sex partnerships in a typical week.

Conclusion: Among this sample of sex workers, unwanted prior pregnancy and desire to prevent future pregnancy were common, but many used no contraception at last sex. Low contraceptive knowledge and low condom self-efficacy, previously identified as important barriers to contraceptive use, also appear to be associated with unmet need among women in this sample. These barriers are amenable to change through clinic-based counseling or peer education. Such efforts may reduce unplanned pregnancies and improve reproductive health among this high risk population.

P-417 SYPHILIS OUTBREAKS IN TWO MAJOR CITIES IN NEW ZEALAND

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Abstract: In New Zealand infectious syphilis remains rare, with between 13 and 47 cases reported per year by sexual health clinics between 2000 and 2005. Historically almost all cases of syphilis were acquired overseas. A review of Auckland sexual health clinic data from 2002 to 2004 suggested that infectious syphilis was becoming an increasing problem in Auckland (Azariah 2005), and an increasing number of cases have also been seen in Wellington. As Sexually Transmitted Infection (STI) surveillance in New Zealand does not include primary care or laboratory data on syphilis, it was felt that further investigation of syphilis rates in both regions was warranted.

Method: A retrospective study was carried out in Wellington to estimate the incidence of infectious syphilis in the greater Wellington region in 2004 and 2005 and to characterise those with infectious syphilis in terms of demographic and risk factors, to inform control of the disease. Based on regional laboratory data, a questionnaire was sent out to all requesting clinicians for individuals with positive syphilis serology during this time period. Information was also collected from cases seen in the sexual health clinic in 2006. All information was recorded anonymously. In Auckland, a prospective enhanced syphilis surveillance project was designed in conjunction with the regional laboratory services. From July 2006 all clinicians requesting syphilis serology where the RPR titre was >/= 1:8, were sent a questionnaire which recorded anonymised data about the patient's demographic details, risk factors and clinical presentation.

Results: In the Wellington survey 120 questionnaires were returned (67%) and fifteen cases of infectious syphilis were identified. Another fifteen cases were identified from sexual health clinic records in 2006 up to October. These 30 cases were predominantly men who have sex with men (MSM) (80%), and mainly New Zealand born (83%). Few cases reported sex overseas indicating local transmission and anonymous partners were common. In the Auckland project, 61 cases of infectious syphilis were identified from July 2006 to January 2007. The majority (74%) of these were male and 42% were MSM. Nearly half (48%) of all infections were acquired in New Zealand, and the majority of the MSM cases (74%) were acquired in New Zealand. The majority of heterosexually transmitted cases were acquired overseas, or involved recent immigrants. Where number of sexual partners in the preceding 3 months was recorded, the majority of patients had 3 partners or less.

Conclusions: Wellington and Auckland are experiencing an outbreak of infectious syphilis. In Wellington, it is predominantly amongst MSM through sex with anonymous partners, often in sex on site venues. In Auckland, the numbers of cases of infectious syphilis amongst the MSM population has increased significantly, although over half the cases were through heterosexual transmission. It is also of concern that nearly 40% of heterosexually acquired infection was acquired in New Zealand. In both centres collaboration between the New Zealand AIDS Foundation and the Regional Sexual Health Services has resulted in outreach services for MSM in sex on site venues to provide information and offer syphilis testing.

P-418 FINDINGS FROM FOCUS GROUPS WITH FEMALE CAREGIVERS OF 11 AND 12 YEAR OLD GIRLS ABOUT HPV VACCINE

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Objectives: Explore knowledge and attitudes related to HPV disease and the HPV vaccine. Assess perceived benefits and barriers to getting her daughter vaccinated. Pretest educational flyers and posters. Assess preferred channels for receiving information about HPV and the HPV vaccine.

Methods: In December 2006, eighteen 2-hour focus group discussions were held with female caregivers of 11 and 12 year old girls for whom the HPV vaccine is recommended in the US. Participants included African American, Caucasian, and Hispanic women from Philadelphia, Dallas and Oakland. The women were recruited by a professional market research company in each city, using a standardized screening form. Each focus group was facilitated by a trained moderator, using a guide. The groups with Hispanics were conducted in Spanish.

Results: Overall awareness of Humanpapilloma Virus (HPV) was widespread among the participants in the focus groups, however their knowledge was quite shallow. Some of the women knew that HPV is a virus, however few knew that it is associated with cervical cancer. Some knew there is a vaccine against cervical cancer, but of those who knew about it, most knew very little. Overall, when told about the HPV vaccine, participants were very receptive to it and were eager to learn more information. African American caregivers reported themselves least likely to vaccinate their daughters, while Hispanics reported themselves most likely. Information that influenced decision making of these caregivers the most was a short description of HPV and its relation to cancer; a statement that the vaccine is safe and has been tested on thousands of girls and women; vaccine efficacy information; and a firm statement that doctors recommend it. Mothers of 11 and 12 year olds do not want to think about their daughter having sex or being vaccinated against an STD. They found discussing genital warts to be very awkward, and some feared that this vaccine may give their daughter license to be 'promiscuous'.

Conclusions: Caregivers are motivated by a desire to protect their pre-teens, and we need to promote the HPV vaccine as one way to do that. The vaccine should also be promoted as part of a 'platform' of pre teen vaccines. Framing the HPV vaccine as an anti-cancer vaccine for this age group makes caregivers more comfortable and more open to consenting to get it for their child. There is little benefit to discussing genital warts in detail with parents of 11 and 12 year olds, because these parents are not ready to see their child as sexually active and are not motivated by genital wart prevention. Print materials such as flyers and brochures should be concise and use simple language. Literacy is a significant issue, and many caregivers struggle to understand complex vaccine and disease information.

P-419 NATIONALLY REPRESENTATIVE ESTIMATES OF HIV/AIDS KNOWLEDGE, RISK BEHAVIORS, AND ASSOCIATED DEMOGRAPHIC FACTORS AMONG WOMEN IN GUATEMALA, 2002

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Background: Recent UNAIDS estimates suggest that HIV prevalence in Guatemala (0.9%) is among the highest in Central America and higher than in the United States (0.6%) and Mexico (0.3%). However, to date nationally representative estimates of knowledge and risk behaviors related to HIV transmission have not been available to inform prevention activities.

Methods: We performed secondary analysis of a probability sample of women aged 15-49 in Guatemalan households (N=9155) from the 2002 Demographic Health Survey. Exact Clopper-Pearson confidence intervals were calculated for dichotomous measures to produce nationally representative estimates of HIV/AIDS knowledge and condom use. Logistic regression was used to identify associated sociodemographic factors. All analyses use sampling weights to account for the multi-stage sampling design.

Results: Among participating women ages 15-49 in 2002, 14.4% (95% CI [13.7, 15.1]) had not heard of AIDS. Of women unaware of AIDS (N=7380), 14.1% [13.3, 15.0] were not aware of any prevention method; 14.8% [13.9, 15.6] did not know there is no cure; 31.2% [30.1, 32.2] did not know that HIV/AIDS can be asymptomatic; and 63.5% [62.4, 64.6] did not know where they could get tested. Of sexually experienced women (N=7517), mean age of sexual debut was 17.7 years [17.6, 17.8]; 71.7% [70.7, 72.7] report having sex in the past 30 days; and only

3.1% [2.7, 3.5] reported condom use during the most recent sex. In multivariate analysis (N=4221), lack of AIDS awareness was independently associated with younger age, lower socioeconomic status, being employed, inability to understand or speak Spanish (i.e., 'not Spanish-speaking'), illiteracy, less frequent attention to written media and television, and indigenous ethnicity, which is the strongest predictor (AOR=3.1, [2.3, 4.3]). Of sexually active non-Spanish speakers in the sample (N=1189), the vast majority of whom were indigenous (99.6%), none reported condom use during most recent sex. Among sexually active Spanish speakers (N=4295), condom use was independently associated with completion of primary education, urban residence, not having a stable partner, and non-indigenous ethnicity.

Conclusions: Low levels of AIDS awareness and knowledge, high levels of sexual activity, and infrequent condom use among women suggest the potential for rapid sexual transmission of HIV in the Guatemalan population. Prevention efforts should focus on reaching non-Spanish-speaking and indigenous populations, including provision of learning aids and other materials in indigenous languages.

P-420 SEXUAL HEALTH CARE AND STI-RELATED STIGMA AMONG WOMEN ATTENDING A COMMUNITY CLINIC IN A LOW INCOME NEIGHBOURHOOD

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Objectives: Sexual health care seeking behaviours are impacted by a number of social factors including stigma and shame, power and gender, support and communication ' all of which can be present at the individual, system and policy level. The objective of this study was to assess the impact of STI-related stigma among a group of low-income women from a marginalized community on sexual health care behaviours, including annual Papanicolaou (pap) smears and STI testing.

Methods: In order to assess gender-specific aspects of STI-related stigma, a pool of items was developed drawing on published theory, qualitative papers and previously tested scales. Using exploratory factor analysis, three resulting scales were used: 1) tribal stigma (referring to the 'good' girl tribe versus the 'bad' girl tribe), 2) social stigma (referring to aspects of judgement from others), and 3) internal stigma (referring to feelings of guilt and shame). Descriptive statistics were used to assess the association of demographics, sexual and drug-related risk behaviours, and the three stigma measures with the main outcome measures (any pap smear or any STI test in the previous year). Pearson's chi-square was used to test for statistically significant differences in categorical variables, and Kruskal-Wallas for continuous variables. Multivariate logistic models were used with forward stepwise regression in order to determine the impact of stigma after controlling for other relevant factors.

Results: The alpha co-efficients for each scale were 0.737, 0.705 and 0.729 for tribal stigma, social stigma and internal stigma, respectively. Injection drug users were much less likely to report having had a pap smear (60% versus 83%; $p<0.05$). Lower internal stigma score was only marginally associated with reporting an STI test or treatment in the past year [Median standardized score(IQR) for those reporting and not reporting an STI test were 0.79(0.30, 1.59) and 1.35 (0.67, 1.93), respectively]. None of the other stigma scales were associated with either of the sexual health seeking outcomes. However, in the model for STI testing or treatment adjusting for ethnicity, current sex work and perceived STI symptoms in the past year, higher scores on the internal stigma scale were associated in a negative direction with reporting of STI testing and/or treatment in the past year (AOR: 0.43; 95% CI: 0.20- 0.91).

Discussion: Although there are several places for women in this neighborhood to receive sexual health care, reflected in the comparatively high numbers of women who had received at least one pap smear in the past year (75%), there remained an independent association between injection drug use and not having had a pap smear. STI-related stigma in general did not appear to be a barrier for accessing sexual health services; however, higher levels of internal stigma were associated with not having been tested or treated for an STI in the past year. While sexual stigma is a deeply rooted social construct, paying attention to how prevention messages and STI information are delivered could help reduce the stigma attached to STIs.

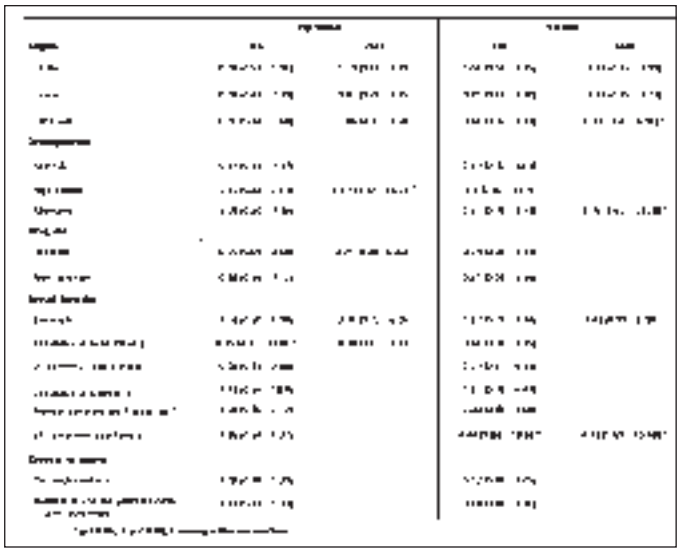

Figure 1: Odds ratios for accessing sexual health care

P-421 HISTORY OF SEXUAL ACTIVITY AMONG HIGH SCHOOL TEENS: NOT NECESSARILY A DETERRENT TO ABSTINENCE MESSAGES

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Objectives: Steadily increasing rates of teen STI and unintended pregnancy provide substantial rationale for abstinence-only sex education. Medically accurate programs promise 100% avoidance of the risks of sexual activity. However, abstinence-based sex education among older teens is challenging. Older teens are exposed to influences for a longer time, many have become or are becoming sexually mature, and as many as two-thirds are sexually active by the 12th grade. Consequently sexual activity may obstruct abstinence commitment: older teens may resist abstinence messages and ignore the potential adverse consequences of sexual activity. In evaluating our 2004-2005 University of Texas Health Science Center Sex Education Project (UTHSCSA SEP) in San Antonio schools, we found a modest increase in abstinence commitment among high school teens. Here we explore the influence of sexual activity on program impact this result.

Methods: During the study, we compared Pre- Post-test changes in abstinence commitment and a number of mediating attitudes and beliefs. Additionally, at each time point we questioned participants about type and quality of relationships with parents and others, participation in school and other activities and use of tobacco, alcohol, and illicit drugs. To evaluate the impact of sexual activity on abstinence commitment, we stratified the sample (1,640 predominantly Mexican-American teens [~ 71%] aged 16 to 19 years [grades 9-12]) by history of sexual activity. We compared Pre- Post-test changes in abstinence commitment between these strata using the Mantel-Haenszel Common Odds Ratio and the Breslow-Day Homogeneity of Odds Ratio tests, controlling for age, gender, ethnicity, and typical grades. We then selected teens reporting a history of sexual activity, and constructed a multivariate logistic regression-based model to evaluate factors related to abstinence commitment.

Results: Only 24% of sexually active teens (51.4% of the total) committed to abstinence at Post-test compared to 66.8% of non-sexually active teens (48.6%). However, sexually active teens were significantly more likely to increase abstinence commitment from Pretest to Post-Test (16.8 % versus 28.0%; ' % 66.7; M-H compared to non-sexually active teens, p<.01, AOR=1.6, p<.01). Abstinence commitment among sexually active teens was described in a multivariate model of four factors: physician influence (AOR=2.25, p< .01), poor parental relationships (AOR=1.97, p< .05), being hit or slapped (AOR=1.88, p< .05), and female gender (AOR=2.04, p< .05).

Conclusions: Clearly, a history of prior sexual activity is not necessarily a deterrent to abstinence messages. To the contrary, sexually active teens may be experiencing many of the difficulties and negative sequelae of sex and may find embrace the prospect of eliminating these consequences from their lives. Sexually active female teens are more likely than sexually active male teens to adopt abstinence commitment. E-Mail: Holden@uthscsa.edu

STRATIFIED COMPARISON OF PRETEST - POST TEST ABSTINENCE COMMITMENT BETWEEN NON-SEXUALLY ACTIVE AND SEXUALLY ACTIVE HIGH SCHOOL STUDENTS

NOT SEXUALLY ACTIVE

	Pre-Test	Post-Test	n	AOR, 95% CI	P
Commitment	55.0	[illegible]	64	1.2 (0.9 – 1.8)	[illegible]

to

SEXUALLY ACTIVE

	Pre-Test	Post-Test	n	AOR, 95% CI	P
Abstinence	15.8	28.0	88.7	1.8 (1.0 – 2.5)	< .01

Mantel-Haenszel Common Odds Ratio (95% CI) [illegible]
M-H Conditional Independence Chi = 15.0 P < .01
Breslow-Day Homogeneity of Odds Ratio Chi = 5.2 P < .03

Multiple Logistic Regression of Factors Associated with Abstinence Commitment among Sexually Active Teens

Variable	Adjusted Odds Ratio (95% CI)	Sig. P
Physician influence	2.25 (1.32 – 5.47)	< .01
Poor parental relationships	1.97 (1.22 – 4.68)	< .05
Experienced being hit or slapped	1.88 (1.23 – 4.27)	< .05
Female gender	2.04 (1.14 – 6.01)	< .05

P-422 ACCEPTABILITY OF HIV RAPID TESTING IN COMMERCIAL SEX VENUES IN LIMA, PERU: A HYBRID SURVEY AND QUALITATIVE ASSESSMENT

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Objective: To ascertain correlates of screening uptake using HIV rapid testing technology offered to both female sex workers (FSW) and their male clients in sex work venues in Lima, Peru. To describe factors related to HIV testing acceptability in this setting.

Methods: Between November 2005 and April 2006 we offered voluntary community-based HIV counseling and testing in sex work venues (CBVCT) using Determine™ finger-stick technology. Results and counseling were offered the morning following screening either face-to-face at a clinic site or by telephone. Attitudes towards testing were assessed in testers using a questionnaire. The qualitative study involved focus groups with FSW and in-depth interviews with both FSW and male clients.

Results: Of 403 FSW approached, 346 (86%) chose to undergo screening. Of 665 male clients, 299 (45%) chose to undergo testing. The participation rate for clients improved over the time the study was implemented. In both FSW and men, 55% of screened individuals obtained their test results. Screened men tended to be younger than those who refused testing (52% vs. 36% in 18-36 age group; p<0.001); the pattern was similar for FSW (46% of screened vs. 15% of refusers in 18-25 age group; p<0.001). Screened men were more likely to have never been tested (69%) or to have tested over a year ago (22%) compared to those who refused testing (60% and 4% respectively; p<0.001); we did not see comparable differences in FSW. The primary reasons men refused to be tested included lack of time (39%), having tested recently (15%) and disinterest in HIV status (9%). For women the reasons included having tested recently (30%), not having time (20%), distrust of the test quality (13%) and concerns over breach of confidentiality (9%). Several domains related to HIV rapid testing in sex work settings were documented by the qualitative study and many viewpoints were shared by FSW and clients. CBVCT accessibility, the potential to quickly 'alleviate worry' about possible HIV infection, and the quality of counseling services were all viewed as appealing features. The role of FSW peer outreach workers was seen as an important motivation for testing for both FSW and clients. However, FSW commonly equated the rapidity of testing with unreliability of results since the gravity of HIV is believed to require laboratory-based testing where the sample is 'studied carefully'. While clients appeared somewhat more willing to accept the reliability of rapid testing technology, many (both men and FSW) felt it would be impossible to preserve confidentiality when giving a positive test result in a sex venue. Telephone counseling was seen as more anonymous but less amenable to preserving privacy than face-to-face counseling.

Conclusion: This pilot study demonstrated the feasibility of offering HIV rapid testing in outreach settings and highlighted potential barriers that should be addressed in future programs directed to similar populations. There is a need to evaluate the impact of this group-level intervention on same-day condom use and other HIV prevention strategies as well as on subsequent STI care-seeking behavior.

P-423 YOUNG WOMEN AND SEXUALLY TRANSMITTED INFECTIONS: LIMITS TO THE NORMALISATION OF CONDOM USE

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Objectives: Encouraging condom use among young women is a major focus of sexually transmitted infection (STI) prevention, but the degree to which they see themselves as being at risk limits their use of the method. Here, we examine the extent to which condom use has become normalised among young women, and the role of STIs in their condom use decisions.
Methods: Data were obtained via in-depth interviews with 20 year old women from eastern Scotland (N=20), as part of a qualitative study. Purposive sampling, based on sexual experience, area of residence, father's social class, and educational attainment, was used to recruit a range of young women from different backgrounds. Interviews were transcribed verbatim and analysed using framework analysis.
Results: All of the young women had used (male) condoms but only three reported consistent use. The rest had changed to other methods, most often the contraceptive pill, though typically returned to occasional condom use. Condoms were the most easily accessible method and there were strong social norms of use. Nearly all used condoms with partners regarded as 'casual', and many thought that not to do so would be irresponsible. As a result, most (16) had accessed and carried condoms themselves, which they did without fear for their sexual reputations; producing the condom was more powerful than simply asking a partner if they had one. Although the STI prevention provided by condoms was important, this was additional, and secondary, to pregnancy prevention. The influence of STI fears lessened once the young women were in relationships with boyfriends (defined as partnerships expected to develop further and being about more than just sex) when they trusted that they were no longer at risk. Further, perceived susceptibility to STIs was limited and did not always correspond with actual risk, and while nine had been tested for STIs, only one did so purposively before stopping condom use with her boyfriend. Nevertheless, being in a relationship was rarely enough in itself to lead to discontinuation of condom use. This generally also required either the experience of failure or strong personal dislike of the method. Strikingly, 14 of the young women talked about their dislike of condoms, which centered on the interruption, inconvenience and reduced enjoyment their use involved.
Conclusions: Growing up since the advent of HIV/AIDS has heightened young women's awareness of STIs, and led to the normalisation of condom use. However, normalisation is limited by (mis)perceived susceptibility, the continued priority of pregnancy prevention, and willingness to discontinue condom use in relationships with boyfriends. Negative experiences of condom use lead to discontinuation, but it is being in a relationship with a boyfriend that allows this to take place. The promotion of condoms for STI prevention alone fails to consider the wider influences (of pregnancy, partner and method) on young women's use of the method, and the role of their negative experiences has yet to be addressed. Interventions to counter this and the limits of the normalisation of condom use should to be included in STI prevention efforts.

P-424 SHIFT-ING RISK: PILOTING A RANDOMISED CONTROLLED TRIAL OF AN INTERNET DELIVERED BEHAVIOURAL INTERVENTION

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Objectives: Individual-based counselling has been effective in reducing the risk of STI infection in some studies. However, there are major challenges in delivering such counselling to the large numbers of people who are at risk. The SHIFT (Sexual Health Internet Facilitated Trial) project is developing a novel computer-aided behavioural intervention targeting people recently diagnosed with a sexually transmitted infection, and piloting the intervention through a small randomised controlled trial (RCT).
Methods: Setting: Three genitourinary medicine clinics in England (London, Brighton and Sheffield). A preliminary survey was carried out of approximately 200 consecutive clinic attendees in each clinic, to identify socio-demographics, internet access and likely acceptability of the intervention amongst the target group. Intervention: We developed and piloted the internet-delivered intervention building on previous studies of behaviour change programmes and interventions used in routine clinical practice. The intervention includes cognitive behaviour therapy and motivational interviewing techniques using models of risk and behaviour change.
Trial design: Patients with a current or recent sexually transmitted infection (diagnosed within the previous three months) are informed and consented. Baseline characteristics are obtained using a computerised self-assessment instrument (CASI). Participants are randomised (using block randomisation in pre-assigned envelopes) to either intervention (given a username and password for internet site) or treatment as usual. After three months participants are asked to complete a further CASI, and to provide samples for STI testing.
Results: Preliminary survey: 705 patients completed a short questionnaire. Samples were representative of clinic populations in terms of gender, age, ethnicity and sexual orientation. Over half (52%) used the internet daily, 78% using it weekly or more; 13% never used the internet. The majority had private internet access, and of those over 80% had broadband connection. Of those with private access, over 70% said they were likely or very likely to use a website to find help to avoid getting an STI in the future.
Piloting: We identified the key elements for design and content including emotionally relevant visual stimuli including pictures, video and animations, interactive modules which responded to patient input, materials aimed at specific populations, and the ability for the user to download outputs from interactive modules.
Trial: Recruitment is ongoing; baseline data will be available on all participants, with outcome data for one third. The key results will be presented as (a) compliance with the intervention, shown by site usage and statistics on particular modules, pages and interactive elements; (b) acceptability of the intervention, obtained through user comments on the website and outcome CASI; (c) three month outcomes for: numbers and types of partners, condom use, intention and confidence in relation to negotiation and safer sex, STI incidence.
Conclusions: The majority of patients attending STI clinics are regular users of the internet with high speed, private access, and appeared willing to use a website to assist in STI risk reduction. If the online intervention is acceptable and effective, it may offer a practical supplement to the provision of one-to-one counselling for people at risk of STI.

P-425 DETECTING Y CHROMOSOME IN VAGINAL FLUID AS A BIOMARKER - IMPACT OF THE VAGINAL ENVIRONMENT AND MENSES ON CLEARANCE

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Background: Self reported sexual behaviors are prone to bias. Biomarkers can be use to assess validity of self-reports. In previous work, we developed and characterized polymerase chain reaction detection of Y-chromosome sequences (Yc-PCR)in vaginal fluid as a biomarker for recent sexual activity. The half life of Yc in vaginal fluid is 2.8 days, and Yc is detectable for up to 2 weeks post-coital. In this study, we assess the impact of the vaginal environment, specifically menses, on Yc clearance.
Methods: 45 monogamous women were recruited to participate in a 2-cycle study. For each cycle, they had unprotected vaginal intercourse once after a 14 day abstinence period. Vaginal swabs were obtained, using a standard protocol at the pre-

coital time point, at 24 hours post coital, and then every 48 hours for 14 days. One collection cycle (Cycle A) was initiated 2 days after the last day of the menstrual period. Initiation was defined as the date of unprotected intercourse. Cycle B, was initiated 2 days prior to an anticipated menstrual period, and was designed to assess the impact of menses on the Yc assay. Semiquantitative assessment in nanograms of Yc was determined by Real-time PCR using previously published primers and standard curves. Subjects kept daily manetrual and sexual activity diaries. Lowess curves were constructed to compare Cycle A to Cycle B for individual subjects and aggregate. Data are expressed in semi-log format (log Yc vs time). Population average models were then constructed correcting for intra-person correlations of repeated measurements with general estimating equations.
Results: For Cycle A (non-menses) the Yc-decay slope was -.27 (95% CI:-.22 to -.31) which confirms our previous initial work. For cycle B (menses) the Yc-decay slope was incrementally steeper by .08 (95% CI :0.014 -.018). This translates into reduced clearance of Yc from a half-life of 2.6 days to 1.9 days. Clearance was faster on days when the menstrual period was reported.
Discussion and Conclusion: Using a more advanced real-time PCR method, we confirmed our previous work. However, we found that during menses, Yc clearance (as defined by calculated decay slope) is accelerated by 29%. Sensitivity of Yc as marker of unprotected intercourse is reduced if menses is present, and our previously suggested detectability limit of 7-14 days should be revised. These data also suggest that other alterations of vaginal environment, such as douching, may impact Yc clearance.

P-426 SOCIAL DESIRABILITY: ITS IMPACT ON REPORTED SEXUAL BEHAVIOR AND SEX WORK AMONG FEMALE SEX WORKERS IN PERU

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Background: Individuals tend to avoid negative evaluations and portray a positive view of themselves by providing self reports of behaviors that are socially desirable and refraining from reporting socially undesirable behavior or presenting distorted reports of behavior. Report of sexual behavior may be particularly susceptible to social desirability bias. Such bias may play a more important role in socially compliant societies compared to those that emphasizes individual autonomy.
Objective: We compared self-reported behaviors of female sex (FSW) workers in Peru with high social desirability bias to those of FSW with low social desirability bias on answers of number of sex partners, condom use, alcohol use, and sex work. Methods: The initial stratified random sample consisted of 4156 FSW from 20 cities responded to a standardized questionnaire. The participation rate was 99.9 percent. We used the short version (10-item) Marlowe-Crowne Social Desirability Scale (MCSDS) to measure survey participants' tendency to give socially acceptable responses and created two categories for low (0-5) and high (6-10) desirability bias. High MCSDS scores indicated an increased tendency for social desirability response bias.
Results: FSW with high social desirability scores were younger (25.7 vs. 26.3, $p<0.05$) and reported initiating sex work at a younger age (21.76 vs. 22.26; $p<0.01$) than FSW with low social desirability scores. FSW with high social desirability scores were also more likely to report having had a planned abortion (Chi sq. = 14.62; $p<0.001$); and use alcohol before having sex with a client (Chi sq. = 14.62; $p<0.001$). Condom use with sexual partners, however, was lower among FSW with high social desirability scores (Chi sq. = 8.65; $p<0.05$). Reported number of sexual partners during the past week did not significantly differ between the two groups.
Conclusion: Social desirability bias affects self-reports of sexual behaviors and sex work and should be measured in surveys of FSW. Further research is needed to test the usefulness of the MCSDS within the context of socially compliant populations.

P-427 AIDS PREVENTION AND GENDER INEQUITY IN THE USA

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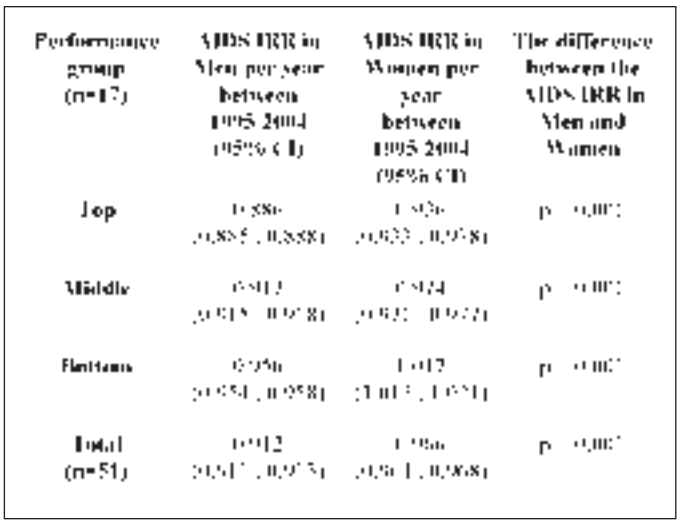
Objective: AIDS prevention occurs at three levels: primarily in preventing HIV infection, secondarily by HIV treatment and thirdly by prophylaxis and treatment of AIDS defining illnesses. The early HIV/AIDS epidemic was concentrated amongst men but now increasing affects women of colour. The study objective was to explore how AIDS prevention differs by gender at the level of the State.
Methods: An ecological analysis was performed comparing the prevention of AIDS in each State between the years 1995-2004. The AIDS case rates per 100,000 were obtained for each State and the District of Columbia (DC) for both men and women from the Center for Disease Control and Prevention (www.cdc.gov/hiv). Changes in AIDS diagnoses over time were calculated using Poisson regression to provide an incidence rate ratio (IRR) for each State. The numbers of AIDS diagnoses were derived from the AIDS case rate and the population estimates for men and women from the 2000 US census (www.census.gov). For descriptive purposes, the 51 regions were ranked by the IRR in men and three groups (n=17) were created. The combined IRR (95% confidence level) has been presented as a measure of prevention performance for each group. The IRR in both sexes and their relationship to the AIDS cases in 1995 were compared by linear regression.
Results: AIDS prevention performance was first compared to the extent of disease in 1995. In Men, no relationship was seen between the IRR and the number of AIDS cases in 1995 ($r= -0.147$, $p=0.303$). In Women however, a higher the number of AIDS cases in 1995 was associated with better prevention outcomes ($r= -0.313$, $p= 0.026$). A correlation exists between State IRR changes in Men and Women ($r=0.735$, $p = 0.000$). In Men, the average fall in AIDS cases was 11.5%, 8.1% and 4.4% per year in the top, middle and bottom performance groups respectively. In Women the percentage fall was lower than Men in both the top and middle performance groups whilst AIDS cases actually rose 1.7% per year over the decade in the bottom performance group. These results are summarized in the table below:
Conclusion: State to State variation exists both within and between the sexes. It is important to understand the causes of these performance disparities in order to maximize the national AIDS prevention efforts. The unmet needs of Women have predominantly occurred in States with few AIDS cases in 1995. These ecological results appear to indicate the need to broaden prevention efforts from 'at risk' groups to additionally focus on sexual health in Women.



P-428 PERSONAL DIGITAL ASSISTANTS: THE USE OF PAPERLESS QUESTIONNAIRES FOR STI/HIV SURVEY

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Objective: To describe the applicability of using personal digital assistants (PDAs), during a community survey evaluating knowledge, attitudes, and sexual risk behavior with the advent of more accessible Antiretroviral treatment (ART) within Kisumu District, Kenya.
Methods: Piloted questionnaires were designed into visual CE (version 9.3) then installed into the PDAs. There were three main questionnaires: For general population, for HIV positive individuals on ART and for HIV positive individuals on conservative care. The questionnaires were in English, Kiswahili and Dholuo the main local dialect. A household listing form, a screening eligibility form and a refusal questionnaire were also included in the PDAs, and for geographic positioning of coordinates, Arc pad GPS software was also programmed. The survey was conducted in 40 clusters in Kisumu Municipality as listed from the Kenya Bureau of Statistics. We systematically sampled every fourth household in each cluster. HIV positive participants were identified from the Family AIDS Care and Education Services (FACES). Trained Interviewers administered the questionnaires.
Results: From July 2006 to February 2007, we conducted 1677 interviews from the general population, 207 among HIV positive participants on ART and 154 HIV positive participants on conservative management. We collected 815 GPS coordinates of the households where interviews were conducted. It was difficult to program the long questionnaire onto the PDAs in three different languages and there was a constant need for technical support and intensive training before use. The PDAs were well accepted by the household in the community and individual participants from the HIV clinic. Interviewers reported ease of carriage and enjoyed the new technology. Occasional PDA hanging and power outages resulted in double entry and incomplete questionnaires.
Conclusion: PDAs are suitable for administering survey questionnaires and performing complex functions like taking GPS coordinated in resource constrained settings. Email address: nsang@kemri-ucsf.org

POSTER SESSION: C26

P-429 HUMAN PAPILLOMAVIRUS (HPV) VACCINE: AWARENESS, INFORMATION NEEDS, AND BARRIERS AMONG HIGH RISK HPV (HR HPV) POSITIVE AND NEGATIVE WOMEN IN OKLAHOMA, FLORIDA, AND CALIFORNIA

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Objectives: To examine awareness of and attitudes toward Human Papillomavirus (HPV) vaccine in women tested for high-risk (HR) HPV prior to the June 2006 FDA approval of an HPV vaccine.
Methods: Women patients at community, university-based and American Indian clinics in Oklahoma (n=270), Florida (n=154) and California (n=137) completed paper or computer surveys (October 2003 to May 2006) addressing their awareness of a vaccine against HPV, willingness to vaccinate self and adolescent daughter, information they would need, barriers they would experience, and demographics.
Results: Mean age was 29.1 (range 15 to 64). Race/ethnicity was mixed: 33% were white, 21% African American, 21% Native American, 12% Asian, and 11% Hispanic. About 63% of participants tested positive for HR-HPV (OK: 58.5%; CA: 41.6%; FL: 89.0%); variation was due to different clinic types and recruitment protocols. Only 10.5% of participants thought it true that 'A vaccine may prevent HPV,' and 9.1% had 'heard of a vaccine for HPV.' About 92% of respondents said if there were an HPV vaccine they would be 'likely' or 'very likely' to get it, and 94.1% would have an adolescent daughter get it. This may be compared with the proportion who thought it 'very important' to be vaccinated for childhood diseases (94%), sexually transmitted diseases (92%), biological hazards (72%), or adult diseases (68%). On a 0 to 3 scale, respondents felt it was important (2.8) to have information about HPV vaccination facts (efficacy, safety, side effects), health care provider recommendations (2.7), cost (2.2), whether others get vaccinated (1.8), and whether others think she should be vaccinated (1.3). Ratings of the importance of barriers to vaccination included doubts about vaccine efficacy (2.4), cost (1.9), inconvenience (1.1), fear of needles or vaccines (0.8), and stigma (0.5). 69% of HRHPV positive women, and 47% of HRHPV negatives, would be willing to pay $25 or more for an HPV vaccine; 21% of HRHPV positives and 12% of HRHPV negatives would be willing to pay $100 or more.
Conclusion: This 2003-2006 study provides a baseline for assessing the effects of subsequent competing media messages regarding public and personal health, sexual behavior, and state control of individual behavior. In this sample from 3 states and 5 racial/ethnic groups, there was little knowledge about HPV vaccination. Over 90% of respondents reported they were likely to get vaccinated and have an adolescent daughter vaccinated. Respondents desired information about vaccine efficacy, safety, side effects, provider endorsement, and costs. They indicated that doubts about vaccine efficacy, and costs, would be the most important barriers to their getting vaccinated. Only a small proportion reported willingness to pay the current price (US $360) for the available HPV vaccine.

P-430 THE CENTER OF EXCELLENCE IN INTERNET AND COMMUNICATIONS TECHNOLOGY FOR STD/HIV PREVENTION

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Objectives: To describe the purpose, development, implementation, evaluation, and dissemination plans of the Center of Excellence in Internet and Communications Technology for STD/HIV Prevention.
Methods: STD/HIV prevention workers routinely encounter obstacles posed by the gap between their clients' easy access to communications technology and the health department's technological barriers. Despite the fact that sexual behaviors are facilitated via electronic communications, some STD/HIV programs still operate primarily by pen and paper. However, innovative programs are being developed using communication technology that may effectively support public health STD/HIV prevention. To facilitate the integration of technological innovations into public health efforts, program directors need evaluation data describing the best practices for web-based and cell-phone-based methods. They also need training, technical and evaluation assistance for online partner notification, outreach, and health communication. Further, many programs would be well-served by web-enhanced clinical services such as online clinic reminders, test slips, and test results. Finally, prevention workers need access to partnerships with web-site owners, cell-phone service providers, and other owners of communications and media outlets.

Results: The Center of Excellence was funded by the Division of STD Prevention of CDC in 2006 to create an infrastructure of key 'thinkers and actors' associated with web-based STD/HIV prevention. Included in the Center of Excellence are academic researchers; health-department-based providers; leading STD-prevention web developers; managers of web sites, including a former manager of a sex-seeking web site; sexual behavior researchers and intervention specialists; health communication specialists; representatives of non-governmental organizations; and a laboratory director. These are leaders and innovators at the forefront of the field, and the assembly of the group represents a cutting-edge effort to bridge multiple disciplines and strategies with technological advances. The first task of the Center is to create an evaluation tool for the assessment of web-based STD/HIV prevention programs. This tool will be applied to the most promising online programs, such as online partner notification, home testing for chlamydial infection, and web sites for clinical services. Questions addressed by the evaluation will include 'reach' of the program; messages conveyed by each web service and the completeness, appropriateness and medical accuracy thereof; adaptability to new communications platforms such as cell phones; evidence that the web-based effort enhances in-person efforts; and expandability of the program to other populations, diseases or areas.

Conclusions: In the long term, the Center of Excellence will produce an STD portal for providers and prevention staff. The portal will allow access to evaluated interventions or programs, usage guides, and evidence for the usefulness of the efforts. In addition, providers will gain access to examples of systems such as online 'standing orders' or clinical decision trees; local STD data views; and channels for partnerships with communications service providers. Thus, the Center of Excellence will become a resource for local STD/HIV prevention programs where resources to develop these tools may be scarce. The Center of Excellence will adapt to new technology, and will ensure that the field of STD Prevention is on the same technological footing as its client base.

P-431 COMMUNITY RESPONSE TOWARDS HIV/AIDS PERSONS AND SOCIAL FOUNDATIONS OF THOUGHT AND ACTION

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Being society of cultural and religious obligations, Pakistan has several imminent challenges that are worrying the sentiments of this nation. Majority of health related issues are not properly dealt and HIV/AIDS problem is one such area where lack of education, adequate financial resources and infrastructure has created a discerning state. Isolation of HIV persons has caused unprecedented problems and complexities in the treatment of these people in this society. The main objective was to understand the prevailing education and awareness level of general population about AIDS and in this context, we aimed to unravel the aspects causing isolation of HIV/AIDS persons in the society and to highlight implications involved in disclosing the HIV status. Primary data was collected from selected groups such as religious leaders, street youth, teachers, low income women etc through brief consultation to detailed interviews and then subjected to analysis to draw conclusions. A large proportion of population was surveyed including some the AIDS affected and those whose status declared positive for HIV. Both the published and unpublished documents were consulted and secondary sources were also used for retrieving the data. Results indicated that acquiring hard stance against very cause of the disease by religious and ethical factors has caused several complexities in HIV/AIDS patients. Their segregation from mainstream society is mainly due to sense of ignominy and jettison from various public factions. Once infection detected, HIV person feel that doors of normal civic life are closed hence put them to further isolation leading to several nutritional deficiency problems. The diet related anomalies have aggravated their vulnerability to physical and immunological disorders to greater extent compared to any other type of patients. There is no separate hospital for HIV/AIDS patients. The main thing that emerges from this survey was that all respondents had heard about HIV/AIDS and in their opinion it is mainly caused due to sexual corruption and declining morality. Mostly believe that AIDS is incurable and is punishment of sins. It seems that following factors are key one in causing isolation of HIV/AIDS persons include: 1) Public perception about the disease, 2) Religious precincts that it is caused by adultery and unethical practices, 3) moral implications of HIV declaration such as uneasy conjugal life and family ties on stake, 4) Social bindings like boycott of friends and closing doors of normal civic life. It was also observed that people have slightly to better educated background strongly supports the need to have effective HIV/AIDS prevention campaign at grassroots level. In particular, graduates of both male and female groups say that there should be a demonstration for condom use while others (mostly illiterate) believe it is against the conservative norms of the society. There needs to open the doors so that communication barriers could be removed and actual record of HIV persons can be maintained. Poverty and illiteracy should be simultaneously addressed while making an effective AIDS control strategy. Active participation of local religious leaders is essential to enhance awareness in this cultural and gender split country.

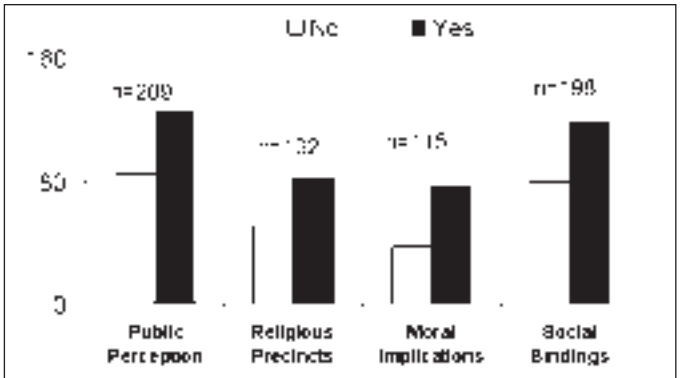

Figure 1:Result of 554 respondents in yes/no to find whether HIV/AIDS persons isolated from the society

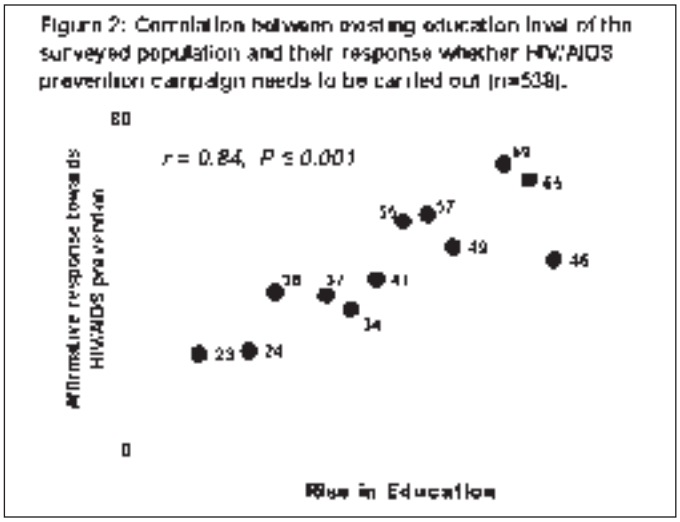

Figure 2: Correlation between existing education level of the surveyed population and their response whether HIV/AIDS prevention campaign needs to be carried out (n=538).

POSTER SESSION: MODELING

P-432 HIGH SCHOOL-BASED SCREENING FOR CHLAMYDIA IN PHILADELPHIA IS COST-EFFECTIVE: INSIGHTS FROM DYNAMIC MODELING

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Objectives: High prevalence of infection with Chlamydia trachomatis in Philadelphia teens led to the introduction of urine-based anonymous screening in the city's public high schools in 2002-03. Prevalence in teens declined after screening was introduced, but increased slightly in 2005-06. Most existing assessments of cost-effectiveness of C. trachomatis screening ignore transmissibility; we sought to assess cost-effectiveness of screening male and female students using a dynamic transmission model.
Methods: A dynamic transmission model was constructed using cross-sectional prevalence data, based on the simplifying assumption that the Philadelphia Chlamydia epidemic was at equilibrium when screening was initiated. The model was calibrated to reproduce the observed changes in prevalence of Chlamydia that followed the introduction of screening. Data on test costs were derived directly from the screening program; estimated costs of complications of infection (e.g., pelvic inflammatory disease, infertility, etc.) were abstracted from the published medical literature. Estimates of the impact of Chlamydia on health-related quality of life were derived from data on chronic sequelae of pelvic inflammatory disease in young women.
Results: A model structure that incorporated a transient immune state reproduced observed trends in Chlamydia (P=0.65 for differences between model outputs and observed data). The model projected declines in incidence and prevalence of infection over time, though maximum decreases were seen in the first 3 years of screening, with less effect subsequently. Screening both males and females was a more effective strategy than screening restricted to females or males, in terms of reduction of incidence of infection, and also in reduction of PID and related sequelae. Screening programs resulted in a net savings in healthcare costs, but increased total societal costs due to fixed costs of program administration. Screening both genders average and marginal cost utility ratios that were more favorable than screening programs confined to either males or females alone. The incremental cost per quality-adjusted life-year (QALY) gained in this model was $2000-$3000 in the base case, and was < $10,000 per QALY under wide-ranging assumptions about disease natural history, treatment effectiveness, test characteristics, and uptake of screening. The cost-effectiveness of Chlamydia screening was maximized when baseline prevalence in females was 6-8%; higher baseline prevalence enhanced the tendency 'rebound' in infection prevalence with screening.
Conclusions: Using a modeling approach that accounts for transmissibility, high-school based screening programs like the one in Philadelphia are extremely cost-effective relative to other available preventive interventions. These programs can be economically attractive notwithstanding the apparent rebound in prevalence that occurs when transient immunity is included in the model. The economic attractiveness of Chlamydia screening is enhanced when screening is extended to both males and females.

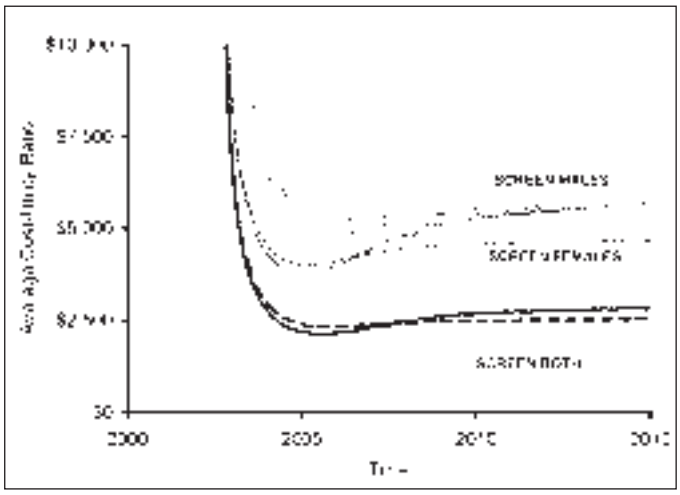

Figure 1: Projected average cost-effectiveness of screening

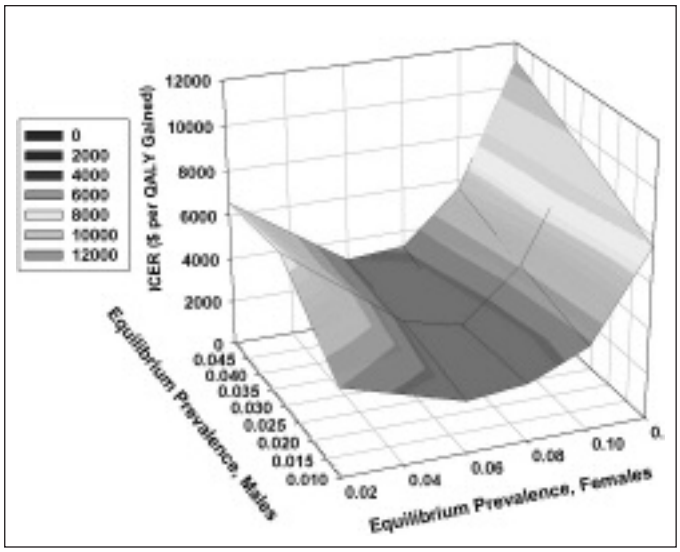

Figure 2: Sensitivity analysis, baseline prevalence.

P-433 MIND THE GAP: MODELING THE ROLE OF TIME BETWEEN SEX WITH TWO CONSECUTIVE PARTNERS ON THE TRANSMISSION DYNAMICS OF GONORRHEA

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Objectives: The time between sexual acts with two consecutive partners (gap length) can be highly variable. We use a deterministic population-based pair model with multiple gap lengths to explore the transmission dynamics of gonorrhea in the United Kingdom.
Methods: Data from the National Survey of Sexual Attitudes and Lifestyles 2000 was used to structure a heterosexual population into 5 different partnership lengths, and three preceding gap lengths (see Table 1). We then built a gonorrhea transmission model which tracked the preceding gap lengths and infection states of individuals and their partnerships.
Results: Assortative mixing of individuals with short gaps between partnerships facilitated persistence of the infection (Figure 1), and prevalence was highest in individuals with short (>1 day to 1 month) and mid-term partnerships (>1 month

to 3 months), and single day partnerships were less efficient in supporting the transmission of gonorrhea than partnerships of longer durations. The model reasonably replicated observed patterns of gonococcal infections in the United Kingdom. Sensitivity analysis showed that the prevalence of infection was insensitive to reductions in the time from infection to treatment, as well as to condom use in the shortest and the longest partnerships. A high level of condom use in the critical partnership lengths (short term partnerships of >1 day to 1 month, and mid-term partnerships of >1 month to 3 months) was needed to eliminate transmission. Model results were highly sensitive to assumptions regarding the proportion and turnover of individuals with short gaps.

Conclusions: The pair model suggests that gonorrhea is sustained by the presence of a small group of individuals with short gap lengths and the appropriate partnership lengths; the turnover and size of this group determines whether gonorrhea can persist, and its endemic prevalence.

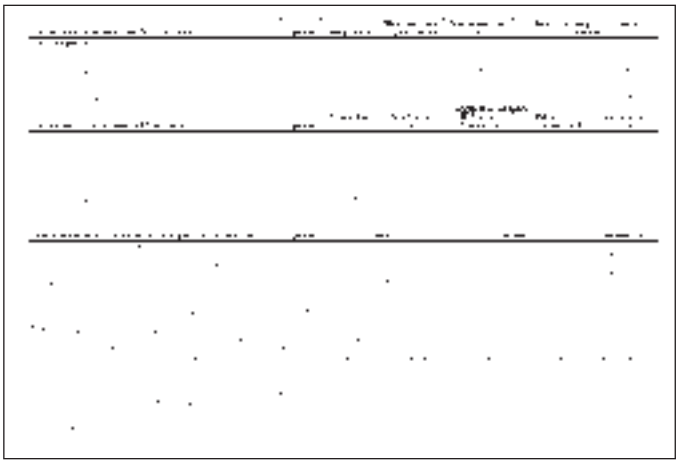

Table 1: Input parameters for model

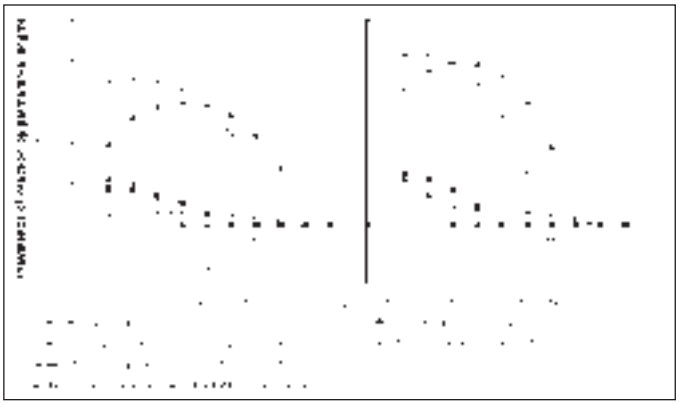

Figure 1: Prevalence for different partnerships

P-434 ASSESSING THE POPULATION-LEVEL IMPACT OF THE ACUTE STAGE OF HIV IN ZIMBABWE THROUGH NETWORK MODELING

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Objectives: Virologic research as well as modeling work suggest that the fraction of new HIV infections attributable to source partners in the acute stage of infection may be high. The population-level attributable risk of acute infections should logically be a function of both virology and relational timing, although the importance that variation in relational timing plays in shaping this risk is not clear. No study documenting the population-level impact of recent infections has been conducted. This paper uses a social network model that incorporates individual-level behavior to estimate the proportion of HIV infections due to source partners in the acute stage, and to explore how this changes under different behavioral scenarios.

Methods: We use dynamic exponential random graph (ERG) modeling along with a stochastic simulation model of HIV transmission dynamics. Behavioral data are taken from a study of sexual behavior in thirty communities across Zimbabwe, collected in 2003. The ERG models which we fit include momentary degree distributions (the number of ongoing sexual relationships at any given time), relational types (marital vs. non-marital), relationship duration, and duration of relational overlap. The model is implemented in a version of statnet ' an R package for network estimation and simulation.

Results: Initial results suggest that ~35% of new HIV infections in this population could be attributable to acute infections, considerably higher than in simulated populations with identical virologic dynamics but less relational concurrency.

Conclusions: The proportion of new HIV infections stemming from partners in the acute stage of HIV infection depends strongly on the behavior of the population and not just on virologic dynamics. The high level of attributable risk for acute infections in this (and perhaps other) African populations has implications for the potential effectiveness of CTL vaccines and other interventions for reducing HIV that are targeted at the acute stage.

P-435 PREVENTING ONWARD TRANSMISSION OF HIV FROM MSM WITH PRIMARY HIV INFECTION THROUGH EARLY DIAGNOSIS, COUNSELING AND TREATMENT: COMPARISON OF UK & USA STUDIES USING A STOCHASTIC, INDIVIDUAL-BASED MODEL

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Objective: Reductions in HIV transmission-risk behavior may be difficult for HIV positive people to sustain, limiting the effectiveness of behavior-change interventions. However, since primary HIV infection (PHI) is characterized by high viral loads and may play a key role in transmission but is also short term, targeting behavioral interventions at this stage of infection may be very effective, particularly for those in highly-interconnected sexual networks. Short course ART (scART) during PHI may reduce transmission further, so long as it does not encourage riskier behavior. In a comparative analysis of data from studies of men who have sex with men (MSM) in the UK and USA we examine the potential impact on HIV transmission of early diagnosis and scART.

Methods: In the UK study, 98 MSM in London infected within the previous 6 months (median period 11 weeks) were interviewed about their sexual behavior in the 3 month periods before and after HIV diagnosis. In the USA study, 113 MSM in Los Angeles and San Diego infected within the previous 12 months (median period 10 weeks) were interviewed about their sexual behavior in the 3 month periods before and after an enrolment interview (conducted a median of 4 weeks after HIV diagnosis). In both studies, samples were obtained at the time of interview for plasma viral load measurement. Some participants chose receive scART. We developed a stochastic, individual-based model to calculate the number of transmission events that would have occurred from this group with and without (i) their reported behavior change post diagnosis, and (ii) their change in viral load due to treatment, where applicable. Sensitivity to parameter estimates ' including transmission probabilities ' was investigated.

Results: Most recently-diagnosed MSM with PHI, including those who received scART, significantly reduced their risk of transmitting HIV through reducing their number of casual partners and adopting safer sexual practices (e.g., increased condom use, reduced anal intercourse, choosing partners known to be HIV-positive).

In the UK study, reductions in HIV transmission risk behavior alone reduced estimated secondary transmission during PHI by 45% (95%CI:27-62%), and in combination with viral load reductions produced a 64% (95%CI:46-77%) reduction. In the USA study, estimated secondary transmission during PHI was reduced by 56% (95%CI:38-69%). Hypothetical earlier diagnosis further reduced transmission.
Conclusions: Recently-diagnosed individuals may be highly receptive to behavior change counseling. The high infectivity and short duration of PHI mean that even short-term behavior change can significantly reduce transmission, and providing scART during PHI can reduce transmission further. The sooner PHI is diagnosed ' and the greater the proportion of HIV infections that are identified in this primary phase ' the greater the potential reduction in secondary transmission. Strategies for HIV prevention in MSM should include effective rapid detection of PHI through increasing awareness of seroconversion-illness symptoms to encourage care-seeking, frequent testing of high risk individuals using appropriate methods such as nucleic acid testing of pooled EIA negative samples within public HIV testing laboratories, and effective contact tracing. (p.white@imperial.ac.uk)

P-436 INCREASES IN PRIMARY AND SECONDARY (P&S) SYPHILIS IN MSM: THE IMPACT OF INCREASED NUMBERS OF MSM WITH HIV DUE TO DECREASED AIDS MORTALITY

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CDC, ATLANTA, United States of America

Objectives: Decreases in risk behavior in response to AIDS have been documented and may have contributed to the decline in primary and secondary (P&S) syphilis rates in the US in the 1990s. Disproportionate AIDS mortality in persons at risk for syphilis may have contributed to the decline as well. If AIDS mortality can contribute to reduced P&S syphilis rates through the loss of persons with high-risk behaviors from the population, then decreases in AIDS mortality could facilitate an increase in P&S syphilis rates. This analysis estimates the number of cases of P&S syphilis in men who have sex with men (MSM) that might be attributable to the increased number of MSM at risk for acquisition of P&S syphilis because of decreasing AIDS mortality.
Methods: We estimated the number of P&S syphilis cases in MSM with HIV in 2002 that would not have occurred if the number of deaths in MSM with AIDS had remained at peak 1994 levels to be N = (M/100,000)_R. M is the number of MSM with HIV in 2002 less than 54 years of age who would not have been alive at the start of 2002 if AIDS mortality in MSM had remained at 1994 levels. R is the estimated rate of P&S syphilis per 100,000 MSM with HIV in 2002. M was calculated as the difference between the number of deaths that would have occurred in MSM from 1994-2001 if AIDS mortality had remained at 1994 levels and the actual number of AIDS deaths in MSM, adjusted for age and the probability of death to causes other than HIV. R was obtained from a published study which estimated the rate of P&S syphilis in MSM with HIV to be 336 per 100,000 in 2002.
Results: We estimate there would have been 233,900 deaths in MSM with AIDS from 1994-2001 had AIDS mortality not declined. Actual deaths were 117,400. Adjusted for age and mortality due to other causes, we estimate M to be 84,200. Therefore, in 2002, there were an estimated 283 P&S syphilis cases in MSM with HIV as a result of decreasing AIDS mortality. When varying R between 115 and 751, the estimated number of P&S syphilis cases attributable to decreased AIDS mortality ranged from 97 to 632.
Conclusions: An estimated 97 to 632 P&S syphilis cases in MSM in 2002 occurred in MSM with HIV who would not have been alive in 2002 had the number of deaths in MSM with AIDS not declined from 1994 levels. These 97 to 632 P&S syphilis cases make up about 3% to 19% of the estimated cases of P&S syphilis in MSM in 2002, based on a previous study of P&S syphilis in MSM. Our analysis considered only the acquisition of syphilis by MSM with HIV, and not the transmission of syphilis after acquisition. If transmission dynamics were addressed, the estimated impact of the increased number of MSM with HIV on P&S syphilis incidence could be greater.

P-437 WHAT IS THE MOST IMPORTANT DATA TO COLLECT FOR DYNAMICAL MODELS?

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[3]Centre hospitalier affilie universitaire, QUEBEC, Canada

Objectives: Mathematical modelling for the transmission of sexually transmitted infections (STIs) in a population is useful to identify the most effective interventions, or to evaluate how effective existing interventions have been. However, these models depend on parameters, such as the average duration of infectiousness of the STI or the number of sexual contacts of individuals per unit time, which have inherent uncertainty associated with them. Uncertainty around model parameters (i.e. reduce parameter space) can be reduced by fitting the model to epidemiological data such as prevalence and incidence. However, there is little guidance as to how best to collect this data to minimise uncertainty around model parameters. Is it more informative to have data from one large survey of size N, or two smaller surveys of size N/2 at different times, and at which stages of the epidemic should these surveys be carried out? We investigated the connection between epidemiological data quality and the accuracy and precision of the resulting parameter estimation.
Methods: We developed a deterministic compartmental model of Neisseria gonorrhoea (Ng) transmission in a heterosexual population. 50000 combinations of parameter values were sampled from uniform distribution (prior) centred around the 'real' value using Latin hyper-cube sampling. The plausible parameter combinations were identified using a simple target-fitting scheme identifying model predictions that fitted within the confidence interval CI (assuming a given sample size) of a given Ng prevalence data set. The data set, which were generated with the stochastic version of the Ng model using known ('real') parameter values, consisted of one, two or three overall male and female Ng point prevalences at different stages of the epidemic (early, mid and/or mature phases). Different scenarios explored included varying prevalence fitted, number of data point available and the number of unknown parameters.
Preliminary Results: In all scenarios investigated, with up to 8 estimated parameters, the simple scheme identified around 1% good fits. However, when the precision of prevalence data was poor (wide CI), the average or median from the plausible combinations of parameters tended to underestimate or overestimate the 'real' parameter values by around 10%. As expected, the precision increased considerably when the sample size increased (N>1000). For a survey size of size 3000 and prevalence of 0.4, the parameter estimates with smallest range were surprisingly obtained by a single survey in the mature stage of the epidemic.
Conclusions: Results suggest that having more data points is not always beneficial. If resources are very limited, it may be preferable to conduct a single survey with the largest sample size possible to minimise uncertainty around prevalence estimates. The study was carried out under Avahan, the India AIDS Initiative. The work will be extended to identify the most useful source of behavioural and epidemiological data necessary to minimise the uncertainty in model prediction of epidemiological trends and of the impact of STI and HIV intervention using more complex STI and HIV prevention interventions models.

POSTER SESSION: MULTI-LEVEL DETERMINANTS OF STD / HIV TRANSMISSION

P-438 SIGNIFICANT PREDICTORS OF PARTNER NOTIFICATION OF SEXUALLY TRANSMITTED INFECTION EXPOSURE: THE KEY IS RELATIONSHIP COMMITMENT

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[2]NIAID NIH, BETHESDA, MD, United States of America

Objectives: To determine factors significantly and independently associated with partner notification (PN) of sexually transmitted infection (STI) exposure among low-income Mexican-American (MA) and African-American (AA) women and their male sexual partners.
Methods: This study is a cross-sectional analysis of 775 low-income MA and AA women with a non-viral STI, enrolled in a randomized controlled trial (RCT) of behavioral intervention to prevent recurrent STIs (Project SAFE 2). The primary outcome, PN, is notification of or intent to notify male sexual partner(s) of STI exposure. A comprehensive intake interview was used to obtain socio-demographic, psychosocial, communication and relationship variables for the patients and each male sexual partner. Chi-square analysis followed by multivariate logistic regression analysis was performed to determine characteristics independently associated with PN.
Results: The 775 women identified 1122 male sexual partners. Among women with one partner, 87.9% reported PN. Among women with two partners, 41.4% reported PN for all partners, 45.2% reported PN for some partners, and 13.4% reported PN for no partners. Among women with three or more partners, 25.0% reported PN for all partners, 57.1% reported PN for some partners, and 17.9% reported PN for no partners. Logistic regression yielded five variables which independently predicted partners women had notified or planned to notify: having a 'steady' relationship (OR 5.25 CI 2.82, 4.91), only one male partner (OR 2.10 CI 1.71, 2.56), recent intercourse (OR 1.37, CI 1.21, 1.54), future sexual activity anticipated (OR 1.48 CI 1.04, 2.10), and/or desire for pregnancy with that partner (OR 1.68 CI 1.10, 2.58). This model correctly predicted PN status for 73.5% of partners overall; the model correctly classified 73.1% of partners notified and 74.3% of men not notified. Individual patient variables including: ethnicity, age, education, referral clinic, pregnancy status, physical or sexual abuse, illegal drug use (excluding marijuana use), financial dependence, and index genital infection were not significantly associated with PN. Multiple index infections and living with a partner were significantly associated with PN, but did not remain independent in the final logistic regression. Individual partner variables including: ethnicity, educational attainment, and age difference between the patient and partner were not significantly associated with PN. Answers to specific relationship and communication variables, which reflected trust, closeness, and respect, while significant, did not remain independently associated with PN in the final logistic regression model, because these individual questions were subsumed by the 5 variables which more broadly defined a committed relationship.
Conclusions: The woman's perception that her relationship with individual partner(s) was committed, rather than unique patient or partner characteristics, was most predictive of PN. Even variables that were initially predictive, but did not remain independent in the final logistic regression, speak to relationship quality. This large study yielded 5 variables upon which a clinician can focus to determine an effective PN strategy for low-income MA and AA women with a non-viral STI.

P-439 COMMUNITY DESTABILIZATION, STRUCTURAL INTERVENTION, AND STDS: FROM POLELA TO NEW ORLEANS

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Objectives: Since Hurricane Katrina, the Latino population of New Orleans has dramatically increased from an estimated 3% of the population pre-storm to almost 10% post-Katrina. This growth is largely a result of the estimated 10,000-50,000 migrant male workers who arrived for reconstruction jobs, but has seemingly expanded to include their families and others. The purpose of this study was to 1) assess STD care access for Latinos in New Orleans following Hurricane Katrina, in the context of culture-change and community destabilization and 2) to develop STD program recommendations for structural intervention to improve STD prevention services.
Methods: An ethnographic assessment of the STD health system was conducted in New Orleans, Louisiana. Semi-structured and unstructured interviews were conducted with staff of state and local public health departments, and community and faith based organizations that provide services to the Latino population. Six interviewers conducted interviews with more than 40 participants in February 2007. Data were analyzed for recurrent themes and key topics of interest (e.g., barriers to STD health care access, awareness of STD care services). Recommendations were developed for rapid follow-up based on initial discovery of emergent themes and topics of interest.
Results: Compelling early findings include:1) uncertainty on a policy for treating undocumented workers, 2) lack of awareness of public health STD clinical services, 3) language barriers, 4) a deficit in links between STD services and other health care within the public health system, 5) a deficit of linkages between public health services and community organizations, 6) a sustained environment of destabilization with widespread disruption of services following hurricane Katrina and a change in clinic client demographics (influx of latino and spanish-only speakers, and 7) increased stress on health care providers and others in the community needing to rebuilding homes and lives after the hurricane. Recommendations for structural interventions (e.g. organizational-level liaisons, policy reviews) will be discussed.
Conclusions: Community destabilization and culture-change in New Orleans have presented challenges to STD prevention services there. Benefits and challenges to implementing and sustaining structural intervention to improve STD services will be presented in light of historical evidence. For example, structural interventions, as early as the 1930s, have improved STD prevention services (e.g., Rapid Treatment Centers as part of the Syphilis Control Program in the US, and development of the Polela Community Health Centers in rural South Africa). Particularly in the latter case, syphilis resulted from community destabilization in the indigenous people working in gold mines. Such structural interventions have been shown to be effective in improving STD prevention as long as they can be sustained.

P-440 PERCEPTIONS OF SEXUAL PARTNER SAFETY

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Objectives: Many people continue to engage in high-risk sexual behaviours because they assume their sexual partners are 'safe', or uninfected with an STI/HIV, and their motivation to engage in safer sexual behaviour is lowered. There is some evidence suggesting these assumptions are not based on definitive evidence (STI testing), but on less reliable factors such as partner attributes and relationship characteristics (we term these 'partner safety beliefs'). The objective of this research was to determine whether beliefs related to partner attributes and relationship characteristics were used to evaluate the STI/HIV safety of a sexual partner, and whether these beliefs influenced perceived personal STI/HIV risk and condom use.

Methods: A cross-sectional correlational survey design was used with a nonprobability sample of 317 participants from an STI clinic. A 16-item Partner Safety Beliefs Scale (PSBS) was developed to determine to what degree participants relied on partner attributes and relationship characteristics to evaluate the STI/HIV safety of their sexual partners. Higher PSBS scores indicated greater reliance on partner attributes and relationship characteristics to assess sexual partner safety. The survey also included questions about personal perceived STI/HIV risk and general condom use.

Results: Exploratory factor analysis with principal component extraction supported a single factor structure of the PSBS scale that explained 46% of the variance. Twelve of the 16 items yielded factor loadings from .69 to .79; four yielded loadings from .51 to .63. The scale showed high internal consistency (Cronbach's alpha = 0.92). Results indicated that a high percentage of participants were relying on relationship characteristics and partner attributes to determine the STI/HIV safety of a sexual partner. The beliefs most frequently endorsed were related to perceptions of familiarity, trust, and the feeling that one 'knew' the partner's sexual history (see Table 1). Multiple linear regression analyses showed that income, number of sexual partners in the last six months, relationship status, and PSBS scores were significant predictors of personal perceived STI/HIV risk. As PSBS scores increased, personal perception of STI/HIV risk decreased. In addition, personal perception of STI/HIV risk was positively correlated with frequency of condom use.

Conclusion: The results of this study indicate that many individuals are relying on partner attributes and relationship characteristics to evaluate the STI/HIV status of a sexual partner, and that this reliance is associated with a decreased perception of their own personal STI/HIV risk which, in turn, is associated with a decreased frequency of condom use. A re-education of the public about the dangers of superficial assessment of a sexual partner's safety is required. Prevention campaigns need to acknowledge that people are likely to evaluate sexual partners whom they know and trust as safe. Targeting these assumptions and clarifying faulty beliefs about the ability to select safe partners is needed to promote safer sexual behaviour.

Table 1 STI/HIV Partner Safety Beliefs

STI/HIV Partner Safety Beliefs Statement Items	"Agree" partner considered safe if...
	Frequency (%)
I felt I knew the person	211 (67.4)
The person was part of my circle of close friends	180 (57.5)
I knew the person's friends	91 (29.1)
I knew about the person's lifestyle	213 (68.1)
I felt I could trust them	220 (70.3)
I felt the person was a "good" person	134 (42.8)
The person came from a background similar to mine	98 (31.6)
The person had the same interests and values as me	125 (39.9)

Figure 1: STI/HIV Partner Safety Beliefs

Table 1 continued
STI/HIV Partner Safety Beliefs

STI/HIV Partner Safety Beliefs Statement Items	"Agree" partner considered safe if...
	Frequency (%)
I like or loved the person very much	142 (45.4)
The person was physically attractive	70 (22.4)
The person seemed intelligent/well-educated/responsible	163 (52.1)
The person looked healthy/clean	124 (39.6)
The person seemed like they hadn't slept around a lot	138 (44.1)
I felt I knew the person's sexual history	201 (64.2)
The person said they thought they were "safe"	126 (40.3)
The person was someone I considered myself serious about	153 (48.9)

Figure 2: Safety Beliefs Continued

P-441 EXPLORING THE EFFECTS OF SEASONAL MIGRATION OF HIGH-RISK GROUPS IN RURAL SOUTHWEST INDIA: A MATHEMATICAL MODELLING SIMULATION

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Objectives: Migration of female sex workers (FSWs) and male clients (MCLs) may be important determinants of the HIV epidemic in rural India. We developed transmission dynamics models to explore the impact of seasonal migration of FSWs and MCLs, in migrating and non-migrating groups and the general populations, on 1) HIV prevalence and incidence; 2) fraction of new infections acquired; 3) fraction of new infections attributable to high-risk groups; and 4) the effectiveness of core group interventions.

Methods: Plausible ranges for demographic and behavioural model parameters were based on data from FSW and general population surveys (GPS) in Bagalkot District (2004) and literature reviews. The base-case (B-C) scenario was obtained by fitting the model, in absence of migration, within confidence intervals of observed 2004 HIV prevalence in one Taluka (sub-District area) in Bagalkot District (model=1.2%; data=1.2%, CI=[0.3'1.8]%). As data on migration was limited, different scenarios were explored. We assumed seasonal migration occurred annually for fixed duration (varied: 2 to 8 months [Base-case for migration (B-CM)=4]); among a fraction of the high-risk population (varied: FSWs: 7.5% to 30% [B-CM=15%]; MCLs: 15% to 60% [B-CM: 30%]); and two (varied) HIV prevalence sce-

narios over time in the place of migration (POM): 1) Constant prevalence and 2) increasing prevalence (logistic). Additionally, we assumed that 1) migrating FSWs and MCLs are not replaced while they are in the POM and 2) the desired number of FSWs contacts per MCL remains unchanged by migration.

Results: When set to their B-CM values, the independent impact of each seasonal migration parameter for MCLs was negligible (<0.4% difference in model prevalence compared to B-C), unless the number of FSW contacts per MCL in the POM was 3.0-fold the number in the place of origin, with high HIV prevalence in the POM (2004: 70%; equilibrium: 80%), and size of migrating MCLs increased to 60%. Then, 2004 HIV model prevalence reached 2.2% (B-C=1.2%). For FSW migration, the largest increase in overall model prevalence (2004: 1.2% to 2.2%) was obtained when assuming MCLs' HIV prevalence was constant at 17% in the POM and when the size of the migrating FSW population increased to 30%, with other migration parameters at B-CM values. With a larger but more gradual (logistic) HIV epidemic for MCLs in the POM (2004: 17%; equilibrium=35%), overall model prevalence increased more modestly (2004: 1.2%-1.8%).

Conclusions: Seasonal migration of MCLs had a relatively modest impact, unless MCLs had much higher risk behaviour in the POM. Seasonal migration of FSWs had a greater impact on HIV prevalence (even if FSWs did not increase their risky sexual behaviour in the POM), because the average number of client contacts per FSW decreased proportionately to the number of males migrating and time away. When FSWs migrate, the average number of client contacts per FSW increases proportionately. The relative effectiveness of HIV prevention intervention targeted to migrating FSWs versus MCLs and the contribution of high-risk groups to transmission in presence of migration will be evaluated. More detailed data on seasonal migration in southwest India is needed.

P-442 STI PREVALENCE AND RISK FACTORS OF POST-JAIL RELEASE SUBSTANCE USING MEN

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Objective: The purpose of this study was to examine the risk behaviors and post-incarceration STI prevalence of men newly released from jail with substance use histories.

Method: Men, ages 18 to 60 yrs, who were 45 or fewer days post-release from jail were recruited to participate in an intervention study tailored for the population. All participants had histories of substance use and self-reported HIV negative status. As part of an intervention study, participants were interviewed at baseline and 3 post-intervention time points. Testing for 4 STIs were done at baseline and 2 post-intervention time points. Baseline results are presented.

Results: Participants (N=265) were mostly African-American (93%), never married (65%), unemployed (88%), with at least 12 yrs of education (65%), and a median age of 38 yrs. Median jail stay was 30 days and 71% were on probation/parole. Prior to the last arrest, most (78%) men reported a main partner with half of these men reporting concurrent partners. Half (54%) reported exchanging sex for drugs, money or housing. Although 67% of the men reported practicing 'safe sex', most (77%) did not use condoms during their last sexual encounter. One out of four men (24%) men reported ever being diagnosed with an STI. In the year prior to their last arrest, 7% of the total sample reported having an STI, and 2.6% of the total sample reported a previous diagnosis of hepatitis C or genital herpes. More than half of the men (53%) reported sexual activity in the time since their jail release; one-fifth (22%) of these men reported having had 2 or more partners (range 2-9). Post jail release prevalence of new STIs was an overall 10%. Chlamydia (3.4%) was the most common STI found in the sample, followed by gonorrhea (2.6%), syphilis (2.6%) and HIV (2.2%). Of the approximate 27 men who tested positive for an STI, 3 (11%) reported an STI in the previous year.

Conclusions: Prevention programs for jail incarcerated men are needed to interrupt the STI transmission cycle that begins prior to incarceration and continues once inmates are released. The findings speak to the need for STI rapid testing screening and treatment at entry and/or prior to release, and policies that facilitate linkages to community resources for post release jail detainees. The findings also highlight the need for innovative health promotion strategies including, health communication, social marketing, and behavioral intervention strategies that address the multiple factors associated with substance use, sexual risk and recidivism.

POSTER SESSION: N. GONORRHOEAE

P-443 RECENT SENSITIVITY PATTERNS OF NEISSERIA GONORRHOEA AMONG MEN WITH DYSURIA AND/OR URETHRAL DISCHARGE ATTENDING FIVE URBAN CLINICS IN LUSAKA, ZAMBIA

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Objectives: The Dermato-venerology Division at the University Teaching Hospital Lusaka, Zambia, carried out a study to determine sensitivity patterns of Neisseria Gonorrhoea in men presenting with dysuria and or urethral discharge.

Method: A cross sectional survey was carried out among five urban clinics in Lusaka. Men with dysuria and or urethral discharge, who had not taken any antimicrobials in the last two weeks were included in the study. Culture of urethral samples on Modified Thayer Martin Media and Gonococcal chocolate agar was done followed by confirmatory tests of positive cultures. The diagnosis of infection with Neisseria Gonorrhoea was confirmed after positive cultures and positive cytochrome oxidase reaction, positive glucose utilization tests and positive monoclonal antibody testing. Sensitivity to antibiotics was determined using the E test.

Results: A total of 468 men were sampled. Majority of the men sampled were in the age group 18-25 (48.1%) and 26-30 (32.7%). Out of 468, only 202 (43.2%) had positive culture for N. Gonorrhea. There was no growth in the remaining 266 (56.8%) of the samples. From the positive cultures (202), gram negative diplococci were demonstrated using gram stain in 201 samples. Glucose utilization tests and antibody testing was positive in these samples. Gonoccocal cultures were positive mainly in samples from men in the age group 26-30 (67.30%) and in the age group 31-35 (25.7%). Cultures were positive in only 1.50% of samples from men in the age group 18-25. Sensitivity patterns of Neisseria Gonorrhoea were found be to as follows: ciprofloxacin 91%; Ceftriaxone 89%; Spectinomycin 39%; Co-trimoxazole 7%; Gentamycin 29%; (see table 1 attached)

Conclusion: 1. Sensitivity of GC to Ceftriaxone has reduced to 89%. According to literature which we reviewed, this is the first time in the world reduction of sensitivity is being reported. 2. Reduction of GC sensitivity to Ciprofloxacin (94%) and Spectinomycin (39%) has greatly affected the Syndromic management Guidelines of STI's especially in pregnant women and neonates. 3. The reduction in sensitivity has a negative impact of HIV control programs in Lusaka.

P-444 OPA-TYPING OF NEISSERIA GONORRHOEAE STRAINS ISOLATED FROM PATIENTS ATTENDING AT STD CLINICS IN CHINA

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Objectives: Gonorrhoeae has been one of the most common sexually transmitted diseases (STDs) in China, a clear understanding of its transmission dynamics is important in formulating prevention and control measures. The aims of the present study is to characterize the genotypic profiles of the N. gonorrhoeae strains isolated from patients in four cities across China between March 2005 and February

2006 and to determine potential sexual links suggested by opa-types found, as well as to evaluate the concordance between epidemiologic data and opa-typing results.

Methods: Opa'typing is a genetic typing method which uses polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) and analyzes large fragments generated by restriction endonuclease digestion of opa genes. The typing method was applied to our study to analyze Neisseria gonorrhoeae strains isolated from patients at four STDs clinics in four cities in China. Opa genes were amplified by a pair of OPA primers. After purification, PCR products was then digested overnight with the restriction enzyme TaqI, the resulting fragments were separated on a 10% polyacrylamide gel with an electrophoresis unit. Images of band patterns were saved and the pattern profiles were analyzed using the GelCompar program. Isolates that gave identical band patterns when digested with Taq_ were subsequently digested overnight with HpaII. Images of band patterns produced by HpaII were also presented using the GelCompar program. Epidemiologic data including sexual contacts was collected as well.

Results: From the four cites, there were 468 patients diagnosed with gonorrhea and, of these, 330 had a positive culture and survived storage (Nanjing, 86; Jinan, 80; Fuzhou, 94; and Nanning, 70). Opa-typing with two restriction enzymes TaqI and HpaII identified 309 opa-types among 330 isolates. 292 unique opa-types were each linked to one isolate, and 17 opa types were found in more than one patient. Among the 292 isolates with unique opa-types, 18 isolates formed 9 similar pairs. Thus, opa-typing identified 17 opa clusters (14 pairs, 2 triplets and one group of 4) and nine similar pairs with two restriction enzymes(Fig.1.). All the identified opa clusters and seven of the nine similar pairs comprised of isolates obtained from the same city. Patients' epidemiologic data revealed 9 (8 pairs and 1 triplet) sexual links among 19 patients from their known sexual contacts. 8 sexual links were confirmed with opa-typing with eight opa clusters, and the remaining sexual link was confirmed by one similar pair.

Conclusions: opa-typing for 330 isolates of N. gonorrhoeae identified more sexual links than what shown by epidemiologic data. Our results may demonstrate that each city has its own prevalent opa type and may be relatively independent from each other. However, no large opa cluster could be found in each city or between cities. The ability of opa-typing to identify sexual links not revealed by epidemiologic data can assist us in understanding transmission dynamics of gonorrhoeae, guiding prevention, control and tracking measures for gonorrhoeael transmission.

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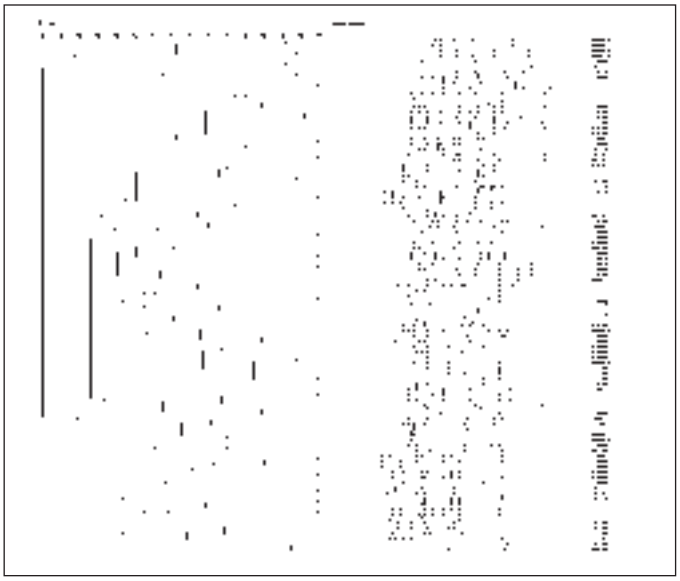

Figure 1: Master dendrogram of relationships between 44 TaqI

P-445 STI SCREENING OF SOCIAL AND SEXUAL CONTACT NETWORKS OF GONORRHEA-INFECTED URBAN ADULTS: WHAT IS THE YIELD?

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Objectives: To determine if screening the reported social and sexual network contacts of gonorrhea-infected patients yields more sexually transmitted infections (STIs) than screening sexual network contacts alone.

Methods: Between September 2001 and December 2004, patients diagnosed with gonorrhea who presented to public health clinics were recruited as part of a social and sexual network study in an urban setting with a high prevalence of STIs. Trained interviewers administered to participants a survey soliciting information on demographics, STI/HIV risk behaviors and social and sexual contacts. Biologic specimens were collected for gonorrhea, HIV, gonorrhea and chlamydia testing. After the survey, participants were asked to refer their social and sexual contacts to the study for enrollment and participation. Contacts of index participants (first tier) and their contacts (second tier) were also asked to refer social and sexual contacts. Using Stata, directed dyads between index participants and a contact were created and coded as either sexual or social as reported by the index participant. Any index participant that did not have a contact enrolled in the study was dropped. Using Pajek, contacts of the index participant were used to create two types of networks: 1) social and sexual network components of indexes; and 2) sexual network components of indexes. For the sexual network components, any component that did not contain an index participant was deleted. The number of newly identified STI-infected contacts for each type of networks was summed. STI infections in the contacts included gonorrhea, HIV, gonorrhea and chlamydia.

Results: Fifteen percent (25/164) of gonorrhea-infected index participants had at least one contact enrolled in the study. The gonorrhea-infected indexes resulted in the subsequent enrollment of 47 social and sexual contacts and 25 network components. The network components had an average size of 2.9 individuals and the largest component included 7 individuals. Together the contacts yielded 7 STI infections including 6 cases of gonorrhea. Ten percent (16/164) of gonorrhea-infected index participants resulted in the enrollment of at least one sexual contact. The gonorrhea-infected indexes resulted in the subsequent enrollment of 21 sexual contacts and 16 network components. The network components had an average size of 2.3 individuals and the largest component included 3 individuals. The sexual contacts yielded 2 cases of gonorrhea and no additional cases of STIs.

Conclusions: The social and sexual contacts (versus the sexual contacts) of gonorrhea-infected patients resulted in more and on average larger network components and yielded almost four times more infected contacts. The data suggests that traditional methods of disease contact tracing may be enhanced and yield greater numbers of undiagnosed STIs by including the elicitation of social contacts in addition to sexual contacts.

P-446 CHARACTERIZATION OF MEN WHO HAVE SEX WITH MEN DIAGNOSED WITH GONORRHEA, INCLUDING RISK FACTORS FOR HIV INFECTION

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Objectives: The Centers for Disease Control and Prevention's Sexually Transmitted Disease (STD) Surveillance Network (SSuN), is comprised of STD clinics in Denver, Minneapolis, New York City, Richmond (Virginia), San Francisco, and Seattle. SSuN provides data on patient demographic, behavioral, and clinical characteristics to better understand disease transmission, monitor behavioral trends, and guide programmatic interventions. In the first year of collaboration, SSuN implemented a standard approach to reporting information for all persons with gonorrhea (GC). The objective of this analysis was to characterize men who have sex with men (MSM) diagnosed with GC in SSuN clinics and identify risk factors for HIV infection.
Methods: During April-November 2006, 4298 GC cases were reported from SSuN sites; 3478 (81%) were male. Of 3194 men with an initial infection, 2880 (90%) had sex of sex partner(s) information available; 43% (1246/2880) reported male partners in the 3 months before GC diagnosis. We examined demographics, reported number of partners and drug use (past 3 months), and reported HIV status among MSM. Multivariate analysis of HIV risk factors included methamphetamine use, sentinel site, number of partners, race/ethnicity, and age.
Results: The proportion of MSM among men with GC varied significantly by SSuN site (12% in Richmond to 82% in San Francisco). Race/ethnicity distribution also varied substantially; e.g., Minnesota MSM were predominantly non-Hispanic White (78%), Virginia MSM non-Hispanic Black (86%), and New York City MSM were more evenly distributed among major groups. Eight percent (94/1246) of MSM reported male and female sex partners. Bisexual men were less likely than other MSM to be White (30% vs. 60%), and had similar total numbers of partners as men with only male partners (mean 6, median 3). Of 1126 MSM with drug use data, 132 (12%) reported methamphetamine use. White (69%) and Hispanic MSM (19%), and MSM from West Coast sites [San Francisco (26%); Denver (11%); Seattle (9%)] were more likely than other MSM (e.g., New York City, 2%) to report methamphetamine use. Among methamphetamine users, 33% (48/132) reported using erection enhancing drugs (ED), compared to only 5% of non- methamphetamine users. Methamphetamine users reported more sex partners than non-methamphetamine users (mean 11.4 vs. 5.0, $p<.001$); this difference was more pronounced for methamphetamine-ED users (mean 16.5, median 10). Among GC-positive MSM, 84% reported HIV status; 22% were positive (range 13%-32% across sites). HIV positivity was independently associated with methamphetamine use and older age.
Conclusions: SSuN provides timely case data that are richer than routine surveillance data. Higher numbers of partners among MSM using methamphetamine and methamphetamine-ED, and the association between methamphetamine use and HIV positivity suggest that when treating MSM with STDs, prevention messages should address illicit and prescription drug use. Substantial GC-HIV co-infection (~1/4 of our sample) indicates recent unsafe sex and the need for increased prevention efforts for HIV-positive persons. To characterize all MSM, subsequent analyses will use weighted data; however, variations in race/ethnicity across SSuN sites, and associations of race/ethnicity with bisexuality and methamphetamine use, substantiate the need to consider cultural and locale issues when developing prevention messages.

P-447 LABORATORY DIAGNOSIS OF NEISSERIA GONORRHOEAE IN BELARUS: PRELIMINARY RESULTS OF A NATIONAL SURVEY

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Objectives: Sensitive and specific diagnosis of sexually transmitted infections (STIs), e.g. gonorrhea caused by Neisseria gonorrhoeae, is highly dependent on optimized, standardized and quality assured laboratory diagnostic methods. This is crucial for effective case management of the STI patients. Concerning laboratory diagnostic services for STIs in Belarus, and particularly regarding diagnosis of N. gonorrhoeae, no thorough knowledge has yet been internationally published. The aim of the present paper is to present preliminary results of a survey of laboratory diagnosis of N. gonorrhoeae in Belarus.
Methods: The present study is a part of the ongoing survey concerning all STI diagnostic services in Belarus. All laboratories, confirmed to perform diagnosis of STIs, were included. A questionnaire, comprising 60 questions with up to five subheadings each, was distributed by post, accompanied by an explanatory letter describing the purposes of the study, information needed etc.
Results: The study was initiated in November 2006 and is still in progress. So far, 96% of the laboratories have replied. In total, approximately 300 laboratories are providing diagnosis of N. gonorrhoeae, which corresponds to about 95% of all STI diagnostic laboratories. During the year 2005, these laboratories diagnosed totally 405 700 N. gonorrhoeae samples. The Republic of Belarus is divided into seven administrative regions and 118 districts. Laboratory diagnosis of N. gonorrhoeae is available in 116 (98%) of these districts. Microscopy of stained smears was used at 97%, culture at only 23%, and nucleic acid tests (NATs) at 2% of the laboratories. Of the laboratories using culturing of N. gonorrhoeae, 90% used commercially available media (mostly Complegon, imported from the Russian Federation) and 10% of them were using media prepared their laboratory. Selective media were not utilized at any of the surveyed laboratories. The used NATs were also originating from the Russian Federation.
Conclusions: According to the present preliminary data, the laboratory diagnosis of N. gonorrhoeae in Belarus is highly suboptimal. In most laboratories, only microscopy of stained smears is utilized for diagnostics and, consequently, solely definitive diagnosis of urethral smears from symptomatic males can be provided and no antibiotic susceptibility testing is possible to perform. In addition, the laboratories (only 23%) that performed any culturing of N. gonorrhoeae were only using nonselective culture medium. The NATs used by 2% of the laboratories are still not evaluated regarding performance characteristics (work in progress). In conclusion, the new national guidelines for diagnosis of gonococcal infection (see abstract by M Domeika et al.) will be essential for provision of effective strategies and methodologies for optimization, standardization and quality assurance of the diagnosis of gonorrhea in Belarus. Information: Marius.Domeika@medsci.uu.se

P-448 DISCONTINUATION OF FLUOROQUINOLONES USE IN THE TREATMENT OF NEISSERIA GONORRHOEAE INFECTIONS IN THE UNITED STATES, 2007

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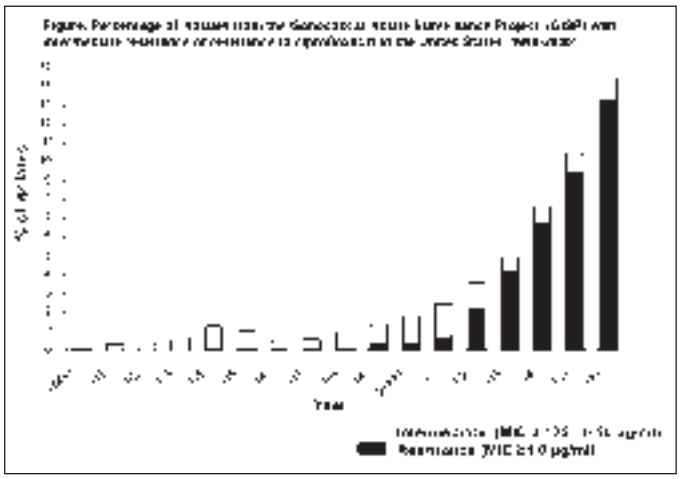
Objectives: The objective is to describe the increasing prevalence of fluoroquinolone-resistant Neisseria gonorrhoeae (QRNG) in the United States provided by the Gonococcal Isolate Surveillance Project (GISP), leading to the discontinuation of fluoroquinolones for the treatment of gonococcal infections.

Methods: Annually, approximately 6,000 urethral gonococcal isolates from men are collected from 26-30 sentinel sexually transmitted disease (STD) clinics throughout the country. Clinical and demographic data, along with a urethral gonococcal isolate, are collected every month from the first 25 men in each clinic. Antimicrobial susceptibility testing on all the gonococcal isolates is performed at 5 regional GISP laboratories. Ciprofloxacin has been included in the panel of antimicrobials since 1990.

Results: Overall, QRNG prevalence was <1% from 1990-2001 in the United States. However, increasing gonococcal resistance to the fluoroquinolones was noted, first in Hawaii, then in California, and other Western states, then among men who have sex with men (MSM). QRNG prevalence increased to 2.2% in 2002, to 4.1% in 2003, to 6.8% in 2004, and to 9.4% in 2005. From preliminary data in January to June 2006, 13.3% of 3,005 isolates collected, were QRNG (Figure). QRNG prevalence was <2% in 2001 among isolates from both MSM and heterosexual men. From 2002-2004, the QRNG prevalence in MSM increased to 7.2% in 2002, doubled to 15% in 2003, and then increased again to 23.8% in 2004. In heterosexual males, QRNG has been increasing more slowly from 0.9% in 2002, to 1.5% in 2003, and then to 2.9% in 2004. In 2005, QRNG was found in 29% of MSM and 3.8% of heterosexual males, and from January to June 2006, QRNG prevalence increased to 38% in MSM and 6.7% in heterosexual men. For isolates from sites outside of California and Hawaii, QRNG prevalence was 24.3% among MSM and 2.7% among heterosexual men in 2005; in 2006, it was 30.7% and 5.1%, respectively. Additionally, several cities outside of California and Hawaii have seen large increases in QRNG prevalence in heterosexual males from 2004 to 2006; for example, in Philadelphia, QRNG prevalence increased from 1.2% in 2004, to 9.9% in 2005, and to 26.6% in 2006, and in Miami prevalence increased from 2.1%, to 4.5%, and to 15.3% in 2004, 2005, and 2006, respectively.

Conclusions: Treatment recommendations have been changed when QRNG prevalence had reached at least 5% in defined groups and locales, while considering other factors such as the prevalence of gonorrhea, the availability of antimicrobial susceptibility data, and the costs of diagnostic and treatment options. Data from GISP for 2005 and preliminary data from 2006 have demonstrated that QRNG has continued to increase among heterosexual men and MSM and now is prevalent in many regions of the country, necessitating a change in the treatment recommendation for gonorrhea. Based on these recent results, CDC is recommending that clinicians discontinue the use of fluoroquinolones for the treatment of Neisseria gonorrhoeae infections in the United States.



P-449 ESCALATION IN THE PREVALENCE OF CIPROFLOXACIN RESISTANT GONORRHOEA IN MEN PRESENTING WITH URETHRITIS TO PUBLIC HEALTH FACILITIES IN TWO SOUTH AFRICAN CITIES

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Objectives: Within South Africa, ciprofloxacin is the first-line agent used to treat presumptive gonococcal infection in index patients, and their sexual partners, presenting with four major STI syndromes: male urethritis syndrome (MUS), scrotal swelling syndrome (SSW), vaginal discharge syndrome (VDS) and lower abdominal pain syndrome (LAP). The objective of this study was to assess the prevalence of ciprofloxacin resistant gonorrhoea in Cape Town and Johannesburg in 2007 and to determine the relative 3 year increases in ciprofloxacin resistance using historical data from 2004.

Methods: Male patients with MUS gave informed consent to participate in anonymous surveys of gonococcal antimicrobial resistance in Salt River Clinic (Cape Town) and Alexandra Health Centre (Johannesburg) during the first 2 months of 2007. Data from a 2004 national survey were used as a baseline to assess the rise in prevalence of ciprofloxacin resistance in both cities. Endourethral specimens were collected from consecutive men attending the primary healthcare facility with urethral discharges. Swabs were streaked directly onto selective New York City medium in the clinic and then placed in a candle jar before same-day transport to the laboratory (Johannesburg), or else placed in a transport medium and later plated out within 12 hours in the laboratory (Cape Town). Minimum inhibitory concentration (MICs) for both ciprofloxacin and ceftriaxone were determined with E-tests (AB Biodisk, Sweden) on all laboratory-identified Neisseria gonorrhoeae isolates. Isolates with a ciprofloxacin MIC of 1mg/L or higher were defined as resistant, those with ciprofloxacin MICs between 0.12 and 0.5mg/L were defined as having intermediate susceptibility, and those with an MIC of 0.06mg/L or lower were defined as susceptible. Isolates with a ceftriaxone MIC of 0.25mg/L or lower were defined as susceptible. Ethical approval was obtained for the study from the Human Research Ethics Committee of the University of the Witwatersrand.

Results: Historical 2004 data reported a prevalence of ciprofloxacin resistance of 7% in Cape Town and 11% in Johannesburg. In 2007, 39 of 141 gonococcal isolates (28%) in Cape Town and 26 of 65 isolates (40%) in Johannesburg were resistant to ciprofloxacin. Isolates with intermediate susceptibility to ciprofloxacin were reported in both cities; 5 of 141 isolates (4%) in Cape Town and 5 of 65 isolates (8%) in Johannesburg. The prevalence of ciprofloxacin fully susceptible isolates was 69% (97 of 141 isolates) in Cape Town and 52% (34 of 65 isolates) in Johannesburg.

Compared to the historical 2004 surveillance data, this represents increases of 300% and 264% in the prevalence of ciprofloxacin resistant gonococci in Cape Town and Johannesburg respectively. All Cape Town and Johannesburg isolates tested in both the historical 2004 dataset and the 2007 study were fully susceptible to ceftriaxone.

Conclusions: This study demonstrates that South Africa is witnessed an alarming rise in the prevalence of ciprofloxacin resistant gonorrhoea among men presenting with urethral discharge in Cape Town and Johannesburg. The available data from South Africa support an urgent need to change national first-line therapy from ciprofloxacin to ceftriaxone for the management of the MUS, SSW, VDS and LAP syndromes.

P-450 INCIDENCE OF AND NEW DETECTION METHOD FOR PHARYNGEAL NEISSERIA GONORRHOEAE INFECTION

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Objectives: To control the dissemination of sexually transmitted diseases, we must be aware of the incidence of not only symptomatic diseases but also asymptomatic ones. In recent years, the incidence of asymptomatic pharyngeal Neisseria gonorrhoeae infection in female patients with genital gonococcal infection has increased and been noted as an infectious source due to a change of sexual behavior. However, only a few attempts have so far been made to determine the incidence of pharyngeal gonococcal infection in male patients with genital gonococcal infection. In addition, the polymerase chain reaction method, a nucleic acid amplification test, often results in false positives by cross reaction with normal flora of the pharyngeal or oral cavity. Therefore, we tried to clarify the incidence of pharyngeal gonococcal infection using various detection methods.

Methods: The subjects were male patient with urethritis. The diagnosis of these patients with urethritis was made by the nucleic acid amplification test, a polymerase chain reaction method using a specimen of first-void urine. Gargled water was used for the specimen to detect pharyngeal N. gonorrhoeae. The patients gargled with 50ml of normal saline within 1 minute. Then the specimen of gargled water was examined by polymerase chain reaction, strand displacement amplification and culture methods. Because polymerase chain reaction could give a false positive result due to detection of N. cinerea or N. subflava, normal flora of the pharyngeal and oral cavities, a positive result for pharyngeal N. gonorrhoeae was defined by the positive result of strand displacement amplification and/or positive culture.

Results: Eleven of 38 patients (28.9%) with gonococcal urethritis were positive for pharyngeal N. gonorrhoeae. Eleven showed positive results by the strand displacement amplification method but only 2 of the 11 had positive cultures. One of the 8 patients with chlamydial urethritis had a positive result for pharyngeal N. gonorrhoeae but none of the 22 patients with non-gonococcal and non-chlamydial urethritis did.

Conclusions: The incidence of pharyngeal gonococcal infection in patients with gonococcal urethritis cannot be ignored. Gargled water and nucleic acid amplification tests other than the polymerase chain reaction method were useful tools for the detection of pharyngeal N. gonorrhoeae. In the future, we should study the clinical relevance of and therapeutic methods for male pharyngeal N. gonorrhoeae infection.

P-451 RESULTS OF SURVEILLANCE OF ANTIMICROBIAL RESISTANCE OF NEISSERIA GONORRHOEAE IN RUSSIAN FEDERATION IN 2006

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Objectives: The present study was designed to ascertain the current status of antimicrobial susceptibility patterns of N. gonorrhoeae as one of the activities of the Russian National Program on Control and Prevention of sexually transmitted infections in 2006.

Methods: Isolates of N. gonorrhoeae were obtained from patients with acute gonorrhoeae in 36 regions of Russian Federation from January through December 2006. Totally, 521 isolates N. gonorrhoeae were collected and tested. The susceptibility N. gonorrhoeae to antibiotics: penicillin, tetracycline, ciprofloxacin, ceftriaxone, spectinomycin was determined by the agar dilution method using GC ' II agar base with IsoVitalex supplement and twofold dilutions of antibiotics according to NCCLS.

Results: 74,8% ?f the isolates showed resistance to penicillin, 73,7 % to tetracycline and 47, 4 % to ciprofloxacin. 92,1 % of the isolates were susceptible to spectinomycin and 100% to ceftriaxone. Significant regional differences in antimicrobial resistance patterns among isolates originating from different regions of Russian Federation were observed.

Conclusions: The results of the surveillance of N. gonorrhoeae antimicrobial resistance in Russian Federation indicate the necessity of exchange of penicillin, tetracycline and ciprofloxacin for treatment of N. gonorrhoeae infections in Russia and advice using exclusively ceftriaxone. In the most regions of Russian Federation except Ural-Region, according to the WHO estimates, level of resistance of N. gonorrhoeae to spectinomycin is too high to be recommended. for treatment of N. gonorrhoeae *Correspondance: Prof. Nataliya Frigo frigo@cnikvi.ru

P-452 USING SENTINEL SURVEILLANCE TO CHARACTERIZE PATIENTS WITH GONORRHEA IN THE UNITED STATES 2006

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Objectives: To better characterize patients with gonorrhea, in light of concerning increasing trends in gonorrhea case reports in the U.S.

Methods: Current gonorrhea case report data in the United States are limited to basic demographic information (e.g. sex, age, race/ethnicity, geography). The STD Surveillance Network (SSuN) is a CDC-funded sentinel surveillance system consisting of 17 STD clinics in 6 cities (Denver, CO; Minneapolis, MN; New York, NY (10); Richmond, VA (3); San Francisco, CA; and Seattle, WA). SSuN uses a collaboratively developed protocol to collect additional demographic, risk behavior, and clinical data on all patients with gonorrhea diagnosed at participating STD clinics. Data are presented for April through December 2006 for patients for whom sex and sex of partners is known.

Results: SSuN STD clinics diagnosed 4,180 patients with gonorrhea (Denver 12.7%; Minneapolis 8.1%; New York 45.9%; Richmond 7.6%; San Francisco 15.4%; and Seattle 10.4%). Overall, 20.2% of SSuN STD clinic patients with gonorrhea were women, 45.0% were heterosexual men, and 34.7% were men who have sex with men (MSM). The proportion of MSM varied widely by city (Denver

25.3%; Minneapolis 22.5%; New York 25.5%; Richmond 6.0%; San Francisco 76.5%; and Seattle 55.9%). Women with gonorrhea were frequently less than age 25, non-Hispanic black race/ethnicity, HIV negative, and co-infected with chlamydia (Table 1). Other than multiple partners (mean 1.7), women with gonorrhea reported few risk behaviors in the past 3 months: methamphetamine use (1.5%), crack use (2.7%), sexual performance drug use (0.2%), and exchange of sex (3.3%). Similarly, heterosexual men were commonly less than age 25, non-Hispanic black race/ethnicity, HIV negative, and co-infected with chlamydia. Most heterosexual men also reported few risk behaviors in the past 3 months other than multiple partners (mean 2.3): methamphetamine use (0.2%), crack use (3.0%), sexual performance drug use (1.0%), and exchange of sex (4.5%). In contrast, MSM were more likely to be older, non-Hispanic white race/ethnicity, HIV positive, and less frequently co-infected with chlamydia. MSM with gonorrhea reported risk behaviors more commonly than women and heterosexual men: methamphetamine use (12.0%), crack use (4.1%), sexual performance drug use (8.6%), exchange of sex (3.3%), and a mean of 5.7 sex partners.

Conclusions: The characteristics of gonorrhea cases in this sample of STD clinics suggested two markedly different epidemics among heterosexuals and MSM in the United States. The relative contribution of these two epidemics varied by geographic region. Women and heterosexual men with gonorrhea tended to be younger, were more likely to be African American, and reported minimal risk behaviors other than multiple partners. In contrast, MSM reported more frequent drug use and more sex partners. Collection of additional surveillance information, especially about the gender of sex partners, was critical in characterizing these two different populations at risk for gonorrhea. Such characterizations of specific differences between populations are an important step towards targeting prevention strategies appropriately. Email contact: Dr. Lori Newman, len4@cdc.gov.

Characteristic	% of MSM (N=1,462)	% of heterosexual men (N=1,852)	% of women (N=846)
Age < 25 years	22.3	39.7	67.3
Black, non-Hispanic	27.1	48.1	62.4
Hispanic	20.3	9.5	18.1
White, non-Hispanic	52.7	5.4	10.8
HIV positive	22.4	1.1	3.6
Chlamydia co-infected	11.1	24.6	37.6
Methamphetamine use	12.0	0.2	1.5
Crack use	4.1	3.0	2.7
Sexual performance drug use	8.6	1.0	0.2
Exchange of sex	3.3	4.5	3.1
Mean number of sex partners (range)	5.7 (0-300)	2.3 (0-50)	1.7 (0-150)

Figure 1: Characteristics of patients with gonorrhea

P-453 ARE MEN WHO ARE DIAGNOSED WITH EPIDIDYMITIS SUSCEPTIBLE TO REPEAT EPISODES?

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Objective: To determine the proportion of men who experienced single or multiple episodes of epididymitis using a large insurance claims database of approximately 5 million privately-insured U.S. enrollees. Untreated chlamydia and gonorrhea infections are among the most common causes of this syndrome in post-pubertal men. Research has shown that among men diagnosed with chlamydia or gonorrhea, repeat infection is common. It is possible that biological susceptibility or behavioral risk factors could predispose some men to repeat or recurrent episodes of epididymitis as well. We sought to determine whether a pattern of recurrence would emerge among men diagnosed with epididymitis. Although the average cost per case of epididymitis is not high enough to warrant routine screening of men for chlamydia and gonorrhea to prevent epididymitis, a tendency toward recurrence of epididymitis could indicate a need for follow-up care and monitoring.

Methods: We accessed insurance claims data from Medstat's MarketScan_ Databases from 2001 through 2004 and identified male enrollees with continuous coverage during this period as the study population. We reviewed both inpatient and outpatient claims records for this population and selected those with a diagnosis of either primary or secondary epididymitis as indicated by International Classification of Disease (ICD-9-CM) codes. We then determined the number of discrete episodes of epididymitis represented by these claims. For those enrollees with two or more claims, we defined a new episode as a claim occurring more than 60 days after the previous claim.

Results: Of the 1,165,103 eligible patients, 16,039 had 18,594 discrete episodes of epididymitis. While a majority of enrollees with a diagnosis of epididymitis had only one episode during the study period, 11.9% (1,909/16,039) had two or more episodes. The data clearly show an increasing tendency for recurrence as the number of episodes rises: among enrollees with at least two episodes, 21.9% have another episode; among enrollees with at least three episodes, 33.4% have another episode; and among enrollees with four or more, 40.7% go on to have another episode (trend $p<.001$). The median interval between episodes was 196 days (Interquartile Range: 107-385).

Conclusions: The proportion of men diagnosed with epididymitis who experienced recurrence increases as the number of episodes increases. These results could be used to evaluate both the benefits and cost effectiveness of routinely screening men previously diagnosed with epididymitis for chlamydia and gonorrhea as a part of follow-up care.

P-454 CATALASE PROTECTS NEISSERIA GONORRHOEAE AGAINST H2O2-PRODUCING LACTOBACILLI IN VITRO BUT NOT DURING LOWER GENITAL TRACT INFECTION IN FEMALE MICE

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Objective: To test the hypothesis that vaginal lactobacilli protect against gonorrhea using a surrogate mouse model of Neisseria gonorrhoeae (GC) infection, and to assess the role of gonococcal catalase, cytochrome C peroxidase, and lactate utilization in interactions between GC and H2O2-producing lactobacilli in vitro and in vivo.

Methods: Wild type GC strain FA1090, an isogenic catalase (kat) mutant, and catalase-deficient GC that were also mutated in the cytochrome c peroxidase (ccp) or lactate permease (lctP) genes were used in this study. Sensitivity of wild type and mutant GC to an H2O2-producing strain of L. crispatus (LC) was measured using an in vitro co-culture assay. The 17 _-estradiol-treated mouse model was used to measure the effect of LC on GC colonization in vivo. For each experiment, groups of 7-8 estradiol-treated BALB/c mice were inoculated intravaginally with LC (test group) or the inoculum diluent (control group). Four hours later, mice in both groups were challenged with wild type or mutant GC. Recovery of GC and LC was measured over 8 days by quantitative culture. Differences among test and control groups were analyzed by repeated ANOVA.

Results: Growth of wild type GC was inhibited by LC under anaerobic and aerobic conditions. Inhibition was abolished with the addition of exogenous catalase. Consistent with H2O2-mediated inhibition, kat and kat,ccp mutant GC were more susceptible to LC than the wild type strain. In contrast to these in vitro results, we found no difference in the duration of GC infection or number of GC recovered from

mice that were pre-colonized with LC versus control mice regardless if wild type GC, the kat mutant, or kat,ccp double mutant were tested. High numbers of LC were recovered from test mice over the duration of each experiment. We also tested a kat,lctP mutant of GC to determine if LC-mediated inhibition was obscured by enhanced growth of GC in vivo due to the presence of lactobacillus-produced lactate. No difference was observed in the capacity of the kat,lctP mutant to colonize test versus control mice.

Discussion: Clinical studies show a decreased incidence of gonorrhea in women with increased numbers of vaginal lactobacilli. The reasons for this association are not clear and have not convincingly been shown to be due to H2O2 production. While we observed H2O2-mediated inhibition of GC by a human H2O2-producing lactobacillus strain in vitro, we did not detect lactobacillus-mediated inhibition of GC in an experimental infection model, even when GC were deficient in antioxidant factors and unable to use lactobacillus-produced lactate as an energy source. Our findings emphasize the complex nature of GC adaptation to the host and suggest that the reported inverse association between GC and lactobacilli in women may reflect the influence of an unidentified factor.

P-455 MOLECULAR EPIDEMIOLOGY OF GONORRHOEA IN SOUTH EAST WALES (UNITED KINGDOM)

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Objectives: The number of new diagnoses of uncomplicated gonorrhoea made by genitourinary medicine (GUM) clinics in Wales increased by 60% between 2001 and 2004. Two-thirds of these cases were in the more populous South East of Wales. Outbreaks of gonococcal disease are not routinely investigated in Wales and the reason for this increase is not known. In order to understand better the factors affecting the transmission of gonorrhoea in South East Wales, we investigated the molecular epidemiology of gonorrhoea cases presenting in all GUM clinics in the region using NG-MAST (Neisseria gonorrhoeae Multi Antigen Sequence Typing). This is a highly discriminatory molecular typing method to identify clusters of indistinguishable gonococci, which in turn can identify transmission chains and sexual networks and provide information for public health interventions.

Methods: Consecutive isolates were collected at three microbiology laboratories in South East Wales. Isolates were retrieved, confirmed to be N. gonorrhoeae and susceptibility testing was performed. Sequence typing was performed using the NG-MAST method.

Results: From May 2005 to September 2006, 540 isolates of N. gonorrhoeae were collected (325 from male patients, median age: 25 years, 211 isolates were from female patients, median age: 21 years). Age and sex was not available for four patients. To date, a total of 340 isolates have been typed. Of these, 44 clusters (two or more isolates with the same NG-MAST sequence type (ST)) have been identified. Of the STs identified, 31% linked at least two individuals. Twenty-one clusters were in samples submitted to a single laboratory; the remaining 23 clusters included isolates submitted from two or more laboratories. The five largest clusters of 15 or more individuals were ST 2 (23 members), ST 471 (19), ST 752 (19), ST 8 (18) and ST 249 (15). All included female members, suggesting heterosexual transmission. The majority of the heterosexual clusters were composed of isolates that were sensitive to the therapeutic antimicrobials tested. The largest clusters with exclusively male members were that of ST 147 (10), ST 4 (8) and ST 225 (7). Two of these clusters (ST 147 and ST 225) included isolates resistant to ciprofloxacin and tetracycline.

Conclusions: Using NG-MAST, clusters of isolates of N. gonorrhoeae with the same ST have been identified, demonstrating networks of gonococcal transmission in South East Wales. Currently, the largest clusters appear to involve predominantly heterosexual transmission. The antimicrobial resistance data are similar to other national data, in that the burden of ciprofloxacin resistance appears to be in men who have sex with men. STs for some of the largest clusters identified in this study have been previously identified in the UK, indicating that they are part of a wider network involving sustained transmission and endemic spread of isolates throughout the UK. There were also clusters of STs that have not been seen elsewhere, which could indicate more localised transmission networks, or outbreaks. Identification of sexual networks using molecular epidemiological techniques such as NG-MAST should ultimately aid in sexual health intervention programmes.

P-456 LOS IGG ANTIBODIES IN GONOCOCCAL INFECTIONS

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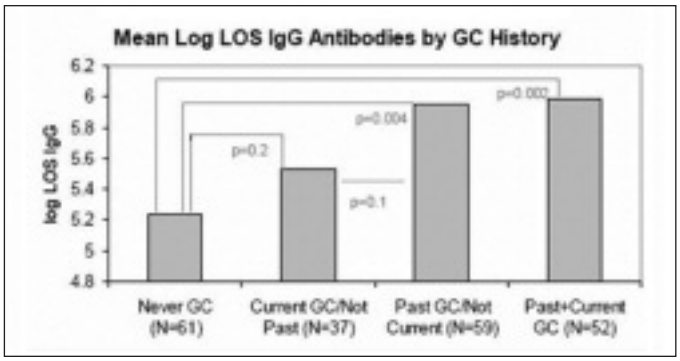
Objectives: Neisseria gonorrhoeae is an obligate parasite of humans that has no other natural host; thus, interrupting its transmission should result in the disappearance of infections caused by the organism. In small human studies, resistance to gonococcal (GC) reinfection was found to correlate with the presence of IgG antibodies that bound the LOS of the infecting organism. Our goal was to determine the prevalence of Paraglobosyl LOS IgG antibodies among patients in a STD clinic cohort and whether their levels correlated with GC infection status.

Methods: Ambispective study of patients presenting to the Baltimore City Health Department STD clinics for care as part of the prospective MUCOSAL study. Patients were stratified by self-reported previous history of GC infection and current GC infection status as documented by cultures. 1291 LOS affinity-purified IgG from IVIG was used as standard by which to quantify serum antibody concentrations using ELISA. Values were log-transformed to achieve a normal distribution. Two-sample t-tests were used to compare antibody levels between groups and linear regression models were used to adjust for potential confounders.

Results: Of 209 subjects (46% women; 98% African American; mean age 29 years), 29% neither reported past nor current infection, 28% had a previous but no current infection, 18% had a current but no past infection, and 25% had both current and past infections. Figure 1 summarizes antibody levels in each group. Women were symptomatic longer than men before presentation (93% of women with symptoms >3 days vs. 65% of men, p<0.001). There was no difference in mean LOS IgG levels by sex (5.60 in men vs. 5.76, p=0.3). In a multivariable model adjusting for race, sex, current GC infection, and duration of symptoms, the most significant predictor of higher log LOS IgG antibodies was a self-reported past history of GC infection (difference=0.60 95%CI 0.22-0.96 log LOS IgG, p=0.002).

Conclusion: LOS IgG is induced by previous GC infection. A prospective study is underway to determine the association between antibody level and risk of reinfection.



P-457 GONORRHEA IN VIENNA: EIGHT YEARS OF OBSERVATION

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Objective: A global increase of gonorrhea and rising numbers of quinolone resistant N. gonorrhoeae (QRNG) isolates have been observed worldwide in the last decade. The aim of the study was to evaluate the number of gonococcal infections in the Outpatient´s Center for STI in Vienna as well as to determine the resistance patterns of the isolated gonococci.
Methods: Between 1999 and 2006 a total of 219,443 men and women were examined for the presence of gonorrhea and other sexually transmitted infections. Cervical and/or urethral swabs were obtained to detect N. gonorrhoeae by Gram stain and culture on selective VCA3 medium and nonselective modified blood GC agar. In addition, in the year 2006 the Aptima Combo 2 assay was included as additional diagnostic procedure on different samples especially if collected outside of the laboratory. Disk diffusion method was performed to identify the resistance patterns.
Results: While numbers of patients remained almost constant, a significant increase of gonococcal infections from 52 (0.2%) in 1999 to 298 (1.1%) in 2002 was noticed. After a decrease of infections during the three following years, again a significant increase from 149 (0.6%) cases in 2005 to 199 (0.7%) in 2006 was detected. A similar trend was observed for reported gonococcal infections in Austria. Comparing both, culture and the Aptima Combo2 assay in 93 infected individuals demonstrated a higher detection rate for the amplification method especially for rectal and pharyngeal samples collected outside of the laboratory. The evaluation shows that 18.3% of gonococcal infections would have been missed by using culture methods only. During the observation time an increasing number of gonococcal isolates with antibiotic resistance were detected. While in 1999 only 3.1% of gonococcal isolates showed resistance to quinolones, a peak of 64% was observed in 2003 and decreased to 37% in 2006. Furthermore, in 2006 penicillin and tetracycline indeterminate resistances were detected in 75% and 25% of strains, respectively, while no resistance against cephalosporines was observed during the whole study period.
Conclusions: The results show that gonococcal infections have become again a major problem for the management of bacterial sexually transmitted infections. The increase of resistant gonococcal strains demonstrates the need for a microbiological examination including culture and the determination of the gonococcal resistance patterns for successful treatment of gonorrhea. However, in addition to culture, amplification methods have to be recommended as additional diagnostic procedure for the detection of pharyngeal and rectal gonorrhea and in case of suboptimal transport conditions.

P-458 SURVEILLANCE OF GONORRHEA IN CANADA, 1980 TO 2006

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Objectives: After observing a substantial decrease in the rate of gonorrhea reported in Canada since 1980, national goals were established in 1997 to eliminate the disease by 2010. In order to evaluate the progress made towards reaching this goal and to identify and interpret the epidemiological trends, an analysis of national gonococcal surveillance data was conducted.
Methods: Cases of gonorrhea reported to the Public Health Agency of Canada from 1980 to 2005 (and 2006 preliminary data) were included for analysis. Population denominators were based on census estimates provided by Statistics Canada. Rates of infection (per 100,000 population) were calculated by age, sex and geographical region.
Results: Between 1980 and 1997, the number of gonococcal infections reported in Canada decreased by 92% from a high of 53,040 to a recorded-low of 4,468. The corresponding rates decreased 562% from 217.3/100,000 in 1980 to 14.9/100,000 in 1997. Since 1997, however, both the number of cases and the rate of infection have increased annually and nearly doubled. In 2005, a total of 8,937 cases of gonorrhea were reported (27.7/100,000); preliminary data for 2006 indicate that more than 10,000 cases will be reported for a projected annual rate of 32.6/100,000. Unlike genital chlamydia infections which predominately affect females, males have consistently accounted for nearly two-thirds of all gonorrhea cases reported in Canada annually. In 2005, males accounted for 5,592 (62.6%) of reported gonococcal infections; of these, 25.1% were among those aged 30 to 39 years of age. Males 20 to 24 years of age, however, reported the highest rate of infection (118.6/100,000) followed by females 15 to 19 years of age (114.0/100,000). Geographically, the population in northern Canada continues to experience the highest burden of illness compared to other regions of the country. In 2005, despite representing only 2.5% of all reported gonorrhea cases, the rate of infection in northern Canada was 212.0/100,000 ' nearly 10-times higher than the nationally reported rate (27.7/100,000).
Conclusions: Since 1997, in a complete reversal of the downward trend observed between 1980 and 1997, there has been a steady increase in both the number and rate of gonorrhea infections reported in Canada annually. Males have consistently accounted for the majority of cases and the male-to-female ratio of the rate of gonorrhea infections has remained constant. Among both sexes, the highest rates of gonorrhea have been reported among adolescents and young adults; among males, however, those 30 to 39 years of age comprise the majority of reported cases. Canada's northern population continues to experience the highest rates of gonococcal infections in the country. Therefore, focused public health prevention efforts are necessary to reduce the spread of gonorrhea within these populations. In the absence of such efforts, the national goal to eliminate the disease by 2010 will not be achievable.

P-459 SINGLE-DOSE, ORAL CEFPODOXIME PROXETIL IS EFFECTIVE FOR TREATMENT OF UNCOMPLICATED UROGENITAL AND RECTAL GONORRHEA

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Objectives: Disease caused by Neisseria gonorrhoeae (NG) is a significant public health problem, with over 330,000 cases reported in the United States (US) in 2005. Given decreased NG susceptibility to fluoroquinolones and discontinuation of US distribution of cefixime, the role of another third-generation oral cephalosporin, cefpodoxime proxetil, holds considerable promise; however, efficacy data are limited. This observational cohort study evaluated cefpodoxime as oral therapy for uncomplicated NG infection.
Methods: From April 2004 to January 2007, study participants were identified among adult men and women with uncomplicated urethral, cervical, rectal, and/or pharyngeal NG infection attending 6 sexually transmitted diseases clinics in California, Colorado, and Hawaii. Participants were diagnosed presumptively (i.e., suggestive symptoms and/or clinical signs, sex partner with NG) or definitively (i.e., recent screening laboratory result, positive Gram stain) and treated with a single 400mg oral dose of cefpodoxime. Persons were excluded if under age 18, allergic to penicillin or cephalosporins, known to be co-infected with Chlamydia trachomatis (CT) or syphilis, or unwilling to refrain from sex until test of cure.

Bacterial culture was performed at exposed mucosal sites at initial visit and 4-9 days after treatment; CT co-treatment was administered at follow-up. Positive NG isolates were stored for antimicrobial susceptibility testing.

Results: 535 individuals with suspected NG infection were enrolled. Excluding those without confirmed NG at initial visit (83), lost to follow-up (78), and with follow-up outside the 4-9 day period prescribed by the study protocol (43), 331 participants were available for analysis. Of these, 63% were men having sex with women; 29% men having sex with men; and 8% female. Thirty-one percent were younger than 25 years-old; 21% over 40. Fifty-four percent were African American; 25% Hispanic; 14% white; and 2% Asian. Among men and women infected at any urogenital or rectal site, 96.5% (305/316) were cured overall (lower bound of exact 95% confidence interval [LB95%CI], 93.9%). Among the subset of these participants who denied having sex prior to follow-up, 97.9% (281/287) were cured (LB95%CI, 95.5%). Among 281 males with urethral NG, 96.1% (270/281) were cured overall (LB95%CI, 93.1%). Of those with pharyngeal NG, 74.0% (26/35) were cured. Among participants with urogenital or rectal NG, 3 treatment failures occurred in the first two study years, compared to 8 in the latter two (p=0.01).

Conclusions: Ever fewer agents are available to treat gonorrhea, and antimicrobial resistance is a concern related to multiple drug classes. These results demonstrate the efficacy of cefpodoxime proxetil as single-dose, oral therapy for uncomplicated NG. Current standards of the US Centers for Disease Control and Prevention classify antimicrobials with NG treatment efficacy ≥95% and LB95%CI ≥95% as recommended agents, and those with efficacy ≥95% and LB95%CI ≥90% as alternative agents. These data suggest cefpodoxime should be considered an alternative therapy for treatment of uncomplicated urogenital and rectal gonorrhea, of particular use in settings where intramuscular therapy is unavailable or impractical. Treatment of pharyngeal NG with oral agents remains challenging. Antimicrobial susceptibility results will aid in understanding the potential role of cephalosporin resistance in cefpodoxime treatment failures.

P-460 GRAS: A NEW NATIONAL SURVEILLANCE OF GONOCOCCAL ANTIMICROBIAL RESISTANCE IN THE NETHERLANDS

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Objectives: To implement a new surveillance system on gonococcal (GC) antimicrobial resistance in the Netherlands in order to a) harmonize national surveillance and obtain comparable data and b) integrate epidemiological and microbiological data collection. We report on the progress regarding the implementation and on the preliminary results of the Gonococcal Resistance to Antimicrobials Surveillance project (GRAS).

Methods: In the Netherlands, STI care and treatment is freely available in eight large STI clinics with a national coverage. Routine STI data are collected from all STI clinic attendees and include information on date of consultation, reason for consultation, diagnosis, gender, date of birth, ethnicity, sexual preference, sex work, drug use and concurrent HIV and STI. For GRAS, additional information on antimicrobial resistance is obtained. In case of a symptomatic GC patient, a culture for susceptibility testing is taken for each patient directly. Asymptomatic patients are first screened with a PCR and when positive, a specimen for culture and susceptibility testing is taken (afterwards). Participating laboratories test each isolate for resistance to penicillin, quinolones (ciprofloxacin), tetracycline and 3rd generation cephalosporins (cefotaxim) by using an E-test. The laboratories report their results to the STI clinic, after which the MIC values are entered in the online STI registration system together with the epidemiological data.

Results: In June 2006, GRAS was implemented in the first STI center. As of March 2007, GRAS includes 5/8 STI clinics, representing approximately 60% of the total population of clinic attendees. The other centers will be included subsequently. So far, 177 isolates have been tested for susceptibility. Preliminary results showed that the prevalence of ciprofloxacin resistance was 38%, tetracycline 45%, penicillin 14% and cefotaxim 1%. Ciprofloxacin resistance was highest among men having sex with men (MSM) (45%), followed by heterosexual men (29%) and women (21%).

Conclusion: The first results of this new surveillance system show a high prevalence of ciprofloxacin resistance with the highest rates among MSM. GRAS demonstrates that a continuous, timely and integrated data collection is feasible. Continuous assessment of the emergence and spread of antibiotic resistance in Neisseria gonorrhoeae is needed to enable physicians and public health workers to evaluate prevention and control programs including treatment regimens.

P-461 GONOCOCCI REQUIRING CITRULLINE AND URACIL CAUSE CERVICITIS LESS FREQUENTLY THAN OTHER GONOCOCCAL AUXOTYPES

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Objective: To compare gonococci requiring citrulline and uracil (CU) to other gonococcal auxotypes in their association with cervicitis.

Methods: Gonococcal isolates from cervical specimens from women who sought STD clinic services in King County, Washington between 1993 and 2000 were characterized by auxotype, porin serovar and antimicrobial susceptibilities. Clinical, demographic, and behavioral data were abstracted from the computerized STD clinic data system. Relationships between CU auxotypes and clinical and laboratory findings were examined by multivariate analyses.

Results: Gonococcal isolates from 426 women were characterized. CU-requiring strains were recovered from 84 (19.7%) women. Women infected with CU-requiring strains were somewhat younger (mean 21 versus 24 yrs, P<0.05) and more likely to be utilizing hormonal contraception (29% versus 15%, P<0.01) than women infected with other strains. Coinfection with Chlamydia trachomatis, history of prior gonorrhea, and recent sexual behaviors did not differ significantly by the auxotype of the infecting strain. Women infected with CU strains were less likely then were women with other auxotypes to have cervical mucopus (8.3% vs. 18.4%, P<0.05) or easily induced cervical bleeding (23.5% vs. 34.1%, P=0.07). Inflammation as defined on Gram strain smear (>30 PMNs/hpf) did not differ significantly by auxotype (CU'43.0% vs. other'54.1%), but women infected with CU-requiring strains were less likely to have Gram negative intracellular diplococci (GNID) reported (20% versus 41%, P<0.01). A diagnosis of mucopurulent cervicitis was made less often in CU-infected women (16.5%) than in other women (29.6%, P<0.05). In multivariate analysis, controlling for age, and hormonal contraception, the CU auxotype remained negatively associated with mucopus (OR 0.4, 95% CI 0.2-0.9), and easily induced cervical bleeding (OR 0.5, 95% CI 0.3-0.9), a diagnosis of mucopurulent cervicitis (OR 0.5, 95% CI 0.3-0.9), and GNID on Gram stain smear (OR 0.4, 95% CI 0.2-0.7).

Conclusions: Women infected by CU-requiring gonococci had fewer findings suggestive of cervicitis and were less likely to have GNID identified on Gram stain smear than women infected with other auxotypes. Reduced severity of infection and decreased likelihood of detection by Gram stain may provide selective advantages for these gonococci in some human populations.

P-462 HOW MUCH SEX DOES IT TAKE TO CATCH GONORRHEA? FREQUENCY OF SEXUAL INTERCOURSE BETWEEN COUPLES RESULTING IN TRANSMISSION OF N. GONORRHOEAE IN SHANGHAI

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Objective: Accuracy of previous estimates of the transmission probability was hampered by ecological fallacy and insensitive testing protocols. In order to improve prevention programs, refine program evaluation and provide information for improved surveillance of all strains of N. gonorrhoeae, we examined the frequency of sexual intercourse within heterosexual partnerships in Shanghai, China that resulted in the transmission of N. gonorrhoeae. Our ultimate goal is to estimate the per coitus transmission probability of N gonorrhoeae.

Methods: Three hundred forty-two men with culture positive N. gonorrhoeae attending the Shanghai Skin Disease & STD Hospital completed a questionnaire collecting information on demography, sex practices, previous sexually transmitted infection history and current and previous female sex partners. Male participants were encouraged to refer their partners to the clinic, who were then eligible to enrol in the study themselves. A time period in which transmission resulting in infection ' 'the infection interval' - was calculated from date when symptoms started less the incubation period for gonorrhea for both the males and their female partners. A minimum and maximum interval when transmission occurred was calculated as the difference between the maximum and minimum dates of infection and the minimum and maximum dates of infection, depending upon which partner was infected first. A minimum and maximum frequency of coitus resulting in transmission was calculated as the product of the transmission interval in days multiplied by the reported frequency of coitus per day. This frequency ranged between 1 for those who reported engaging in coitus once per day to 0.016 times per day for those who reported engaging in coitus less than once per month.

Results: Of the 342 male index patients, 97 identified 110 female sex partners who were followed up with testing and treatment. Of the 110 partnerships, 32 females were N. gonorrhoeae culture negative. Excluded from analysis were 24 partnerships where the females were asymptomatic and the frequency of intercourse could not be determined, two partnerships where the male refused to indicate the frequency of intercourse and six partnerships that were excluded as outliers. There remained 42 partnerships where the total frequency of intercourse resulting in infection could be determined. The mean frequency was 1.6 coitus events per transmission (median=1, IQR 1-2 range 1-9) For those partnerships where the female was culture negative indicating no transmission, the mean frequency of coitus was 2.3 per transmission (median=1, range 1- 9).

Conclusions: Previously the risk of a male acquiring gonorrhea through coitus with an infected female has been estimated to be .22(1). Our data suggest that this risk of transmission may be much higher. Reference List (1) Holmes KK, Johnson DW, Trostle HJ. An estimate of the risk of men acquiring gonorrhea by sexual contact with infected females. Am J Epidemiology 1970; 91(2):170-174.

P-463 IS GONORRHOEA UNDER CONTROL IN ENGLAND?

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Gonorrhoea diagnoses in England rose rapidly in the mid 1990s. A government target to reduce gonorrhoea by 25% was set in 2001, and since then rates of diagnosis in STD clinics have declined. The objective of this study was to investigate whether there is evidence that the government initiative has helped bring gonorrhoea under control in England. Diagnoses of gonorrhoea were collated from a range of sources: national STD clinic statistical returns, laboratory reports, the Gonococcal Resistance to Antimicrobials Surveillance Programme (GRASP), and from sentinel primary care (family medicine) records (qresearch ver13). Where possible incidence rates were calculated per 100,000 population, and stratified by demographic and risk group. Trends were examined in the context of local and national prevention and health service initiatives. In 2005, the rate of gonorrhoea in men and women based on STD clinic diagnoses was 52 and 20/100,000. Diagnoses of gonorrhoea in STD clinics fell by 32% in women and by 25% in men overall between 2002 and 2005, although the latter reflected a 35% drop in heterosexual men and a 19% rise in men who have sex with men (MSM). Trends varied little by health region. Laboratory reports of gonorrhoea and data from GRASP were consistent with this pattern. Lab reports of genitourinary specimens fell slightly over the same period in both men (1.8%) and women (0.5%), but those of anorectal specimens from men increased by 20%. And while the total number of isolates submitted to GRASP fell by 22% (2502 to 1948) between 2002 and 2005, the proportion of isolates from MSM increased from 25% to 34%. Data from primary care can only be presented by gender and age, but appeared to contrast with the other surveillance data. Incident diagnoses in primary care were twice as high in women (6/100,000, [95%CI: 4.8-7.3]) as in men (3/100,000, [95%cCI: 2.2-3.9]), and while there was a slight (6%) drop among men between 2002 and 2005, there was a 46% increase in new diagnoses in women over the same period. There is increasing evidence that transmission of gonorrhoea among heterosexuals is in decline across England. The decline corresponds with the launch of local and national health promotion initiatives targeting known risk groups following the introduction of government targets on gonorrhoea incidence. Significant reductions in waiting times for appointments at STD clinics may also have helped interrupt transmission, as STD clinics make most gonorrhoea diagnoses in England. Increased incidence of new diagnoses among women attending primary care may be due to better detection of gonorrhoea in the community associated with the use of Nucleic Acid Amplification Techniques for chlamydia and gonorrhoea as part of the National Chlamydia Screening Programme. While this suggests a reservoir of undetected gonococcal infections may exist in the community, overall incidence of gonorrhoea in this setting remains low. However, the continued rise in gonorrhoea diagnoses among MSM, coinciding with rising incidence of syphilis, HIV and LGV, and despite sustained health promotion, suggest that efforts to reduce unsafe sexual behaviour in this group should be invigorated.

P-464 CORRELATION OF SOCIAL AND GENETIC DISTANCE IN COUPLES INFECTED WITH N.GONORRHOEAE IN SHANGHAI

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Objective: The population genetics of sexually transmitted organisms is affected by clusters of people linked directly or indirectly by sexual intercourse, within which STI are transmitted. To better understand diversity, we attempted to validate porB

sequencing as a reliable indicator of both genetic and social distance of N. gonorrhoeae strains within sexual partnerships. We hypothesised that the genetic distance between isolates of known sex partners was significantly smaller than that between any other pairs or 'controls' in our study. Also, in those couples where the genetic distance was larger, the social distances between them would be diluted by other recent partnerships.

Methods: At the Shanghai Skin Disease and STD Hospital we recruited 342 males and with symptoms and a positive gram stain for N. gonorrhoeae, and 110 of their female partners resulting in seventy eight pairs in which each person was culture positive. For each, the entire porB gene was PCR-amplified from gonococcal chromosomal DNA; the products of PCR were purified, and the DNA sequences of both strands were determined. The DNA sequences were verified and the unambiguous DNA sequences were used for phylogenetic analysis. porB genotypes were assigned to porB1a or porB1b, based on the presence or absence of two nucleotide sequences in loop V coding region. The average distance trees of porB1a and porB1b were constructed, and the average distances between isolates were calculated using Jalview. The genetic distances between reported couples, and 'control' pairs of all index males and all possible females in the study were compared using Kruskal Wallis tests for non normal data.

Results: All of the 14 presenting couples with strain porB1a had a genetic distance of 0 between their respective isolates and therefore were significantly more closely related than any of the remaining porB1a 'control' strains ($p<0.001$). Of 59 couples with type porB1b genotypes, all were more closely related than were 'control' couples ($p<0.001$). Five couples harboured discordant strains, and genetic distances were compared with numbers of recent partners of both the males, and females. The comparison of genetic distance and the number of recent partners of the female approached significance ($p=0.09$), but other comparisons were not significant.

Conclusions: Sequencing porB is specific enough to differentiate accurately between couples who probably share a common strain of N. gonorrhoeae and those who do not. Larger sample sizes are required to detect more remote genetic relationships based on less direct sexual relationships where one or both of the partners may be having sex with two or more other people. We have calibrated a method of strain typing to accurately delineate transmission clusters, valuable in both in outbreak investigation and monitoring the rise of antimicrobial resistance. We will investigate three groups of 10 - 20 isolate which shared identical subtypes for possible indirect sexual links.

P-465 GOING TO THE SOURCE: A STRATEGY TO DECREASE THE INCIDENCE OF GONORRHEA IN COWLITZ COUNTY

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Objective: To determine the prevalence of gonorrhea and chlamydia in the county jail and whether widespread treatment at the jail will impact the incidence of disease and the ongoing outbreak of gonorrhea in the county.

Methods: 56% of Cowlitz County gonorrhea cases report ever being incarcerated (defined as being in jail or prison for more than 24 hours) and 47% report incarceration in the previous 12 months. The Cowlitz County Health Department offered two clinics were held at the jail during December 2006, one for each gender. Female inmates were all screened using a questionnaire and then had urine PCR amplification test for chlamydia and gonorrhea testing. Males wishing to participate were screened using the same questionnaire, and only those with symptoms or history of exposure were offered urine testing. Participation in the screening and testing project was voluntary and offered to all inmates incarcerated on the day of the clinic.

Results: 141 inmates participated in the project, 29 females (89%) and 112 (39%) males. Of the females tested (n=29) 5 (14%) were positive for gonorrhea and 2 (7%) positive for Chlamydia. In the male inmate population those tested (n=72), 3 (4%) positive for gonorrhea and 8 (14%) positive for chlamydia. Symptoms were not found to reliably predict infection: 19% of persons testing positive for chlamydia or gonorrhea reported discharge or dysuria now or in the previous 6 months, as compared to 13% of persons negative for chlamydia or gonorrhea. Not unexpectedly, STI diagnosis was associated with significantly increased odds of the inmate's reporting a previous sex partner with either symptoms (OR=2.9, p=0.04) or as diagnosed with an STI (OR=3.4, p=0.03). None of the cases reported using condoms the last time they had sex and overall 108 (77%) of the participating inmates did not use condoms the last time that they had sex.

Conclusions: Urine testing in the local corrections setting is feasible and was exceptionally welcome by the inmate population. During a local outbreak of gonorrhea we found that 17% of female and 15% of male inmates in the jail tested had a bacterial STI, rates higher than expected based upon a review of the literature. In the two months (January and February 2007) since the clinic was offered the community incidence of gonorrhea (November and December 2006) has dropped by 59% (from 22.4 per 100,000 to 9.2) and chlamydia by 73% (from 43.8 per 100,000 to 11.7). While the specific contribution of the jail intervention to decreasing the community rates may not be known, the preliminary results are very encouraging.

P-466 REPRODUCIBILITY OF POSITIVE GONORRHEA RESULTS USING A NUCLEIC ACID AMPLIFICATION TEST (NAAT) OVER A SIX YEAR PERIOD IN A STATE PUBLIC HEALTH LABORATORY

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Objective: Nucleic acid amplification tests (NAAT) have become the standard for detection of Chlamydia and gonorrhea infections. These tests are known for their excellent performance, but concerns remain about specificity, especially in lower-prevalence settings where Positive Predictive Value (PPV) can be unacceptably low. Despite selectively screening for gonorrhea infections in Wisconsin Family Planning and STD clinics, the positivity rate is under 1% in many parts of the state. In order to increase the specificity and PPV, initially-positive gonorrhea results are retested before being reported. The goal of this study was to analyze the repeat-testing data gathered since early in 2001, in order to evaluate reproducibility and possibly adjust our retesting and reporting algorithm for gonorrhea (GC).

Methods: All specimens tested for gonorrhea on the BD Probe Tec instrument with 'MOTA' ('method other than acceleration', a non-quantitative numeric value) scores over 2000, the manufacturer-specified cutoff for positive results, were retested to improve the PPV of positive results. The only exceptions were specimens with concurrent positive Chlamydia results; these were only retested if the initial GC MOTA was between 2000 and 20,000. Specimens repeating over 2000 MOTA were reported as positive; those with retest MOTA values under 2000 were reported as negative. Data including specimen identification numbers, submitting agency, dates of tests, reagent lot numbers, specimen type (urine or swab) and initial and repeat MOTA values were retained for each specimen. Analysis included stratification by specimen type and initial MOTA score and comparison of reproducibility across MOTA ranges and calendar year periods. Additional information was obtained on selected specimens in order to assess risk factors for GC infection.

Results: A total of 3887 specimens from February 2001 through February 2007 were included in the analysis. Several trends in the data were apparent. Overall reproducibility ranged from 78.2% (2001) to 95.3% (2006) and consistently improved over time. Reproducibility was higher in urine specimens, with a rate of 97.8% in 2006, than in swab specimens, with a 2006 rate of 89.5%. Swab specimens yielded a higher proportion of low-positive MOTA scores, with 12.6% of initially positive swab results falling in the 2000-10,000 range, as compared to urine specimens with only 2.6% in this range.

Conclusions: The reproducibility of initially-positive GC specimens using the BD Probe Tec was overall very good, especially in specimens with MOTA scores over 10,000. Clearly, specificity can be improved by retesting specimens in the low-positive range, with minimal loss of sensitivity. Non-repeating low-positive specimens were more likely to come from patients with risk criteria noted as 'none' in the subset with this data available. However, quantification of the true impact on test performance (increased specificity versus decreased sensitivity) will require further study. Our retesting and reporting algorithm for positive GC specimens will be updated, partly as a result of this analysis. bobbie@mail.slh.wisc.edu

P-467 RISK FACTORS FOR GONORRHEA AMONG HETEROSEXUALS SAN FRANCISCO, 2006

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Objectives: In San Francisco, we observed substantial increases in gonorrhea among young heterosexuals during 2003'2005. To identify intervention strategies to improve the prevention and control of gonorrhea among young heterosexuals, we conducted a case-control study.

Methods: We interviewed case-patients identified among San Francisco residents with laboratory-confirmed gonorrhea during February'July 2006. Control subjects were surveyed anonymously during 2 days as they entered the California Department of Motor Vehicles (DMV) office in San Francisco. We included sexually active heterosexuals aged 15'35 years in case-patient and control subject surveys. Analyses were stratified by sex. Significant demographic and partner variables in univariate analysis were used to generate adjusted odds ratios for other risk factors by using logistic regression.

Results: We interviewed 24 male and 28 female case-patients and 98 male and 75 female control subjects. Interviewed case-patients were more likely to have been tested at the municipal STD clinic (44% versus 26%) but were otherwise similar to eligible case-patients who were not interviewed. At the DMV, 254 (74%) of 343 distributed surveys were returned, 81 of which were subsequently excluded because of lack of eligibility. Compared with census data of persons aged 15'35 years, control subjects were more likely to be black, less likely to be white, and tended to be younger. Among males, no association was identified between age and gonorrhea (Table). In univariate analysis, males with multiple partners and black males were more likely to have gonorrhea. After adjusting for black race and having multiple partners, males who reported having an anonymous partner were more likely to have gonorrhea. Males who did not report meeting a new partner during the past 3 months were less likely to have gonorrhea. Condom use with the last partner among case-patients and control subjects was 37.5% and 48.5% (P=0.34). In univariate analysis among females, age, multiple partners, and black race of subject or partner were risks for gonorrhea. After adjusting for these factors, females who were black or had a black partner, females with a partner who had recently been incarcerated, and females who met partners in the street had significantly increased risk for gonorrhea. Six female case-patients but no female control subjects reported incarceration. Condom use with the last partner among case-patients and control subjects was 32.1% and 43.7%, respectively (P=0.29). Neither case-patients nor control-subjects reported crack cocaine use or being human immunodeficiency virus (HIV)-positive. Drug use, meeting partners on the Internet, anal sex, oral sex, and condom use were not significantly associated with gonorrhea.

Conclusions: Demographic and behavioral factors increased the risk for gonorrhea among heterosexuals in San Francisco. Partner characteristics are particularly important to consider among females. The DMV can be a useful venue for selecting control subjects. These data support current intervention efforts, including screening young adults for STDs in jails, focusing on reducing racial disparities in STD prevalence, and street-based outreach programs for young heterosexuals. Efforts to improve rates of consistent condom use and to understand the risks of meeting a partner on the street are needed.

Odds ratio (OR) and adjusted odds ratio (AOR) of risk factors for gonorrhea among sexually active heterosexual males aged 15–35 years (24 case-patients, 98 control subjects) — San Francisco, 2006

	OR	95% CI	AOR	95% CI
Age Group 15–19 yrs	0.5	(0.1–1.7)		
Black Race				
Subject	6.7	(2.0–16.7)	5.1	(1.7–16.0)
Subject or Partner	4.7	(1.6–13.5)		
Risk Factors				
Anonymous Partner	5.1	(1.9–14.1)	6.4	(1.9–21.4)
Multiple partners	3.7	(1.4–9.7)	3.1	(1.1–8.6)
Incarcerated	3.3	(1.04–10.4)	2.1	(0.6–7.1)
Where Partner Met				
No New Partners	0.2	(0.1–0.6)	0.3	(0.1–0.9)
Street	3.0	(1.00–8.9)	1.7	(0.5–6.8)

Figure 1: Risk factors among heterosexual males

Odds ratio (OR) and adjusted odds ratio (AOR) of risk factors for gonorrhea among sexually active females aged 15–35 years (28 case-patients, 75 control subjects) — San Francisco, 2006

	OR	95% CI	AOR	95% CI
Age Group 15–19 yrs	2.9	(1.1–7.3)	1.4	(0.6–4.3)
Black Race				
Subject	2.5	(1.0–6.3)		
Subject or Partner	8.7	(3.0–25.5)	6.3	(2.2–21.8)
Risk Factors				
Anonymous Partner	6.1	(1.35–35.3)	2.5	(0.3–18.1)
Multiple partners	3.5	(1.4–8.8)	2.7	(0.97–7.6)
Partner Incarcerated	10.4	(2.0–55.5)	6.2	(1.3–38.4)
Where Partner Met				
No New Partners	0.4	(0.1–1.02)	0.5	(0.2–1.7)
Street	51.4	(8.2–429.3)	19.0	(2.3–179.0)

Figure 2: Risk factors among females

P-468 PREVALENCE OF GONOCOCCAL INFECTION WITH DECREASED SUSCEPTIBILITY TO CIPROFLOXACIN, AS DETERMINED BY REAL-TIME PCR AMONG FEMALES SAN FRANCISCO, 20052006

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Objectives: The gonococcal isolate surveillance program (GISP) monitors antibiotic susceptibility among Neisseria gonorrhoeae culture isolates from predominately symptomatic male sexually transmitted disease (STD) clinic patients nationwide. In San Francisco, the majority of GISP samples are from men who have sex with men (MSM) and thus might not reflect susceptibility trends among heterosexuals. We sought to determine the prevalence of N. gonorrhoeae with decreased susceptibility to ciprofloxacin among females and to compare this prevalence with that identified by GISP.

Methods: Because cultures are no longer routinely obtained in San Francisco outside of GISP, we used molecular methods that we previously developed to detect a genetic mutation in N. gonorrhoeae that confers decreased susceptibility to fluoroquinolones. We used a real-time polymerase chain reaction (PCR) assay to test for mutations in the Ser91 region of the gyrA gene of N. gonorrhoeae in stored urine and vaginal swab specimens from females who had tested positive for gonorrhea by transcription-mediated amplification during March 2005'June 2006 at the San Francisco Public Health Laboratory. For comparison, results of GISP susceptibility testing for ciprofloxacin were obtained for this period. For both assays, decreased susceptibility corresponded to minimum inhibitory concentration (MIC) ≥ 0.125 mcg/mL. STD registry data were used to determine basic demographics and risk factors.

Results: During the 17-month collection period, 145 gonorrhea-positive samples from females were available for PCR testing. A total of 29 (20%) specimens did not amplify by PCR, and no susceptibility result was determined. Of the remaining 116 specimens, 10 (8.6%; 95% confidence interval [CI], 4.2'15.3) had decreased susceptibility to ciprofloxacin. Women with decreased susceptibility infections were aged 18'62 years (mean: 28.2 years) and six were black. No significant differences existed in PCR results by age or race or among sex workers. Of the 145 (48%) patients for whom we had data on symptoms, 33% had symptoms of gonorrhea. No differences existed in symptom prevalence by ciprofloxacin susceptibility (P = .89) or whether the specimen amplified by PCR (P = .86). By comparison, 425 specimens (77.9% from MSM) from San Francisco were tested by GISP. Of these, 169 (39.8%; 95% CI, 35.1'44.6) had decreased susceptibility to ciprofloxacin. Among the 331 MSM, 156 (47.1%; 95% CI, 41.6'52.7) had infections with decreased susceptibility to ciprofloxacin, whereas 13 of 94 (13.8%; 95% CI, 7.6'22.5) non-MSM had decreased susceptibility infections. The prevalence of decreased susceptibility was significantly greater among MSM than among non-MSM in GISP (P < .0001), but was not significantly different between non-MSM in GISP and females by PCR (P = .23).

Conclusions: In San Francisco, the results of PCR surveillance among females were similar to GISP results from heterosexual men. Because susceptibility was significantly greater among heterosexuals than among MSM, gonorrhea treatment recommendations should continue to consider subgroups. PCR makes it feasible to perform ciprofloxacin susceptibility surveillance among populations not monitored by GISP and where culture specimens are not available. PCR can be an important supplementary surveillance tool nationally and internationally.

P-469 ASSESSING THE UTILITY OF RECTAL SCREENING IN HIGH RISK WOMEN: PREVALENCE OF CERVICAL AND RECTAL GONORRHEA AMONG FEMALES IN JUVENILE DETENTION IN LOS ANGELES COUNTY, USA

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Objectives: The U.S. Preventive Services Task Force (USPSTF) recommends screening sexually active women for gonorrhea if they are at increased risk. Although sexually transmitted gonorrhea infections may involve rectal mucosa, there is limited evidence to support screening women for rectal gonorrheal infections. This study evaluated the findings of a gonorrhea screening program for young women admitted to a juvenile detention facility to determine the prevalence of rectal gonorrhea and risk factors for rectal gonorrheal infection as compared to rectal/cervical co-infection.

Methods: Data were examined from screening physicals conducted at three juvenile detention facilities from April 1, 2005 to September 30, 2006. The population selected consisted of all females who had cervical specimens collected. A stratified analysis was conducted for the subgroup of females who had a rectal gonorrhea specimen collected in addition to a cervical specimen. Available demographic, clinical, and behavioral data was reviewed. Detailed risk histories routinely collected by case managers from females with confirmed gonorrhea were reviewed. Specimens were tested using previously validated nucleic acid amplification tests (NAATs).

Results: A total of 3,029 female detainees between the ages of 11-19 years of age received cervical screening for gonorrhea with 2,882 (95%) receiving additional rectal gonorrhea screening. The overall gonorrhea prevalence was 5.1% (155/3029). Among females who had both cervical and rectal specimens collected, there were 18 (0.6%) cervical-only infections, 36 (1.2%) rectal-only infections, and 134 (4.6%) concomitant cervical and rectal infections. The overall rectal gonorrhea prevalence was 5.9% (170/2882) while the overall cervical gonorrhea prevalence was 5.2% (152/2882). Of the 188 females with any gonorrhea infection, 151 (80%) had detailed behavioral data available. Among those with rectal-only infection, 11% reported anal sex, 33% reported trading sex for money or drugs, and 39% reported non-marijuana drug use. Among young women with concomitant cervical/rectal infections, 7% reported anal sex, 17% traded money for sex or drugs, and 19% reported non-marijuana drug use. Young women with cervical-only infections reported no anal sex, 16% reported trading sex for money or drugs, and 22% reported non-marijuana drug use.

Conclusions: There was a high prevalence of rectal gonorrhea detected by NAAT screening in this high risk population, with the majority of infected females having concomitant cervical infections. Of all cervical gonorrhea infections, 88% had rectal gonorrhea detected as well. A cervical-only screening protocol would have missed 19% of gonorrhea infections. Further data on the predictors of rectal-only infections would be useful in supporting targeted screening recommendations to identify rectal gonorrhea infections that would otherwise be missed by routine cervical screening.

P-470 AN EPIDEMIOLOGICAL AND GEOGRAPHICAL INVESTIGATION OF THE DISPARATE IMPACT OF GONORRHEA ON BLACKS IN MINNESOTA

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Objectives: In 2005 the national rate of gonorrhea (GC) among Blacks was 18 times that among Whites, and in Minnesota this disparity was even greater. Furthermore, Blacks in Minnesota have seen an increase in GC from 2004-2006 while rates in Whites declined. Using epidemiological and geographical analysis, we examined GC surveillance data to better understand the incidence and distribution of GC in Minnesota, comparing Blacks with Whites.

Methods: Using statewide GC case surveillance data (1996-2006) from the Minnesota Department of Health (MDH) we calculated three GC risk measures ' incidence rate, incidence rate difference (RD), and incidence rate ratio (RR) ' comparing Blacks to Whites. Because the GC burden is largely concentrated in the Minneapolis-St. Paul metropolitan area, subsequent analyses were limited to this region. Risk estimates were computed and mapped to residential zip codes to identify areas with the greatest racial disparities. The low quality of zip code data in years prior to 2002 further restricted our analysis to a five-year period (2002-2006). To maximize the sample from each zip code, risk measures were computed using cumulative GC morbidity from all five years. Further analysis focused on GC morbidity data from 2004-2006 due to contrasting trends in GC incidence among Blacks and Whites during these years.

Results: In 2006 statewide rates of GC were 55 times higher among Blacks compared with Whites. Progress seen from 1996-2004, when the GC rate in Blacks decreased (from 1,099 to 705 per 100,000), was followed by rate increases in 2005 and 2006. With a falling GC rate among Whites over the same two years (22 to 18 per 100,000), the gap between Blacks and Whites is widening. Cumulative (2002-2006) GC rate differences and rate ratios for Minneapolis-St. Paul zip codes were

not correlated with each other (r=0.06, NS). Moreso, zip codes with the highest five-year GC morbidity had the highest RD (r=0.39, p<0.05) but the lowest RR (r=-0.43, p<0.05), making it difficult to identify the most disparate geographical regions. Overall, Blacks in these zip codes had 3939 more cases per 100,000 persons than Whites and their GC rates were nearly 23 times higher. Further analysis of trends between 2004-2006 revealed increasing GC morbidity among Blacks in 68% of the zip codes (mean increase=79% or 373 cases per 100,000) and decreasing GC burden among Whites in 52% (mean decrease=46% or 27 cases per 100,000). [Note: Maps of geographical distribution of GC incidence, RR, and RD will be presented.]
Conclusion: While GC rates in Minnesota have remained relatively stable over the past decade, disparities between Blacks and Whites persist and are worsening. Cumulative risk measures (RR and RD) performed differently in identifying geographical areas of high GC disparity, with minimal overlap. Nonetheless, both measures may serve as tools to guide STD prevention and testing activities.

P-471 THE REAPPEARANCE OF DISSEMINATED GONOCOCCAL INFECTION (DGI) IN SEATTLE-KING COUNTY ASSOCIATED WITH SPREAD OF A SINGLE GONOCOCCAL PFGE TYPE

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Objectives: During the past three decades, the frequency of DGI has declined dramatically in North America and Europe, and DGI has occurred rarely in Seattle-King County over the past two decades. However, from April through December 2006, King County clinicians reported 13 cases of DGI. We characterized gonococci from DGI cases and compared those strains to gonococci from persons with uncomplicated gonococcal infection.
Methods: Gonococcal isolates from nine patients with DGI were sent to the Neisseria Reference Laboratory (NRL) at the University of Washington. Using established methods, the NRL confirmed the identity of the isolates, performed agar dilution antimicrobial susceptibility tests and pulsed-field gel electrophoresis (PFGE) with the enzymes, NheI and SpeI. All (>1200) other isolates received by the laboratory during 2005-2006 were characterized. Isolates from DGI patients and from patients with uncomplicated disease were also tested for resistance to killing by human serum. Demographic and behavioral factors were collected from patients with and without DGI.
Results: Cultures of synovial fluid (most commonly knee, ankle or thumb) or blood were positive for N. gonorrhoeae in 11 patients, and an Aptima combo 2 test of synovial fluid was positive in one additional case. Ten DGI infections occurred in men and three in women. The median age of these patients was 44 years (range 23 to 57). All of the reported cases had been hospitalized and received intravenous antibiotics. Nine of the cases acknowledged use of cocaine, three were homeless and three engaged in commercial sex. One man reported sex with men, another man reported sex with men and women and the remaining patients only heterosexual contact. All nine isolates from the DGI cases were confirmed as N. gonorrhoeae. Median minimum inhibitory concentrations (MIC) of penicillin G, tetracycline HCl, ciprofloxacin, and erythromycin were 0.125, 0.5, 2, and 0.125 mg/ml, respectively. Gonococcal isolates from 54 patients diagnosed with gonorrhea, but without DGI, in 2006 had similar MICs for each agent. Isolates from DGI patients and a sample (n=11) of those from patients whose isolates had the same susceptibility pattern without evidence of DGI were indistinguishable from each other after digestion with NheI and differed from each other by <3 bands after digestion with SpeI. Isolates from the PFGE type of the DGI patients were resistant to killing by normal human serum. The PFGE type from the DGI patients was first identified in late February 2006 and accounted for 10.9% (63/576) of isolates received thereafter through December 2006.
Conclusion: The reappearance of DGI in Seattle, King County, WA was linked to the apparent spread of a single gonococcal PFGE type. Resistance to the fluoroquinolones in this gonococcal type limits therapeutic choices for DGI. The true size of the outbreak is uncertain, and could be larger as not all evaluations of persons with compatible syndromes may have included tests for gonococcal infection and cultures from synovial fluid and blood have often been negative in patients with DGI.

P-472 INCREASING RESISTANCE TO ANTIMICROBIALS AMONG NEISSERIA GONORRHOEAE ISOLATES IN DEVELOPING COUNTRY

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Background and objective: Increasing antimicrobial resistance among N. gonorrhoeae isolates in many developing countries in recent years has become a major global public health concern in a high-risk population.
Methods: Gonococcal isolates from consecutive male and female patients with urethral / cervical discharge attending 4 STD clinics through 2002-2006, were tested for antimicrobial susceptibility to penicillin, tetracycline, norfloxacin and ceftriaxone by disk diffusion method using NCCLS guidelines. MIC's were determined for resistant strains by the agar dilution technique. Penicillin resistant isolates were tested for lactamase production by nitrocefin method. Linear yearly trend in the proportions of resistant strains to individual antibiotics was studied by trend chi-square test using the statistical package, EPI INFO program.
Results: 277 N. gonorrhea isolates were obtained during the period of seven years. Resistance to penicillin was observed in 63(22.74%) of which, 31 (44.2%) were penicillinase producing N. gonorrhoeae (PPNG). 137 (49.45%) of the isolates were resistant to tetracycline of which 73 (43.9 %) were tetracycline-resistant N. gonorrhoeae (TRNG, MIC >/=16 ug/Ml). A significant increasing trend in the resistance to penicillin and tetracycline (p< 0.001) was observed over the seven years. Resistance to norfloxacin was seen in 40(14.44%) of strains with an increasing prevalence of resistant strains observed though not significant (p=0.2). Overall 10(3.6%) isolates showed resistance to ceftriaxone by disc diffusion technique.
Conclusion: An overall increase in N. gonorrhoeae strains resistant to the commonly used antimicrobials was observed. The high percentage of GC isolates resistant to quinolones and the emerging resistance to ceftriaxone highlights the need for periodic susceptibility monitoring and proper patient management

POSTER SESSION: PATHOGENESIS

P-473 ASSOCIATION OF CYTOKINE POLYMORPHISM WITH C. TRACHOMATIS INDUCED TUBAL FACTOR INFERTILITY

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Objectives: Chlamydia trachomatis is an important cause of tubal factor infertility (TFI). Pathogenesis of Chlamydia associated infertility seems to be linked with the genetic background of the host. We have previously shown that IL-10 -1082 polymorphism is strongly associated with the intensity of Chlamydia specific cell mediated immune response. IFN-_ is also an important regulator of protective immunity in C. trachomatis infection in animal models. To further study the genetic correlates of Chlamydia associated TFI we genotyped IL-10 -1082/-819/-592 haplotypes, IFN-_ +874 SNP and other polymorphic immunomodulating cytokine genes in TFI women and in healthy controls.

Methods: The study population consisted of 119 women with TFI and 177 blood donors as controls. DNA was isolated from blood cells and genotyping of selected cytokine polymorphisms (TNF-_ -308, TGF-_1 codons 10 and 25, IL-10 -1082, -819, and -592, IL-6 -174 and IFN-_ +874) was performed by PCR using the Cytokine Genotyping Tray (One Lambda Inc., CA). Statistical analyses were performed using Fisher's exact test (SPSS 13.0) and the two-sample test of proportions (Stata 5.0 statistical software).

Results: The genotype distribution of the control population followed Hardy-Weinberg equilibrium (HWE) in all studied SNPs except IL-10 -1082. The genotype prevalence of cytokine SNPs was compared between TFI cases and controls. Haplogenotype IL-10 ATA/ATA and genotypes IL-10 -1082 AA and IL-6 -174 CC were more common among TFI cases than in controls (Table 1). There were no differences between controls and cases in genotype prevalence of TNF-_ -308, TGF-_1 codons 10 and 25 or IFN-_ +874 genes.

Discussion: According to our previous studies IL-10 -1082 AA genotype is associated with low IL-10 production and strong secretion of proinflammatory cytokines IFN-_ and TNF-_, which may be linked with tissue injury leading to TFI. In this study IL-10 -1082 AA was more common among cases than in controls although the control population was not in HWE with respect of IL-10 -1082. We also found that IL-6 -174 CC tended to be more common in TFI women than in controls. This genotype is associated with low IL-6 production. Further immunogenetic studies are needed to understand the association of these cytokine polymorphisms with C. trachomatis induced cytokine profile and pathogenesis of TFI.

	TFI	Controls	P (Fisher's exact)	P (Fisher's exact)
IL-10 -1082/-819/-592				
GCC/GCC (high)	17 (14.3%)	41 (23.2%)	0.059	0.062
GCC/ACC (intermediate)	42 (35.3%)	61 (34.5%)	0.883	
GCC/ATA (intermediate)	24 (20.2%)	42 (23.7%)	0.471	
ACC/ACC (low)	5 (4.2%)	13 (7.3%)	0.244	
ACC/ATA (low)	19 (15.9%)	17 (9.6%)	0.101	
ATA/ATA (low)	12 (10.1%)	3 (1.7%)	0.025	
IL-6 -174				
GG (high)	20 (23.5%)	42 (23.7%)	0.968	0.085
GC (high)	48 (40.3%)	91 (51.4%)	0.061	
CC (low)	43 (36.1%)	44 (24.9%)	0.037	
IFN-γ +874				
T/T (high)	10 (8.5%)	21 (11.9%)	0.321	0.601
T/A (intermediate)	56 (47.5%)	85 (48.3%)	0.835	
A/A (low)	52 (44.0%)	70 (39.8%)	0.475	

Table 1: Genotype distribution in study groups

P-474 INTERACTION OF LYMPHOGRANULOMA VENEREUM (LGV) AND OCULOGENTIAL (OG) CHLAMYDIA TRACHOMATIS WITH HUMAN KERATINOCYTES AND CERVICAL EPITHELIUM

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Objectives: To infect human keratinocytes with C. trachomatis; and to determine differences in infectivity, growth rates and pathophysiology of the LGV and OG biovars in human keratinocytes and cervical epithelium.

Methods: HaCaT (human keratinocyte) and ME-180 (human cervical) cell monolayers were grown in 24-well plates on glass or Thermanox coverslips. To determine infectivity and growth rates, the monolayers were infected at an multiplicity of infection (MOI) of 0.025 with serovars L1, L2, L3 and E, incubated at 37 or 33°C, and harvested for 5 consecutive days post infection. For ultramicroscopy studies, cells were infected at an MOI of 0.25 with serovar L2 and E, incubated at 37°C then processed for transmission electron microscopy at 1, 3, 9, 18, 24, 36 and 48 hours post-infection.

Results: The rate of infection was similar for all serovars tested in both cell lines, at 37 and 33°C, although the rate of growth was affected by the incubation temperature. In HaCaT cells all serovars replicated more rapidly at 37°C than 33°C, resulting in at least a 15-fold increase in the number of inclusions formed from day 1 to day 5, compared to a 4.4-fold increase in inclusion counts for serovar E, and only 1.1-2.3-fold increase for the LGV serovars, which did not replicate efficiently at this temperature. HaCaT cell infection with L2 resulted in destruction of the cell monolayer, which was not observed with serovar E despite large inclusion counts. In ME-180 cells there was a steady increase in inclusion formation, in contrast to the LGV serovars which demonstrated a rapid increase until day 3, then declined, with visible destruction of the cell monolayer for serovars L2 and L3 by day 5. For the ultrastructural studies, cytopathic changes were noted soon after HaCaT cell infection. One hour post serovar E infection some mitochondria were markedly swollen with an electron lucent matrix and reduced cristae (figure), which was not observed in L2 infected cells. This pathological change was absent from 3 to 24 hours post infection, but occurred again at 36 hours post infection, which corresponded with the time at which new immature inclusions were beginning to form. Myelin figures, indicative of degenerate mitochondria were noted upon HaCaT cell infection with both serovars. With the ME-180 cells, similar cytopathic changes were noted in the cytoplasm of both serovar L2 and E infected cells which included involuting mitochondria, myelin bodies and regions of cytoplasmic lysis. At the later stages C. trachomatis was not always compartmentalised within an inclusion in the infected cells.

Conclusions: LGV and OG serovars multiplied at a comparable speed in viable cells at 37°C. The loss of integrity of human epithelial cell monolayers exposed to LGV strains, but not to OG at 33°C, is in keeping with the clinical presentation of infections with these biovars. Different ultrastructural pathological changes occur in human keratinocytes following infection with OG C. trachomatis compared to LGV C. trachomatis infection, while the pathological changes exerted on cervical cells are similar for both biovars of C. trachomatis.

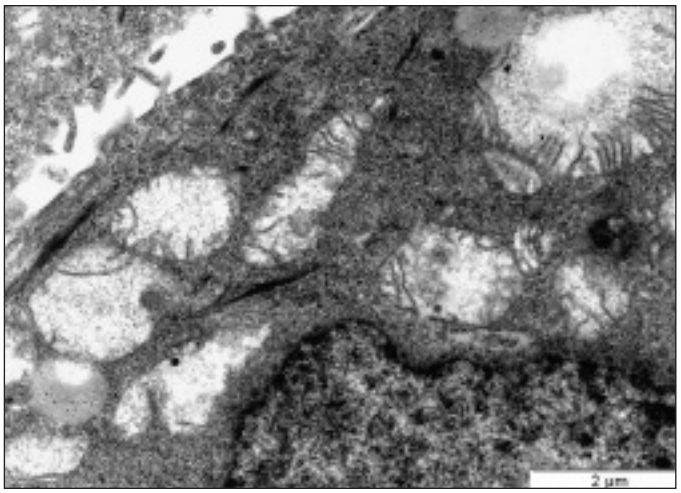

Figure 1: OG C.trachomatis induced mitochondrial changes

P-475 THE HAEMOPHILUS DUCREYI DOUBLE tdX/tdhA MUTANT IS NOT REQUIRED FOR VIRULENCE IN THE HUMAN CHALLENGE MODEL

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Haemophilus ducreyi is a fastidious gram-negative organism that requires heme for growth. This essential nutrient is acquired by using two TonB-dependent receptors: the hemoglobin receptor HgbA (HD2025) and the heme receptor TdhA (HD0388). An hgbA mutant of H. ducreyi (FX504) is avirulent in the human model of chancroid, while the tdhA mutant has never been tested in any H. ducreyi infection model. Based on genome sequencing data, H. ducreyi strain 35000 possesses a third uncharacterized TonB-dependent receptor termed tdX (HD0646). TdX is similar to the enterobactin receptor from Escherichia coli FepA, contains domains homologous to TonB-dependent receptors, and has several homologs in other gram-negative bacteria. Objective ' Determine whether expression of either tdX or tdhA is required for pustule formation in the human model of chancroid. Methods - A double tdX/tdhA mutant (FX527) was constructed in the 35000HP background by insertion of chloramphenicol and kanamycin cassettes into the coding sequences of tdX and tdhA, respectively. Six volunteers were experimentally infected with the double tdX/tdhA mutant. Each volunteer was inoculated with three doses (76 or 121 CFU) of 35000HP on one arm, and three doses (26, 51, and 101 CFU or 42, 83 and 165 CFU) of FX527 on the other arm. Results - The papule formation rate was 100% (95% CI, 60.6% to 100%) at 18 parent sites and 18 mutant sites. The pustule formation rate was 55.6% (95% CI, 35.7% to 75.4%) at 18 parent sites and 44.4% (95% CI, 15.0% to 73.9%) at 18 mutant sites (P=0.51). Biopsy of 35000HP and FX527 infected sites yielded similar colony counts of bacteria in quantitative culture. Conclusions - Expression of both tdX and tdhA are not necessary for pustule formation in humans. Since HgbA is required for pustule formation, these data indicate that HgbA is the primary mechanism of heme acquisition in H. ducreyi, utilizing heme from hemoglobin. It also suggests that hemoglobin is the major source of heme for H. ducreyi during human infection.

P-476 STRUCTURAL AND FUNCTIONAL STUDIES OF THE HAEMOPHILUS DUCREYI DSRA PROTEIN: IDENTIFICATION OF MINIMAL SEQUENCES REQUIRED FOR SERUM RESISTANCE AND FOR BINDING TO FIBRONECTIN AND VITRONECTIN

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The Haemophilus ducreyi outer membrane protein DsrA is a member of the multifunctional Oca family of proteins. Oca proteins share similarity in their C-terminal sequence, while their N-terminal domains are unique. DsrA has both similar and unique functions compared to other Oca members, as it functions in many facets of the pathogenesis of H. ducreyi infection, including serum resistance, and binding to keratinocytes and the extracellular matrix (ECM) protein vitronectin. Objectives - Expand the study of the multifunctional role of DsrA in chancroid pathogenesis by studying the function of DsrA in the ability of H. ducreyi to bind to the extracellular matrix protein fibronectin, an ECM protein bound by other Oca members. Determine which regions of the DsrA protein are involved in serum resistance and binding to the ECM proteins vitronectin and fibronectin. Methods - Fibronectin binding by H. ducreyi was assayed, using 2 different types of whole cell binding assays, in the wild-type parent strain 35000HP and a panel of isogenic mutants. Thereafter, a series of dsrA mutants were constructed, each containing increasing N-terminal deletions, while retaining the expression of the signal sequence for targeting of the protein to the outer membrane and the C-terminal membrane anchor domain. Mutant DsrA proteins were expressed in the null isogenic dsrA mutant FX517 and each was examined by outer membrane preparation, Western blot analysis and for surface expression with an anti-DsrA antibody. FX517, expressing each mutant protein, was tested for resistance to the bactericidal activity of normal human serum (NHS), as well as binding to fibronectin and vitronectin. Results - Each mutant protein appeared to be expressed at wild-type level and at the surface of the cell, although protein quantitation was difficult due to differences in immunoreactivity and staining characteristics. The minimal sequences required for DsrA to provide protection against the bactericidal activity of NHS, as well as for binding to fibronectin and vitronectin were determined. Conclusions - DsrA was the major factor in mediating the binding of H. ducreyi to fibronectin, with MOMP providing a minor role. As opposed to other bacteria systems where vitronectin binding is involved in resistance to the bactericidal activity of NHS, vitronectin binding by DsrA did not appear to mediate serum resistance in H. ducreyi.

P-477 MIGRATION OF TREPONEMA PALLIDUM THROUGH A KERATINOCYTE LAYER

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Objective: To determine how Treponema pallidum passes through a keratinocyte layer.
Methods: T. pallidum (Nichols strain) was propagated in rabbit testes. Experiments to establish the adherence were carried out by real time PCR on DNA extracted from HaCaT cells exposed to T.pallidum for different periods of time. Invasion and transmigration of HaCaT cells was observed using transmission electron microscopy. Transmigration was also measured by Real Time PCR using confluent HaCaT cells grown on the inserts of the Transwell tissue culture system.
Results: RT-PCR showed that there was already adherence at 15 minutes post infection and that the number of adherent treponemes increased over time. Transmigration and internalization was observed at 3 hours post infection. Electron microscopy showed T. pallidum attached to the cell surface and situated inter- as well as intra-cellularly. RT-PCR revealed that the number of treponemes arriving beneath the keratinocyte monolayer had increased over time.
Conclusion: T.pallidum passes through a keratinocyte layer by disruption of the tight junction and/or transmigration through the cells. This needs further investigation.

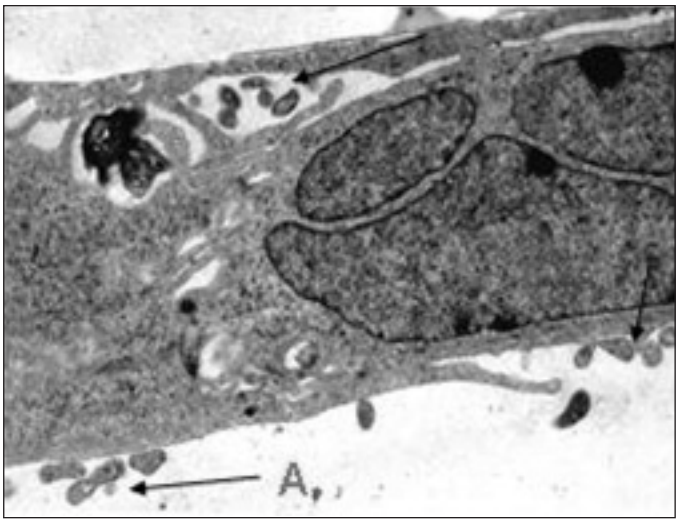

Figure 1: T. pallidum on the surface of cultured HaCaT cells seen 16 hoours post infection(A). T. pallidum is also seen inter-cellularly(B)

P-478 TLR4 AND CD14 GENOTYPES IN CHLAMYDIA TRACHOMATIS-ASSOCIATED TUBAL FACTOR SUBFERTILITY: THE KNOCKOUT MOUSE AND HUMAN CANDIDATE GENE APPROACHES

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Introduction: Although C.trachomatis (CT) infection is a predominant cause of tubal pathology in subfertile women, not all women develop this complication following infection. CT bacterial factors have been studied in relation to the clinical course of infection, however no strong associations have been found between the different serovars and the clinical course. Host immune factors are considered more important determinants of the inter-patient variability in the susceptibility to and severity of infectious diseases in general and CT infections in particular. The TLR family has been shown to be an essential component in the recognition of pathogens and initiation of the immune response. TLR4 recognizes chlamydial LPS via CD14. Our first objective was to assess the role of TLR4 in TLR4 deficient and control mice. Secondly, we have enlarged the cohort of subfertile women that was previously described (Morré et al., 2003) and investigated the role of TLR4+896 A>G and CD14'260 C>T SNPs in the development of CT-associated tubal factor subfertility.
Murine study: TLR4 deficient and control mice were intravaginally inoculated with CT serovar D. All mice were re_nfected 8 weeks later. Swabs were taken at regular intervals to assess the rate of infection. At the end of the experiment, all mice were investigated for hydrosalpinx or other gross upper genital tract pathology. Human study: 227 women visiting the Academic Hospital Maastricht because of subfertility, participated in this study. Data on tubal pathology and CT-IgG serology were collected as described previously (den Hartog et al., 2006). TLR4 and CD14 were genotyped as described previously (den Hartog et al., 2006).
Results: No differences were observed in the level of shedding during the acute phase of CT infection of mock/CT TLR4 deficient mice and mock/CT TLR4 functional mice. The median duration of CT infection was slightly longer in mock/CT TLR4 deficient mice (31.5 days) as compared to mock/CT TLR4 functional mice (26 days). No mice had evidence of hydrosalpinx or other gross upper tract pathology following the experiment. No differences in CD14 or TLR4 genotype distribution could be observed between subfertile women and controls. Introduction of CT IgG serology, with special attention to CT IgG-positive subfertile women with and without tubal pathology, did not alter the observed genotype distribution, although a trend was noticed towards a higher frequency of TLR4 SNP carriage in CT IgG-positive subfertile women with tubal pathology (19% AG) as compared to those without tubal pathology (8% AG).
Conclusion: TLR4 functional mice seem to be more protected against CT re-infection as compared to the TLR4 deficient mice. In humans, the single TLR4 and CD14 SNPs do not play a major role in the susceptibility to CT-associated tubal factor subfertility. Since other receptors may compensate for the loss of function in patients carrying a single SNP in a single gene, further studies are necessary to evaluate if carrying multiple SNPs in multiple genes has a more profound impact on the development of tubal pathology following CT infection as compared to carrying a single SNP in a single gene.

P-479 CHEMOKINE RECEPTOR 5 (CCR5) ANALYSES IN HPV / TTV CO-INFECTED INDIVIDUALS AND IN HEALTHY BLOOD DONORS

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Objective: Chemokines are chemotactic cytokines that orchestrate leukocyte trafficking in tissues, thus, playing an important role in regulation of immunological processes. The aim of this study was to investigate the association of human papillomavirus (HPV) infection and Torque Teno Virus (TTV) and its influence with chemokine receptor 5 (CCR5) polymorphism.
Methods: Following approval from the Human Ethics Committee of Londrina State University, 81 HPV positive Brazilian women and 100 healthy control subjects DNA samples were assessed for TTV DNA presence by nested PCR using primers for N22 region. We also performed CCR5 genotyping by polymerase chain reaction with specific primers. Data were evaluated by the qui-square, t-test, using Statistica 6.0.
Results: The prevalence of TTV DNA in HPV infected patients was 25,92% (21/81) and 6% (6/100) in the blood donors samples. TTV distribution was significantly higher among HPV infected women than in healthy blood donors (p=0,0002). The examination of 81 HPV positive patients for CCR5D32 deletion showed that 96,3% (78/81) were homozygous for the wild allele, 2,47% (02/81) carried the Delta 32 allele in the heterozygous state, and 1,23% (01/81) were homozygotes for the variant allele. Among TTV positive patients 95,24% (20/21) presented the wild allele in heterozygous state and 4,76% (01/21) were heterozygous for the D32 allele. There was no significant difference in Delta 32 allele distribution between HPV patients TTV co-infected and uninfected (p>0,05).
Conclusions: TTV DNA is significantly more prevalent in HPV infected patients than in healthy blood donors. No correlation between CCR5 genotyping and TTV DNA presence was observed in HPV infected patients. Because there is small number of D32 allele carriers examined, further studies are needed to clarify the role of CCR5 in clinical features of HPV and TTV co-infection.

P-480 CYTOKINE EXPRESSION IN RABBITS INFECTED WITH SYPHILIS

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Objective: The study of the immune response to syphilis has been hampered by the lack of available immunological reagents for the animal model of syphilis, the rabbit. In the current study, we developed a quantitative real-time RT-PCR assay for rabbit cytokines and to examine temporal expression of cytokines during the progression and resolution of early experimental syphilis in the skin and testes of rabbits. The relationship of treponemal burden was also examined with that of local cytokine expression in lesions.
Methods: We developed a new SYBR green-based, real-time RT-PCR assay using an external plasmid standard containing fragments of IFN-_, TNF-_, IL-4, IL-2, and IL-10 and a housekeeping gene (HPRT) to measure the relative levels of treponemal mRNA and compare them with the levels of different rabbit cytokines within testicular or dermal lesions throughout early experimental syphilis. Five rabbits were infected intradermally on their backs with 108 Treponema pallidum subsp. pallidum Nichols strain. Four mm punch biopsies were collected on days 2, 6, 9, 13, 29, 36, and 45. Sixteen rabbits were infected intratesticularly with 7x107 treponemes per testis with another T. pallidum strain (Chicago). Testes from 4 rabbits were aseptically removed on days 11, 18, 25, and 39 post infection. Total RNA from these lesions was isolated and reverse transcribed for real-time PCR.

Results: We observed a significant increase in the mRNA levels of the Th1-associated cytokine, IFN- _, and a macrophage-associated IL-10, which overlapped temporally with maximum treponemal mRNA at peak lesion development. This increase was followed by a sharp decline in treponemes, IFN-_, and IL-10 by day 25 when organisms had been cleared. Neither IL-2 nor IL-4 mRNA was detected at any time-point during early infection.
Conclusions: The presence of high levels of IFN-_ and the absence of IL-4 demonstrates a predominant Th1 cellular infiltration in rabbits infected with syphilis, at either skin or testicular sites. Our results strengthen the hypothesis that treponemal clearance in the rabbit model is mediated by phagocytosis of T. pallidum by activated macrophages. The finding that the cytokine repertoire expressed in rabbits parallels that seen in human syphilitic lesions confirms the utility of the rabbit as an excellent model for further studies of immunity in syphilis.

POSTER SESSION: PREVENTION / INTERVENTIONS

P-481 REDUCING SEXUALLY TRANSMITTED INFECTION RATES BY IMPROVING PATIENT-BASED PARTNER NOTIFICATION FOR TREATMENT: A RANDOMIZED CONTROLLED TRIAL

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Objectives: To assess whether sexually transmitted infections can be prevented through social-cognitive approaches targeting improved partner notification through patient referral of sexual partners.
Methods: At two inner-city sexually transmitted disease clinics from 01/2002 through 12/2004, 600 primarily Afro-Caribbean and African American patients with microbiologic confirmation of infection with Neisseria gonorrhoeae or Chlamydia trachomatis were randomly assigned to standard-of-care for patient referral of sex partners (N = 296) or to counseling to promote patient referral (N = 304). Participants completed an interviewer-administered instrument on the day of diagnosis and at 1 and 6-months post-diagnosis. At 6-months, participants were tested for STI with Nucleic Acid Amplification Testing of urine samples.
Results: Those in the experimental group were more likely to report having notified at least 1 sexual partner 1-month following counseling (86% control, 91% experimental; Adjusted OR 1.8, 95% CI: 1.0 ' 3.0), and were more likely to report at the 6-month interview that they had no episodes of unprotected vaginal or anal sex (38% control, 48% experimental; Adjusted OR 1.5, 95% CI: 1.1 ' 2.1). Follow-up rates of gonorrhea or chlamydial infection were 6% for the experimental and 11% for the control group (Adjusted OR 2.2, 95% CI: 1.1 ' 4.1), with greatest benefits seen among men (3% STI in experimental group, 12% in control group; p-value for gender interaction = 0.03).
Conclusions: Clinic-based counseling to improve patient-based partner notification improves health behaviors and can reduce risks for subsequent infection among urban, minority patients presenting for care.

P-482 A BRIEF, CLINIC-BASED, SAFER SEX INTERVENTION FOR AFRICAN AMERICAN MEN AT-RISK OF HIV ACQUISITION: A RANDOMIZED CONTROLLED TRIAL

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Objective: To test the efficacy of a brief, clinic-based, safer sex intervention among a sample of young (ages 18-29 years) African American men newly diagnosed with an STD.
Methods: A randomized control trial was conducted. Immediately following diagnosis, 266 eligible volunteers attending the clinic completed a brief assessment and were randomized to receive a personalized intervention session lasting approximately 40 minutes or routine standard of care. The sample was screened to include only men using condoms during penile-vaginal sex in the past 3 months. 197 men (74%) returned to complete a 3-month follow-up assessment, including four outcome measures. A 6-month medical records review determined post-intervention frequencies of subsequent STD acquisition. A complete case analysis approach was used.
Results: Compared to men in the control condition, those receiving the intervention were significantly less likely to acquire a subsequent STD within 6 months (50.4% vs. 31.9%, P=.002). Men receiving the intervention were significantly more likely to report using condoms the last time sex occurred (72.4% vs. 53.9%, P=.007). Based on a 10-point rating scale, men receiving the intervention scored higher on the task of applying condoms to a penile model (mean difference=3.17, P=.0001). Also, men receiving the intervention reported significantly fewer sex partners (2.06 vs. 4.15, P=.0003). Finally, those receiving the intervention reported significantly fewer acts of unprotected sex (12.3 vs. 29.4, P=.045).
Conclusion: Findings suggest that brief and tailored, clinic-based, intervention may be an efficacious strategy to reduce acquisition of STDs among young, African American men newly diagnosed with an STD.

P-483 STRUCTURED SYSTEMATIC TEACHING OF PATIENTS WITH STIS IN A RESOURCE-POOR SETTING: EFFECTS OF LEARNING OUTCOMES ON SELF CARE, SEXUAL BEHAVIOUR AND CONDOM USE, RECURRENCE OF STIS & HOSPITALIZATION

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Objectives: Adequate and effective education and counseling of STI patients is rarely done in most of the resource-poor settings of sub-Saharan Africa. This is due in part to a large patient: doctor ratio. Oftentimes, the only education or counseling provided for these patients is the routine casual teaching from nurses. The objective of this study was to compare a structured systematic teaching module (SSTM) with the routine casual education and evaluate its effectiveness on the patients' level of knowledge and skills in self-care, use of condom, identification of STI symptoms, and use of health facilities.
Methods: 110 STIs patients were prospectively recruited into the study, and randomly assigned into experimental and control groups in the ratio of 3:2 respectively. Strict ethical procedures were followed and full consent obtained from all the patients. A pre-test, post-test time-series design was used to collect data using a 20-item knowledge and skills assessment schedule with items rated on a 5-point Linker-type scale. The schedule was pre-tested on 30 patients with a Cronbach's a score of 0.86 and a test-retest co-efficient of 0.88 at a 2-week interval. The SSTM was used to teach the experimental group while the controls had the traditional routine casual teaching. Knowledge and skills in self-care, positive lifestyle and sexual health, identification of STI symptoms, use of condom and health facilities were

assessed 4 times. The first was before teaching module, then at 4 weeks, 3 and 6 months. c2 and t-tests were used to determine significance of any changes in knowledge and skills levels. $p < 0.05$ was considered significance.

Results: 71 (69.6%) were males. The mean age was 29.2±8.4 years. 92.7% of the patients were heterosexual. 73 (66.4%) had multiple sexual partners in the last 6 months. 20 (18.2%) use condom at the last sexual encounter, and 76 (69%) had last unprotected sex with casual acquatancies. Patients in experimental group showed: a significant increase in knowledge and skills in self care and positive sexual lifestyle ($p = 0.032$); a significant increase in condom use ($p = 0.01$); a significant increase in knowledge and skills in identification of STI symptoms ($p < 0.01$). Over the 6 month follow up, the recurrence rate was significantly lower in experimental than in control group ($p = 0.048$). However, there was no statistically significant increase in the use of health facilities by the patients in the experimental group for those of them with recurrent STI or who required sexual and reproductive health services.

Conclusions: The study clearly shows that the structured systematic teaching module is more effective than the traditional routine casual teaching. This teaching model is therefore recommended for education and counseling of all STI patients, and should be adopted as a core aspect of their overall management.

P-485 A RANDOMIZED CONTROLLED TRIAL OF THE IMPACT OF EMAIL AND TEXT (SMS) MESSAGES ON THE SEXUAL HEALTH OF YOUNG PEOPLE

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Objectives: Notifications of Chlamydia have dramatically increased among young people in Australia, it is now the most commonly notified infectious disease. Young people frequently report multiple partners and inconsistent condom use. The aim of this study was to trial a novel method of sexual health promotion - sending email and mobile phone text messages (SMS) about safe sex and STI with the aim of encouraging reductions in sexual risk behaviours and increasing Chlamydia awareness and testing uptake.

Methods: Young people (aged 16'29) were recruited at a music festival held annually in Melbourne, Australia. They completed a questionnaire about sexual risk behaviour and were randomised to either the intervention arm of the study (to receive messages) or a control group. SMS messages were sent every 3-4 weeks for a twelve month period and included catchy STI prevention slogans such as 'Chlamydia: hard to spell, easy to catch. Use a condom!' Emails were sent monthly and contained detailed information about STI topics and included links to related websites. Participants completed follow up questionnaires online after 3, 6 and 12 months. Only data from the 12 month questionnaire are presented here.

Results: 370 people completed the 12 month questionnaire (169 in the intervention group and 201 in the control group); 64% were female and the median age was 21 years. Of those in the intervention group 96% recalled receiving study SMS, 84% recalled receiving emails. The intervention group reported having multiple partners in the past year less often than the control group (8.3% vs. 15.5%, Risk Ratio 0.53, 95%CI 0.29, 0.97). The intervention group were more likely to score highly on a test of simple STI knowledge (RR 1.41, 95%CI 1.19, 1.66). Among the intervention group, 31.4% reported a STI test during the 12 month study period, compared with 22.5% of the control group (RR 1.39, 95%CI 0.99, 1.96). However, when stratified by gender, males showed no effect associated with the intervention (RR 1.03, 95%CI 0.68, 1.55) but females in the intervention group were more likely to have had a STI test than females in the control group (RR 1.47, 95%CI 1.11, 1.94). There were no significant differences between the groups in condom use with casual partners (RR 0.92, 95%CI 0.61, 1.40) or having sex with a new partner (RR 1.08, 95%CI 0.75, 1.56).

Conclusions: The results of this randomized controlled trial show that receiving regular sexual health-related SMS and email messages can improve knowledge, risk behaviour and health seeking behaviour in young people. SMS and email are low cost, widely available, easy to use and can have an almost instantaneous response time; which when combined with their popularity among youth, means that these media have a strong potential in sexual health promotion.

P-486 PROBLEMS WITH CONDOM USE AMONG PATIENTS ATTENDING SEXUALLY TRANSMITTED DISEASE CLINICS: PREVALENCE, PREDICTORS, AND RELATION TO INCIDENT GONORRHEA AND CHLAMYDIA

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Objective: Consistent and correct condom use remains important for sexually transmitted disease (STD) prevention, yet few epidemiologic studies assess the role of condom use problems. We examined the prevalence of condom use problems, predictors of use problems, and relation between condom use and incident infection with gonorrhea and chlamydia (Gc/Ct) among STD clinic patients.

Methods: Data were analyzed from 1,152 sexually active participants in Project RESPECT, a trial of counseling interventions conducted at five publicly funded US STD clinics from 1993-1997 where participants were followed quarterly for one year. These participants completed assessments of consistency and correctness of condom use at their 12-month follow-up visit. Demographic and behavioral predictors of condom use problems (breakage, slippage, leakage, and partial use) were evaluated using multivariable logistic regression. Associations between condom use and incident Gc/Ct infection were assessed using exact logistic regression.

Results: Altogether, 336 participants (41%, 95% CI, 38-45%) reporting condom use indicated condoms broke, slipped off, leaked or were not used throughout intercourse >1 time in the last 3 months; correspondingly, 8.9% (95% CI, 7.0-9.5%) of uses resulted in potential for exposure to STD if a partner was infected because of: delayed application of condoms (4.3% of uses), breakage (2.0%), early removal (1.4%), slippage (1.3%), or leakage (0.4%). Use problems were more likely among those who used condoms inconsistently (adjusted prevalence odds ratio (aPOR)=2.4, 95% CI: 1.8, 3.3), had multiple partners (aPOR=1.5, 1.1, 2.0), and were aged<25 (aPOR=1.3, 95% CI: 1.0, 1.8). Of 130 participants tested for incident Gc/Ct, 21 (16.2%) were infected: 0/18 consistent users with no use problems, 2/15 consistent users with >1 problems, 11/62 inconsistent users, and 8/35 nonusers. Exact logistic regression showed a dose-response relation between increased protection from condom use and reduced Gc/Ct risk (p for trend=0.032).

Conclusions: Both consistency of use and use problems must be considered in studies of highly infectious STD to avoid underestimation of condom effectiveness.

P-487 ADVANCED PROVISION EMERGENCY CONTRACEPTION AMONG WOMEN RECEIVING PARTNER NOTIFICATION SERVICES FOR GONORRHEA OR CHLAMYDIAL INFECTION: A RANDOMIZED CONTROLLED TRIAL AND META-ANALYSIS

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Objective: To determine whether giving women emergency contraception at the time they receive partner notification services decreases their risk of unintended pregnancy.
Methods: We conducted a randomized controlled trial of advanced provision emergency contraception (APEC) among noncontracepting women who were receiving partner notification services for gonorrhea or chlamydial infection in King County, Washington. All women, regardless of randomization assignment, were offered medication to give to their untreated sex partners; women assigned to the intervention arm were also prescribed free APEC and condoms to be obtained at pharmacies concurrent with receipt of medications for their partners. Women in the APEC arm could refill their prescriptions for condoms and emergency contraception as needed for one year. Staff advised women in both study arms to seek complete contraceptive services through health department clinics. Study staff interviewed participants every three months over a 12 month follow-up period. We also performed a meta-analysis of 7 randomized trials of APEC, including our own.
Results: A total of 374 (21%) of 1756 women receiving partner notification services were not contracepting and did not desire pregnancy. Of these, 177 agreed to participate in the trial. Forty-nine percent of participants had been diagnosed with gonorrhea or chlamydial infection in a private sector clinic, and 13% in an STD clinic. Ninety-two percent of participants completed at least one follow-up interview, 71% completed 3 or more, and 51% completed all 4 follow-up interviews; the number of follow-up interviews completed did not significantly differ by study arm. Compared to women in the control group, women in the APEC group were somewhat more likely to ever use emergency contraception during the follow-up period (38% vs. 25%, RR 1.87 95% CI 0.98-3.6). A total of 39 pregnancies occurred among the 177 study participants over a total follow-up period of 142.1 person years (27.2 pregnancies per 100 person years). Women who received APEC had a similar risk of becoming pregnant as women in the control group (17% vs. 20%, RR 0.84 95% CI 0.40-1.80). In an analysis of 3 month interview periods, women in the APEC arm were significantly more likely to report having emergency contraception at home (52% vs. 34% RR 1.20 95% CI 1.06-1.36), but similar proportions in both arms reported hormonal contraception use (10% vs. 6%, RR 1.14 95% CI 0.90-144) and condom use at the last sexual encounter (41% vs. 38%, 1.03 95% CI 0.91-1.117). Meta-analysis of the 7 randomized trial found that the effect of receiving APEC on pregnancy was homogenous and negligible (common RR = 0.91, 95% CI 0.76-1.09).
Conclusions: Although noncontracepting women with gonorrhea or chlamydial infection have an extremely high rate of unintended pregnancy, APEC does not reduce that risk. These findings are consistent with previous randomized trials, most of which were conducted in much lower risk populations.

P-488 RANDOMIZED TRIAL OF TOPICAL PENILE MICROBICIDE USE BY MEN TO REDUCE POST-TREATMENT RECURRENCE OF BACTERIAL VAGINOSIS IN THEIR SEXUAL PARTNERS

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Background: Bacterial vaginosis (BV) recurs frequently after metronidazole treatment. Hypothesizing possible sexual transmission of the bacteria associated with BV, we conducted a randomized controlled trial (RCT) to evaluate the efficacy of topical application to the penis of 62% ethyl alcohol in emollient gel by male partners of women diagnosed with BV in reducing post-treatment BV recurrence.
Methods: At a sexually transmitted infection (STI) referral center in Nairobi, Kenya, among 587 women who presented with STI symptoms, 236 had BV (vaginal Gram stain Nugent score _ 7) and 223 agreed, with their partners, to be randomized. We randomized 115 to the intervention and 108 to the control arm. In the intervention arm male partners were instructed to apply the 62% ethyl alcohol in emollient gel before and after sexual intercourse. Men in the control arm were not asked to alter their sexual or hygienic practices. All couples received counseling for STI reduction, were treated for STI when indicated using syndromic management, and provided with condoms. Women were followed for up to 3 months post enrollment with repeat vaginal Gram stain evaluations at every visit and culture for H2O2-producing lactobacilli at the 2 month visit.
Results: In an intent to treat analysis, risk of BV was significantly higher in the intervention arm (Hazard ratio of 1.44 (95% CI 1.01-2.04). A comparison of bacterial morphotypes identified by Gram stain of vaginal specimens obtained at one and two months showed a trend towards fewer lactobacillus morphotypes (p=0.08) and more mobiluncus morphotypes (p=0.06) in the intervention arm at one month but not at two months (p = 0.14 and p=0.33). At the two-month visit, vaginal cultures showed no differences between women in the two study arms in prevalences of any lactobacilli or of H2O2-producing lactobacilli (p=0.81, and 0.32 respectively).
Conclusions: Use of the 62% ethyl alcohol by male partners significantly increased persistence or early recurrence of BV but not prevalences of vaginal lactobacilli at two months, among women treated with metronidazole.

P-489 EMPOWERING HIGH RISK YOUTH IN PAKISTAN

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Introduction: As poverty continues to grip Pakistan, the number of urban street children grows and has now reached alarming proportions, demanding far greater action than presently offered. Urbanization, natural catastrophe, drought, disease, war and internal conflict, economic breakdown causing unemployment, and homelessness have forced families and children in search of a 'better life,' often putting children at risk of abuse and exploitation.
Objectives: To reduce drug use on the streets in particular injectable drug use and to prevent the transmission of STDs/HIV/AIDS among vulnerable youth.
Methodology: Baseline study and situation assessment of Health problems particularly HIV and STDs among street children of Quetta, Pakistan.
Activities & Conclusion: The program launched a peer education program, including: awareness of self and body protection focusing on child sexual abuse, STDs/HIV/AIDS, life skills, gender and sexual rights awareness, preventive health measures, and care at work. Relationships among AIDS-related knowledge and beliefs and sexual behavior of young adults were determined. Reasons for unsafe

sex included: misconception about disease etiology, conflicting cultural values, risk denial, partner pressures, trust and partner significance, accusation of promiscuity, lack of community endorsement of protective measures, and barriers to condom access. In addition, socio-economic pressure, physiological issues, poor community participation and attitudes, and low education level limited the effectiveness of existing AIDS prevention education.

Recommendations: It was found that working children are highly vulnerable to STDs/HIV/AIDS, as they lack protective measures in sexual abuse and are unaware of safe sexual practices. Training of adolescent as peer educators is recommended. Ours being an Islamic society, such information should be given to youth in a way that does not challenge local norms and values. Problem-based learning and participatory education for improving knowledge and condom use and community-based interventions should be considered for STDs/HIV/AIDS prevention.

P-490 YOUTH EMPOWERMENT AS A TOOL FOR PREVENTION OF STI/HIV/RISKY BEHAVIOUR

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Objectives: The burden of HIV in most sub-Saharan countries is concentrated in youths in the age ranging from 15years to 35years. The tuchinfye youth organisation was designed to teach sexuality to youths and empowerment to prevent STI/HIV/AIDS.

Methods: The Tuchinfye Youth Organisation was formed in Kabanana compound in Lusaka North. Poverty is very high in these areas and most people live below poverty datum line of one US Dollar per day. Education levels are very low due to overcrowding against the few government schools thus most youths are either out of school dropouts or they have never been to school at all. Most youths resort to engaging in risky behaviour that could lead them to contracting HIV. The Tuchinfye was formed with an aim of reducing the prevalence of STI/HIV in youths through empowerment of various skills for sustainable livelihoods, education in sexuality and sports development as a tool to prevent youths from engaging in risky behaviour such as prostitution, alcoholism, smoking and early marriages. A group of 30 youths mobilised themselves to prevent youths from risky behaviour that could predispose them to contracting STI/HIV and came up various skills that would empower them and make them self-reliant.

Results: The skills kept them occupied for the whole day and they have an income to sustain them from the sales of the items they made; during leisure time they also had sports for development where they participated in various social games and learnt about HIV through sporting activities games with an HIV message; 200 did VCT; of these 100 reported in a survey reported having started to abstain from sex after going through VCT process; 60 were suspected of having an STI and of these 15 were diagnosed and treated for STIs. The health centre has since been receiving a big number of youths coming through to the clinic for screening and medical care.

Conclusions: Skills empowerment is an effective tool for prevention of HIV transmission and sustainable livelihoods for youths; Sports for youth development should be encouraged in the school curricular activities with emphasizing on HIV prevention. Sexuality education is vital for the youths so that they know the level at which they are in life and apply coping skills. VCT should be made youth friendly to encourage as many youths to come over as possible using peer medical personnel.

P-491 FEASIBILITY OF USING THE INTERNET TO COUNSEL AND REFER HIGH RISK MEN WHO HAVE SEX WITH MEN (MSM) AND TO NOTIFY THEM OF STD EXPOSURE

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Objectives: The internet has become an efficient means for some MSM to meet new sex partners, and has been associated with STD outbreaks and HIV transmission. This report summarizes the recent experience of the largest health care center in New England caring for MSM in using the internet to counsel and recruit at risk MSM, and the results of a nationwide survey of attitudes about internet STD partner notification.

Methods: Internet counseling and recruitment efforts recently conducted at Fenway Community Health (FCH) were reviewed, and a survey was posted on an MSM sex seeking website to better understand MSM attitudes about internet-based education and partner notification services. Descriptive statistics were calculated for both demographic variables and content-related questions; Chi-square tests, t-tests and analysis-of-variance (ANOVAs) were performed to assess independent associations.

Results: Since 2004, FCH has used the internet to educate MSM and recruit participants into prevention studies. 'Ask Doctor Cox' is a web-based service staffed by health educators and clinicians that responds to health queries from MSM, averaging about 3 new questions a week, such as: where can one be tested for STDs, receive PEP, as well as inquiries about the transmission modes of different STDs. Over the past year, almost 200 MSM responded online to recruitment efforts for studies of HIV preventive vaccines, rectal microbicides and antiretroviral chemoprophylaxis. In 2005, a web-based survey was posted on the largest MSM internet sexual meeting in the world, and within a one-month period, more than 1,800 MSM from 48 states responded. Respondents tended to be Caucasian (83%), with a mean age of 36 (SD=10.3), and 58% had at least an undergraduate college degree. Thirty-five percent of the sample reported a previous STD (syphilis, chlamydia, and/or gonorrhea). Those who reported having a prior STD were demographically similar to those who did not. MSM who reported having a previous STD were more likely to identify as gay or homosexual compared with those who did not ($p < 0.001$). The vast majority (70%) of the MSM indicated a willingness to utilize a public health specialist to inform their sexual contacts via a partner notification email of possible exposure to an STD. MSM with a prior STD history were less likely to want to utilize internet-based partner notification services to inform partners about new STD exposures compared with MSM with no STD history ($p < 0.001$).

Conclusions: The internet provides new opportunities for the education, counseling, and engagement of at risk MSM in HIV and STD prevention activities. The majority of at risk MSM were amenable to being notified about STD exposures online and using these services in the future, although those with prior STDs expressed more concerns about confidentiality, suggesting the need for further MSM community education about the benefits of public health engagement in STD control.

P-492 THE SAFE CITY STUDY: A MODEL FOR LOWER COST AND MORE GENERALIZABLE EVALUATIONS OF THE EFFECTIVENESS OF ITERVENTIONS FOR THE PREVENTION OF SEXUALLY TRANSMITTED INFECTIONS (STI)

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Objectives: STI clinics provide access to large populations of at-risk men and women and the opportunity both to deliver and evaluate the efficacy of behavioral interventions aimed at reducing risk behaviors and newly acquired infections. Yet this opportunity is often limited by two major obstacles: the costs involved in assessing behavioral and biologic outcomes and the lack of generalizability or external validity resulting from narrowly defined study populations. Costs are high because large numbers of study subjects are needed to detect a relatively small effect size combined with the need to bring back large numbers of participants for follow-up behavioral assessments and STI testing. External validity and generalizability are limited due to the selection of study subjects willing and motivated to participate in research and the additional training and quality assurance provided to research and clinic staff delivering interventions. Rigorous study designs that overcome obstacles of cost and generalizability are needed. Traditional randomized controlled trials are often not feasible or possible in STI clinic settings and alternative research models should be considered to bridge the gap.
Methods: The Safe City study, a study of the effectiveness of a brief, video-based waiting room intervention among STI clinic patients conducted between 2003 and 2005, employed a block randomization design that systematically allotted blocks of clinic weeks (in 4-week increments) to either intervention (Safe City video, supplemented by posters) or control (regular clinic services) and used routinely collected clinic and surveillance data to ascertain newly acquired STI. The design addressed the structural nature of the intervention approach, in which a 23-minute, theory-based, soap opera style video, shown during clinic hours, was intended to reach all patients in the waiting room. The intervention was evaluated by passively following all patients in both study conditions at three clinic sites for a median of 14.8 months and comparing incident STI between patients according to study condition.
Results: Approximately 40,000 subjects were followed during the 3-year study. This large sample afforded sufficient power to detect a statistically significant reduction in STI of almost 10% among clinic patients exposed to the video intervention, compared with patients in the control waiting room condition. By passively following STI incidence among all clinic patients, generalizability was maximized (by minimizing selection bias) and minimal burden was placed on clinic staff.
Conclusion: The Safe City study methodology had two advantages compared with more conventional studies of intervention efficacy for STI prevention. First, by following all STI clinic patients, the study was able to monitor the required number of subjects to detect a modest effect size appropriate for a brief, low intensity intervention. Second, the study had good external validity, since results could be generalized to all clinic participants, multiple clinics were involved, and relatively little additional staffing, training, or technical assistance were required. By avoiding individual recruitment, enrollment, and active follow-up among study subjects, evaluation costs could also be reduced. The Safe City study may offer an alternate research paradigm for other intervention studies, particularly in the STI clinic setting.

P-493 PREDICTORS OF ADHERENT USE OF DIAPHRAGMS AND MICROBICIDE GEL IN A FOUR-ARM, RANDOMIZED PILOT STUDY AMONG WOMEN IN MADAGASCAR AT HIGH RISK OF SEXUALLY TRANSMITTED INFECTIONS

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Objective: Female-controlled methods for prevention of HIV and sexually transmitted infections (STIs) rely less on cooperation from men than alternative options like male condoms. To be effective, however, they must be used consistently during sex. In 2005, we conducted a four-week, four-arm, randomized pilot study in preparation for an upcoming randomized trial of the effectiveness of two female-controlled methods for STI prevention. Women were randomized to use a latex diaphragm with candidate vaginal microbicide AcidForm, diaphragm with placebo gel hydroxyethylcellulose (HEC), Acidform alone, or HEC alone. In this analysis, we examined participant and product characteristics associated with adherent use of assigned study products.
Methods: We screened 314 women to enroll 192 (61%). Enrolled participants were women self-reporting high numbers of sex partners and inconsistent use of male condoms. Equal numbers of women (n=48) were randomized to each study group. Participants were seen once weekly for four weeks for physical exams and structured questionnaires capturing reproductive and sexual behavior. Using multivariable regression models with generalized estimating equations (GEE), we assessed predictors of adherent use of assigned study products during 100% of sex acts over the previous week. We considered several factors: study-related and demographic characteristics, reproductive and sexual behavior, product characteristics, and participants' perceived power and control. We computed unadjusted and adjusted risk ratios (RRs) for each predictor with adherent product use, separately for women in gel-diaphragm and gel-only arms.
Results: Between 44% and 67% of gel-diaphragm users (varying by follow-up visit) reported use of study products at 100% of sex acts during the last week. Gel-only users were less compliant, with 22-47% (depending on visit) reporting gel use in 100% of sex acts over the previous week. Among gel-diaphragm users, adherence increased with longer follow-up (Visit 4 vs. Visit 1 RR: 1.51, 95% confidence interval (CI):1.23-1.86). Women who had experienced violence from a partner after requesting condom use were also more adherent (RR: 1.26, 95% CI: 1.02-1.56). Among gel-only users, adherence also improved significantly by the final visit (Visit 4 vs. Visit 1 RR: 1.39, 95% CI:1.001-1.93). Older women (over age 35) were more adherent than the youngest participants (16-24 years) (RR: 1.62, 95% CI: 1.01-2.59). Among both groups, women who found their products easy to conceal (RR for gel-diaphragm users: 3.10, 95% CI:1.38-6.96; RR for gel-only users: 1.55, 95% CI: 0.88-2.74) and who experienced no problems with products in the past week (RR for diaphragm-gel users: 1.54, 95% CI: 1.05-2.25; RR for gel-only users: 1.21, 95% CI: 0.67-2.17) were more likely to be adherent. Adherence was not associated with education, site, prior study participation, or socioeconomic factors.
Conclusions: Two factors associated with increased adherence in this pilot study ' describing covert product use as easy, and not reporting problems with products in the past week ' can be addressed by lengthening the 'practice product use' sessions conducted by clinicians when participants receive their assigned study products at enrollment. Booster sessions during follow-up will include more practice with product insertion. Simple, practical changes to counseling may improve adherence in the upcoming trial.

P-494 STI AND HIV COUNSELING AS A HEALTH PROMOTION STRATEGY IN PRIMARY CARE SETTINGS

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Introduction: In Brazil primary care attendance services has been providing sexually transmitted infection (STI) counseling and HIV testing as an important HIV prevention strategy. The integration of STI/HIV prevention in primary care services could enlarge the access of the population who has not been reached by vertical traditional programmes of STI/HIV prevention. It is important to consider this issue as part of health promotion activities in primary care services which could also be included in the process of enabling people to increase their control over, and to improve, their health. Providing information and enhancing life skills increases people empowerment and therefore the possibility of making choices targeting healthier behaviors. The aim of this study was to evaluate the feasibility and acceptability of providing STI/HIV counseling as a health promotion activity in primary care attendance services.
Methods: This primary care service is located in the center of São Paulo metropolitan area, in Brazil. This primary care service has conducted a pilot-test for a different way to promote STI/HIV counseling by using idler time in consultation waiting room as an opportunity of sharing knowledge between professionals and patients. The population of this study was the service customers who have taken part in this heath promotion activity in waiting rooms. The evaluation of this intervention was performed by using a standardized instrument to collect information: -individual counseling, -acceptability of monthly condoms supply and STI/HIV testing and condoms. The multidisciplinary team involved in this intervention was undergraduated medical students, social assistants and auxiliary nurses who have been trained to use a standardized job aid (kind of 'quiz show'). The anonymity was guaranteed for all the participants.
Results: The total of participants in this intervention was 108 (67% women and 33% men) in eight waiting room sessions. The range of age was from 14 to 82 years old; the median was 33 years. Among them after the group: 92% accepted condoms, 23% asked for an individual and deeper counseling and 20% tested for STI and HIV. We found a difference in acceptability of condoms according sex ($p<0.05$), women seems to accept more condoms than men.
Conclusions: Gender homogeneity of waiting room participants seamed to increase the acceptability of this kind of intervention, due the main issue of it was sensitive behaviors. Although we found lower acceptability of condoms by men which should be explained by gender differences, perhaps we could reach more men using other educational tools. This pilot-test has shown that low costs and easy interventions in waiting rooms could provide information and counseling in a primary care set. It is a simple way to promote equity and empowerment reducing their STI/HIV vulnerability.

P-495 TRANSLATION OF AN STI EVIDENCE-BASED BEHAVIORAL INTERVENTION FOR AIDS PATIENTS LOST TO FOLLOW-UP MEDICAL CARE

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Background: This study builds on behavioral interventions developed in our previous studies. These studies are culturally relevant minority-gender-specific interventions based upon the AIDS Risk Reduction Model shown to be effective through controlled randomized trials. These interventions grounded in knowledge of the target populations' behavior and culture use STI and measures of sexual behavior as primary outcome variables. Results of these trials with one, two and five year follow-ups demonstrated participants receiving intervention were significantly less likely to be re-infected with STI and report sexual risk behavior or depression. Mixed methods were used for translation of these interventions for community health programs. This study focuses on reducing rates of STI, unintended pregnancy and substance use among patients with AIDS who were lost to follow-up care by changing high-risk sexual behaviors, encouraging contraception and decreasing substance use.
Methods: A modified cognitive-behavioral intervention was pre-tested prior to implementation in a community health program to identify patients with AIDS who are lost to follow-up. Mexican-and African-American and non-Hispanic white women and men with AIDS who were lost to follow-up care were enrolled in a quasi-experimental study with scheduled 6 and 12 month follow-ups. Following study entry, participants attended the behavioral intervention and received case management for identification of necessary health and social services to promote patient re-entry into the health care system.
Results: Findings (n=150) indicated overall high levels of substance use, abuse, depression and psychological distress. Intervention attendees versus non-attendees reported greater depression, symptom severity, and substance use. However, trends at 6 months follow-up indicated lower substance use, sexual risk behaviors, less depression and fewer symptoms for persons who attended the intervention.
Conclusions: Translation of evidence-based interventions for community health programs requires intervention modification. Community-based culturally relevant cognitive-behavioral interventions can reduce sexual risk behavior among women and men with AIDS lost to follow-up care.

P-496 CIRCUMCISION AND RISK OF SEXUALLY TRANSMITTED INFECTIONS IN A BIRTH COHORT

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Objectives: To investigate the impact of early childhood circumcision on sexually transmitted infection (STI) acquisition to age 32 in response to the findings of a major protective effect in a similar cohort and setting (Fergusson et al, Pediatrics 2006;118:1971-7).
Methods: The circumcision status of a cohort of children born in 1972/73 in Dunedin, New Zealand was sought at age 3. Information about STIs was obtained at ages 21, 26 and 32. The incidence rates of STI acquisition were calculated taking into account timing of first sex and comparisons were made between the circumcised and uncircumcised men. Adjustments were made for potential socio-economic and sexual behavioural confounders where appropriate.
Results: Of the 499 men studied, 201 (40.3%) had been circumcised by age three. The circumcised and uncircumcised differed little in socio-economic characteristics and sexual behaviour. Overall, up to age 32 the incidence rates for all STIs were 23.4 and 24.4 per 1000 person-years for the uncircumcised and circumcised respectively, an incidence rate ratio of 0.96 (95% confidence interval 0.70-1.3), this was not affected by adjusting for any of the socio-economic or sexual behaviour characteristics (Table 1).
Conclusions: These findings are inconsistent with a major protective effect and are in accord with recent population-based cross-sectional studies in developed countries that found early childhood circumcision does not markedly reduce the risk of STIs common in the general population. Chance is the most likely reason for the different findings of the two cohort studies.

Table 1 Relationship between circumcision and reported numbers of sexually transmitted infections

Age period:	Circumcised	Incidence Rate (per 1000 man years)	Incidence Rate Ratio (95% CI)
Up to age 32	Yes		
	No		
Up to age 24	Yes		
	No		
Ages 24 to 28	Yes		
	No		
Ages 28 to 32	Yes		
	No		

P-497 MALE CIRCUMCISION AND GENITAL ULCER DISEASE: A META-ANALYSIS

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Objective: Recently, the results from three randomized trials demonstrated a reduced risk of HIV acquisition among men who are circumcised, which supported previous observational studies. One potential mechanism for this protective effect could be through a reduction in genital ulcer disease (GUD), which is a cofactor for HIV acquisition, among men who are circumcised. We postulate that removal of the prepuce may reduce the incidence, severity, duration or recurrence of symptomatic ulceration resulting in a lower likelihood of HIV acquisition. Therefore, we conducted a meta-analysis of published observational studies and one randomized trial to test the hypothesis that circumcision is associated with a reduction in symptomatic GUD.
Methods: Fourteen articles with information on the frequency of GUD among circumcised and uncircumcised men were identified through computerized literature searches, of which 11 were eligible for inclusion. Because the prevalence of GUD was expected to be high in both groups, odds ratio (OR) and risk ratio (RR) estimates were analyzed separately. The main analysis estimated summary odds ratios (OR) and 95% confidence intervals (95% CI) using a random effects model. Sensitivity analyses were carried out to assess the robustness of these estimates to key assumptions in conducting this meta-analysis.
Results: Odds ratio estimates could be extracted from 10 of the 11 studies. Circumcised men had lower odds of GUD in each specific study and this effect was statistically significant in 7 out of the 10 publications. When these studies were combined using a random effects model, the pooled OR of GUD was 0.56 (95% CI: 0.47, 0.68) among circumcised compared to uncircumcised men. However, there was significant between study heterogeneity (p=0.024). Explanations for potential heterogeneity were examined in sensitivity analyses, which resulted in exclusion of one study with little change to the summary OR 0.57 (95% CI: 0.50, 0.65) and a non-significant test of heterogeneity between studies (p=0.35).
Conclusion: We conclude that male circumcision is associated with a reduced risk of symptomatic GUD based on a meta-analysis of observational studies and one randomized trial. While the protective effect may be due to a reduction in infection with ulcerative STIs, it is also possible that circumcision reduces the frequency and duration of symptoms. This reduction in symptomatic GUD may contribute to reduced acquisition of HIV infection found in circumcised men.

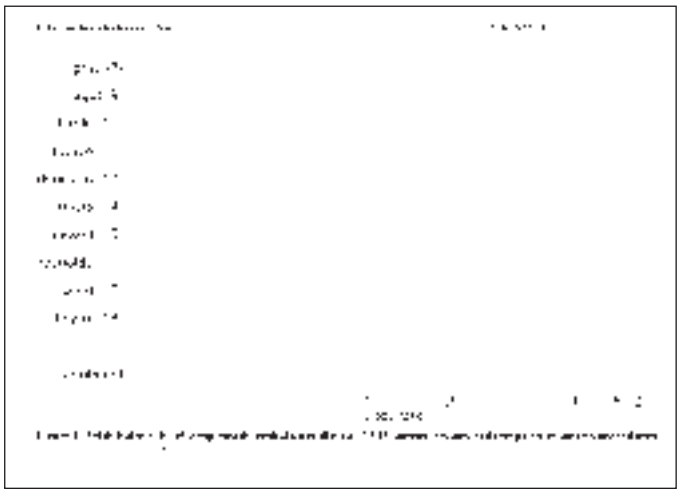

Figure 1

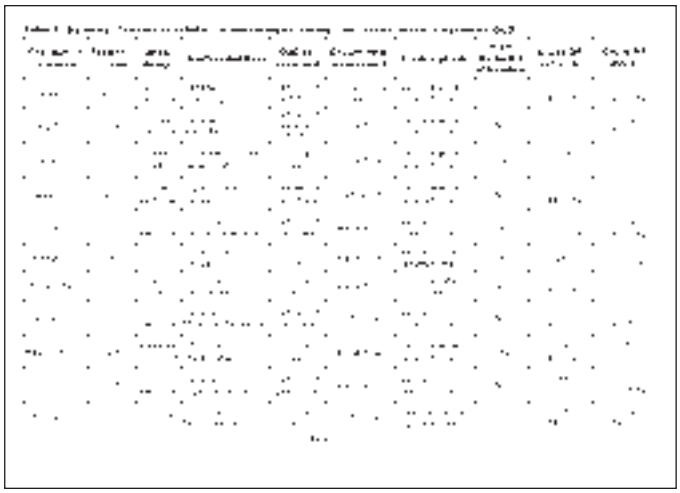

Table 1

P-498 A RANDOMISED CONTROLLED TRIAL COMPARING NON-INVASIVE TESTING WITH ROUTINE SCREENING FOR SEXUALLY TRANSMITTED INFECTIONS IN A SEXUAL HEALTH CLINIC SETTING

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Objectives: Nucleic acid amplification testing of urine and self-taken vaginal swabs (non-invasive testing) for sexually transmitted infections (STIs) have the potential to increase clinic throughput and reduce waiting times, and may also be more acceptable to patients than undergoing a genital examination. The aims of this study were to compare the effectiveness, patient acceptability and cost-effectiveness of non-invasive testing with standard examination and testing.
Methods: Asymptomatic patients attending a UK genitourinary medicine (GUM) clinic were invited to participate. Patients were randomised to either standard of care for routine screening (including a genital examination) or non-invasive testing. Patient acceptability was assessed using a self completed questionnaire.
Results: Results are based on 391 patients with a mean age of 27 years and mostly of White British (55%) or Black Caribbean (24%) ethnicity. The proportion who strongly agreed or agreed that they were satisfied with the care they received was greater in patients who were randomised to non-invasive testing compared with

standard of care (81% vs. 52% p<0.0001). More patients in the non-invasive group reported spending less time in clinic than they had expected (61% vs. 29%, p<0.0001). Consultation and screening times were reduced for those in the non-invasive testing arm of the study (10 vs. 12 minutes; p=0.04). Rates of STD diagnoses were the same in each group.

Conclusions: Patients prefer non-invasive testing compared to undergoing a genital examination and consultation time is modestly, but significantly, reduced.

P-499 THE IMPORTANCE OF A MICROBICIDES STI-EFFICACY IN REDUCING HIV-RISK AND ITS AFFECT ON THE REDUCTION IN CONDOM USE THAT CAN BE TOLERATED FOLLOWING PRODUCT INTRODUCTION: MODEL PROJECTIONS

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Objectives: Some second generation microbicide products may not be efficacious against STIs. Additionally, there has been discussion about the potential for condom migration (reduction in condom use following microbicide introduction) to undermine microbicide impact. Static modeling has identified thresholds for when condom migration is a concern, but assumes that microbicides have equal HIV- and STI-efficacy. This study investigates how an individual's risk of HIV infection is related to the STI-efficacy of the microbicide and how this affects the condom migration thresholds.

Methods: A dynamic model describing the transmission of a bacterial STI between sex workers (SWs) and their clients, or between males and females in the general population, was coupled with a static model of HIV transmission. The model was parameterized using behavioural and epidemiological data from Cotonou, Benin, giving a STI (gonorrhoea) prevalence of 21% among SWs and 0.9% among females in the general population. These were taken as medium STI prevalence scenarios for commercial sex and general population scenarios, respectively. The modelled STI is assumed to increase the per sex act risk of HIV transmission 2-fold. The model was used to estimate the change in STI- and HIV-risk following the introduction of microbicides of different STI- and HIV-efficacies, used in 50% of sex acts when a condom is not used. The maximum absolute reduction in condom use that can be tolerated after microbicide introduction without increasing an individual's HIV-risk ('migration threshold') was then estimated. The degree to which the findings are influenced by STI prevalence was explored.

Results: When the STI prevalence among SWs is high, it is hard to control STI transmission, but a high proportion of HIV-risk can be attributed to the STI and so there is substantial additional benefit, for reducing HIV-risk, from having a high STI-efficacy microbicide (Figure). In the medium prevalence commercial sex scenario, if condom use remains unchanged, even a microbicide with zero HIV-efficacy can reduce HIV-risk among SWs by 11% with 50% STI-efficacy, 47% of the impact of a 50% HIV-efficacious microbicide with zero STI-efficacy. Across the STI-efficacies and STI prevalence scenarios considered, for SWs in Cotonou (whose average consistency of condom use was 56%), the migration thresholds predicted by the coupled model ranged from 10-20% (Table). However, among the general population, there was little variation in the relative reduction in HIV-risk, resulting in the static threshold estimate for a 50% HIV- and STI-efficacious microbicide (16%) providing a good approximation for microbicides of other STI-efficacies used by low-risk groups.

Conclusions: The findings illustrate that a microbicide's STI-efficacy may have a substantial impact on STI and HIV incidence. If the introduction of a microbicide leads to a change in STI prevalence, the HIV-impact of that microbicide will likely vary by setting. Thresholds for condom migration will be affected by the microbicide's STI-efficacy and the STI prevalence in the setting, but for low-risk populations these are expected to be very similar to the static model predictions. This analysis highlights the importance of developing microbicides that are active against STIs and pursuing combination products.

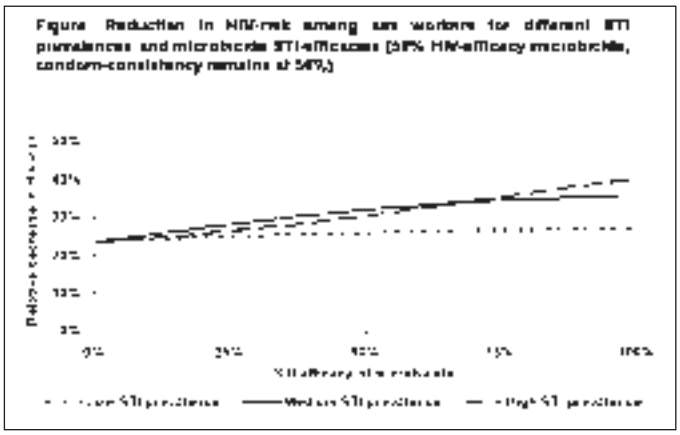

Figure. Reduction in HIV-risk among sex workers for different STI prevalences and microbicide STI-efficacies (50% HIV-efficacy microbicide, condom-consistency remains at 56%)

Table. Commercial sex: migration thresholds for different STI prevalence scenarios and microbicide STI-efficacies (50% HIV-efficacy microbicide, 56% condom-consistency before microbicide introduction)

STI prevalence scenario	STI-efficacy 0%	25%	50%	75%
'Low'	11%	14%	16%	17%
'Medium'	10%	13%	16%	20%
'High'	13%	14%	16%	15%

P-500 THE PREVEN URBAN COMMUNITY RANDOMISED TRIAL OF A COMBINED INTERVENTION FOR SEXUALLY TRANSMITTED DISEASE PREVENTION IN PERU

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Objective: A community randomized trial, (PREVEN trial), was conducted to explore the impact of combined sexually transmitted disease interventions in urban Peru in ten intervention and ten control cities.

Methods: The intervention were: (1) improved syndromic management of vaginal and urethral discharge available through pharmacies, with social marketing of condoms and treatment packages and referral to previously trained physicians for cases of pelvic inflammatory disease and genital ulcers, and (2) screening and treatment of sex workers (SW) reached through a mobile team every two months, along with presumptive treatment for trichomoniasis (TV) and bacterial vaginosis with metronidazole, and provision of free condoms. A baseline survey of STIs prevalence was undertaken in the general population (GP) and amongst SW and their clients in 24 cities in 2002 to stratify cities for randomisation to intervention and control arms of the trial. Twenty cities were selected for the trial. The impact of the interventions, was evaluated through surveys of STI prevalence after 2 years and 3 years of intervention, in an interim household based survey in 2005 and a final survey in 2006 along with concomitant surveys in a sample of SW. Testing for

syphilis, GC, CT, TV and HIV were undertaken in the 20 randomised cities. Data analysis was blinded with respect to city identity until results were available for each infection where upon the prevalence of each infection in the matched intervention and control cities could be compared.

Results: In 2006, the overall prevalences of STIs in the general population across the 20 cities were as follows: males: gonorrhea 0.11%, Chlamydia 4.7%, syphilis (titer > 1:8) 0.29%, HIV 0.51%; females: gonorrhea 0.24%, Chlamydia 8.6%, syphilis (titer > 1:8) 0.20%, trichomonas 2.4%, HIV 0.17%. The overall prevalences of STIs in the female sex workers in 2006 across the 20 cities were as follows: gonorrhea 1.2%, Chlamydia 17.6%, syphilis (titer > 1:8) 1.3%, trichomonas 3.7%, HIV 0.41%.

Conclusions: Final analyses of the differences in STI prevalences by intervention arm are ongoing and will be presented. The implications of these results for sexually transmitted disease control programmes will be discussed with an invited panel.

P-501 CONDON USE ASSOCIATED FACTORS OF THE HOMELESS LIVING IN SO PAULO METROPOLITAN CENTRAL AREA-BRAZIL

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Introduction: The vulnerability of the homeless people to sexually transmitted infections is possibly higher due to their life conditions and low socioeconomic status. The increase number of this population in the last decade in the center of metropolitan areas enlarges the importance to work with the factors involved in their high vulnerability to STI and HIV. It was very important in order to provide appropriated prevention intervention strategy to recognize the way this population use condom as well the factors associated with. The objective of this study was to investigate the factors associated with condom use among homeless population.

Methodology: This study was undertaken in a primary health care attention service located in a central district of the São Paulo metropolitan region, Brazil. Homeless people who have sought the CSEBF from December 2005 to March 2006 constituted the study population. Using a standardized questionnaire trained interviewers performed the information collection during routine health attendance. The Ethical Committee has approved this study. The analysis has been conducted by calculating OR and the respective 95% CI, a multivariate analysis has been conducted due to the control of possible confounding variables.

Results: It was interviewed 165 homeless, 69% were male, 66% self-referred themselves as having skin color as black; 42% had gone to school for four-years, and only 15% were married or had steady partners. Only 32% reported that they had not used condoms in the last six months. The factors associated independently with the no use of condom in this population were: the lower levels of schooling, ageing and the fewer sexual partners in the last six months determined. Those who reported having fewer sexual partners in the past six months, and those who believed that having sex with apparently healthy people would not make it possible for them to get infected with the HIV virus were those who make the least use of condoms.

Conclusion: These findings revealed that the use of condom could be less frequent amongst elderly homeless people for they have less access to available information on how to prevent HIV infection, as well as different generation of the risk perception. Having a steady partner should also be a discouragement of using condom as well as the wrong perception of having sex with apparently healthy people. Others preventions strategies should be organized to reach this population and raise the condom use.

P-502 E-STD CONTROLUSING INTERNET PEER-TO-PEER NOTIFICATION TO ENHANCE PARTNER TREATMENT, INSPOT, 2006-2007, SAN FRANCISCO

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Objectives: To describe the use of Internet-based partner notification and electronic prescriptions in San Francisco. STD incidence remains high in San Francisco, particularly in gay men and other men who have sex with men. While expanded screening and treatment programs are one strategy to reduce prevalence, additional strategies to prevent re-infection and treat partners and partner networks are needed. In 2003 we launched InSpot, an Internet-based peer-to-peer partner notification electronic postcard (e-card) system. Currently InSpot is available in multiple cities and states in the United States and Romania with plans to expand to Canada. In 2006 in San Francisco we added the option for recipients of e-cards to obtain electronic prescriptions (e-prescriptions) for chlamydia and gonorrhea. Upon completion of an e-prescription and either faxing that e-prescription to a local pharmacy or printing, a blind copy is faxed to the STD Controller. Those e-prescriptions are valid in California and pharmacists may fax copies to the STD Controller for verification.

Methods: We measured the number of persons who sent e-card notifications for chlamydia or gonorrhea, the number of e-cards sent by each person, the proportion that contained a personal message, were sent either confidentially or anonymously and the proportion of received e-cards that recipients clicked-through embedded e-card hot links. We also measured the number of views to the chlamydia and gonorrhea prescription pages and in 2007 the number of prescriptions completed and either faxed to a pharmacy or printed by the recipient.

Results: From February 2006 through January 2007, 399 persons sent e-cards for partner notification for chlamydia and 358 sent e-cards for gonorrhea. About 1.5 e-cards were sent per person. Of those 75% contained a personal message and 80% were sent anonymously without the senders specific return e-mail address. Recipients clicked through 50% of e-cards and made 255 views to the chlamydia prescription page and 314 page views to the gonorrhea prescription page. Beginning in 2007 on average 3 chlamydia prescriptions and 5 gonorrhea prescriptions are filled weekly.

Conclusions: Peer-to-peer online partner notification continues to be popular in San Francisco for gonorrhea and chlamydia. Recipients appear to seek specific treatment information and some obtain their prescriptions through this Internet-based epidemiologic treatment service. Further evaluation of the impact of those e-prescriptions on the community-level and STD incidence is warranted.

P-503 THE ROLE OF CHLAMYDIAL INFECTION ON SEXUAL HEALTH IN MALES

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Introduction: According to WHO criteria the couple is infertile if there is no pregnancy after 1 year of regular sexual life without contraception. According to meta-analysis of data in infertile couples, in 35-40% of couples infertility the caused by the male, in 50% it is caused by the female and in 15-20% by both.

Objective: To estimate the influence of genital Chlamydia infection (GCI) on male infertility.

Methods: We examined 105 married men (18 - 48 y/o, mean 30.0), of whom 77 were from infertile couples according to WHO criteria, and 28 men were from fertile couples. All men were questioned about the history of GCI, and the levels of anti-sperm antibodies (ASAB) in their serum and spermoplasma were measured.

Results: History of GCI was found in 66 (85.7%) men from the infertile group and in 12 (42.9%) men from the fertile one. There were no ASAB found in fertile or infertile men without history of GCI. In men with history of GCI ASAB were found in serum of 25% and 46% men from fertile and infertile group, respectively ($p<0.05$). In spermoplasma derived from fertile men there were no ASAB found, whereas they were found in spermoplasma derived from 58% of men with history of GCI. In infertile men ASAB were found in 18% of patients without history of GCI and in 82% of men with history of GCI. Positive correlation ($r=0.466$, $p<0.001$) was found between frequency of GCI and male infertility. ASAB in spermoplasma were found in 42%, 45%, 54% and 100% of men from infertile group in whom GCI was registered 1, 2, 3 and 4 times, respectively.
Conclusions: Forming of antisperm antibodies in spermoplasma correlates with the frequency of Chlamydia infection. The 'male factor' in infertility plays important role when there is a history of genital Chlamydia infection.

P-504 PARTNER NOTIFICATION IN DEVELOPING COUNTRIES

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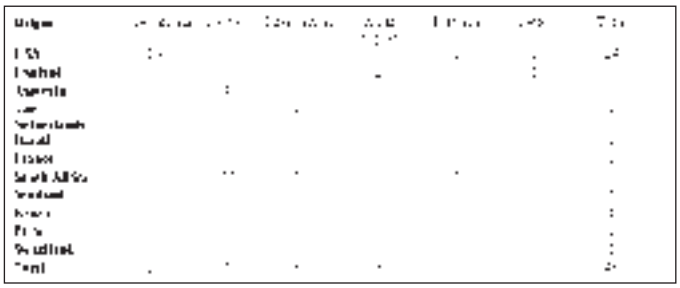
Background: Sexual partners of people with sexually transmitted infections (STIs) are likely to be infected as well, but not be aware of it, given a substantial number of asymptomatic STIs. Partner notification is a well known strategy to control STIs, and has been practiced according to different strategies. In developing countries data on STIs are usually underestimated, although it is recognized that low-income populations contribute with the majority of the cases. In Brazil, figures of STIs are impressive. The National STI/AIDS Program estimates approximately 6 million cases per year, in addition to AIDS, that reaches 433000 cumulative cases up to June of 2006.
Objectives: To identify recent experiences of partner notification in developing countries, identifying study design, specific strategies, and in which extend the effectiveness of different approaches has been tested. We are also investigating if there are differences of results according to the type of health service which delivered the notification.
Methods: We performed a literature review on MEDLINE, LILACS and SCIELO. The searching strategy was the follow: Language: English and Portuguese. We looked at the expression: 'partner notification' or 'notificação de parceiros' in the title. Period: 2001 to 2006. No restriction to study design. In addition to that we included a recent paper carried out in our institution in Brazil.
Results: Throughout MEDLINE we identified 59 articles and have had access to full text in 45. No publication was found on LILACS or Scielo, the main databases of scientific publication in Latin America and the Caribbean. Table 1 summarizes study design and country of publication. Only 7 (%) among the articles were based on developing countries and all but one of them were observational studies. In Brazil, a study among low-income women in São Paulo showed that offering partner delivered medication to a woman diagnosed with gonorrhea, Chlamydia or trichomoniasis resulted in 80% of notified male partners, among them 96% were treated. The type of partnership was predictor of partner notification in São Paulo, as well as in Peru. The studies based on Kenya, Peru and Zambia highlighted the important role of counseling in increasing partner notification. In the intervention study done in South Africa, an educational video was used to increase the number of partners reported. The study carried out in Swaziland showed that the standard partner notification was not effective.
Conclusion: There is a great need of studies involving partner notification in developing countries. The few studies recently published presented significant results and demonstrate there is room for intervention regarding partner notification. Cultural, social, ethics and resources characteristics must be taken into account in any attempt of implementing successful experiences from a different setting.



P-505 SELF-REPORTED MECHANICAL PROBLEMS DURING CONDOM USE AND SEMEN EXPOSURE: COMPARISON OF TWO RANDOMIZED TRIALS IN THE UNITED STATES OF AMERICA AND BRAZIL

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Objectives: To compare self-reported condom use problems and objectively determined semen exposure in two populations.
Methods: Two randomized crossover trials in the USA and Brazil compared the failure rates of the female condom (FC) and male condom (MC). Participants used both condom types, completed condom-specific questionnaires to report problems and collected precoital and postcoital samples of vaginal fluid. Prostate-specific Antigen (PSA) was detected by immunoassay.
Results: Problems with condom use were reported less frequently in the Brazilian study (rate difference: FC= 24%, $p<0.0001$, MC= 5%, $p=0.003$). By contrast, the PSA detection rates were similar for both the FC and the MC (rate difference: FC= 2%, MC= 1%, not significant). These results suggest that the PSA detection rate was similar in the two study groups, and that self-reported problems may be a less reliable measure of condom failure.
Conclusions: These results suggest that Brazilian study subjects under reported problems with both male and female condom use while the PSA detection rate was similar in both studies, within condom type and within categories of use problems. Use of biomarkers of condom failure like PSA may help to strengthen the validity of studies promoting behavior change for the prevention of sexually transmitted diseases.

P-506 EFFICACY OF THE MALE LATEX CONDOM AND OF THE FEMALE POLYURETHANE CONDOM AS BARRIERS TO SEMEN DURING INTERCOURSE: A RANDOMIZED CLINICAL TRIAL

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Objective: To compare the effectiveness of the male latex condom and the female condom by assessing the frequency and types of mechanical failure and by evaluating semen exposure during use.
Methods: Randomized crossover trial. Eligible women were randomly assigned to begin the study with 10 male condoms and then switch to 10 female condoms (N=55), or vice versa (N=53), and were trained to use both types. Data collection included questionnaires for each condom use and measurement of prostate-specific antigen (PSA) in specimens of vaginal fluid taken before and after intercourse.

Results: Participants returned 700 male condoms and 678 female condoms, and reported mechanical problems for 9% and 34%, respectively. Moderate-high postcoital PSA (>22ng/ml) was detected in 3.5% of male condoms and 4.5% of female condoms (difference: 1 percent, 95% confidence interval (95%CI): -1.6, +3.7). Moderate-high PSA values (≥22ng/ml) were more frequent with mechanical problems (male condom: 9.6%, female condom: 9.4%), less frequent with other problems (3.0% and 0.9%) or correct use with no problems (2.7% and 2.5%).
Conclusions: This study indicates that while mechanical problems are more common with the female condom than with the male condom, these devices may entail a similar risk of semen exposure. Objectively assessed semen exposure is associated with self-reported mechanical problems.

P-507 THE FIRST YEAR OF INSPOTLA: REPORT FROM THE FIELD ON INTERNET HIV/STD PARTNER NOTIFICATION

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Objectives: The objective of this analysis is to assess the use and impact of the inSPOTLA.org website for STD/HIV partner notification. InSPOTLA enables users to send an e-card (electronic postcard), anonymously if desired, to sex partners regarding potential HIV/STD exposure. E-card recipients are linked to disease-specific information and clinic referrals on the website. InSPOTLA is the only website of this type which includes HIV in the same menu of notifiable diseases as other STDs. The InSPOTLA website was launched in December 2005 to address an ongoing syphilis outbreak among men who have sex with men (MSM) in Los Angeles County (LAC), and the substantial use of the Internet among MSM in LAC to meet sex partners. Created through a partnership of the LAC STD Program, AIDS Healthcare Foundation, a community-based organization, and I.S.I.S. inc., a non-profit agency, inSPOTLA was modified from a San Francisco website, inSPOT.org, and was the second of a group of now 10 inSPOT sites.
Methods: Web usage statistics were collected electronically. Impact on partner testing was calculated by extrapolations from click-through rates, and comparisons with other partner notification methods. Usage was also correlated with advertising and outreach efforts.
Results: Due to extensive international publicity at its launch, inSPOTLA experienced very high website traffic in December 2005, with a total of 22,381 e-cards sent to 38,780 recipients. However, site traffic and e-card notifications dropped sharply after the initial publicity ended. In calendar year 2006, the first full year of regular operation of the website, a total of 9,916 e-cards were sent to 15,984 recipients, an average of 1.6 recipients per e-card. Of e-cards sent, 14.7% were for HIV, and 11.5% for syphilis. The great majority of e-cards (8,301 or 83.7%) were sent anonymously, but nearly as many (80%) also contained a personal message. A total of 3,914 e-card recipients (24.5%) clicked through to the inSPOTLA website to receive more information. A small advertising campaign was maintained for the website through Spring, 2006. Website traffic and e-card volume declined further after this campaign ended, from an average of 1,039 e-cards per month in February-April 2006, to 392 e-cards per month in May-December. However, even at the lowest volume of usage, the estimated number of HIV and syphilis partner contacts who clicked through to the website was equivalent to about half of the number of partner contacts made using traditional partner notification methods. This presentation will also review ongoing efforts to evaluate the website using actual clinic visits from persons who received e-cards, new efforts to publicize the program, and content of the small number of complaints received.
Conclusions: An Internet-based partner notification website for STDs, including HIV, can be successfully implemented with broad community acceptance, and is capable of generating substantial response among persons notified, relative to traditional partner notification methods. However, publicity and outreach must be sustained for maximum impact.

P-508 COMPARISON OF RESIDENCE BY ZIP CODE OF WOMEN REQUESTING SELF-OBTAINED SAMPLE KITS FOR CT/GC TESTING FROM THE INTERNET WITH THAT OF WOMEN REPORTED TO THE HEALTH DEPARTMENT WITH CT/GC INFECTION

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Objectives: To determine if women requesting and returning the test kit report residence in the same geographic areas of the City with a similar frequency as those reported to the Health Department with chlamydia (CT) and/or gonorrhea (GC) infections and to determine if they report similar age and race/ethnicity.
Methods: In 2004, the Internet website, www.iwantthekit.org, was developed and has been described in earlier reports. In order to better describe the women utilizing the website, we conducted a review of all surveys returned by women who requested and submitted the self-sampling kits to determine their residence zip code. We compared that zip code information with the residence zip code identified in CT and/or GC morbidity in women reported to the Baltimore City Health Department from 2004 ' 2006. Age and race/ethnicity were compared. Morbidity reported to the Department by the study site was removed from the comparison as were reports missing age, race/ethnicity, zip code and test report.
Results: From 2004 through 2006, 764 women requested and submitted kits, 47% (359) of these women reported residence in Baltimore City, 12 reports were excluded because zip code was not in Baltimore City (4), age or race/ethnicity (5) or test results (3) was not recorded. In that time frame, more than 13,000 cases of CT and 11,000 cases of GC were reported in women living in Baltimore City. All groups reported residences from the same 24 zip codes, however women accessing services from the website reported 4 zip codes more frequently than others, while women reported to the Health Department were more likely to report residence zip codes more uniformly throughout the City. Women using the kits were slightly older, median age 22, compared to 19 and 21 for chlamydia and gonorrhea respectively, and Black race was reported in 79% of women using the kits, 89% of women with CT and 90% of women with GC. Overall prevalence for chlamydia in women using the kit was 9.2% while gonorrhea prevalence was only 1.2%. Morbidity data from the City demonstrated gonorrhea infection in women represented more than 50% of cases reported during this period.
Conclusions: While the zip code of residence does not appear to describe the differences among the women reported with CT and/or GC infection and those using the Internet to secure diagnostic services, the low rate of gonococcal infection among the women using the kit appears to indicate a difference. There were small differences in the median age and the reported race, however, are not explanatory. It may mean that evaluation using a smaller population unit will be necessary to determine the subtle differences among these groups. mhogan2@jhmi.edu

P-509 THE IMPORTANCE OF CHOICE: AN RCT OF CLIENT-CENTERED COUNSELING VS. WRITTEN EDUCATIONAL MATERIALS WITH ORAL FLUID TESTING AT A NEEDLE EXCHANGE

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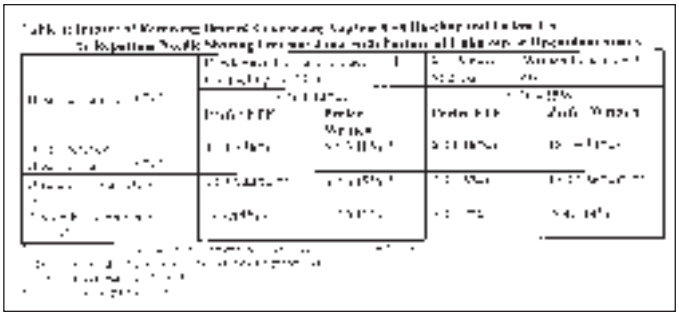
Background: Client-centered counseling is routinely provided with HIV testing in outreach programs to needle exchanges. Prior research in this venue showed that when counseling was optional, 80% preferred written educational materials, more people got tested and more people learned their status. However, the impact on HIV prevention was unknown.

Goal: To determine the comparative impact of client-centered face-to-face counseling vs. written educational materials on HIV risk behaviors among participants who did and did not get their preferred counseling strategies at a needle exchange. Methods: We conducted a randomized controlled trial among people requesting HIV testing at a needle exchange. All clients entering the needle exchange were offered HIV testing. Eligibility for study participation included acceptance of HIV testing, no test in the prior 3 months, and ability to provide informed consent. After determining client's HIV counseling preferences (written materials or face-to-face) consented participants were randomized to receive either written materials or face-to-face counseling (pre and post-test) with standard OraSure oral fluid testing. ACASI risk surveys were administered at baseline and at 2 month follow up. Changes in sexual and needle sharing behaviors were measured over time. Primary study outcomes included: 1) unprotected anal or vaginal sex with a partner of unknown or discordant status in the past 2 months; and 2) needle sharing with a partner of unknown or discordant status in the past two months.

Results: People who accepted testing (n= 328) and were eligible (n=290) were offered study participation, and were asked their counseling preference ' 56% preferred written educational materials and 44% preferred face-to-face counseling. Among the 284 people (98% acceptance) who completed a baseline interview, 67% followed up for the 2 month interview. Primary study outcomes for sex or needle sharing were not different between the study arms at baseline or at follow up. However, people who received their desired counseling method, whether it was face-to-face or written materials, in combination were more likely to report needle sharing risks at baseline (33% vs. 14%, p=0.002). In addition, participants who got what they wanted and completed the 2 month follow up (n=142) were more likely to report reduced needle sharing risks over time than those who did not get what they wanted (see table 1). In a multiple logistic regression exploring characteristics (age, race, gender, randomization arm, and receipt of desired counseling method) potentially associated with decreased needle sharing, only receipt of desired counseling was significantly associated with decreased needle sharing at the 2 month follow up (p=0.001, OR=7.2).

Conclusion: Offering patrons a choice of counseling strategies with HIV testing may be the most effective HIV prevention strategy at Needle Exchanges. Randomized controlled effectiveness studies of HIV prevention interventions should include an arm that offers choices of counseling and testing options to better determine the most effective strategies for future dissemination.



P-510 CONTROLLING FOR TIME-DEPENDENT CONFOUNDING AND ESTIMATING THE CAUSAL EFFECT OF INTERVENTIONS: AN APPLICATION OF MARGINAL STRUCTURAL MODELS AND POPULATION INTERVENTION MODELS IN LONGITUDINAL DATA

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Objectives: To demonstrate the rationale for and application and interpretation of Marginal Structural Models and Population Intervention Models in longitudinal data.

Methods: We illustrate the application of weighted regression approaches to Marginal Structural Models (MSM), called inverse probability of treatment weighted estimators (IPTW), to a longitudinal study of HSV-2 infection and HIV incidence conducted among 6000 women in the developing world. We interpret the findings, comparing the MSM model to findings from traditional analyses. Finally, we illustrate the application of a recently proposed population impact measure, termed the Population Intervention Mode (PIM) to estimate the impact of hypothetical HSV-2 interventions on HIV prevention in our population. This approach generalizes techniques developed for MSM's to population-based studies where one is interested in comparing the current rate of HIV infection to the same population where, for instance, the prevalence of HSV-2 infection has been reduced.

Results: We present data to contrast the estimates from traditional analyses to estimates from the MSM. In addition, we present and compare the traditional population attributable risk estimates to estimates from the population intervention. Finally, we estimate the effect of partially effective HSV-2 prevention interventions (e.g. a 50% effective vaccine or a 30% effective microbicide) on HIV prevention in this population.

Conclusions: Marginal structural models (MSM) provide a powerful tool for controlling for time-dependent confounding and estimating the causal effect of an intervention or risk variable on the distribution of a disease in a population. MSM are particularly useful in the context of longitudinal data structures, in which each subject's exposure and covariate history are measured over time, and an outcome is recorded at a final time point. The Population Intervention Model, which is similar to the attributable risk, is of public health interest as it relates the rate of disease in the current target population (with its distribution of HSV-2 infection) to a population where no one has HSV-2 (or only a subset of individuals have HSV-2) infection. Thus, the PIM allows an estimate of the impact of a uniform intervention (e.g. HSV-2 vaccine or microbicide) in the target population relative to current rates of HIV acquisition.

P-511 A COMPARISON OF EPIDEMIOLOGICAL RISK FACTORS IN HIV PATIENTS CO-INFECTED WITH STI AND HIV PATIENTS WITHOUT STI IN THE BLUEGRASS CARE CLINIC

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[2]Division of Infectious Diseases, LEXINGTON, United States of America

Objectives: To determine the prevalence of sexually transmitted infections (STI) in a cohort of HIV-infected men and women at a university HIV clinic over a period of 4 1/2 years and to determine epidemiological factors that contribute to their co-infections.

Materials and Methods: We conducted a retrospective chart review comparing 131 cases co-infected with HIV and STIs with 144 HIV + patients as controls. The controls were matched for age, race and sex. We compared the co-infected group to our control group with HIV and no STIs. Data were extracted from patients seen in the Bluegrass Care Clinic (BCC) from January 2002 through May 2006. We examined epidemiological risk factors that contribute to co infection by comparing age, sexual orientation and other socio'demographic findings. We determined individ-

uals to be infected with an STI by positive laboratory testing, physician exam and patient report. The statistical model used was a logistic regression analysis using a chi-squared test with a P value of <0.10 to determine which variables were significant of STI's co-infection.

Results: Enrollees (n=275) were predominantly white, homosexual men with the majority of individuals being between the ages of 36 to 45 years. The age range was between 19-72 years. There were no significant differences between the control and co-infected group in respect to age, race and sex. In the co-infected group, there were 103 white patients (78.6%) and 19 (14.5%) black patients. Nine (6.9%) patients were of Hispanic ethnicity. Herpes was the most common STI found in 42 (32.0%) cases, followed by Human Papilloma Virus in 40 (30.5%) cases and Syphilis in 26 (19.8%) cases. Gonorrhea, chlamydia and trichomoniasis was found in 8 (6.1%), 5 (3.8%) and 2 (1.5%) cases respectively. There were 69 (52.7%) employed and 62 (47.3%) unemployed individuals in the co-infected group. Ninety-three (70.9%) patients had an annual income of $ 0-9,800. We found patients who were unemployed, had a 1.55 (C I, 1.03-2.34) times greater likelihood of having a co-infection with an STI, versus HIV patients who were employed. Using a 90% confidence interval, the HIV patients with a high school education or GED were less likely to have an STI than patients with less or more education.

Conclusions: In our population, we found that HSV was the most prevalent viral infection and syphilis was the most common bacterial infection. Unemployment appears to be a potential predisposing factor. Interestingly, risk factors reported for the general population (African American race and lower socioeconomic status) were not predisposing factors for STIs in our study population.The retrospective nature of our study is an obvious limitation; further prospective studies are needed to assess behavioral factors, such as condom use and number of sexual partners, in this co-infected population.

POSTER SESSION: STD / HIV INTERACTIONS

P-512 PREVALENCE AND PERSISTENCE OF CERVICAL HUMAN PAPILLOMAVIRUS (HPV) INFECTION IN HIV-POSITIVE WOMEN INITIATING HIGHLY-ACTIVE ANTIRETROVIRAL THERAPY (HAART)

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Objective: The study aims were to determine the prevalence of HPV DNA in cervical specimens from treatment-na_ve women initiating HAART and to explore the trend of HPV DNA prevalence over time, and its association with CD4 and HIV viral load after HAART.

Methods: Subjects were recruited and enrolled from 35 sites in the US. Subjects were enrolled just prior to initiating their first HAART regimen; all were at least 13 years old (post menarche), had confirmed HIV-1 infection, and had no history of previous antiretroviral treatment. Women were evaluated at baseline, weeks 24, 48, and 96 with a pelvic examination, CD4+ T lymphocyte count, HIV-1 plasma viral load, cervical cytology, and collection of a cervical swab specimen for HPV DNA testing by the Roche PCR/reverse blot strip assay. Colposcopy was recommended for ASCUS or higher cytology results.

Results: 146 subjects were enrolled and had data available at baseline. 84% of study subjects were members of racial or ethnic minority groups; at baseline, the median CD4+ T lymphocyte count was 238 and median viral load was 13,894. 97 of the 146 subjects (66%) had HPV DNA detected in the baseline specimen including 90 subjects (62%) positive for one or more high risk HPV types and 43 (29%) positive for one or more low risk HPV types. The most common types detected were (in order of frequency) HPV 58, 53, 16, 52, 83, 18, 59, and 31. The prevalence of cervical HPV DNA detection declined from 66% at baseline to 49% at week 96 and the prevalence of DNA of a high risk HPV type declined from 62% to 41% over the same time. Using a logistic random-effect mixed model to compensate for missing data, the duration of follow-up was found to be significantly associated with decreased detection of HPV DNA of any type (p=0.045); high risk HPV type (p=0.009); multiple HPV types (p=0.007); and multiple high risk HPV types (p=0.001). The frequency of detecting DNA of nearly all individual HPV types also decreased with the duration of follow-up. Although most subjects had improved CD4+ T lymphocyte counts and plasma HIV-1 viral loads on HAART, there was at most a marginal association between treatment response and clearance of cervical HPV DNA. A lower CD4+ T lymphocyte count at baseline (p=0.025), at week 24 (p=0.043), and at week 48 (p=0.047) was associated with progression of cervical dysplasia, after controlling for other baseline factors.

Conclusions: HIV-infected women initiating HAART had a high baseline prevalence of cervical HPV DNA that declined over the first 96 weeks of HAART. The decline was seen for nearly all HPV types, especially the high risk types. Despite the overall trend, the relationship between CD4+ T lymphocyte and plasma HIV-1 viral load response and decline of cervical HPV DNA was not strong in this observational study.

P-513 SEXUALLY TRANSMITTED INFECTIONS IN HIV INFECTED PATIENTS IN A TERTIARY CARE HOSPITAL IN INDIA

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Objective: India is a low HIV prevalence country with an overall prevalence of less than 1%. There are more than 5.2 million HIV infected cases. The infection is spreading, primarily through sexual route. HIV infection is considered to be a risk factor for acquiring STIs. The risk is dependent on the immune status, sexual behavior of the host and prevalence of microbial organisms in that population. We studied the occurrence of STIs in HIV infected individuals attending our STD Clinic.

Methods: A retrospective analysis of HIV positive patients' records, from 2002-2006 at our sexually transmitted diseases clinic was done. A detailed clinic history and examination were recorded. VDRL and CD4+ cell count were done. Dark ground illumination, Gram's stain, Tzanck smear and wet mount were done where ever required.

Results: There were 435 HIV positive patients (349 males and 86 females) between 4.5 - 66 years of age (mean 34 years). Majority of them were males between 20-40 years of age and most of them had acquired the infection from commercial sex workers through heterosexual unprotected intercourse. Two hundred and twenty four (51.5%) of them had 316 STIs. Many of them had more than one STI at the time of presentation. Eighty seven of these were herpes simplex virus infections, 86 genital warts, 55 molluscum contagiosum, 30 syphilis, 25 scabies, 14 candidal balanoposthitis, 8 vulvovaginal candidiasis, 7 chancroid, and 2 each were gonorrhoea and non-gonococcal uethritis. The CD4+ cell count in these patients varied from 2 ' 1610 cc3 (mean 257 cc3 ; median 212 cc3).The patients with <200 CD4+ cells count more often had viral STIs like genital herpes (27), molluscum contagiosum (18) and genital warts (16).

Conclusions: In our study >50% (224) HIV infected patients had STIs. Majority of these (72%) were viral STIs (HSV, HPV and molluscum contagiosum). Syphilis was the next commonest while other STIs were less frequently seen. High occurrence of STIs in our study group may be due to the study subjects been drawn from a STD Clinic. E-mail: prokverma@hotmail.com

P-514 AN HYPOTHESIS: LOW DEGREE, HIGH CONCURRENCY, LONG DURATION SEXUAL NETWORKS MAY CONTRIBUTE TO EPIDEMIC HIV TRANSMISSION IN AFRICA

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Objectives: To present an hypothesis for an underlying sexual network configuration in Africa that could explain observed transmission. Data supporting the prevailing hypothesis that ~ 90% of HIV infections are transmitted by penile-vaginal contact have a number of inconsistencies: (1) the disjunction between measured sexual partner distributions, and modeling efforts that attempt to reproduce the time course and intensity of the epidemic spread of HIV in Sub-Saharan Africa; and (2) the need for invoking transmission probabilities that exceed currently published estimates. The available data suggest that general African populations have partner configurations (low mean number of new partners per unit time, and low degree distribution of partnerships) similar to those of industrialized countries. The high level diffusion of HIV into a general population seen in many African nations is difficult to explain with such configuration.
Methods: Using current work in progress to suggest a possibly explanatory transmission dynamic. Three lines of current investigation contribute to this hypothesis. First, Moody has presented a theoretical approach and simulation model that demonstrated that low degree networks (with a maximum of three contacts per person) can rapidly produce a giant connected component with an inner bicomponent (defined as a subgraph in which at least two node-independent paths connect every pair of actors in the subgroup). He also demonstrated the presence of such bicomponents in several large studies of STD/HIV transmission. Second, Helleringer and Kohler have demonstrated empirically the emergence of a giant component with an inner bicomponent in an island population in Malawi with a low degree distribution. In this predominantly heterosexual setting, a large proportion of men and women had two or three concurrent partners of long duration resulting in complex, multi-cyclic network. Third, the variation in transmission probability with viral load is well established. Chakraborty and colleagues have developed a model that attempts to relate viral load to transmission probability. Their model suggests that a viral load in excess of 105'typically found in early infection, but not limited to that period'can generate male-female transmission probabilities in excess of 0.01 for a single coital act.
Results: This hypothesis asserts that low degree, high concurrency, long duration heterosexual networks provide a plausible construct for epidemic transmission of HIV in Africa. The introduction of HIV into such a setting would engender high transmission probabilities and permit rapid dissemination of the virus. In a more mature transmission setting (that is, one of high prevalence), the same network characteristics would permit ongoing endemic spread by repeated exposure of new participants to HIV at lower transmission probabilities.
Conclusions: It is likely that no single theory of transmission dynamics applies to all of Africa. The inherent heterogeneity of this vast area suggests that several mechanisms may be operative. Considerable refinement, both theoretical and empirical, is required, and the role of other factors'sexual, parenteral, and their interaction'should be mapped into the outcome. This hypothesis, if confirmed, may expand our understanding of how observed network configurations contribute to endemic and epidemic spread. (rrothen@emory.edu)

P-515 HIV AND STI PREVALENCE IN THE GENERAL POPULATION OF MYSORE DISTRICT, KARNATAKA STATE, SOUTHERN INDIA

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Objectives: To assess HIV/ STI prevalence and related behaviours in Mysore district in the context of the monitoring and evaluation of a large preventive intervention targeting vulnerable populations (Avahan, the India AIDS Initiative of the Bill & Melinda Gates Foundation).
Methods: This study was carried out from 10/2005 to 11/2006. We used a stratified two-stage sampling method to randomly select 6000 subjects equally distributed between rural and urban areas (clusters) and between men and women aged 15 to 49 (randomly selected from each cluster). Sampled subjects were approached at home by members of the study team. After providing informed consent, each participant was administered an extensive questionnaire, and consent was sought for blood and/or urine samples for HIV and STI testing. Serum and dried-blood spot samples were tested for HIV using an enzyme immunoassay (EIA), with confirmation by a second EIA. For subjects providing urine only, HIV was tested using the Calypte EIA, followed by Western Blot confirmation. Sera were also tested for syphilis by RPR with TPHA confirmation, and for HSV-2 specific antibodies on a subsample of 1/8 sera. Urine samples were tested with the Aptima Combo-2 assay for both Neisseria gonorrhoeae (NG) and Chlamydia trachomatis (CT). Prevalence estimates were weighted by the sampling and population structure.
Results: Out of 5996 subjects effectively selected, 5732 were eligible for the study. Of those, 4663 (81.4%) answered the questionnaire, and 4175 (72.8%) provided at least one biological sample. Table 1 presents HIV/STI prevalence according to sex and place of residence (urban vs. rural). The overall HIV prevalence was 0.8%, and the prevalence of other STIs was low, with for example only 5 cases of NG. HIV (p=0.028) and syphilis (p=0.035) prevalences were significantly higher among men compared to women in urban but not rural areas. HIV and syphilis prevalences were also higher in urban compared to rural areas [statistically significant for syphilis only (p=0.031)]. NG and CT were slightly higher among women and in rural areas, but not significantly. The prevalence of HSV-2 in the sub-sample tested was 11.5%. Although only 12.7% of the men and 1.1% of the women reported >1 lifetime sexual partner, there was a significant association between increasing number of partners and HIV (p=0.009 for men and p=0.003 for women). HIV prevalence was significantly higher (p=0.001) among separated and widowed women (2.9%) compared to married (0.6%) and single (0.0%) female subjects. The other risk factors for HIV were: for women, reporting any previous anal sex (4.5% vs. 0.6%, p=0.015); and for men, any previous sex with a female sex worker (7.0% vs. 0.8%, p=0.007).
Conclusions: This study shows low levels of most STIs and risky sexual behaviour in Mysore district. Comparison of our results with those of sentinel surveillance among pregnant women shows close similarity for rural areas, but HIV prevalence among urban pregnant women appears to overestimate prevalence among the general female population. At the current stage of the HIV epidemic in Mysore, prevalence is highest among urban men.

Table 1. HIV/STI prevalence in the general population of Mysore district, Southern India

	N	HIV	Syphilis	NG	CT	NG or CT
Urban men	881	1.6%	2.2%	0.0%	0.6%	0.6%
Urban women	1061	0.6%	0.9%	0.1%	0.9%	1.0%
All urban	1922	1.0%	1.4%	0.1%	0.8%	0.8%
Rural men	1056	0.7%	0.5%	0.1%	0.7%	0.9%
Rural women	1197	0.5%	0.8%	0.3%	1.1%	1.2%
All rural	2253	0.6%	0.7%	0.2%	0.9%	1.0%
All men	1917	1.1%	1.3%	0.1%	0.7%	0.7%
All women	2258	0.6%	0.8%	0.2%	1.0%	1.1%
All subjects	4175	0.8%	1.0%	0.1%	0.9%	0.9%

P-516 INCIDENT BACTERIAL STDS AMONG HIV-INFECTED MEN WHO HAVE SEX WITH MEN AND ARE IN PRIMARY CARE: CLINICAL, DEMOGRAPHIC, AND BEHAVIORAL CORRELATES

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Objectives: Sexually transmitted diseases (STDs) in HIV-infected patients may be associated with risk taking behavior and clinical conditions that can potentiate further transmission of STDs or HIV. The current study was designed to assess the incidence of bacterial STDs among men who have sex with men (MSM) enrolled in a prospective cohort study prior to the initiation of a counseling intervention, and to determine whether new STDs were associated with specific demographic, behavioral or clinical variables.
Methods: The SUN Study was designed to better understand the complications of effective antiretroviral treatment and prolonged survival among HIV-infected patients receiving care in 7 HIV-specialty clinics in 4 U.S. cities. At baseline and 6 months, participants underwent a computer-assisted interview to elicit behavioral risk data and were screened serologically for syphilis. Urine and oropharyngeal and rectal swabs, were tested for N. gonorrhoeae (GC) and C. trachomatis (CT) infection by AptimaTM NAAT.
Results: This analysis focused on 191 MSM for whom baseline and 6-month behavioral and clinical data were available. At their initial visit, 27 (14.1%) were diagnosed with 30 bacterial STDs and treated. At their 6-month visit, 23(12.0%) were diagnosed with 29 new or recurrent STDs (rectal CT: 6.8%, rectal GC: 2.6%, oropharyngeal CT: 2.1%). Six (3%) men were diagnosed with STDs at both the baseline and 6-month visits; 5 of these infections were either caused by different organisms or occurred at a different anatomic site. MSM with an incident STD (ISTD) did not differ from those without an ISTD by race/ethnicity, education, employment status, recruitment site, CD4 count or plasma HIV RNA concentration. Plasma HIV RNA was <400 copies/mL for 80% of MSM with an ISTD and 73% of MSM without one. Compared to MSM without an ISTD, those with an ISTD were younger, (36.7 vs. 42.4 years, p=0.002), more likely to have 4 or more sexual partners (65% vs. 24%, p<0.001), and more likely to engage in unprotected anal intercourse (70% vs. 39%, p=0.005); 56.5% of the MSM with an ISTD and 30.4% of those without an ISTD engaged in unprotected receptive anal intercourse (URAI) at least once in the prior 6 months (p=0.013). Eleven of 13 men with an ISTD who engaged in URAI did so with at least one HIV-uninfected partner, and 7 of 11 men who developed an ISTD who engaged in insertive anal intercourse had at least one HIV-uninfected partner. Unprotected oral sex was not associated with an ISTD. MSM with an ISTD were more likely to use club/party drugs (p=0.008) and erectile dysfunction medications (p=0.03) than those without an ISTD. In multivariate analysis, age <42 years and 4 or more sex partners remained significant (p=0.02 and p<0.001, respectively).
Conclusions: Incident bacterial STDs were often detected in HIV+ MSM when NAAT screening was performed, underscoring the need for routine STD screening as part of primary care. Additional counseling to promote safer sexual practices is needed, particularly for MSM who use club/party drugs or erectile dysfunction agents, or who report engaging in unprotected anal sex.

P-517 SYPHILIS-COINFECTION AMONG HIV-POSITIVE PATIENTS IN A STD CLINIC IN SHANGHAI, CHINA

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Objective: The number of reported HIV(+)/AIDS and syphilis cases was rapidly increasing in China in the past decade. The genital ulcer lesion facilitates HIV and syphilis transmission. This study aimed to investigate the co-infection statues of syphilis among the HIV-positive patients in a STD clinic setting in Shanghai, China, so as to provide information for STD/HIV control policy.
Methods: Sera from 49 HIV-positive patients were tested for serological reactions to syphilis Rapid Plasma Reagin (RPR) and Treponema Particle Agglutination Assay (TPPA). The HIV infections were confirmed by WEST-BLOT in the Shanghai Skin Disease and STD Hospital during 2003-2006. Meanwhile, 49 sera from gonorrhea patients who were HIV-negative were tested for RPR and TPPA as controls. The time for serum collection, age and gender were matched in the study cases and controls.
Results: The mean age was 32.86 (ranges of 6-60, 1SD=10.82). Forty-eight cases (>=15 years old) were infected with HIV through sexual contacts, One case who did not have syphilis was infected with HIV by using hematic product for medical reasons. The majority of the cases were male (83.67%), including 46.43% (13/28) men who had sex with men (MSM). About 50% of the HIV-positive cases had syphilis co-infection. The co-infection ratios were age-related with cases younger than 30 years-old being more common than older cases (64.29% vs 28.57%; X2=6.125, p=.013). Male cases had a higher co-infection ratio (51.22%) than females (37.50%). The controls had a co-infection ratio of 10.20% which was significantly lower than that of the case group (X2=12.96, p=.001). The OR value was 7.33 (95%CI 2.09-30.73).
Conclusions: A great portion of HIV positive patients in a STD clinic setting in Shanghai were co-infected with syphilis, supporting that HIV infection and syphilis interact and facilitate transmission. Therefore screening both infections may be recommended in high-risk groups in STD clinic settings.
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P-518 KNOWLEDGE, INCIDENCE AND TREATMENT SEEKING BEHAVIOR OF SEXUALLY TRANSMITTED DISEASES (STDS) IN THE CONTEXT OF HIV/AIDS AMONG NEPALESE MEN

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Objective: The emerging epidemic of AIDS in Nepal has made STDs control as one of the major strategies. Therefore, it is essential to know the extent of knowledge, incidence and treatment of sexually transmitted diseases (STDs) among Nepalese population.

Methods: The data of this study are derived from Men's Survey 2005, a representative sample from three districts of western hill region of Nepal, conducted by Organization for Integrated Research and Development (OIRDN). A sample of 461 ever married men aged 15-59 were interviewed from 500 households based on multistage sampling techniques. Both qualitative and quantative methods have been adopted to collect the data. For analyses, bivariate (Chi square) and multivariate (logistic regression) statistical techniques have been used to find the correlates associated with knowledge, incidence and treatment seeking behavior of STDs.

Results: About two-thirds of men (66.3 percent) know about STDs (against 84.0 percent who know HIV/AIDS). The major STDs are gonorrhea, burning during urination, genital ulcer and swelling of genital organ. More than 10.0 percent followed by 6.1 percent of men recognize gonorrhea and genital ulcer as STDs. However, 21.0 percent of men do not perceive severe burning during urination as a STD. They report it as hot (Garmi Rog) diseases due to lack of water in the body. Just more than one third (33.2 percent) men have at least one STD, whereas only 60.8 percent of them seek treatment for the diseases. Bivariate results show that age, education, mass media exposure and spousal communication are significantly associated with knowledge of STDs. There is positive association between education, mass media exposure, standard of living and spousal communication with knowledge of STDs. Likewise, the prevalence of STD is higher among uneducated men, men from dalit caste, migrants and men from households with low standard of living. For instance, 29.4 percent of men from the households with high standard of living as compared to 40.0 percent of men from low standard of living report that they have at least one STD. Similarly, men at older age, men with better education, men who discuss with their partners seek treatment for the diseases than their other counterparts. On the other hand, a majority of the respondents in focus group discussion report that shyness is one of the main obstacles to seek the treatment of STDs. In multivariate analysis, after controlling for other variables, education, mass media exposure and spousal communication are the significant predictors of knowledge and treatment seeking behavior of STDs among men. For example, men with secondary and above education are more than 3.0 times likely to seek treatment than uneducated men.

Conclusion: The analyses suggest that education is one of the significant determinants of knowledge and treatment seeking behavior of STDs among Nepalese men. Therefore, an immediate step is to create awareness through formal and informal education towards the adverse effect of STD in their overall health and its prevention among vulnerable group of population (especially adolescent). Email: Vkkc2001@yahoo.com

P-519 HIGH PREVALENCE OF GONOCOCCAL AND CHLAMYDIAL I NFECTION IN MEN WHO HAVE SEX WITH MEN WITH NEWLY DIAGNOSED HIV INFECTION: AN OPPORTUNITY FOR SAME DAY PRESUMPTIVE TREATMENT

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Objectives: The availability of rapid HIV testing provides an opportunity for same day interventions for persons with newly diagnosed HIV. In sexually transmitted disease (STD) clinics, where rapid HIV testing is readily available, positive rapid HIV test results could be used to identify persons at high risk for other STDs. Gonorrhea (GC) and chlamydia (CT) are common, treatable infections that may facilitate acquisition of HIV. Untreated infections in HIV positive patients may increase viral load and hasten progression of HIV disease. Prompt diagnosis and treatment of these frequently asymptomatic STDs is an important secondary prevention measure for persons with newly diagnosed HIV.

Methods: Visits to the San Francisco municipal STD Clinic between 2004-2006 from self-identified men who have sex with men (MSM) that had either a rapid or standard HIV antibody test that day and who were not previously known to be HIV positive were included in the analyses (n=6,860). Results from rectal, pharyngeal and urine specimens tested with nucleic acid amplification tests and urethral specimens tested by Gram stain were used to calculate GC and CT prevalence at each anatomic site. Men not tested were considered negative for the infection. Date of treatment was used to calculate treatment completion and time to treatment. Chi-square tests were used to calculate differences in proportions.

Results: 3.0% (212/6,859) of tested MSM had newly diagnosed HIV infection. Overall, co-infection with GC occurred in 25.0% (53/212) of HIV-infected MSM, compared to 10.9% (725/6,647) of HIV-uninfected MSM ($p<0.01$); co-infection with CT occurred in 18.4% (39/212) of HIV-infected MSM versus 7.8% (515/6,647) of HIV-uninfected MSM ($p<0.01$). The prevalence of co-infection among HIV-infected MSM was lower among those without GC/CT treatment indications compared to those with same day treatment for both GC (15.6% vs. 60.0%, $p<0.01$) and CT (14.7% vs. 27.0%, $p<0.01$), but remained higher than HIV-uninfected MSM. Among MSM with newly diagnosed HIV, 7.6% (4/53) co-infected with GC and 5.1% (2/39) with CT were not treated. The median time to treatment for the 35.8% (19/53) GC-infected and 56.4% (22/39) CT-infected MSM treated after their HIV test visit was 6 days (range: 2-81 days).

Conclusions: Prevalence of GC and CT was high in MSM with newly diagnosed HIV, including MSM with no indications for same day GC and CT treatment. Because these infections are often asymptomatic, under current clinical protocols, nearly half of GC and CT infections in MSM with newly diagnosed HIV were not treated until after laboratory tests results become available. This practice delays time to treatment and sometimes results in no treatment for MSM in this high prevalence population. Providing same day presumptive treatment for MSM with newly diagnosed HIV would ensure treatment of patients that are currently not being treated, decrease overall time to treatment, and streamline clinical care. We recommend that STD programs evaluate the local prevalence of co-infection and consider providing presumptive treatment for GC and CT to MSM with newly diagnosed HIV by rapid antibody testing in STD clinic settings.

P-520 SEXUALLY TRANSMITTED DISEASE CO-INFECTIONS IN HIV/AIDS INFECTED PATIENTS

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Objectives: The quality of life for persons living with HIV/AIDS has improved with the development of highly active antiretroviral therapy (HAART). Since HAART, many persons with HIV/AIDS continue to lead sexually active lives after HIV diagnosis and may continue to engage in unprotected sex. Many studies have found that some STDs such as syphilis may increase the likelihood of contracting HIV, and vice-versa. This investigation examined the role of HIV/AIDS in rising vulnerability to STD co-infections in persons attending two HIV-STD clinics in Kentucky. *Methods:* This investigation was comprised of three study designs. The cross-sectional study evaluated exposure and outcome simultaneously by matching HIV cases and controls to other STD cases and controls. The case-comparison study compared co-infections among a population of HIV positive individuals either with or without another STD. The count-comparison study included separately-reported cases of HIV and STDs from Fayette County and Kentucky to compare counts to the first two studies. *Results:* Out of 483 persons tested (or notified as being at risk) for HIV at the HIV-STD clinic, 60 were found to be at risk for HIV-STD co-infections and 51 agreed to be tested. Nineteen of the 51 participants (37%) tested positive for HIV-STD co-infections. The odds of having HIV/AIDS and contracting another STD was 5.53 (95% CI=1.58-19.27, p=0.005).

Conclusions: Although HIV and many other STDs are on the national notifiable disease list, HIV-STD co-infections are not. Better prevention strategies and screening methods are needed to decrease the morbidity and mortality of HIV-STD co-infections.

P-521 UNPROTECTED RECEPTIVE, BUT NOT INSERTIVE, ANAL INTERCOURSE AND RECENT SYPHILIS INFECTION ARE ASSOCIATED WITH INCIDENT HIV INFECTION AMONG MSM

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Objectives: Recent studies in the United States and Europe provide conflicting results about the contribution of sexually transmitted infections (STI) on HIV incidence among men who have sex with men (MSM). Sexual positioning may also contribute to risk of HIV acquisition. We used a case-control design to determine if STIs, sexual positioning, and other factors were associated with recent (< 12 months) HIV infection.
Methods: From 2002-2006, 120 recently HIV-infected and 75 HIV-uninfected MSM from San Diego, CA were screened for the Acute Infection and Early Disease Research Program (AIEDRP) and completed computer-assisted self-interviews regarding their sexual behaviors over the previous year and with their last three partners. Most received testing for syphilis by rapid plasma reagin test (positive results confirmed by VDRL and TPA); gonorrhea and chlamydia by nucleic acid amplification of urine and culture of anal/pharyngeal swabs; and HSV-2 antibodies by specific enzyme linked immune assay from sera. We examined associations between HIV serostatus, sociodemographics, risk behaviors, and a positive STI test at enrollment using chi-square analysis, t-tests, and logistic regression.
Results: The mean age of participants was 32.7 years. Most were white (70%), 15% were Hispanic, and 7% African American. Interviews occurred a median of 3 weeks after receiving HIV test results. Among those tested, 8.5% were positive for syphilis, 3.2% for gonorrhea, 2.5% for chlamydia, and 39.6% for HSV-2 antibody. There were no significant differences between cases and controls with regard to demographics, number of sexual partners in the past year, or general drug use. Cases were more likely than controls to report a greater number of receptive unprotected anal intercourse (RUAI) partners in the past year, a greater number of RUAI partners among last three partners, and to have syphilis; but were less likely to report ever being incarcerated. HSV-2 antibody was not associated with HIV serostatus; however, information on HSV-2 symptoms and genital shedding were not available. In multivariate analyses, HIV-positive cases were more likely to report RUAI with 2-5 partners (OR=3.41, $p<0.01$) or >5 partners (OR=6.50, $p<0.01$) in the previous year, but were less likely to report ever being incarcerated (OR=0.33, $p<0.01$). Syphilis was not modeled due to small numbers and no positive controls. Receptive, but not insertive, anal intercourse, was associated with HIV-positive serostatus in all models, regardless of condom use. There was also a significant trend for increasing proportions of cases compared to controls reporting more RUAI partners in the last year (none 41%, one 57.1%, 2-5 60.9%, >5 80%, $p<0.01$).
Discussion: Having more RUAI partners was strongly associated with recent HIV infection among these MSM, but not the total number of partners or number of insertive partners, suggesting that site of exposure (i.e., receptive anal) may be more important for transmission than unprotected intercourse in general. These data suggest the need for future studies that include larger sample sizes in order to compare differences in syphilis, gonorrhea, and chlamydial infection by site of infection and those that examine HSV-2 shedding and symptoms in relation to HIV acquisition among MSM.

P-522 FEASABILITY OF AND RESPONSES TO POINT OF CARE (POC) STI TESTING AND RAPID HIV SCREENING BY OUTREACH WORKERS FOR INDOOR COMMERCIAL SEX WORKERS (CSW) IN VANCOUVER, CANADA

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Objectives: To determine the feasibility, acceptability and experience of STI self sampling screening and POC, rapid HIV testing provided by trained, supported outreach teams to women working in selected indoor commercial sex establishments.
Methods: Outreach teams visited selected indoor commercial sex establishments and offered HIV and STI screening as part of an STI prevalence research study. Three outreach workers and two registered nurses from a community-based program conducting research and outreach in indoor commercial sex establishments in the Vancouver area were trained to provide the standard pre- and post-test counseling promoted in The Canadian Guidelines on Sexually Transmitted Infections (2006 Edition). Training was provided by nurses from the Education Division of STI/HIV Prevention and Control, British Columbia Centre for Disease Control (BCCDC). The outreach workers were supported and supervised by research team nurses. Protocols for legislated infectious disease reporting and follow-up clinical care were jointly established between the BCCDC and the community partner organization. INSTI™ HIV Rapid Antibody Test kits and training were provided by BioLytical™ Laboratories. Chlamydia, gonorrhea, and HPV tests were performed using self-collected vaginal/cervical swabs.
Results: Since August 2006, 55 sex workers from 14 indoor sex establishments have been screened for HIV and STI. Of these, three (5%) had never been previously screened for HIV, 11 (7%) had only been screened for HIV once, four (7%) had never been screened for STI, and five (9%) had only been screened for STI once. Eleven (20%) women did not have a regular healthcare provider. To date there have been no reactive HIV tests, and two (4%) positive Chlamydia tests. The HIV POC screening test was received positively by the study population possibly due to the non-invasive testing method (finger poke versus blood draw) and the instant results. The self swab tests for STI have received positive feedback from women who said they were not comfortable undressing for their health care provider. The members of the research team have found that offering these tests in the sex establishments provides the opportunity to initiate conversations related to STI prevention and education and have contributed to the promotion of regular clinic visits. There have been no difficulties with performing the HIV rapid screen, the self swab tests and/or the pre-post test counseling process.
Conclusions: HIV and STI screening conducted by outreach workers and nurses trained and supported by a professional healthcare team provides an opportunity to link a vulnerable, hidden community to professional health care services. HIV and STI screening offers an excellent opportunity to provide education to indoor sex workers. POC HIV and STI screening by outreach teams can be a key entry point for women who work in the commercial indoor sex industry to access sexual health care and may be a solution to missed opportunities to provide health services and education to this population.

POSTER SESSION: STD EPIDEMIOLOGY

P-523 SEROPREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS IN CTE DIVOIRE, 1997-2005

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Objective: Evaluating HIV and HSV prevalence and assessing HPV infections rates among HIV-infected patients in Côte d'Ivoire from 1997 to 2005.
Methods: Several cross-sectional studies were carried out among visitors and patients attending public sexually transmitted diseases (STDs) and outpatient gynecology clinics in Abidjan and Bouake. Endocervical, urethral swabs and blood specimens were collected. The diagnostic was based on clinical symptoms and laboratory analyses.
Results: The estimated HIV prevalence after stratification by age in the general population was 12.45% in 1997. Surprisingly, between 1997 and 2004, data revealed a silent HIV epidemic in Côte d'Ivoire and young at the age of 20-30 years were mostly affected. The prevalence of HIV in STD clinics attendees varied between 20.1% and 23.7%. More than 60% of patients were single and HIV infection was highly linked to multiple sexual partners and to the lack of condom use. Patients diagnosed with a STI or having a medical history of STI in Abidjan (1997) and Bouake (2000) had a higher HIV prevalence, respectively 31.3% and 43.3%. Young were also at higher risk of being infected with HSV and the global prevalence was 1.4% in 2000 with a recurrence rate of 38%. One study was specifically performed in women with cervical infections and 16.4% of them were infected with HSV. Concerning HPV infections, the findings showed that around 45% were diagnosed in women under 28 years of age and those infections were strongly associated with HIV infection ($p<0.001$). Indeed, HPV was detected in more than 60% of HIV (+) women compared to 35% of HIV (-) women.
Conclusion: The rate of STI infections is high in Côte d'Ivoire since 1997. Results may be understood in the light of the political turmoil in Abidjan since 1999 which could be responsible for the slackening in the National HIV prevention policy. There is a great need to strengthen interventions targeting young such as school-based or community-based HIV/STI prevention programmes in urban and rural areas.

P-524 STUDY TO DETERMINE THE AETIOLOGY OF SYMPTOMATIC AND ASYMPTOMATIC URETHRITIS IN AN INNER-CITY REGION OF JOHANNESBURG, SOUTH AFRICA

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Objectives: The study was conducted to determine the prevalence of urethritis-associated pathogens among a) men with urethral discharge (MUS) attending an inner city STI clinic in Johannesburg, b) men with genital ulcers (GUD) without clinical urethritis, and c) asymptomatic men presenting to the HIV voluntary counselling and testing service (VCT) attached to the clinic. To determine the prevalence of ciprofloxacin resistance among gonococci isolated from urethral swabs taken from the MUS and GUD participants.
Methods: Six hundred and forty eight male MUS, GUD or VCT patients were invited to participate in the study over a two year period (2004-2006). Demographic data, sexual risk behaviour and history of previous STIs were collected using a nurse-administered questionnaire. An endourethral swab was taken from each MUS or GUD patients for culture of Neisseria gonorrhoeae and Trichomonas vaginalis. All enrolled patients, including VCT clients, provided a first catch urine sample for nucleic acid amplification testing using a real-time multiplex PCR for detection of the following urethritis pathogens: N. gonorrhoeae, Chlamydia trachomatis, Mycoplasma genitalium and T. vaginalis. Ciprofloxacin susceptibility testing on N. gonorrhoeae isolates was performed using E tests and breakpoints determined using NCCLS criteria. The study was approved by the Human Research Ethics Committee of the University of the Witwatersrand.
Results: Of the 648 patients recruited, 446 (68.8%) had at least one pathogen identified. Among the 412 MUS patients, gonorrhoea was the major cause (279, 67.7%); there were additionally 99 (24.0%) C.trachomatis, 74 (18.0%) M. genitalium and 36 (8.7%) T. vaginalis infections in the MUS group. Among the 77 GUD patients, T. vaginalis was the most frequent pathogen (22, 28.6%), followed by N. gonorrhoeae (18, 23.4%), M. genitalium (14, 18.2%) and C. trachomatis (13, 16.9%). Among the 159 VCT clients, C. trachomatis was the most frequent pathogen (24, 15.1%), followed by M. genitalium (12, 7.5%0, N. gonorrhoeae (11, 6.9%) and T. vaginalis (9, 5.7%). Ciprofloxacin susceptibility data were available for 173 cases of gonorrhoea in which an isolate was grown; 30/173 (17.3%) gonococcal isolates were resistant to ciprofloxacin (MIC 1mg/l or higher).
Conclusions: Gonorrhoea remains the most important pathogen in the aetiology of the male urethritis syndrome in South Africa. Given that 17.3% of isolated gonococci were resistant to ciprofloxacin, there is a need to change first-line therapy for presumptive gonococcal infection from ciprofloxacin to a more suitable therapeutic agent. Carriage prevalence of urethritis-associated pathogens are relatively high in GUD, and to a lesser extent, in VCT patients.

P-525 EPIDEMIOLOGY OF SEXUALLY TRANSMITTED DISEASES IN IVORY COAST, 1997-2005: IMPLICATIONS FOR PREVENTION

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Objective: Evaluating HIV and HSV prevalences and assessing HPV infections rates among HIV-infected patients in Ivory Coast from 1997 to 2005.
Methods: Several cross-sectional studies were carried out among visitors and patients attending public sexually transmitted diseases (STDs) and outpatient gynecology clinics in Abidjan and Bouake. Endocervical, urethral swabs and blood specimens were collected. The diagnostic was based on clinical symptoms and laboratory analyses.
Results: The estimated HIV prevalence after stratification by age in the general population was 12.45% in 1997. Surprisingly, between 1997 and 2004, data revealed a silent HIV epidemic in Ivory Coast and young at the age of 20-30 years were mostly affected. The prevalence of HIV in STD clinics attendees varied between 20.1% and 23.7%. More than 60% of patients were single and HIV infection was highly linked to multiple sexual partners and to the lack of condom use. Patients diagnosed with a STI or having a medical history of STI in Abidjan (1997) and Bouake (2000) had a higher HIV prevalence, respectively 31.3% and 43.3%. Young were also at higher risk of being infected with HSV and the global prevalence was 1.4% in 2000 with a recurrence rate of 38%. One study was specifically performed in women with cervical infections and 16.4% of them were infected with HSV. Concerning HPV infections, the findings showed that around 45% were diagnosed in women under 28 years of age and those infections were strongly associated with HIV infection ($p<0.001$). Indeed, HPV was detected in more than 60% of HIV positive women compared to 35% of HIV negative women.
Conclusion: The rate of sexually transmitted diseases is high in Ivory Coast since 1997. Results may be understood in the light of the political turmoil in Abidjan since 1999 which could be responsible for the slackening in the National HIV prevention policy. There is a great need to strengthen interventions targeting young such as school-based or community-based HIV/STD prevention programmes in urban and rural areas.

P-526 DRAMATIC INCREASES IN ADULT MALE CHLAMYDIA AND GONORRHEA CASES REPORTED IN NEW YORK CITY AFTER IMPLEMENTATION OF A JAIL STD SCREENING PROGRAM, 2004-2006

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Objectives: A high prevalence of Chlamydia (CT) has been shown among men in United States (US) correctional facilities. The US Department of Justice reports that ~650,000 men are admitted to jails annually, and the New York City (NYC) Department of Corrections admits ~95,000 adult men annually; where the average stay is 48 days. In January 2005, the NYC Department of Health and Mental Hygiene office of Correctional Public Health (CPH) implemented a program to screen men <35 years old admitted to NYC adult jail facilities for CT and gonorrhea (GC) infection. The objectives of this analysis were to examine the impact of male CT/GC jail screening on the measured burden of CT/GC disease in NYC.
Methods: NYC STD surveillance data were analyzed to determine number of CT/GC cases reported by gender, age, report year, and provider type (STD clinics, jails, hospitals, private doctors, and other clinics) from 2004 through 2006.
Results: In 2004, 85% (6,945/8,186) of reported male CT in NYC was among men <35 years old; STD clinics reported 40% (2,763/6,945) of male CT and 37% (1,606/4,382) of male GC cases in this age group. Three percent of CT and 2% of GC was reported by adult jails, and 57% of CT and 62% of GC were reported by other provider types in 2004. After jail screening was implemented in 2005 by CPH, the overall number of reported CT cases among males <35 increased from 6,945 in 2004 to 10,885 in 2005; the number of CT cases reported by jails increased from 222 in 2004 to 3,854 in 2005 and the number of GC cases reported by jails increased from 68 in 2004 to 670 in 2005. In 2005, there were more CT cases reported in males <35 from NYC jails (3,854/10,885, 25%) than from NYC STD clinics (2,728/10,885, 35%). This trend in male CT reporting continued in 2006.
Conclusions: A male screening program implemented by CPH in NYC jails detected and reported more cases of CT than all 10 NYC STD clinics combined. The high burden of CT disease among non-health care seeking and likely asymptomatic men strongly supports screening in this non-traditional setting. Despite declining GC rates, this program resulted in increases in GC case reports from jails. Men's average length of stay in jail suggests that a high proportion of infected men could get treated before release from jail, thereby decreasing subsequent transmission in the community. Future research should investigate whether male screening in jails impacts female CT rates in the community.

P-527 PREVALENCE OF CHLAMYDIA TRACHOMATIS, NEISSERIA GONORRHOEAE AND TRICHOMONAS VAGINALIS IN YOUNG ADULTS IN TANZANIA USING THE GEN-PROBE APTIMA ASSAYS

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Objective: Reliable data on STD rates in Tanzania are scarce and there are only a few published prevalence studies. For example, Obasi et al detected 1-2% Chlamydia trachomatis (CT) in 15-19-year olds in rural Tanzania using PCR (Trop Med Int Health, 2001 Jul; 6(7): 517'525); and in Northern Tanzania, Klinger et al used PCR and found 1.7% and 0.7% CT, and 10.7% and 6.3% Trichomonas vaginalis (TV) in women and men, respectively (STD, 2006 Dec, 33(12): 712-718). As part of a preliminary phase of a proposed intervention study, our goal was to determine the prevalence of CT, Neisseria gonorrhoeae (NG) and TV infection among at risk adolescents and young adults in rural Tanzania.
Methods: Of the commercially available nucleic acid amplified tests for CT and NG, the Gen-Probe assays are the most sensitive and are highly specific. We used the Gen-Probe's APTIMA COMBO 2 Assay, (AC2) (San Diego, CA) for CT and NG, and their TV (ASR, analyte specific reagent) assay on urogenital specimens collected from male and females in the south central Tanzania Kilombero/Ulanga district. In an on-going study, we selected subjects randomly from a pre-existing population database (Ifakara's Demographic Surveillance System). Subjects were 15'30 years old. Urogenital specimens were collected in the field in the privacy of the subject's own home and with the assistance of a health care worker (if requested). Using the AC2 collection kit, females obtained a self-administered vaginal swab and placed it into the transport tube. Males provided 25' 30 ml of first catch urine (FCU) in a sterile cup. FCU was then inoculated into the AC2 urine transport tube. Swabs and FCU tubes were kept refrigerated at 4º C, sent to the UCSF laboratory and tested within 30 days of collection. We followed the package insert for the AC2 assay. The TV ASR test also targets 16s rRNA. This assay is generally similar to the other APTIMA assays' target capture and amplification protocol.
Results: To date, 223 patients (101 males and 122 females) have been enrolled. Overall, combined STD prevalence is 17.9% (5.4% for CT, 0.9% for NG and 11.7% for TV). All were single infections. For females, there was 2.5% (3/122) CT, 1.6% (2/122) NG and 14.8% (18/122) TV. For males, there was 8.9% (9/101) CT and 7.9% (8/101) TV. No NG was detected in men.
Conclusions: We found a higher prevalence (5.4%) of CT in our population than was reported earlier. There was (atypically) more CT infection seen in males than females. Rates for TV were also high (11.7%) with more TV detected in females than males. Prevalence of NG was low. Given the high CT and TV prevalence in this population, it appears that the current standard of care (syndromic management) may not be effective, as these infections are often asymptomatic. Clearly, STD/HIV prevention strategies are needed.

P-528 SURVEILLANCE OF SEXUALLY TRANSMITTED INFECTIONS IN GAUTENG PROVINCE, SOUTH AFRICA: 2000-2006

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Objectives: To report trends in clinical sexually transmitted infections (STI) sentinel surveillance data from Gauteng Province over a 7 year period, 2000-2006.
Methods: Surveillance data were continuously collected from 21 sentinel primary healthcare facilities (PHCFs) situated in 5 regions of Gauteng Province, South Africa. Daily tally sheets were used to collect data on STI syndromes from men and women presenting with STIs to the sentinel PHCFs. The data were incorporated onto monthly data sheets at the facilities and faxed to the STI Reference Centre for data entry and subsequent analysis. Staff at the STI Reference Centre chased up late reports and undertook facility training as required. Data were collected on the following syndromes: genital ulceration (GUS), male urethritis (MUS), vaginal discharge (VDS), scrotal swelling (SSW), lower abdominal pain (LAP), inguinal bubo (BUBO), genital warts (GW), balanitis (BAL) and 'other STIs' (OTHER). Partner slip issue and receipt rates, the number of asymptomatic partners seen at the PHCFs and the proportion of RPR tests that were positive were also recorded. Data were analysed using MS Excel and EPI info. Statistical analysis for trends involved the Chi-squared test with significance set at the 5% level.
Results: During the 7 years period, 317,808 new episodes of STIs were recorded; 172,737 new female episodes (54%) and 145,071 male episodes (46%). Between 2000 and 2006, there was a significant 47% decrease in total numbers of new STI episodes recorded at sentinel PHCFs ($p<0.0001$). The peak age range for both women and men presenting with STIs remained at 20-29 year throughout 2000-2006. Among total female episodes, VDS, LAP and GUS were the three most prevalent STI syndromes with relative prevalences of 68%, 13% and 10% respectively. For men, the three most prevalent STI syndromes overall were MUS (60%),

GUS (19%) and OTHER (8%). In 2006, GW (7%) became the third most prevalent STI syndrome among men for the first time. Buboes accounted for 3% of male and 1% of female episodes. During the 7 year surveillance period, a total of 212,013 partner slips were issued (67% of total new episodes), and 52,932 partner slips were received (25% of those issued), at the sentinel PHCFs. Partner slip issue significantly increased over the 7 year period from 70% in 2000 to 78% in 2006 (trend p <0.0001). In contrast, the trend for the receipt of partner slips at sentinel PHCFs was in the opposite direction, with a decline over the 7 year period from a 30% receipt rate to a 19% receipt rate in 2006 (p<0.0001). Overall, 22724 asymptomatic partners were seen and received epidemiological treatment for STIs in the PHCFs. The RPR screening rate for syphilis remained stable over the 7 year period with an overall screening rate of 51%. In 2006, 5% of those screened were RPR seropositive compared to 8% in 2000.

Conclusions: The Gauteng sentinel surveillance programme has shown itself to be sustainable and has documented a significant decline in the number of new STI episodes presenting to the sentinel PHCFs.

P-529 NEW SEXUALLY TRANSMITTED INFECTIONS AMONG PERSONS WHO DID NOT HAVE SEX: POSSIBLE SOURCES OF ERROR IN A CONTROLLED TRIAL

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Objective: In a recent large STI prevention trial 64 patients acquired gonorrhea (GC), chlamydia (CT), or trichomonas (TV) during an interval in which they reported having no sex. We wanted to identify errors that led to this paradoxical situation.

Methods: Prior to data analysis we listed types of errors and how they would influence the data. 1) Test specificities are reportedly 95-99%, so many positives could be false positives and they would be randomly distributed. 2) Errors in sex behavior histories would manifest as infections among persons reporting no sex who have the same characteristics as all infected persons in RESPECT 2 (differences by age, race, infection at baseline). 3) Test sensitivity errors would manifest in the first follow-up interval, and 4) treatment failure would manifest in intervals following treatment; these were not expected to be major contributors. Data were reviewed for evidence of each of these possible sources of error. In RESPECT-2, patients from STD clinics in Newark, Denver, and Long Beach had computer-assisted interviews, exams, and lab tests at baseline, 3, 6, 9, and 12 months. Tests were nucleic acid amplification tests for GC and CT, and culture for TV (women only). This analysis was restricted to participants tested for infections before and after an interval in which they reported having no sex partners. We calculated the incidence of new infections associated with different patient characteristics.

Results: The 64 infections occurred among 668 persons who reported no sex during 1125 three-month intervals. Tests were more likely to be positive for TV (4.0%) than for GC (1.4%, p<0.01), or CT (2.4%, p=0.1). Although this number of errors is compatible with test specificities of 96-98.6%, the infections were not randomly distributed. Relative risks (RR) for infection among persons who did not have sex and among all persons were: for GC, persons infected vs uninfected at baseline (2.2 [no sex], 3.1 [all persons]), blacks vs whites (4.3, 2.3); for CT, infected vs uninfected at baseline (3.8, 2.1), age <25 vs >25 (3.4, 2.1); and for TV, infected vs uninfected at baseline (4.6, 3.6), blacks vs whites (1.8, 5.3), and women <25 vs >25 (0.3, 0.6). Only gonorrhea was significantly associated with having infection in the previous interval (RR 6.8) but there were only 4 such infections among persons who reported no sex.

Conclusions: Infections among persons who reported no sex were associated with the same risk factors identified for all study participants, suggesting there were errors their sex histories. False positives also likely occurred, and could have been reduced by confirmatory testing. Treatment failure may have occurred in a few cases.

P-530 OPENING PANDORAS BOX: EXPOSING THE BURDEN OF HIV AND SEXUALLY TRANSMITTED INFECTIONS AMONG MEN RESIDING IN INFORMAL SETTLEMENTS NEAR CARLETONVILLE, SOUTH AFRICA

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Objectives: To describe the burden of HIV and other sexually transmitted infections (STIs) among men residing in informal settlements near Carletonville, South Africa.

Methods: Men voluntarily accessed a mobile clinic, staffed by a male nurse and two male HIV counsellors, placed within informal settlements near Carletonville between July and September 2006. Men were given the opportunity to have an HIV test, to have a genital examination, to have urine tested by nucleic acid amplification for infection with Neisseria gonorrhoeae (GC), Chlamydia trachomatis (CT), Trichomonas vaginalis (TV) and Mycoplasma vaginalis (MG), and to undergo serological screening for syphilis (RPR) and herpes virus type 2 (HSV-2) infections. Men testing HIV seropositive had same-day CD4 and HIV viral load (VL) assays performed. Any symptomatic men with STIs were treated syndromically; asymptomatic men in whom STIs were detected by laboratory testing were treated 2 weeks later. Data on patient demographics, sexual behaviour, previous STI history, HIV testing history and clinical examination findings were collected by nurse-administered questionnaire. Data were entered in Excel and analysed using Epi Info and STATA. Statistical analysis was performed using Chi squared. Ethics approval was obtained from the University of the Witwatersrand.

Results: A total of 309 men accessed the service; 260 South Africans (84%), 30 from Lesotho (10%), 18 Mozambicans (6%) and 1 Zimbawean (0.3%). The majority (265, 87%) had had sexual intercourse with a regular girlfriend in the past 3 months; 2 (0.5%) men had sex with other men, the remaining 304 were heterosexual. Payment of commercial sex workers (CSW) in the last year was reported by 34 (11%) men; most men (95%) did not use a condom on last time they had sex with a CSW. Over half the men (136, 53%) were single and 19% (50) men lived with their spouse. Most men (270, 87%) were asymptomatic; 8 had urethral discharge/dysuria, 4 had genital warts, 1 had scrotal swelling and 7 had dysuria alone. 304/309 men (98%) agreed to undergo STI testing and 87% (269/309) agreed to take an HIV test. Pathogens were detected at the following prevalences: GC 7% (20/298), CT 9% (26/300), TV 18% (54/301), MG 8% (25/301), RPR seropositivity 7% (20/304), HSV-2 seropositivity 59% (173/294) and HIV seropositivity 30% (80/269). Prevalence of urethritis pathogens were lower among the 274 men asymptomatic for these STIs: GC 5%, CT 9%, TV 18% and MG 8%. 7/74 (9%) men had a CD4 count below 200 and 17/74 (23%) men had a VL >100,000 copies/ml. HIV infections were statistically associated with being non-South African (p=0.03), having a past history of urethral discharge (p=0.001) and genital ulceration (p=0.008), the presence of genital warts (p=0.05) and inguinal lymphadenopathy (p=0.0002), as well as seropositivity for both RPR (p=0.01) and HSV-2 (p<0.0001). GC and CT were associated with single young men whereas TV and RPR seropositivity were associated with older married men.

Conclusions: Asymptomatic STI and HIV infection rates were high in this community population. The study provides insight into the burden of such infections among disadvantaged communities within South Africa.

P-531 ONSET OF SEXUALLY TRANSMITTED INFECTIONS AFTER FIRST COITUS IN ADOLESCENT WOMEN

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Objective: To estimate the interval between first coitus and the first sexually transmitted infection (STI) overall and with Chlamydia trachomatis (CT), Neisseria gonorrhoeae (NG), and Trichomonas vaginalis (TV) in adolescent women using combined epidemiological and medical record data.

Method: 386 young women (89% African-American; ages 14 ' 17 at enrollment; mean=15.8 years) were examined quarterly for CT, NG, and TV for up to 65 months, and were treated if infected. In addition to quarterly examinations, daily behavioral diaries were collected and self administered weekly vaginal swabs were tested in alternating three month periods for the study duration. To identify STI occurring prior to study enrollment or outside of study participation, diagnoses of CT, NG, and TV were extracted from an electronic medical record system. For those with first coitus prior to enrollment, age of first sex was determined from the enrollment interview; for those with first coitus during the study, age of first sex was calculated using the time of first coitus reported in diaries or subsequent interviews. Subjects without first coitus before the end of the study period were censored at the time of their last study visit. Survival analysis was used to model the disease free interval (overall and by organism) since first coitus.

Results: 34 of the 386 subjects (8.9%) did not report any lifetime coitus by their most recent study interview. Mean age at first coitus was 14.3 years (median=14, 25th percentile = 13, 75th percentile=15). The Kaplan-Meier curve in Figure 1 depicts the distribution of age at first sex, which shows that the majority of the young women started sexual activity in the four years between ages 12 and 16. Of the 352 subjects who reported coitus, the median age of first STI was 16.0 (mean 16.2) years. The organism specific median ages were 16.0, 18.0, and 19.0 years (mean 17.2, 18.7, and 19.7 years) for CT, NG, and TV infection, respectively. The median interval between first coitus and the first STI was 2.0 years (25th percentile = 1, 75th percentile=4) years. The organism specific median intervals for CT, NG, and TV infection were respectively 3.0, 5.0, and 5.0 (mean 3.7, 5.0, and 6.1) years, reflecting their prevalence in this population. The Kaplan-Meier curves in Figure 2 show the time sequence of the three infections.

Conclusions: Combining diagnostic information from medical records with frequently collected behavioral and clinical data, we reconstructed the time sequence of the sexual debut and first STI in adolescent women. Epidemiologically, these prospective data confirm cross-sectional and surveillance data showing increased CT risk among young women. Clinically, the data highlight the need for early STI testing, although the median 2.0 year delay of STI after first coitus suggests an important window for prevention.

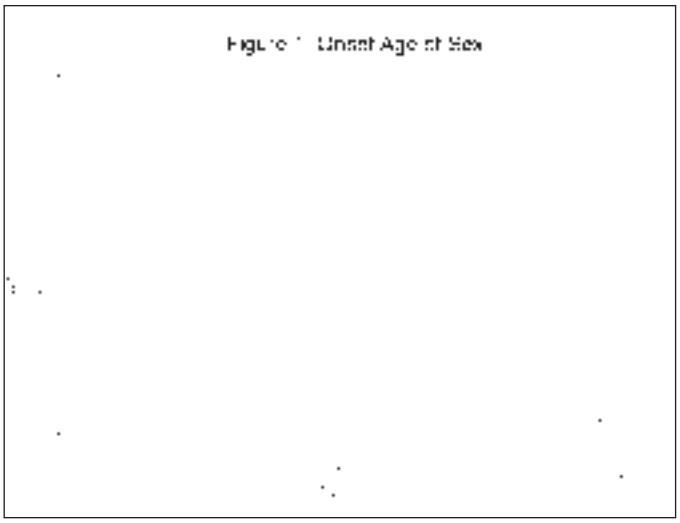

Figure 1. Onset Age of Sex

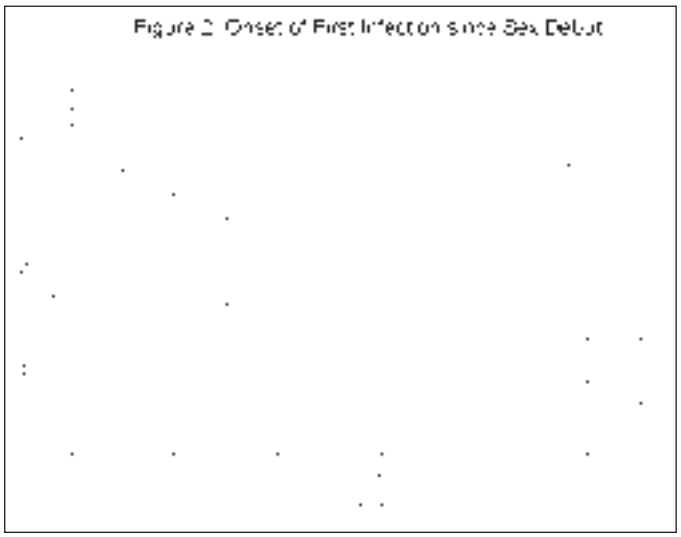

Figure 2. Onset of First STI since Sex Debut

P-532 INCIDENCE OF STI AMONG HIV DISCORDANT COUPLES IN KISUMU, KENYA

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Introduction: Sexually transmitted infections (STI) may be common among both HIV infected and uninfected individuals. In an ongoing randomized controlled trial to evaluate the use of acyclovir to reduce HIV transmission, we evaluated the incidence of STI morbidity among 170 discordant couples during their first year of follow up.

Objective: To determine the incidence of common STIs and the behavioral characteristics associated with their occurrence among HIV discordant couples

Methods: We evaluated the baseline prevalence and incident STI among 170 discordant couples enrolled into the Kisumu site of the Partners in Prevention study. All enrolled couples were HIV discordant and the HIV positive partner was HSV 2 sero positive and had a CD4 count of over 250 cells/mm. Diagnosis of STI both at baseline and follow up was based on either syndromic diagnosis or laboratory testing. Syndomic management was provided for all participants with appropriate testing and further treatment if indicated. We evaluated STI risk based on gender, HIV status and selected behavioral characteristics including condom use and frequency of sexual acts. Herpes type II infection was not included among the STI's evaluated.

Results: The most common diagnosis among women was vaginitis (55.07 %) and among men, syphilis (68.86%). At enrolment, 76(22.4%) of the 340 study participants were diagnosed and treated for STI and the prevalence was significantly higher (28.8%) in HIV positive compared to HIV negative participants (15.9%); p=0.004. Females were more likely to be diagnosed with STIs at enrolment (31.8%) when compared to males (12.9%); p<0.001. During follow up, females were still more likely to be diagnosed with STIs (35.9%) compared to males (16.5%); p < 0.001. Individuals diagnosed with STI reported more sexual acts (ln transformed mean 1.693 compared to 1.347; p=0.008). Among the participants diagnosed with STI during enrolment, 29(38.2%) reported consistent condom use, 39(51.3%) using condoms at least once, and 8(10.5%) no sex in the last one month. Among the participants diagnosed with STI during follow-up, 29(32.6%) reported consistent condom use, 46(51.7%) using condoms at least once, and 14(15.7%) never having sex during the last month. In multivariate analysis women were more likely to be diagnosed with STIs both at enrolment and during follow up (OR=2.97, 95% CI [1.6, 5.5], p< 0.001 and OR=3.00, 95% CI [1.7, 5.3], p< 0.001) respectively. The participants who reported no sexual acts in the last one

month were less likely to have an STI diagnosis (OR = 0.5, 95% CI [0.2, 0.8]). The number of sexual acts, condom use, having extra sexual partners and HIV status in the multivariate model did not influence STIs diagnosis during follow up.
Conclusion: By syndromic management and testing among these discordant couples STIs were diagnosed frequently. Vaginitis was common among women and would have warranted more specific testing to determine exact cause.

P-533 ESTIMATING THE SIZE OF MEN WHO HAVE SEX WITH MEN (MSM) POPULATION IN SHANGHAI USING MULTIPLIER METHOD

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Objective: To estimate population size of men who sex with men in Shanghai.
Methods: Multiplier method was applied in the study, the population size was estimated by the formula r*m where r is the number of MSM who attend the institution over a certain period and m (multiplier) is the inverse of the proportion of MSM who reported they had attended the institution over the same time. Two popular shanghai-based MSM websites were selected as targeted institutions in this study, the number of MSM who visited website during a given period was estimated by a web-based survey, the proportions of MSM who had visited MSM websites over the same period were obtain from an epidemiological study on the HIV behaviors and prevalence of MSM in Shanghai.
Results: During the given period, 94,865 MSM visited the MSM website A and 105,988 visited website B. The proportion of MSM that reported had visited website A and B at the same period were 24.0% and 28.5%. Therefore, the MSM populations were estimated as 398,433 and 377,755 when website A and B were selected as target institution. The estimated population of MSM accounted for 7.1% and 6.6% of male population aged 15 to 49 years old in Shanghai, respectively.
Conclusion: It is feasible to use multiplier method, which select MSM website as target institution, to estimate the size of MSM population. The estimate may be useful for the purpose of planning, implementing and evaluating prevention and care services. However, the representativeness of study sample should be considered seriously.

P-534 HIV/STD RISK IN MEN WHO HAVE SEX WITH MEN SEEKING INTERNET SEX PARTNERS COMPARED WITH MEN FINDING PARTNERS OFF-LINE

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Objective: Internet chat rooms have become popular venues for men who have sex with men (MSM) who are seeking sexual partners. We measured differences of sexual risk indicators with Internet partners in comparison with sex partners found offline.
Method: Findings are from an online study of HIV/STD risk among 618 gay- and non-gay-identifying MSM conducted over nine months of enrollment who provided detailed sexual behavioral data for Internet and offline male sex partners. Sexual risk indicators including frequencies of anal intercourse, knowledge of partners' HIV and STD infection status, use of alcohol/drugs prior to sex, and condom use during anal intercourse with last partner were compared for Internet versus offline partners.
Result: Among this sample of mature (median age 35), mostly white (86.6%), well-educated (54.9% > college graduate), and relatively affluent (49.0% > $40,000 /yr) gay men (83.4%): 61.8% had anal intercourse with sex partners at least half the time, 28.1% knew the HIV infection status of their partners less than half the time, 46.7% knew the STD status/history of all sex partners less than half the time, and 24.1% were drunk or high before sex at least half the time. Among all participants, 45.9% reported not using condoms during last sex. The median number of lifetime male sex partners was 50 (interquartile range: 20-160), of whom half were found online. When comparing online versus offline partners, men with online partners were more likely to know Internet partners' HIV status ($p<0.05$) and less likely to be intoxicated before sex when compared to men with off-line partners. For men reporting both Internet and offline partners, 12.7% of men increased their overall level of risk indicators with Internet vs. their off-line partners. Conversely, 12.1% of these men with both Internet and offline partners reduced their overall risk indicators with Internet vs. their off-line partners. Factors associated with increased risk indicators included age > 35 (OR=2.52; 95% CI=1.01, 6.28; $p = 0.04$) and being HIV-infected (OR= 3.82; 95% CI=1.14, 12. 89; $p = 0.02$).
Conclusion: The Internet is a venue for MSM with high sexual risk, but men with partners found via the Internet more often knew their partners' HIV status and reported lower rates of intoxication during sex than those with partners found offline. However, these potential decreases in indicators of sexual risk with online partners may be offset by ready access to greater numbers of sex partners found online, and by older HIV+ men being more likely to have riskier sex with partners found via the Internet compared to partners they found offline.

P-535 IDENTIFICATION OF RISKS FOR NON-ULCERATIVE SEXUALLY TRANSMITTED INFECTIONS AMONG YOUNG UNCIRCUMCISED MEN IN KISUMU, KENYA

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Objectives: STI prevention interventions often aim to reduce HIV incidence. Understanding STI risks may lead to more effective HIV prevention. We sought to identify risks for non-ulcerative STI among uncircumcised men aged 18-24 in Kisumu, Kenya.
Methods: We analyzed baseline data from a randomized trial of the impact of male circumcision on risk for HIV acquisition. Participants were interviewed for sociodemographic and behavioral risks. Neisseria gonorrhoeae (NG) and Chlamydia trachomatis (CT) were diagnosed by polymerase chain reaction assay, Trichomonas vaginalis (TV) by culture, and herpes simplex virus type 2 (HSV-2) by antibody status. The outcome for logistic regression analysis was infection with NG, CT, or TV. Participants had to be tested for all three infections to be included in this analysis.
Results: February 2002 ' September 2005, 2,784 (62%) of 4,489 men eligible for the main trial consented to participation. Of the 2,784 men who enrolled in the trial, 2,743 (98.5%) had testing for all three infections (NG, CT, TV) with demographic and behavioral data available. Overall 214 (7.8%; 95% CI: 6.8 ' 8.8%) men were infected with any STI: 188 (6.9%) had one infection, 25 (0.9%) had two infections, and one had all three infections. There were 127 (4.6%) CT infections, 56 (2.0%) NG infections, and 58 (2.1%) TV infections. Approximately 28% of men tested positive for HSV-2. Participants were median age 20 years and the median age at first sex was 16 years. While 86% of men were sexually active in the past 6 months,

44% reported no sex partners in the past 30 days. Condoms were used 'always' by 22% and 'never' by 26% of respondents having sex in the past 6 months; 48% reported using a condom the last time they had sex. 15% of men reported giving money or gifts to a woman to have sex in the past 6 months, and 47% said they preferred 'dry' sex. Anal insertive sex with a woman was infrequent (4.0%). In multivariable analysis, statistically significant risks for infection were: living one's whole life in Kisumu (OR=1.50; 95% CI: 1.12 ' 2.01), preferring 'dry' sex (OR=1.47; 95% CI: 1.05 ' 2.07), HSV-2 seropositivity (OR=1.37; 95% CI: 1.01 ' 1.86), and inability to ejaculate during sex (OR=2.04; 95% CI: 1.15 ' 3.62). Risk decreased with increasing age and education, and cleaning one's penis within 1 hour after sex (OR=0.51; 95% CI: 0.33 ' 0.80).

Conclusion: Understanding how post-coital cleaning, 'dry' sex, and sexual dysfunction relate to STI acquisition may improve STI and HIV prevention.

P-536 GEOGRAPHICAL VARIATION IN STI DIAGNOSES AND SYMPTOMS, MALAWI

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Objective: Malawi has one of the highest national HIV prevalence rates in the world, estimated at between 12-17% among adults aged 15-49 years in 2003. Antenatal sentinel surveillance suggests significant regional variation with the highest HIV prevalence in the Southern region and lower HIV prevalence in the Central and Northern Region. HIV transmission is predominantly through heterosexual sex in Malawi. The objective of this study is to determine whether the geographic distribution of STIs is similar to the geographic distribution of HIV. This is important because STI prevalence may reflect more recent transmission than HIV prevalence and/or may signal STI-HIV co-factor effects. The geographic distribution of STI prevalence and associated risk factors in Malawi were analyzed using a geographic information system (GIS) and data from the Malawi Demographic and Health Survey (DHS).

Methods: The 2000 Malawi DHS was the most recent DHS for which GPS data on the enumeration areas (EAs) sampled was available. Interviews were successfully conducted in 14,213 households, and interviews were successfully completed in 13,220 women ages 15-49 and 3,092 men ages 15-54. The selected households were distributed in 560 EAs, 71 in urban and 489 in rural areas. During data collection field staff used global positioning system (GPS) receivers to establish and record geographic coordinates of each of the 560 EAs. STI prevalence was determined if an individual reported a diagnosis of an STI (other than HIV) in the previous 12 months or reported genital discharge or a genital ulcer in the previous 12 months. Individual survey data was used to create a summary data set for each cluster, which was joined with the GPS data, and data from the Africa Digital Atlas in a GIS. ArcGIS Spatial Analyst was used to test for spatial autocorrelation, to interpolate a surface of STI prevalence, and perform hot spot analysis to identify areas of high and low clustering.

Results: STIs were more prevalent in the Southern Region (10.3%) than the Central region (9.5%) or Northern Region (5.1%). STI prevalence was spatially autocorrelated throughout the entire country (Moran's I = 0.19, $p<0.01$). The geographic distribution of STI prevalence is non-random; EAs with high STI prevalence cluster together and EAs with low STI prevalence cluster together (Getis-Ord General G index = 1.78, $p<0.01$). When only men were included, the spatial autocorrelation and spatial clustering increased (Moran's I=0.24, $p<0.01$; Getis-Ord General G index=2.98, $p<0.01$). When just the Southern Region is considered spatial clustering continues to be significant (Getis-Ord General G=3.67, $p<0.05$) and EAs with high STI prevalence are concentrated in a single urban area and a nearby, largely agricultural district.

Conclusions: A significant spatial structure for STI prevalence exists in Malawi. Analysis based on currently available data suggests the areas with high HIV prevalence are also the areas with the highest STI prevalence. Understanding the geographic variation in STI prevalence and the spatial dependence of population and individual risk factors will inform relevant interventions and increase comprehension of Malawi's HIV epidemic.

P-537 IDENTIFYING SAN JOAQUIN COUNTY CENSUS TRACTS WITH HIGH RATES OF REPEAT AND DUAL CHLAMYDIA AND GONORRHEA INFECTIONS USING A GEOGRAPHIC INFORMATION SYSTEM

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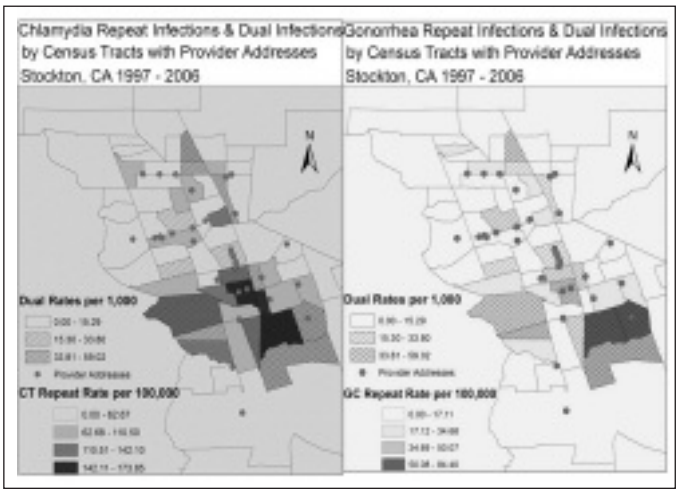
Objective: High rates of chlamydia (CT) and gonorrhea (GC) infections have occurred within San Joaquin County (SJC) over the last ten years. Geographic Information System (GIS) mapping was undertaken to determine if there are geographic areas within the county that have a high incidence of CT and GC repeat and dual infections in order to focus the limited resources that are available for local prevention efforts.

Methods: Morbidity data for both CT and GC cases reported to SJC Public Health Services from 1997 to 2006 were assigned to census tracts based on the residence address provided. Rates were determined by dividing the number of infections per census tract by the Census 2000 population of each tract. GIS maps were created, showing the rate of cumulative incidence over the ten-year period, the rate of repeat infections, and dual infection rates. Cumulative incidence was mapped with comparison to the distribution of repeat and dual infections. Repeat and dual infections were mapped to provide an indication of areas with the highest risk for infection. Repeat infections were defined as two or more of the same infection that occurred greater than 30 and less than or equal to 365 days apart. Dual infections were defined as a CT or GC infection that occurred within 365 days of another infection. Maps were also created showing the location of providers with respect to the distribution of infections. Statistical analyses were performed with the use of Microsoft Excel and SPSS software. Maps were created with the use of ArcView, version 9.2.

Results: Among the 21,551 CT cases reported, 3,092 were repeat infections. Among the 5,806 GC cases reported, there were 606 repeat GC infections. Stockton, the largest city in SJC, had the census tracts in the county with the highest rates of infection. Four census tracts (1, 6, 21, and 22) stood out as having high rates of repeat and dual infections (see figure). Slightly different patterns of infection were observed for repeat CT versus repeat GC. Areas with high rates of repeat GC were much more focused than they were for CT, supporting the concept of a core area of transmission. Only three providers were located within these four census tracts, with no providers at all being located within census tract 22.

Conclusions: The maps identified a concentration of census tracts within SJC that had high rates of repeat and dual CT and GC infections. The lack of providers and access to care within these high-risk census tracts could be contributing to the high rates of repeat and dual infections. The information provided by this analysis has been useful for program planning purposes. SJC Public Health Services' mobile clinic has performed STD and HIV testing within these census tracts in an effort to impact the high rate of repeat and dual infections, and to find individuals who have no other way to access care.



P-538 HETEROSEXUAL TRANSMISSION OF CHLAMYDIA, GONORRHEA, HIV, AND SYPHILIS IN INCARCERATED ADOLESCENTS

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Objectives: Our research and that of others has demonstrated that incarcerated youth in the USA are at high risk of sexually transmitted infections (STIs). Some may be infected with HIV, because the diagnosis is often made in young adults presumably infected as adolescents. In addition, syphilis is increasing in the USA, and we need to know if this is an at-risk population requiring careful surveillance. Our purpose therefore was to determine the prevalence of the following STIs in incarcerated youth: chlamydia, gonorrhea, HIV, and syphilis.
Methods: The site was the Harris County (Houston, Texas) Juvenile Detention Center that serves a population of approximately 3.6 million people. In 2006, during health assessments after their arrest, detainees received a health history, a physical examination, first-catch urine screening for chlamydia and gonorrhea (evaluated by the Gen-Probe Pace 2C and Pace 2 Assays). Males and females judged to be at the highest risk received serum RPR and HIV tests.
Results: We evaluated 3286 sexually active males: 48% were Hispanic, 37% black, 14% white, and 1% Asian. Mean age was 15.3 years (SD 1.2 years). Seventy six percent were sexually active the month before admission, 73% had used a condom at last intercourse, and 27% had had a new partner in the previous month. Three had practiced survival sex with a male partner. Three said that they were gay and two reported intravenous drug use (IVDU). Of the 3286, 257 (7.8%) had urine tests positive for chlamydia, 23 (0.7%) for gonorrhea, and 37 (1.1%) for both organisms, for a total prevalence of infection of 9.65% [95% confidence interval (CI) 8.66%-10.7%]. One of 611 (0.2%; 95% CI 0.004%-0.9%) was positive for HIV infection; his only risk behavior was apparently heterosexual intercourse. None has syphilis (one-sided 97.5% CI 0%-0.6%). We evaluated 649 sexually active females: 43% were black, 29% white, and 28% Hispanic. Mean age was 15.4 years (SD 1.2). Seventy-two percent were sexually active the month before admission, 52% had used a condom at last intercourse, 19% had had a new partner in the previous month, and 8.5% had traded sex for drugs or money. Five said that they were gay or bisexual, and one reported IVDU. Of the 649, 115 (17.7%) had positive urine tests for chlamydia, 29 (4.5%) for gonorrhea, and 35 (5.4%) for both organisms, for a total prevalence of infection of 27.6% (95% CI 24.2%-31.2%). 233 were tested for both HIV and syphilis infections: none (one-sided 97.5% CI 0-1.6%) was positive for HIV infection, and two (0.9%; 95% CI 0.1%-3.1%) had syphilis, one primary and one secondary.
Conclusion: In these incarcerated youth with few gay males or IVDU, the prevalence of chlamydia and gonorrhea infection was high, but only one youth had HIV infection. This suggested that heterosexual transmission of HIV was rare in these adolescents, almost all of whom were less than 17 years old. Syphilis was also rare. Nevertheless, we have begun screening all youth to ensure that we have identified all syphilis and HIV infection.

P-539 SUBSTANTIAL PREVALENCE OF GONOCOCCAL AND CHLAMYDIAL INFECTIONS AMONG MSM WITH EARLY SYPHILIS AND THEIR SEX PARTNERS: SAN FRANCISCO, 2002 - 2005

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Objectives: We evaluated the prevalence of gonorrhea (GC) and chlamydia (CT) among early syphilis cases and presumptively treated sex partners of syphilis cases.
Methods: Men who have sex with men (MSM) with early syphilis and persons presumptively treated for syphilis between 2002 and 2005 in San Francisco, California, were compared by demographics, HIV status, and concurrent GC and CT. We also compared CT and GC diagnoses by provider among syphilis cases, because routine GC and CT rectal and pharyngeal screening was known to be routinely available at the STD Clinic and gay men's health center (GMHC). We assessed statistical significance using t-tests for continuous variables and Pearson's chi squared test for categorical variables.
Results: There were 1,944 cases of early syphilis among MSM residents of San Francisco, and 1,087 persons presumptively treated for syphilis. Syphilis cases and those receiving presumptive treatment were similar with respect to age, race and sex. The majority (60.1%) of syphilis cases were HIV+, while only 37.7% of presumptively treated persons were HIV+ ($p<0.001$). GC and CT prevalence was about 1.5 times higher among those presumptively treated (GC: 11.0%; CT: 9.8%) than among syphilis cases overall (GC: 7.2%, $p<0.001$; CT: 6.1%, $p<0.001$). Demographics and prevalence of HIV among 767 (39.4%) syphilis cases seen at the STD Clinic and GMHC were similar to that of all syphilis cases; however, GC and CT prevalence was 16.6% and 14.1%, substantially greater than syphilis cases overall and persons presumptively treated. The prevalence of GC among syphilis cases diagnosed by providers other than the STD Clinic and GMHC was 1.1% ($p<0.001$ compared to STD clinic and GMHC), and CT prevalence was 0.9% ($p<0.001$). Only 9.3% of GC and 9.2% of CT infections among syphilis cases were diagnosed by clinics other than the STD Clinic and GMHC. 75.6% of GC and 72.2% of CT infections reported by the STD Clinic or GMHC were detected only at rectal or pharyngeal sites, compared to 69.2% of GC ($p=0.52$) and 63.6% CT ($p=0.51$) infections reported by other providers. Additionally, in persons presumptively treated for syphilis, 84.0% of GC and 60.4% of CT infections were found only at rectal or pharyngeal sites.
Conclusions: We observed a significantly higher prevalence of GC and CT among MSM with early syphilis and persons presumptively treated for syphilis known to have been screened appropriately at all anatomic sites than among men diagnosed with syphilis by other providers. We hypothesize that this difference in GC and CT prevalence was due to a lack of rectal and pharyngeal screening. Our data suggest that there is a significant burden of rectal and pharyngeal GC and CT infection among MSM with early syphilis and their sex partners Per the United States Centers for Disease Control and Prevention guidelines, all MSM diagnosed with syphilis and their sex partners should be screened appropriately for GC and CT at all anatomic sites with sexual exposure. Providers diagnosing syphilis should be actively informed about these guidelines to assure appropriate clinical management of their patients.

P-540 THE BURDEN OF SEXUALLY TRANSMITTED ECTOPARASITIC DISEASES: EVIDENCE FROM PRIVATE INSURANCE CLAIMS DATA IN THE UNITED STATES, 2001-2005

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Objective: To estimate the direct medical cost and incidence rate of ectoparasitic diseases that are commonly sexually transmitted.
Methods: We used private insurance claims for 2001 through 2005, from a national database using International Classification of Diseases, 9th revision codes to isolate outpatient claims for sexually transmitted ectoparasitic diseases: crab louse and scabies. We then linked outpatient claims information with the drug claims for the National Drug Codes (NDCs) of the recommended drugs, which occurred 7 days before and 14 days after initial outpatient visit. Claims were categorized based on sex and age. Outpatient follow-up visits were restricted to a maximum of 14 days per episode after the initial claim. All costs were adjusted to 2005 dollars.
Results: Over 95% of the diagnoses were for scabies. Although permethrin and ivermectin are recommended drugs for scabies, over 90% of the prescription drug claims for scabies were for lindane. Overall total cost per episode ranged from $107 in 2001 to $251 in 2004 ($247 in 2005) for enrollees with drug coverage who had drug claims. Including those without drug claims, the costs ranged from $94 in 2001 to $95 in 2005. There was no statistically significant difference between outpatient costs per episode for the different parasites. The increase in cost per episode is largely due to the more than seven-fold increase in the cost for lindane over the period. Prescription drug cost per episode increased from $23 in 2001 to $169 in 2004 ($163 in 2005). However, less than 20% of patients who had prescription coverage had drug claims. The proportion of females diagnosed was significantly higher than males ($p < 0.001$) across all years examined, but costs per episode were not significantly different between sexes or age groups. Incidence rates per year ranged from 76 to 85 episodes per 100,000. A straight-line extrapolation to the general U.S. population using the current population estimates for the years examined, by age group and gender, resulted in approximately 1 million cases over the period covered by the analysis. Thus, the total direct medical cost of ectoparasitic diseases could potentially be $95 million over the five-year period if all cases were treated at similar cost to those in the claims database.
Conclusion: Pediculosis pubis can be treated with over-the-counter (OTC) permethrin (1%). This could account for the small number of claims in the database. Scabies can also be treated with OTC permethrin, although the prescription dose (5%) is recommended. This may explain the preponderance of lindane prescriptions: patients who see their providers may have failed in self-treatment with OTC permethrin, leading providers to choose another treatment. This also implies that our incidence rate estimates are likely low. Nonetheless, these results shed light on the burden of sexually transmitted ectoparasitic diseases in the United States. No other systematic studies of the direct medical costs of these diseases have been undertaken. Further research could reveal why other, cheaper recommended prescription drugs (ivermectin and permethrin) have not been the first choice.

P-541 SWINGERS, AN EMERGING RISKGROUP FOR CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE

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Objective: We wanted to estimate the prevalence of STD in swingers in the Netherlands. Swingers are heterosexual couples who have sex with other heterosexual couples (different concurrent sexual partners). Couples date via internet, via partner exchange clubs or they can invite other couples at their home. Part of the men and women have bisexual contacts.
Methods: Urogenital samples were tested for the presence of Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (GC) by a NAAT according the manufacturer's instructions (SDA, Becton Dickinson ProbeTec ET system, Maryland, USA or PCR, Roche Diagnostic Corp., Indianapolis, IN, USA). Serum samples were tested for the following infection markers: antiHIV, HbsAg and antiHBc (AXSYM, MEIA, Abbott, Abbott park, USA); and TPPA (MHA-TP, Fujirebio, Tokyo, Japan).
Results: We included 130 swingers with a mean age of 42 years (age 24-63) visiting our public health STD clinic in 2006. Almost half of them were men (49%;63/130). 18%(18/63) of the men and 58%(58/67) of the women had bisexual contacts. All were of Caucasian origin with 97% of Dutch nationality. Reason for visit was in 12% having symptoms, in 11% partner referral and in 77% test request because of sexual risk behavior. CT and GC were diagnosed in 12.3% and 5.4% of the patients, respectively. No swinger tested positive for syphilis, hepatitis B (one time antiHBc positive) or HIV. Self-reported prior STD were high: 7.7% CT, 3.8% GC, genital warts 9.2% and genital herpes 3.8%. Female swingers 42%(28/67) reported having receptive anal sex, 37%(23/63) of the male swingers reported having active anal sex. CT and GC prevalences of common riskgroups in our STD clinic are mostly lower than 12% for CT and lower than 5% for GC in 2006 (adolescents (15-24 yrs; n=1436): 10% and 1%, commercial sex workers (CSW; n=202): 8% and 1.5%, male who have sex with male (MSM; n=221): 8% and 9%.
Discussion: Swingers are an unrecognized and underreported risk group while they show high STD risk behaviour and high prevalences of CT and GC compared to well-known risk groups like adolescents, CSW and MSM. With their risk behavior (frequent concurrent partners) they are able to accelerate the STD epidemic in the population. Efforts for STD-prevention and enhanced active case finding are needed just like every common risk group.

P-542 ESTABLISHMENT OF ENHANCED CLINICAL SURVEILLANCE SYSTEMS FOR SEXUALLY TRANSMITTED INFECTIONS IN BOTSWANA AND SWAZILAND

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Objectives: To describe the introduction of, and present key findings from, newly introduced enhanced clinical surveillance systems for sexually transmitted infections (STIs) in Botswana and Swaziland.
Methods: As part of a larger Southern African Development Community (SADC) intervention, enhanced clinical STI surveillance systems were introduced to Botswana and Swaziland in 2005. Baseline surveillance activities and capability at the primary healthcare facility (PHCF) level were assessed using a rapid appraisal tool, comprised of 64 questions within 35 categories. Following the baseline assessment, sample size calculations were performed, sentinel surveillance sites were selected and training was undertaken prior to initiation of the enhanced clinical STI surveillance. In Botswana, 13 sentinel PHCFs were chosen from three sub-districts. Swaziland opted for national coverage with 20 sentinel PHCFs. Training workshops introduced the required data collection tools which included a daily tally sheet, an STI tracer form and a monthly report form. Data were collected on the following syndromes: genital ulceration (GUS), genital blisters without ulcers (GBWU), male urethritis (MUS), vaginal discharge (VDS), scrotal swelling (SSW), lower abdominal pain (LAP), inguinal bubo (BUBO), genital warts (GW) and 'other STIs' (OTHER). Monthly reports were submitted centrally using existing health information systems. Sentinel PHCF data collected from November 2005 onwards were analysed (6 months data for Botswana and 8 months data for Swaziland).
Results: For both countries, the rapid assessment tool indicated that limited STI data were already being collected at all PHCFs. However, neither country had functional STI sentinel surveillance systems to monitor trends in both total STI episodes

and relative prevalence of STI syndromes. For the time periods analysed, based on receipt of monthly data from the sentinel PHCFs, the average reporting rates were 93% in Botswana and 73% in Swaziland. During 6 months, 2,757 new STI episodes were recorded among 2,493 patients attending Botswana's 13 sentinel sites. Likewise, during 8 months in 20 sentinel sites, Swaziland recorded 13,849 new STI episodes among 11,601 patients. The majority of STI syndromes occurred in women in both countries (Botswana, 67.5%; Swaziland 63.3%). The peak age distribution of male STI patients was similar in both countries (25-29 years) but was lower in females in Swaziland (20-24 years) compared to Botswana (25-29 years). In Swaziland, the syndrome:headcount ratio of STI patients was highest in the Hhoho region; for Botswana, the highest ratio was observed in the Tlokweng sub-district. In Swaziland, VDS (52%) and LAP (18%) were the most frequent syndromes in women. In men, MUS and GUS accounted for 50% and 26% of recorded syndromes respectively. The picture was similar in Botswana, with the two most frequent syndromes being VDS (63%) and LAP (21%) in women, and MUS (48%) and GUS (34%) in men. National partner slip issue rates were 58% in Botswana and 65% in Swaziland.

Conclusions: Enhanced clinical STI surveillance systems were successfully introduced into both countries and will be able to provide improved STI strategic information to assist national sexual health policy-makers. Data quality will be improved with efforts to increase the reporting rates in both countries.

P-543 TRENDS IN QUARTERLY LABORATORY TESTING AND DETECTION OF CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEA FOR THE WAIKATO REGION, NORTH ISLAND, NEW ZEALAND, 1998-2006

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Objective: To describe trends in quarterly laboratory testing and detection of Chlamydia trachomatis and Neisseria Gonorrhoea in a region of New Zealand, 1998-2006

Methods: Laboratory testing data for all C trachomatis and all N. Gonorrhoea tests undertaken by all three laboratories within the Waikato District Health Board were collected from 1998 to December 2006. All three laboratories use routine culture methods for the detection of N. Gonorrhoeae. Two of the three laboratories began using amplification methods (Roche PCR) for C. trachomatis in April and May 1998 whilst the third laboratory offered both ELISA and amplification methods (Roche PCR) until the end of 2004. All C. trachomatis testing is now by amplification methods.

Results: Annual testing volumes for C trachomatis rose from 18,500 in 1999 to 23,300 tests in 2002 (locally resident population of 330,000 in 2001 NZ census) and have been stable at this level over the last 5 years. A large rise in the percentage of positive C trachomatis results is noted, from 7.7% in 1999 to 11.3% in 2005, with a subsequent decline down to 7% occurring over 2006. Notable fluctuations occur in either quarterly testing volume and/or in the percentage of positive C. trachomatis results after interventions such as a nationwide media-based 'safer-sex' campaigns and local targeted initiatives aimed at improving access to care. Annual testing volumes for N. Gonorrhoea also rose from 21,236 in 1999 to 34,955 tests in 2003. Test volumes peaked in 2005 with 52199 tests, coinciding with a 3-month nationwide media-based 'safer-sex' campaign. From 1999-2004, about 0.4% of tests were positive. Increased testing in early 2005 at the time of the media campaign coincided with fewer positive N. Gonorrhoea tests. Since late 2005, testing volumes have fallen but positive cases have risen to a peak of 1.1% in 2006.

Conclusions: Our data reinforces the influence of potential confounding factors on testing, diagnosis and hence surveillance of sexually transmitted infections (STI); in our region, these included a national 'safer-sex' media campaign and other strategies aimed at more effective access to testing and treatment. Generally, as local Chlamydia trachomatis testing increased, diagnoses of Chlamydia trachomatis also increased but, as would be expected, the same trend was not seen with N. Gonorrhoea. Increasing case reports of Chlamydia trachomatis and Neiserria Gonorrhoea over recent years in New Zealand have prompted calls for a nationwide targeted screening initiative, particularly for Chlamydia trachomatis. However surveillance trends, whilst helpful, are a poor substitute for population-based prevalence studies. New Zealand needs to undertake a baseline prevalence study before a national STI targeted screening initiative occurs.

P-544 SEXUALLY TRANSMITTED INFECTIONS (STIS) IN CORRECTIONAL SERVICES INSTITUTIONS (CSIS) IN SOUTH AFRICA

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Objectives: There has been very little published data in the CSIs in South Africa on acquisition and spread of STIs including HIV. This study was undertaken to determine the prevalence of HIV and STIs amongst prisoners in the CSIs in two regions of South Africa.

Methods: Prisoners were recruited into the study from CSIs in two regions during the period March 2003 to November 2003. For the women prisoners, two vaginal swabs were collected from the posterior fornix for smear for Gram staining for the diagnosis of Bacterial vaginosis (BV) using the Nugent's scoring system and for culture for Trichomonas vaginalis into modified Diamond's medium. In addition an endocervical swab and first catch urine specimen (from the men) was collected for PCR testing for Neisseria gonorrhoeae and Chlamydia trachomatis using the Becton Dickinson Probe Tec™ system. Venous blood was also drawn for testing for syphilis (RPR and TPHA), hepatitis (HBc antibodies and HCV antibodies) and HIV 1/2 antibodies.

Results: A total of 455 prisoners were recruited and screened. The mean age of the men was 18 years (range 14-22) and women 32 (22-58). BV and trichomoniasis was diagnosed in 35% and 2% of the women respectively. There was no significant difference in the rate of detection of N.gonorrhoeae (6% vs 7%) and C. trachomatis (10% vs 7%) between the men and the women (p= 0.63, p=0.42) respectively. Syphilis was detected significantly more frequently in women than in men (18% vs 8%, p= 0.003). Sixty-nine percent of women showed previous exposure to hepatitis B compared to 50% of the men (p=0.0007). HCV antibodies were present in 0.4% of men and 2% in women. HIV infection was diagnosed in 11% of the women and 2% of the men (p=0.002).

Conclusions: This study showed a high prevalence of STIs amongst prisoners in the CSIs in the 2 regions studied. The rates of gonococcal and chlamydial infection were similar for men and women. However, significant differences were found for syphilis, hepatitis B and HIV infection in women. These findings have important implications for prison authorities in implementing screening programs and interventions in prison populations in South Africa.

P-545 STD PREVALENCE AMONG HIV INFECTED WOMEN IN JACKSON, MISSISSIPPI

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Objectives: The Southeastern United States has disproportionately high STD and AIDS rates and the highest rate of new HIV diagnoses in women in the U.S.. It has been well established that both ulcerative and non-ulcerative STDs facilitate HIV transmission. The goals of this study are to examine the prevalence of commonly reported STDs in a stable, HIV infected female population, identify associated behavioral and clinical characteristics, and provide evidence based rationale for routine STD screening in this population.

Methods: Women seen at a HIV outpatient clinic were offered participation in an STD screening program in collaboration with the local health department. The screening included a pelvic exam, pap smear (Thin Prep_), CT and GC screening (Gen-Probe Aptima_ Combo 2), wet prep, and trichomonas culture (InPouch_).The patients' demographic information, sexual history, prior STD infections, medications, clinical information and laboratory results were extracted from their medical records. Data was entered and analyzed using SPSS_ software.

Results: Since the beginning of the program in April, 2006, 116 women have been screened. They were predominantly African American (91.4%) and heterosexual (95.8%) with a mean age of 40.9 (range 23-65). Of the participants 75% were on HAART, the mean CD4 count was 386 (range 4-1245), and the mean number of years since HIV diagnosis was 9.2 (s.d. 5.39). Prior STD diagnosis was reported by 54.3% of the women. Sexual activity within the last six months was reported by 70.7%, with 42.2% reporting HIV sero-discordant partners, and of those with sero-discordant partners 34.6% reported inconsistent condom usage. The rates of CT, GC, and trichomonas were 1.7%, 0%, and 24.1% respectively. Of the 28 women diagnosed with trichomonas, 50% were asymptomatic and 11 (39.3%) were negative by wet prep. Eight women had reactive RPRs (6.9%) with low titers, none of which were thought to have active disease.

Conclusions: Trichomonas rates were high in this population and comparable to rates seen in a STD clinic setting. Wet preps missed over one-third of the trichomonas cases raising the question of whether cultures should be routinely used to screen for trichomonal infection in areas of high prevalence. The low prevalence of CT and GC may be attributable to an age related cohort effect or the use of antibiotics to treat other infections. Given the role of trichomonal infection in HIV transmission, detection and prevention of this infection is important in this population due to the high burden of disease and inconsistent condom use.

P-546 DIAGNOSTIC UTILITY OF REPORTED SYMPTOMS IN A HIGH-RISK POPULATION-BASED SAMPLE IN PERU

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Objectives: Current standards of care for the diagnosis of sexually transmitted infections (STIs) in Peru rely on the presence of dysuria, urethral/vaginal discharge, or genital ulceration. As STIs are frequently asymptomatic, this approach can result in numerous missed diagnoses. We sought to determine positive and negative predictive values (PPV and NPV) of genitourinary symptoms for STI diagnosis in high-risk individuals in Peru.

Methods: We conducted a study of low-income, socially marginalized populations in Peru. Ethnographic information collected during a general population survey identified subgroups of men and women at high risk for HIV/STIs. Approximately 50 high-risk individuals were randomly selected from each of 26 barrios in the cities of Lima, Trujillo, and Chiclayo from 2001-02. Participants were interviewed concerning sexual behavior, associated risk factors, and presence of genital ulcerations, dysuria, and urethral or vaginal discharge in the preceding six months. No information was collected concerning rectal symptoms, and participants were not screened for rectal gonorrhea (GC) or chlamydia (CT). Male urine samples and female vaginal swabs were tested for GC/CT using PCR analysis. We estimated PPV and NPV of STI symptoms for the diagnosis of syphilis, gonorrhea and chlamydia.

Results: A total of 1,199 men and women were interviewed and provided biological samples. Chlamydia was diagnosed in 6.8% of participants (18.5% [n/N = 20/108] of women and 6.5% [61/1091] of men, p<0.001), gonorrhea in 0.8% (2.8% [3/108] of women and 0.6% [6/1091] of men, p<0.05), and syphilis in 5.5% (4.6% [5/108] of women and 5.6% [61/1084] of men, NS). Only 20.0% (1/5) of women and 9.8% (6/61) of men with untreated syphilis reported a genital ulcer in the prior 6 months, indicating a PPV of 4.7% and NPV of 94.5%. Participants with GC/CT infection were more likely to report recent genital discharge and/or dysuria (63.2% [55/87] vs. 41.6% [463/1112] of uninfected individuals, p<0.001) but were not more likely to have visited a doctor or pharmacy for treatment. Among women with GC/CT, 68.2% (15/22) reported dysuria and 54.5% (12/22) described genital discharge in the preceding 6 months. Symptomatic complaints among men with GC/CT were lower as 55.4% (36/65) reported discharge and only 12.3% (8/65) reported dysuria. Report of dysuria and/or discharge in the past 6 months yielded a PPV for GC/CT of 8.3% in men, 23.2% in women and 10.6% in the entire sample; NPV was 94.0% in men, 79.6% in women, and 92.7% overall.

Conclusions: Standards of care in Peru that rely on symptomatic manifestations to identify STIs should be modified to address the large number of missed diagnoses. Since RPR screening for high-risk individuals is common practice, the low PPV of genital ulceration in heralding syphilis infection is not as concerning as the large number of cases of GC/CT undiagnosed when using current criteria for testing. Individuals should continue to be instructed to seek medical attention for dysuria, discharge, or genital ulcers. However, additional research is needed to evaluate the cost-effectiveness of universal STI screening compared to traditional syndromic management for high-risk individuals in resource-limited countries.

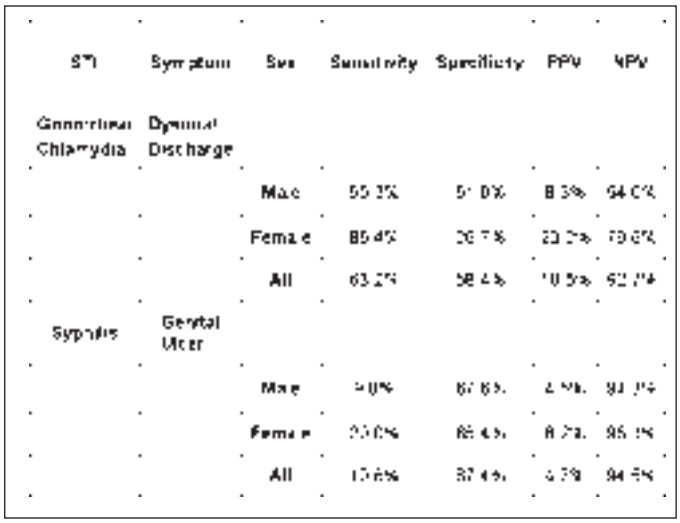

Figure 1: Diagnostic Criteria of STI Symptoms; Peru, 2001

P-547 CORRELATES OF PREVALENT SYPHILIS AND HSV-2 IN FEMALE COMMERCIAL SEX WORKERS AND MALE WINE SHOP PATRONS IN CHENNAI, INDIA

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Objectives: To determine correlates of syphilis and HSV-2 infection status among female sex workers (FSW) and male wine shop patrons in Chennai, India.

Methods: Data were collected from questionnaires, physical examinations and laboratory evaluations on Indian FSWs (n=148) and men (n=1189) in a cross-sectional study in Chennai, India, in 2001. Wine shops from which the male participants were recruited were the venues for FSW recruitment. TPHA and RPR were used to determine syphilis prevalence. HSV-2 was detected using HerpSelect 2 enzyme immunoassay (Focus Technologies, USA). Poisson regression with robust variances was used to estimate the prevalence rate ratio. Statistical significance determined by p-value <0.05).
Results: Syphilis prevalence was 24.3% (36/148) in FSW and 3.3% (39/1189) in men. Chlamydia and HIV infection are the strongest correlates of syphilis among FSWs, (AOR = 2.39, 95% CI 1.30, 4.42, and AOR = 2.37, 95% CI 1.25, 4.52, respectively). HSV-2 infection and the number of sex partners in the last 6 months are correlates of syphilis in men after adjusting for age (AOR = 2.72, 95% CI 1.42, 5.23 and AOR = 1.04, 95% CI 1.01, 1.07, respectively). HSV-2 prevalence was 76.4% (113/148) in FSW and 16.4% (195/1189) in men. The final model for HSV-2 among FSWs included HIV, gonorrhea, history of painful urination in the past 6 months, and number of sex partners in the last 6 months. HIV and gonorrhea were associated with HSV-2 among FSWs after adjustment (AOR = 1.47, 95% CI 1.25, 1.73 and AOR = 1.27, 95% CI 1.04, 1.55, respectively). Number of sex partners in the last 6 months was statistically significantly correlated with HSV-2 among FSWs after adjustment (AOR = 1.001, 95% CI 1.001, 1.002). History of painful urination in the last 6 months was protective against HSV-2 among FSW after adjustment (AOR = 0.80, 95% CI 0.67, 0.95). Syphilis and a history of genital ulcers in the last 6 months were strong correlates of HSV-2 among the men after adjusting for age (AOR = 2.12, 95% CI 1.38, 3.25 and AOR = 1.76, 95% CI 1.24, 2.51, respectively).
Conclusion: The prevalence of syphilis and HSV-2 was high among FSWs and clients. HIV was correlated with syphilis and HSV-2 among FSWs. History of genital ulcers was a strong positive correlate of HSV-2 infection among men, perhaps signally more symptomatic disease. Syphilis was a better marker of recent high-risk sexual activity among the men.

P-548 URETHRAL AND RECTAL SEXUALLY TRANSMITTED INFECTIONS AMONG MSM IN HONDURAS

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Objectives: A screening survey was performed among men who have sex with men (MSM) to assess the burden of circulating sexually transmitted pathogens. This survey was aimed at assessing if intervention strategies should be introduced specifically targeting this group as they may constitute an important bridge for the spread of sexually transmitted infections (STIs) including HIV into the general population.
Methods: Data was collected from June to September 2006 from 613 men who were recruited into a study to determine rates of STIs among MSM by VICITS, a non-governmental organization which promotes health among MSM, in Tegucigalpa, San Pedro Sula, La Ceiba and Comayagua, Honduras. Urine and blood specimens were collected after informed consent had been obtained. However, only 305 of these men consented to rectal swab collection. Among these, 297 paired rectal/urine specimens provided valid test results for Neisseria gonorrhoeae and Chlamydia trachomatis by using an in-house real-time multiplex PCR test. Subsequently, all C. trachomatis-positive rectal specimens were retested to differentiate LGV from non-LGV chlamydial infections using a second real-time assay. The urine specimens were also tested for Mycoplasma genitalium and Trichomonas vaginalis. A dual rapid HIV test algorithm (Determine/Oraquick testing in series) was used to determine HIV status.
Results: Overall, 13/297 urine specimens tested were found to be positive for either N. gonorrhoeae or C. trachomatis (5%), 10 were solely C. trachomatis-positive while one individual was found to be dually infected. While T. vaginalis was rarely detected in urine (2/297, <1%), 13 specimens (4%) were positive for M. genitalium. Rectal infection with N. gonorrhoeae was documented in 23/297 individuals tested (8%), while 22/297 were C. trachomatis positive (8%), one of which was confirmed to be LGV. Dual chlamydial and gonoccocal rectal infections were common (8/41, 20%) in this population. Very few men (5/297) however had detectable STIs in both urine and rectal specimens. Overall, 42 of the 613 men recruited into the study (7%) were sero-positive for HIV.
Conclusions: This is the first study to report the results of screening for rectal infections among MSM in Honduras. Rectal infections with N. gonorrhoeae and C. trachomatis were more frequent than urethral infections caused by the same organisms. M. genitalium infection of the urethra appears to be as common as C. trachomatis infection, while very little T. vaginalis was detected. Based on these findings, it is recommended that on-going surveillance be conducted and that rectal screening for gonoccocal and chlamydial infections be considered when molecular testing is approved for use on rectal specimens.

P-549 KNOWLEDGE AND PERCEPTIONS ABOUT SEXUALLY TRANSMITTED INFECTION (STI) TRANSMISSION AMONG LONG DISTANCE TRUCK DRIVERS, NEW MEXICO, USA

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Objectives: Studies conducted in Asia, Africa and one small study in the United States have shown that long-distance truck drivers have poor knowledge about STIs and their transmission but engage in risky sexual behaviors. This study conducted STI risk assessment, knowledge and screening among truck drivers traveling through New Mexico.
Methods: Anonymous interviews were conducted using a standardized instrument, obtaining demographic information, driving history, sexual behavior, condom use and drug and alcohol use. Perceived risk of HIV and gonorrhea transmission from female to male with one sexual episode, beliefs on condom effectiveness and knowledge of STIs were also ascertained. Screening for STIs (syphilis, HIV, chlamydia, gonorrhea, and Hepatitis B and C) was conducted. Descriptive analyses of knowledge and beliefs are reported.
Results: From December 2004 through March 2006, a total of 652 truck drivers enrolled in the study: 91% were male; 72% non-Hispanic White, 12% African-American, and 11% Hispanic. Twenty percent did not complete high-school; 46% completed high-school, and 34% had more than a high-school education. Having a current partner/spouse was reported by 79% of drivers. With unprotected vaginal sex, >75% stated HIV transmission would occur at least 80% of the time (48% stated transmission was guaranteed) and >75% stated gonorrhea transmission would occur >90% of the time (65% stated transmission was guaranteed). Fifty percent stated HIV transmission during unprotected oral sex was at least 80%. Over half stated HIV and gonorrhea transmission would occur >50% of the time if condoms were used. When asked specifically 'Can condoms reduce the risk of HIV or gonorrhea transmission', 15% said 'No'. No differences in the these responses were found when results were examined by sex, race/ethnicity, education, or reported history of STIs among the truck drivers. Eleven percent of drivers (9% of drivers with partners/spouses and 20% of drivers without partners/spouses) reported having sex with sex workers at truck stops in the past 5 years. Ninety-two percent of all truck drivers and 81% of drivers reporting sex with sex workers stated that sex workers at truck stops were likely or very likely to have HIV and/or gonorrhea. However, 46% of drivers reporting sex at truck stops with sex workers stated they used condoms <50% of the time (32% reported never using condoms).

Conclusions: In the US, the risk of HIV transmission from female to male with unprotected sex is thought to be <1% and about 50% for gonorrhea. Condom use greatly decreases this risk. Knowledge of STI and HIV transmission among these truck drivers was poor. Despite high perceived risk of STI or HIV transmission, truck drivers still reported engaging in risky sexual behaviors, indicating they may have high risk for STIs.

P-550 TRENDS IN SEXUALLY TRANSMITTED INFECTION IN THE CIRCUMPOLAR NORTH

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Objective: Ten million people live in the circumpolar Arctic, yet little is know about sexually transmitted infections (STIs) in the northern communities it comprises. What is known about sexual health and STI prevention strategies from non-Arctic environments is not likely to be generalizable to these communities, which comprise a large proportion of Native American, First Nation and Inuit people living in diverse landscapes including urban, micropolitan, rural, frontier and reservation environments.
Methods: We collected and summarized government published chlamydial infection and gonorrhea rates for Alaska in the United States, the Yukon, Northwest Territories and Nunavut in Canada, and Greenland. Rates were reported for 2002, 2003, 2004, and 2005.
Results: Alaska consistently reports some of the highest rates of chlamydial infection in the United States. Unexpectedly however, Alaska reports some of the lowest gonorrhea rates in the United States even though co-infection of chlamydial infection and gonorrhea is common in most other settings. Territories across northern Canada have reported the highest rates of both chlamydial infection and gonorrhea in Canada and rates higher than most states in the United States (table 1). Greenland also consistently reports both chlamydial infection and gonorrhea rates approximately ten times higher than those reported for the United States.
Conclusions: STI rates in the Arctic appear to be consistently high. Little is known about the sexual behaviors that may contribute to these varying rates of infection or how to approach sexual health issues in frontier communities. We hypothesize that individual, social, cultural, and environmental factors are contributing to disparately high rates of infection and that high STI rates may only be a marker of greater underlying community public health issues. We propose that community based participatory research is the most appropriate approach to address sexual health issues in Arctic communities.

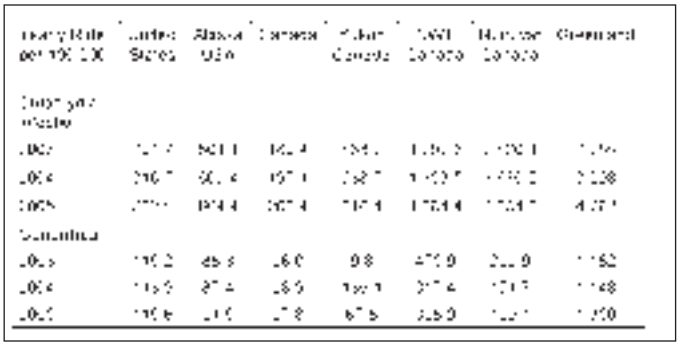

Figure 1: Chlamydia and Gonorrhea Infection Rates

P-551 SEXUALLY TRANSMITTED INFECTIONS IN A NORTHERN FRONTIER STATE

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Objectives: A large portion of the world's population lives in northern rural frontier environments; yet most of what is known about sexually transmitted infections (STIs) is based on research conducted in urban, suburban, southern or African communities. We investigated the epidemiology of STIs for Montana, a northern rural frontier state in the United States. Montana comprises a large proportion of Native American/First Nation and European American people living in diverse landscapes including urban, micropolitan, rural, frontier and reservation environments.
Methods: We analyzed chlamydial infection and gonorrhea case records reported to the Montana Department of Public Health and Human Services from January 1, 2000 to December 31, 2005. Descriptive statistics were used to summarize demographic characteristics (race/ethnicity, age, sex) and a limited number of risk factors, including number of sexual partners. County-specific rates of infection were mapped for each year using ArcView and a Bayesian Maximum Entropy approach to geostatistical analysis was used to evaluate spatiotemporal dependence and map a continuous surface of infection.
Results: Montana consistently reports chlamydial infection rates lower than national rates, despite active contact tracing of sexual partners for diagnosed STI cases. However, we found a high degree of spatial variability in chlamydial infection and gonorrhea when we mapped rates at the county level. For example in 2005, some counties reported chlamydial infection rates up to three times higher (1,070 cases per 100,000) than the national average (333 cases per 100,000), while other counties reported little to no infection (0 cases per 100,000; figure 1). Many counties with the highest rates of chlamydial infection were reservation counties (counties predominantly comprising reservation land), and within those reservation counties, American Indians accounted for 67% to 92% of reported chlamydial infections. Three out of four individuals with chlamydial infections were 24 years or younger, women accounted for three times as many chlamydial infections as men, and on average, infected men were two years older than infected women. 64% of cases only reported one sexual partner and 11% reported 'immaculate infections' (no sexual partners reported). BME covariance plots based on a spatial analysis of chlamydial infection rates further supported high spatial variability of infection rates and spatial dependence suggesting a neighborhood of influence up to 100 kilometers. Maps of chlamydial infection suggested the possibility of core areas of infection at the state level.
Conclusions: A disproportionate burden of infection is being carried by Montana's youth, especially our American Indian youth. We hypothesize that individual, social and environmental factors influence the transmission of STIs in Montana. Community based participatory research is the most appropriate approach to continue addressing health disparities in northern communities.

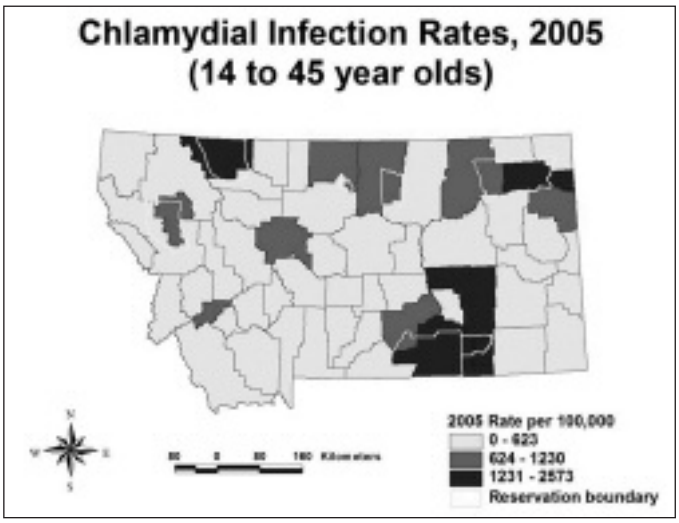

Figure 1: Montana Chlamydial Infection Rates, 2005

P-552 SEXUALLY TRANSMITTED INFECTIONS (STI) IN WEST-EASTERN EU BORDER REGIONS: RESULTS OF THE BORDERNET SENTINEL -SURVEILLANCE

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Objective: With the EU enlargement, new challenges in dealing with STIs have arisen. The border regions between new and old EU-members are characterised by cultural, economic and political differences, also in respect of spreading STI. Bordernet, an EU-funded project, aims at standardising and improving counselling, diagnosis and therapy of HIV and STI in 6 involved EU member states. A sentinel surveillance system for HIV and other STI was set up to monitor trends and the effect of interventions.
Methods: A sentinel surveillance system was established in 2005 in four model regions between Germany-Poland (n=2), Austria-Slovak Republic and Italy-Slovenia. Via several questionnaires clinical data regarding Chlamydia (CT), Gonorrhoea (GO), HIV and Syphilis (SY) are gathered from physicians; information on risk of infection, risk behaviour and social background from patients. Monthly number of patients, sex distribution, numbers of examinations and positive tests are reported also.
Results: In 2006, 47,350 examinations in 27,782 patients were reported by 60 sentinel sites. Most frequent infection was CT (680 pos. tests), followed by SY (293), GO (243) and HIV (157). HIV (77.8%) and SY (75.7%) were mainly diagnosed in men, CT in women (60.6%). A previous STI was reported for 32.0% of men and 24.7% of women ($p<0.01$). Proportion of men was 56.5%, mean age 32.2 years. Proportion of migrants was 20.5% in men and 49.5% in women ($p<0.01$). 66.4% of migrants originated from Central Europe. Most important risks of infection in men were sex with men (37.8%) and heterosexual contacts (32.7%), in women commercial sex work (41.6%) and heterosex. contacts (37.7%). 78.8% of commercial sex workers were migrants. A non regular condom use with casual sex partners was stated by 39.9% of men and 29.8% of women.
Conclusions: Already in its first year, important epidemiological data were gained which are not represented by the national reporting systems. Migration and prostitution turned out as highly relevant influencing factors for epidemiological events within the specific border regions, especially in women. Some of the results were already implemented within the scope of the overall project Bordernet as a basis for planning in prevention and for improvement of diagnostics of STI. (Contact: JansenK@rki.de)

P-553 THE BORDERNET SENTINEL-SURVEILLANCE: EXPERIENCES IN BUILDING UP AN INTERNATIONAL REPORTING SYSTEM FOR SEXUALLY TRANSMITTED INFECTIONS (STI)

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Objective: Bordernet, a new EU-funded project, aims at standardising and improving counselling, diagnosis and therapy of HIV/AIDS and STI in 6 involved EU member states. A cross-border sentinel-surveillance system for STI has been established to provide a solid data basis for developing new approaches in these fields as well as for monitoring their success.
Methods: In four model regions between Germany (G) -Poland (P) (n=2), Austria (A) -Slovak Republic (SK) and Italy (I) 'Slovenia (SI), an international sentinel surveillance system was established in 2005. Data are gathered via monthly, diagnosis and (voluntary) patient questionnaires.
Results: By now, the surveillance-system consists of 60 sentinel sites which reported 47,350 examinations in 27,782 patients in 2006. There are 15 resp. 11 sites in the 2 regions in G, 2 in each region in P, 10 in A, 12 in SK., 6 in I and 2 in SI. In G and A, private practitioners and public health care institutions are represented equally, in all other regions sites are public. 20 sites only test for HIV, 13 only for other STI. Response rates of patients were very high in I (92.3%), P (96.0%), SK (98.5%) and SI (100%), much lower in G (24.7%) and A (17.6%) ($p<0.01$). Obligatory case definitions for Chlamydia based on amplification methods were applied at 9 of 9 sites testing for Chlamydia in A, 5/25 in G, 1/5 in I, 0/1 in P, 3/7 in SK and 0/2 in SI.
Conclusions: Building up a cross-border sentinel surveillance is challenging. Population density, national health systems, number of potential and recruited sentinel sites and repeating completeness vary greatly. Frequent separation of care of HIV and other STI cause underdiagnosing and underreporting. Different resources in diagnostics and treatment hampered the use of standardised case definitions. The high response rates countries with solely public health institutions as sentinel sites and other countries must be questioned. Comparison of epidemiological data between different countries is laborious. However, this study provides much more information than national reporting systems, especially regarding border specific phenomenons like prostitution and migration. It is, therefore, a big step for developing health care efforts in the participating regions. (Contact: JansenK@rki.de)

P-554 INFLUENCES ON AGE OF ONSET OF FIRST SEXUAL INTERCOURSE AMONG YOUNG ADULTS AGED 18-25 YEARS

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Objectives: Early onset of sexual intercourse has been linked with a number of detrimental health consequences. This study examined the extent to which parental alcoholism, onset of alcohol dependence, onset of conduct disorder, and demographic variables are associated with age at first sexual intercourse.
Methods: Data for this study were obtained from relatives, aged 18-25 years, (N= 1,166) of alcohol dependent probands who participated in the Collaborative Study on the Genetics of Alcoholism (COGA) project. Community based participants without alcoholic parents (N= 236) were also evaluated. Clinical and sociodemographic variables were assessed by structured, personal interviews. Participants also provided reports of family history. A Cox proportional hazards survival analysis was used to determine risk factors associated with early onset of sexual intercourse. Time dependent covariates included onset of conduct disorder and onset of first alcohol symptom for those later diagnosed with alcohol dependence.

Results: In the multivariate survival analysis, variables significantly associated with early onset of sexual intercourse included: onset of first alcohol dependent symptom (RR = 1.5, p < .001), onset of conduct disorder (RR = 1.5, p < .001), being African American (RR = 1.5, p < .001), and not having a high school diploma (RR = 1.3, p < .001), where RR denotes the risk ratio (also known as the hazard ratio). Having an income < $20,000/year was associated with earlier onset of sexual intercourse than participants whose income was ≥ $40,000 (RR = 1.2, p = .025). The risk of becoming sexually active at an early age was greater for participants with an alcoholic mother, alcoholic father, and two alcoholic parents in comparison to community based participants (RR = 1.5, p < .001, RR = 1.5, p < .001, RR = 2.1, p < .001, respectively). As well, participants whose parents were not-alcoholic but who had an alcoholic relative (aunt, uncle, or grandparent) were at greater risk of early sexual intercourse than community based participants (RR = 1.5, p < .001).
Conclusions: Findings in this study underscore the importance of psychological, social, and familial characteristics associated with early onset of sexual intercourse. The current study suggests that STD and teen pregnancy prevention programs can be enhanced by targeting conduct disordered and alcohol abusing youth. These programs should also focus on children and relatives of alcoholics and those who are academically disenfranchised.

P-555 TRENDS OF GENITAL HERPES AND GENITAL WARTS, PUERTO RICO, 2000-2006

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Objectives: To describe the magnitude and distribution of Genital herpes and Genital warts reported cases in the Sexually Transmitted Diseases (STD) Surveillance Office for the period 2000-2006 and graphically present the reported case tendency of these infections in Puerto Rico by gender. Genital herpes is an infection that has no cure at present therefore an infected person has a permanent infectious potential. On the other hand, Genital warts can cause potentially fatal infections in babies, additionally Genital warts are caused by the human papillomavirus (HPV) and some of the viruses of the HPV family may lead to cancer of the cervix, vulva, vagina, anus, or penis.
Methods: Data from the US Census Bureau and Puerto Rico STD Surveillance Office was used to describe the demographic characteristics and to calculate the incidence rate of Genital herpes and Genital warts cases in Puerto Rico from 2000 through 2006.
Results: The Genital herpes incidence rate increased by 249.4%, and the Genital warts 439.9% in the period from 2000 to 2006, in Puerto Rico. The incidence rate of both Genital herpes and Genital warts were very similar in both genders until 2002. The difference between men and women became very marked, from the year 2003 to 2006, an average of 35% higher in women for Herpes and an average of 86% higher in women for Genital Warts. The Genital herpes incidence rate was 2.5 times higher in women by 2006. The Genital warts incidence rate followed the same tendency since it was 22.7 times higher in women by the same year.
Conclusions: Although the increment of these incidence rates in a short period of time could be due to the administrative ordinance by the Secretary of Health it still shows the amount of infections that were not being screen for or were not reported. It should call our attention to revise the STD prevention campaigns and or perhaps a more appropriate dissemination. It is also important to remember that Herpes have no cure at present and may play a role in the spread of HIV, the virus that causes AIDS. Herpes can make people more susceptible to HIV infection, and it can make HIV-infected individuals more infectious.

P-556 IMPORTANCE OF SEXUAL BEHAVIOR IN CYTOMEGALOVIRUS SEROPREVALENCE OF THE UNITED STATES, 1988-1994

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Objectives: While modes of cytomegalovirus (CMV) transmission are fairly well established, the importance of these transmission modes for the population of the United States (US) is not well understood. To address the association between sexual behavior and CMV seroprevalence in the US population, we analyzed data from participants ages 15-44 years old (n=7,883) in the National Health and Nutritional Examination Survey III (NHANES III) conducted from 1988-1994.
Methods: Prevalence of CMV infection was determined by testing sera for IgG antibody to CMV. Demographic and sexual behavior data was collected using standardized questionnaires and laboratory measures. Using logistic regression, we assessed the association between CMV seroprevalence and markers of sexual behavior (ever had sex, number of sex partners (lifetime and past year), age at first intercourse, potential years of sexual activity, ever use oral contraceptives, age at first use of oral contraceptives, herpes simplex type 2 antibody, and human papillomavirus antibody). We also assessed sexual risk with a composite variable that summarized the individual measures of sexual behavior. For each measure of sexual behavior, we calculated standardized CMV prevalence differences (PD); weighted average prevalence in the higher sexual risk groups minus prevalence for the lowest sexual risk group.
Results: Even after controlling for potential confounders, including presence of children in the home, we found an association between CMV seroprevalence and markers of increased sexual behavior among non-Hispanic black women (Composite, all ages PD =8.5%, 95% Confidence Interval (CI) = (4.0%, 13.1%)) and non-Hispanic white women (Composite, all ages PD =10.8%, 95% CI = (3.1%, 18.5%)). Sexual behavior may influence CMV seroprevalence among Mexican American women (Composite, all ages PD =3.5%, 95% CI (-0.7%, 7.6%)).
Conclusions: While it is likely that CMV is transmitted through sexual activity in all groups, the importance of sexual behavior as a source of primary CMV infections differs between racial/ethnic-gender groups in the United States population. Attempts should be made to prevent primary CMV infections associated with sexual behavior among women who may become pregnant.

P-557 PREVALENCE OF SEXUALLY TRANSMITTED DISEASES AND ASSOCIATED RISK BEHAVIORS AMONG MEXICAN MIGRANTS IN CALIFORNIA

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Objectives: The California-Mexico Epidemiological Surveillance Pilot (CMESP) is a bi-national collaborative project designed to estimate the population-based prevalence of sexually transmitted diseases (STDs), associated risk behaviors, and underlying determinants among Mexican migrants in California. The objective of this analysis is to describe the prevalence of STDs and associated risk behaviors in this vulnerable population.
Methods: The CMESP was a venue-based targeted random sample of male and female Mexican migrants living in rural and urban areas in the counties of San Diego and Fresno using a structured survey instrument to collect data on a wide domain of topics, including sexual practices and drug use. Blood and urine spec-

imens were collected for chlamydia (CT), gonorrhea, syphilis, and HIV testing. Sampling was conducted March 2004-February 2005 and July-November 2005. Study subjects were systematically sampled and recruited at each venue in proportion to the volume of eligible migrants enumerated at that venue with over-sampling of high-risk venues. STD prevalence and levels of associated risk behaviors were estimated separately for participants recruited from (1) male work venues (male migrant camps and job pick-up locations), (2) community venues (e.g., family migrant camps, laundromats, adult schools, churches), and (3) bars and clubs, including MSM-specific venues.

Results: A total of 1283 eligible subjects (N=990 male, N=281 female, N=12 transgender) were recruited from male work (N=532), community (N=466), and bar/club (N=285) venues. The prevalence of all STDs/HIV was generally low, with the exception of CT prevalence which was 4.0% among (N=520) males recruited from the male work venues, 14% among (N=22) females recruited at bars/clubs, and HIV prevalence which was 2.0% among (N=251) men recruited from bars/clubs. No gonorrhea was found in any study subjects. CT prevalence was highest among younger men (age 18-24) and lowest among older men (age >=35) in all three types of venues (statistically significant trend in male work venues, $p < 0.001$.) Where meaningful comparisons were possible, male prevalence was higher than female prevalence, but were not statistically significant (e.g. CT prevalence was 1.4% among males and 0.8% among females in community venues, p=.7). Among males, risk behaviors were commonly reported, including >18% using cocaine or methamphetamine in all three types of venues, and 19% and 18% reporting sex with commercial sex workers in the male work and bar/club venues, respectively. Risk behaviors were very uncommonly reported among females. Cocaine/methamphetamine use was associated with CT prevalence at male work venues (PR=2.0, p=0.16) and bar/club venues (PR=14.6, p=0.005). Commercial sex work was weakly associated with chlamydia prevalence at the male work venues (PR=1.8, p=0.25).

Conclusions: Although a relatively low prevalence of all STDs was found in this population-based sample of Mexican migrants in California, the high prevalence of reported risk behaviors indicates the potential for rapid STD spread if sexual networks or other factors in this population change.

P-558 BEHAVIORAL SURVEILLANCE INTEGRATED IN ROUTINE STI SURVEILLANCE AS A PILOT STUDY

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Objectives: In the past years, it was generally acknowledged that behavioral surveillance is an integral component of STI and HIV surveillance. Collection of behavioral data within these surveillance systems provides insights into the extent to which HIV and STI trends are related to behavioral changes. In 2005, experts on behavioral surveillance in the Netherlands discussed the selection of key indicators for the monitoring of sexual behavior, that could be integrated in existing STI and HIV surveillance systems. As a pilot, four key indicators were included in the national surveillance network of STI clinics. Preliminary results are presented for 2006.

Methods: In the Netherlands, STI consultations are registered in an internet based application. The registry included demographic variables, case history, laboratory tests and diagnoses of STIs. Four key indicators were included: number of sexual partners in the last 6 months, condom use with last sexual contact, unprotected sexual intercourse abroad in the last 3 months and previous HIV test.

Results: In 2006, 68,887 STI consultations were reported by eight large STI clinics with national coverage; six of them and parts of one other clinic agreed to participate in the pilot study. In these STI clinics 39,932 consultations were reported. The response rate for the key indicators was 86%, except for previous HIV test where the response rate is 100%. The median number of partners varied: 2 among heterosexual men and women, 5 among MSM and clients of CSW and 26 among CSW. 75% of STI clinic attendees did not use condoms with their last sexual contact (MSM: 66%, CSW: 59%). 7% reported unprotected sex abroad, 47% had a previous HIV test and 1% had a previous HIV positive test (MSM: 8.3%, table 1). The most reported countries of unprotected sex abroad were: Spain, Turkey, Thailand, Germany and Belgium. Attendees with a gonorrhea or infectious syphilis diagnosis had more partners in the last six months, more often had sexual contacts abroad and more often had a previous HIV test (table 2). More partners in the last six months was also related to an HIV diagnosis. Furthermore, attendees with an STI diagnosis had a higher HIV prevalence based on previous HIV test.

Conclusions: Overall, having a diagnosis of gonorrhea or infectious syphilis is related to unprotected sex abroad, higher numbers of partners and HIV positivity. We expect that the implementation of key indicators of risk behavior in the STI surveillance system is a helpful tool for the interpretation of STI and HIV trends. Implementation in other surveillance systems provides an opportunity to compare STI clinic attendees with other subgroups with an increased risk for STI/HIV as well as the general population. However, to investigate sexual risk behavior in depth, additional key indicators are needed. More information: marion.de.boer@rivm.nl

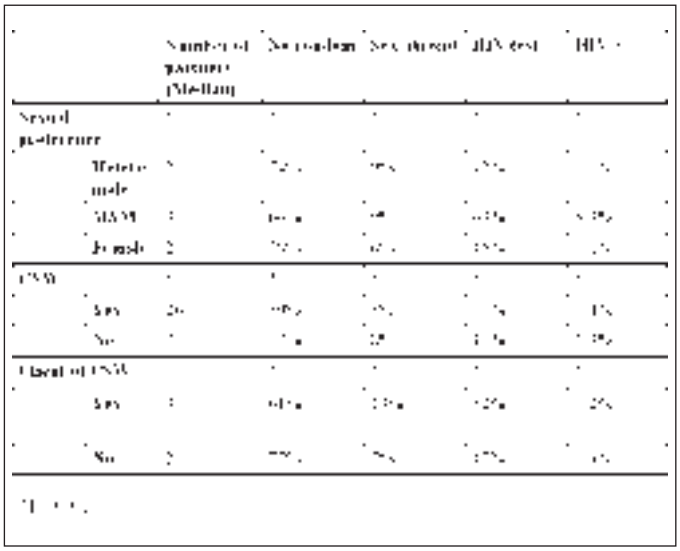

Table 1: Sexual behavior and demographics

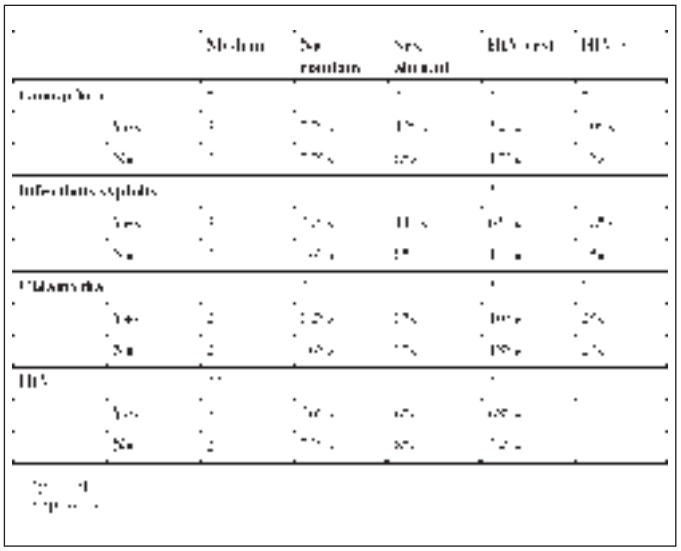

Table 2: Sexual behavior and STI

P-559 SEXUALLY TRANSMITTED INFECTIONS IN THE UNITED STATES MILITARY, 2000 - 2005

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Objectives: Sexually transmitted infections (STIs) have been associated with military forces from antiquity. In general, prevention and control efforts in the United States (US) military are similar to those applied in the civilian sector. Currently, the four US military services (Army, Navy, Air Force and Marine Corps) develop and implement individual STI screening and reporting policies. Our objectives were to summarize reported rates for gonorrhea (GC), chlamydia (CT), non-gonococcal urethritis (NGU) and primary/secondary syphilis (TP), to assess variations within and between services, and to identify pertinent service policies.
Methods: Cases of GC, CT, NGU and TP reported by the four services were extracted from the Defense Medical Epidemiology Database, Army Medical Surveillance Activity (AMSA), Washington, DC. Annual Calendar Year (CY) rates per 100,000 person-years (p-yrs) were calculated for the 6-year period 2000-2005 for each condition by gender and service. Policy documents were obtained from government web sites or service medical representatives.
Results: The highest rates overall were for CT, ranging from a low of 94 cases per 100,000 p-yrs reported by the Marines in CY2000 to a high of 1,478 cases per 100,000 p-yrs reported by the Army in CY2002. GC annual rates ranged from 27 (Marines, CY2000) to 419 (Army, CY2002) per 100,000 p-yrs. NGU rates per 100,000 p-yrs ranged from 2 (Air Force, CY2004) to 254 (Army, CY2000), and for TP, from less than 1 (Navy, CY2000 and Marines, CY2000 and CY2002) to 7 (Army, CY2000) per 100,000 p-yrs. Rates were generally higher in the Army but varied within and between services over the study period. Annual CT and GC rates were consistently higher among women as compared to men; annual NGU rates were considerably higher among men; and annual primary/secondary TP rates varied among genders. Reporting requirements were not rigid (eg, laboratory confirmation was not necessary) and STI screening policies varied. U.S. military data are compared to U.S. national data.
Conclusions: The available data did not allow for discrimination between true incidence or prevalence, the impact of different screening policies, or inconsistencies in reporting as causes of variability across the services and over time. Obtaining a reliable picture of the extent of STIs in the US military will require standardization and enforcement of common diagnostic and reporting criteria across the services.

P-560 PREVALENCE AND INCIDENCE OF MYCOPLASMA GENITALIUM AND TRICHOMONAS VAGINALIS INFECTIONS AMONG STD CLINIC PATIENTS DETERMINED BY TRANSCRIPTION MEDIATED AMPLIFICATION SAN FRANCISCO AND DENVER, 20042005

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Objectives: Infections causing cervicitis, urethritis, and pelvic inflammatory disease (PID) cause substantial health sequelae (e.g., infertility, increased human immunodeficiency virus risk). Although Neisseria gonorrhoeae and Chlamydia trachomatis often cause cervicitis, urethritis, and PID, no specific microbiologic etiology is identified in ≥60%. Mycoplasma genitalium (MGent) and Trichomonas vaginalis (TV) might cause a portion of these syndromes. However, no highly sensitive test is widely used to diagnose these two treatable infections. We used nucleic acid amplification tests (NAATs) to determine prevalence and incidence of MGent and TV infections compared with chlamydial and gonococcal infections among male Denver and San Francisco STD clinic patients. We also determined MGent and TV prevalence among women 3 months after visiting the STD clinic.
Methods: Patients completed computer-assisted surveys and provided urine for transcription-mediated amplification testing for MGent, TV, N. gonorrhoeae, and C. trachomatis (Gen-Probe, Inc.) at baseline and 3 months. Prevalence estimates were calculated by using the first urine sample provided. Incident infection was defined as a positive test at 3 months preceded by a negative baseline test. Most analyses were performed among men because the majority of women did not provide a urine specimen at baseline. Odds ratios (ORs) were calculated by using logistic regression comparing sexual history in the previous 3 months and infection with MGent and TV.
Results: A total of 413 men provided at least one urine sample; 221 provided two. A total of 219 women provided urine samples at 3 months. Prevalence among men was MGent, 6.3% (26/413); TV, 2.2% (9/413); chlamydia, 17.7% (73/413); and gonorrhea, 8.8% (36/411). Among women, prevalence at 3 months was MGent, 3.7% (8/218); TV 2.8% (6/218); chlamydia, 2.7% (6/219); gonorrhea 1.8% (4/219). Among men, prevalent MGent was associated with previous nongonococcal urethritis (NGU) (OR=5.7; 95% confidence interval [CI], 1.5'22.5), previous gonorrhea (OR=7.2; 95% CI, 1.8'29.4), and having five or more sex partners (OR=4.9; 95% CI, 1.8'12.7). Among men, four incident MGent infections (6.4/100 person-years), one TV infection (1.6/100 person-years), eight chlamydial infections (8.8/100 person-years), and one gonococcal infection (1.1/100 person-years) were identified. Incident MGent was associated with previous NGU (OR=15.1; 95% CI, 1.3'172.0). Among men, no association was identified between current NGU, drug use, having sex with men, HIV status, monogamy, or age and incident or prevalent MGent or TV infection. Among urine samples that were positive for gonorrhea at baseline, 15.8% (95% CI, 3.4'39.6) were co-infected with MGent whereas 7.0% (95% CI, 1.5'19.1) of urine samples positive for chlamydia were coinfected.
Conclusion: We identified prevalent and incident MGent and TV infections among this small STD clinic cohort. Men with NGU histories were more likely to have MGent infections, possibly linking MGent and urethritis, although this finding could have been the result of cotransmission with other pathogens or confounding. Larger, prospective studies are needed to determine whether MGent and TV cause cervicitis, urethritis, and PID. If a causal link is proven, using NAATs to detect and treat MGent and TV among STD clinic patients might improve reproductive health outcomes.

P-561 CHLAMYDIA AND GONORRHEA SCREENING IN HIV-INFECTED PATIENTS ATTENDING STD CLINICS IN BALTIMORE, MARYLAND, 2004-2006

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Objectives: Screening for sexually transmitted infections (STIs) is recommended in the HIV clinic setting, yet few data are available to support selective screening for GC and CT in HIV+ women. We aim to 1) determine the prevalence of genital chlamydia (CT) and gonorrhea (GC) infection among HIV-infected female clients enrolled in HIV continuity care, 2) identify clinical, behavioral, and demographic correlates of CT and GC infection, and 3) present algorithms that may be used for screening in clinical settings.
Methods: We examined medical records of HIV-infected female patients receiving HIV continuity care within a health department HIV early care program between 2004 ' 2006. Information on demographics, STD diagnoses, clinical symptoms, sexual behavior, partner characteristics, CD4 count and viral load was abstracted from

the medical record. Information from only the first available CT or GC test was used. Chi-squared and Fisher's exact tests were used to test for associations between CT/GC and patient characteristics. Multiple logistic regression and areas under the corresponding ROC curves were compared to determine correlates of infection. We compared non-parametric screening algorithms by assuming that patients with at least one risk factor were tested and that all women with a contact to CT or GC would be tested regardless of other risk factors,

Results: 30 of the 440 women tested for CT were positive (7%); 21 of the 483 women tested for GC were positive (4%). Fewer than 1% were co-infected (3/421). A prediction model for CT infection included age <= 30, partner with an STI diagnosis, and sex in exchange for drugs or money, while a prediction model for GC infection included sex in exchange for drugs or money, abdominal pain, and genital discharge. Screening algorithms using these correlates detected 96% of CT infections while screening 74% of the population, and 30% of GC infections while screening 52% of the population. Each algorithm left <3% of cases undetected.

Conclusions: CT screening in HIV continuity should be driven by young age (<30), as in other clinical sites. Additional behavioral information on partner's STI history and exchanging sex for money or drugs could be useful in screening. Age-driven criteria for GC perform less well, so algorithms incorporating behavioral and clinical factors should be examined. STIs in HIV-infected women suggests recent or ongoing behaviors that may result in HIV transmission. As certain STIs enhance the risk for HIV transmission or acquisition, effective STD prevention is a priority both for the health of the individual and of her sexual network.

P-563 THE RESPONDENT DRIVEN SAMPLING AS A METHODOLOGY USED TO KNOW THE SEUALLY TRANSMITTED DISEASES PREVALENCE OF FEMALE SEX WORKERS IN HARBOUR AREA FROM MANAUS,AMAZON,BRAZIL

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Objective: To know the RDS as a new methodology to be applied in hidden population and estimate the prevalence of Sexually Transmitted Diseases (STD) in female sex workers in harbour area in the city of Manaus.

Methods: The study was done in the port area of the city of Manaus, Brazil, in an easy accessible place, either rented or built, specifically for this study. In a period of six months 210 (FSW) were attended in the clinic by utilizing a new methodology called (RDS), developed to be applied in hidden population. This method reduces the distortions associated with the snowball sampling using a system of structural incentives (pairs recruiting pairs). Various levels (waves) of recruitment are used. The first is not elected casually from members of the population.But after various levels (waves) a sample is obtained that is independent of the first levels (waves) characteristics. Contrary to the traditional form of sample taking that makes know the result of the sample directly to the population, the RDS constructs its results on the basis of information about the social group involved in the sample. The 210 FSW were asked in a questionnaire about their comportment, attitudes and practices and offered a gynecological exam. Of these 154 accepted to be examined, of which vaginal contents were collected for amine test, Gram stain and microscopy, however cervical contents for the research of Chlamydia and HPV infection through molecular biology, in form of Thayer Martin's modified culture for gonococcus and pap smear. They were also offered HIV, syphilis and hepatitis tests.

Results: The average age of those who accept to participate in the study was 30.3%, and the medium of 28.5 years. About race 17.1% were white; 13.3% were black and 69.6% brown. 72% had not completed primary school and 27.1% had completed primary school 35.2% of these MTS were married and 64.8% not married. Of the 154 that accepted the laboratory exams, 4(2.6%) were HIV positive; 29(18.8%) with syphilis; 35(22.7%) with high risk HPV; 2 (1.8%) with gonorrhea; 1 (1.5%) with Genital Herpes; 55 (35.8%) with bacterial vaginosis; 2 (1.3%) with Trichomoniasis; 13 (11.4%) with Chlamydia Cervices infection; 2 (1.3%) with other cervices infection. With regards to the hepatitis test 1(0.7%) HBs Ag; 13(14:9) Anti Hbc and 17 (26.6) Ant Hbs were positive.

Conclusion: In the general public the STD are not distributed in a homogenic form. The health service has not as yet presented specific intervention programs for hidden population. A strong concern about privacy exists; membership involves being stigmatized because of abnormal or illegal behavior, leading individuals refuse to cooperate, or give unreliable and inefficient samples because of the rarity of most of the hidden populations. Identifying these groups is crucial for the development of effective AIDS prevention programmes (interventions) Through the RDS method we are able to choose a group to be studied, incentive them to participate, observe the comportment and estimate the HIV prevalence and other SDT´s. Author: João Catarino jdutrajr@uol.com.br

P-564 NEISSERIA GONORRHEA AND CHLAMYDIA TRACHOMATIS DIAGNOSIS AND SCREENING AT AN URBAN GAY MENS STD CLINIC

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Objective: To measure the impact of changing from a DNA probe utilizing nucleic acid hybridization technology to a nucleic acid amplification test (NAAT) for screening and diagnosis of Neisseria gonorrhea and Chlamydia trachomatis at Whitman-Walker Clinic (WWC), a non-profit community-based health organization serving the Washington, D.C. metropolitan region established by and for the gay and lesbian community.

Methods: Historically, the Gen-Probe PACE 2C System was used to detect urethral N. gonorrhea and C. trachomatis and cultures were used to detect rectal N. gonorrhea. Specimens were collected based on symptoms and sexual history. In January of 2005, WWC switched to the Becton Dickinson ProbeTec ET, a NAAT, for the detection of N. gonorrhea and C. trachomatis in the urethra and urine. Urethral specimens were collected on symptomatic clients and urine samples were collected on asymptomatic men and anyone refusing a urethral swab. WWC validated and began using NAAT on rectal specimens for detection of N. gonorrhea and C. trachomatis in September 2005. We compared the number of tests done and the positivity rates using the DNA probe and culture to NAAT.

Results: Urethral DNA probes were done from January - December 2004 and urethral and urine NAATs were done from January - December 2005. For urethral N. gonorrhea, 90 (6.0%) of 1,490 DNA probes were positive compared to 94 (5.9%) of 1,606 NAATs (including 84/580 urethral swabs and 10/1,026 urine specimens). For urethral C. trachomatis, 50 (3.4%) of 1,490 DNA probes were positive compared to 59 (3.7%) of 1,606 NAATs (including 36/580 urethral swabs and 23/1,026 urine specimens). Rectal cultures were done from January - December 2004 and rectal NAATs were done from September 2005 - August 2006. For rectal N. gonorrhea, 14 (4.3%) of 327 cultures were positive compared to 25 (7.9%) of 317 NAATs. For rectal C. trachomatis, 26 (8.2%) of 317 NAATs were positive.

Conclusions: Despite using a more sensitive assay, the percentage of tests that were positive for urethral N. gonorrhea or C. trachomatis among these symptomatic and asymptomatic men did not change. NAATs seem to be better than culture for identifying N. gonorrhea in the rectum and provide a means of diagnosing rectal C. trachomatis infection.

P-565 GET IT OUT TO THE FIELD: USING INFORMATION TECHNOLOGY TO IMPROVE TIMELY ACCESS TO SURVEILLANCE DATA

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Objectives: In British Columbia (BC), Medical Health Officers (MHOs) oversee the public health of a defined geographic region. The BC Centre for Disease Control (BCCDC) routinely provided MHOs with STI/HIV/AIDS data via hard copy reports to assist with their surveillance activities. Many MHOs requested data that goes beyond these reports, leading to a drain on BCCDC surveillance resources. In June 2003, an electronic survey was distributed to MHOs to gather information about (1) what routine surveillance questions they want answered and (2) whether they want access to surveillance data if it were available on the web. Most of the routine surveillance questions posed by MHOs could be answered by the following data elements: infection type (i.e. gonorrhea, chlamydia, infectious syphilis, HIV, AIDS), diagnosis date, age, gender, risk, ethnicity, and health region. All MHOs indicated they would access surveillance data if it were available on the web. As a result, the BCCDC undertook a creative initiative, entitled Soul Access, to meet the growing STI/HIV/AIDS data needs of MHOs across BC by providing secure access to near real-time data in a web-based format.
Methods: Using Cognos PowerPlayTM software, the BCCDC created three online data cubes (STI, HIV and AIDS) with non-nominal test, diagnosis and demographic data. The cube is a powerful analytical tool that presents the user with aggregate data, summarized across a range of dimensions (e.g. infection type by year of diagnosis, age, and risk). Since a link between the cube and the source database is not maintained, MHOs are not able to access nominal or case-specific data. The BCCDC also developed an online user training manual. Eight months after implementation, a survey was distributed to the cube users to elicit feedback on the value of the data cubes.
Results: In March 2005, the data cubes were posted on a secure web server and made accessible to MHOs and/or their designates. The STI and HIV cubes are updated monthly, and the AIDS cube is updated quarterly, providing MHOs with access to near real-time surveillance data and enabling them to respond to their surveillance questions in a timely manner. The response rate to the feedback survey was 46.6% (7/15). Of those who responded, 85.7% (6/7) stated that the cubes had improved their access to surveillance data in a timely manner, 57.1% (4/7) stated that they accessed the cubes at least monthly, and 71.4% (5/7) found the training manual helpful.
Conclusion(s): Overall, MHOs find the STI, HIV and AIDS data cubes to be a useful surveillance tool. Routine surveillance questions can now easily be answered with a few mouse clicks on the desired dimensions. As a result of this innovative technology, the number of data requests submitted to the BCCDC has dropped considerably. Currently, the BCCDC is developing additional cubes: an HIV cube for testing data (i.e. negative and positive test results) and an STI cube for co-infection data.

P-566 THE PREVALENCE OF ANAL AND VAGINAL SEX AND SEXUALLY TRANSMITTED DISEASES AMONG DRUG-USING, LOW-INCOME BISEXUAL MEN IN CHICAGO

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Objective: To examine the extent to which drug-using, low-income bisexual men engage in HIV high-risk sex, and to document the prevalence of HIV and other STDs in this group.
Methods: Through respondent-driven sampling at three sites in Chicago we recruited men and women who use 'hard' drugs (cocaine, heroin, methamphetamine or any illicit injected drug), men who have sex with men regardless of drug use, and sex partners linked to these groups. All participants in this on-going study completed a computerized self-administered interview, and provided blood for HIV and syphilis testing and urine for chlamydia and gonorrhea testing. The analysis focused on men who reported having recent (past 6 months) oral, vaginal or anal sex with both men and women. In all cases, sexual orientation is defined by behavioral practice in the 6 months preceding study enrollment.
Results: Of 1068 study participants, 72% were African American, 20% were Hispanic, the median age was 44 years and only 6% reported current full-time employment. Of the 670 males, 84% were sexually active and 145 (22%) reported recent sex with another man. Most (76%) men who had sex with men also reported recent sexual contact with women. Of these bisexual men, 93% reported recent 'hard' drug use, mostly crack cocaine (75%) or heroin (40%) and infrequently methamphetamine (8%). Most self-identified as bisexual (79%) or heterosexual (17%). Recent high-risk sex was common for bisexual men: 63% had anal sex with men, 52% had anal sex with women, 41% had anal sex with both men and women, 62% had anal sex with men and vaginal sex with women, 87% had vaginal sex with women, and 68% reported two or more recent female sex partners. HIV antibody prevalence was 8% for bisexual, 4% for heterosexual and 49% for homosexual men ($p<.001$). Syphilis antibodies were detected in 7% of bisexual, 3% of heterosexual and 14% of homosexual men. Gonorrhea infections were nearly absent (n=2) and chlamydia prevalence (1.5% overall) was low for all groups of men.
Conclusion: Bisexual activity and multiple female sex partners are common among low-income, drug-using men who have sex with men, and the majority engage in anal and vaginal sex. HIV infection and current or past syphilis infections were greater among bisexual compared to heterosexual men, but lower compared to homosexual men. In low-income communities, crack-using bisexual men may represent an especially important pathway for the heterosexual diffusion of HIV infection.

P-567 SHARP INCREASE IN REPORTED RECTAL GONORRHEA AND CHLAMYDIA DUE TO INCREASED SCREENING NOT INCREASED TRANSMISSION: SAN FRANCISCO, 2001-2006

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Objectives: Between 2001 and 2006, the San Francisco Department of Public Health (SFDPH) observed sharp increases in rectal chlamydia and rectal gonorrhea among male residents of San Francisco. We examined whether the increase in reported rectal infections was the result of increased screening for these primarily asymptomatic infections or likely due to increased disease transmission.
Methods: We compared the magnitude of increases in rectal morbidity to increases in volume of rectal screening at the SFDPH Laboratory for the years 2001 to 2006. For rectal specimens tested at the SFDPH Laboratory, we examined submitting provider, chlamydia and gonorrhea positivity, patient demographics and test technology by year. Nucleic acid amplification testing (NAAT) of rectal chlamydia and gonorrhea specimens was verified by SFDPH Laboratory prior to implementation in 2001. Rectal screening using NAAT was initially performed using the SDA (BD Laboratories) and then TMA (GenProbe) beginning in the second quarter of 2005. Initially in 2001, rectal screening was offered only at the municipal STD clinic. By 2006, SFDPH-supported rectal screening had been expanded to 15 settings that offered 30 or more tests per year.
Results: Between 2001 and 2006, reported rectal chlamydia among males increased 8.9-fold from 59 cases to 524 cases, but during this same period, rectal chlamydia screening supported by SFDPH increased from 411 tests to 7,850 tests, a 19.1-fold increase. Rectal gonorrhea reports also increased from 236 cases to 565 (a 2.4-fold increase), while rectal screening increased from 2,132 tests to 8,400 tests (a 3.9-fold increase). During the time period, the number of rectal infections reported by all non-SFDPH-supported providers remained stable (rectal

chlamydia reports ranged from 1 to 9 per year, and rectal gonorrhea reports ranged from 13 to 23 per year). Rectal chlamydia positivity by NAAT was consistently higher than or equal to rectal gonorrhea across age-group, race/ethnicity and provider. Positivity by NAAT was highest among men tested at the STD clinic (chlamydia 9.1% (1,526/16,871), gonorrhea 8.7% (1,457/16,971)) where 52% (16,971/32,449) of rectal specimens were collected. Over time, positivity remained stable by clinic and demographic group, except for an apparent increase after switching from SDA to TMA in 2005. At two high-volume, stable screening sites, the positivity for rectal chlamydia increased from 7.7% (126/1643) by SDA during the quarter prior to and during the switch, to 9.3% (230/2473) by TMA during the quarter of the switch and quarter after the switch (p<.03).
Conclusions: The substantial increase in reported rectal chlamydia and gonorrhea in San Francisco between 2001 and 2006 appeared to be primarily a result of increased screening and secondarily due to changes in test technology. Reported rectal infections surveillance must consider the context of local screening practices. We demonstrated a substantial prevalence of asymptomatic rectal infections that would not be identified and treated without screening, supporting the United States Centers for Disease Control's recommendation for routine rectal chlamydia and gonorrhea screening for men who have had receptive anal sex.

P-568 AGE OF SEXUAL DEBUT AND RISK FOR STI AMONG HISPANICS ATTENDING A U.S. STD CLINIC

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Objectives: Sexually transmitted infections (STI) disproportionately affect some racial and ethnic minorities in the United States. The objective of this study was to explore risk factors for STI among young adult Hispanics in comparison to non-Hispanic (NH) Blacks and NH Whites.
Methods: Men and women (n=912) ages 18-25 years attending the Public Health-Seattle and King County STD Clinic were enrolled in a cross-sectional study of sexual behaviors from 2001-2006. Individuals were eligible if they reported new symptoms of STI or suspected contact to someone with STI. Questions about sociodemographic characteristics were posed by an interviewer and sexual behaviors were self-reported using a computer-administered survey instrument. Urine specimens from men were tested for Chlamydia trachomatis and Neisseria gonorrhoeae by the Aptima CT/NG TMA assay (Gen-Probe) and for Mycoplasma genitalium by a TMA assay. Among women, C. trachomatis and N. gonorrhoeae were detected by culture using cervical swab specimens, and M. genitalium was detected in urine using TMA and self-obtained vaginal swabs using PCR and TMA. T-tests, and Pearson's chi-square tests were used to assess group differences.
Results: Among the 912 young adults (mean age 21.7 years), 10.7% were Hispanic, while 44.5% were NH White, 30.3% NH Black, and 14.5% reported 'other race/ethnicity.' Hispanics were significantly more likely to have an STI than NH Whites (21.4% vs. 10.3%, p<0.01), and only somewhat less likely than NH Blacks (21.4% vs. 25.7%; p=0.40). Although Hispanics were slightly younger at sexual debut than NH Whites (mean 15.4 vs. 16.0 years; p=0.06), they were significantly older than NH Blacks (mean 15.4 vs. 14.7; p=0.04). Hispanic women had fewer lifetime sex partners (median 7) than either NH White (median 9) or NH Black women (median 10), but Hispanic men had approximately the same number of lifetime partners as NH Black men (median 14.5 and 14, respectively), and substantially more than NH White men (median 9). Among Hispanics, older age at sexual debut (>16 years) was associated with increased risk of STI (Odds Ratio [OR] 2.5; 95% confidence interval [CI] 0.65-10.51), whereas among NH Whites older age at sexual debut was associated with somewhat lower risk of STI (OR 0.55; 0.26-1.14). Age at sexual debut was not associated with STI among NH Blacks (OR 1.04; 0.57-1.89). Small subgroup size prohibited multivariate analyses.
Conclusion: Despite older age of sexual debut among all Hispanics and fewer lifetime partners among Hispanic women, STI prevalence was high. This suggests that the traditional prevention messages of having fewer partners and delaying sexual debut may not be sufficient for Hispanics. These trends merit exploration in larger samples of Hispanic men and women.

P-569 CORRELATES OF NEISSERIA GONORRHOEAE AND CHLAMYDIA TRACHOMATIS INFECTIONS IN A COHORT OF FEMALE SEX WORKERS IN NAIROBI, KENYA

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Objective: To determine the factors that are associated with incident Neisseria gonorrhoeae (GC) and Chlamydia trachomatis (CT) infections in an observational cohort of female sex workers (FSWs).
Methods: An ongoing cohort study from November 2003 of FSWs of reproductive age. Every two months sociodemographic and sexual history information is updated, and cervical samples collected for N. gonorrhoeae and C. trachomatis molecular testing. Pap smear, HIV and syphilis serologies are performed biannually. Multivariate analysis was performed using generalized estimating equations for the repeated binary response adjusted for number of clients per week, condom usage, educational level, number of pregnancies, birth control method, age of sexual debut, HIV status and age at enrollment.
Results: Three hundred women of median (range) age of 24(18-47) years were recruited and have been followed up for a total of 512.4 woman-years (median 1.76; range: 0'3.23). Of these, 67 (22%) were HIV-sero-positive at baseline and 9 (3.9%) have sero-converted. GC and/or CT infections have been detected in 73 (24.3%) women for an annual incidence rate of 18.1 per 100 woman-years. At any point in time women who had a GC and/or CT infection, had an increased risk of subsequent infections (AOR=4.09, 95% CI: 2.58-6.50). Additionally the risk of infection decreased with age of the woman at enrollment (AOR=0.91, 95% CI: 0.86-0.97). For this population, HIV seropositive and more weekly sexual clients were not associated with GC and/or CT infections, AOR (95% CI); 1.26 (0.79-2.00) and 1.08 (0.92-1.29) respectively.
Conclusion: Young FSWs have a high risk of GC and/or CT infections. In addition, any incident infection increased the risk of subsequent infections. Programs to educate and counsel young FSWs should be set up so as to minimize risk and even prevent STI infections.

P-570 IMPACT OF NATIONAL TARGETS ON STI CLINIC SERVICES IN ENGLAND

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Genitourinary medicine (GUM) clinics in England provide a range of open-access health services including screening, diagnosis and management of sexually transmitted infections (STI), HIV and other genitourinary conditions as well as offering HIV testing and vaccinations. Government targets were introduced in 2001, which include HIV testing among all patients and hepatitis B vaccinations among men who have sex with men (MSM). New service codes were introduced in 2003 to help monitor these targets. The main objective of this analysis is to determine whether the introduction of targets has an impact on service provision. Annual comparisons (2003 to 2005) and percentage change in service provision data collected from the English statutory routine STI surveillance system at 204 GUM clinics since the intro-

duction of new service codes in 2003. Service codes include: sexual health screen provided, the offer and uptake of HIV test, other conditions which may require treatment, referrals to other health services, hepatitis B vaccinations (1st dose), cervical screenings and contraception services. Diagnostic codes include bacterial and viral STIs, including HIV, diagnosed and treated,. The uptake of HIV test was measured as the number taking the test against those offered the test. In the 3 year period since 2003, the percentage change between the first and third year in service provision at GUM clinics increased by 27% (from 1,376,188 to 1,685,301) whereas the number of STIs diagnosed and treated increased by 6% (from 673,226 to 710,906). The number of sexual health screens performed increased by 27% (from 632 344 to 805 885). There was a 35% increase in the number of clinic attendees being offered an HIV test (from 603 560 to 816 766), which was higher in both heterosexual males and females (36%) compared to MSM (23%). There was a 44% increase of patients that took the test (from 399 284 to 573 255), which was higher in heterosexual males (44%) and females (45%) compared to MSM (27%). There was an increase in the uptake of the HIV test to those offered from 66% to 70% in the 3 years with the greatest variance among females (from 64% to 68%). A 8% change in hepatitis B vaccinations among MSM was observed (from 7807 to 8392). Overall, the pattern of service codes recorded from GUM clinics in England remained unchanged over the 3 years, with service provision focusing on the offering of HIV test to patients and providing sexual health screens to every patient that come with a new episode. There has been an increase in services offered at GUM clinics throughout England with the introduction of the national targets. The number of HIV testing is increasing every year and the number of hepatitis B vaccinations appear to have stabilized. The improved uptake of HIV test among GUM patients and good uptake of hepatitis B vaccine would lead to improving the decrease of mortality and morbidity in these high risk groups.

P-571 REPORTING A WORK IN PROCESS: THE DEVELOPMENT OF A STI SURVEILLANCE PLAN FOR THE CITY OF SO PAULO, BRAZIL

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As a result of a recognized underachieved governmental response to the non-AIDS STIs in the city of São Paulo, the biggest city of the South America, with 11 million inhabitants, the Municipal Program of STI/AIDS, defined in 2006, to establish STIs as a priority issue. This decision started with the implementation of the 'Syndromic Approach Protocol' in the network of primary care units, formed by 400 units, distributed by all the territory and grouped into 27 Health Districts, under management of 5 Regional Coordinators, linked to the Municipal Office of the secretary of Health. The report of the process will be presented aiming to contribute with other localities that also have to face this challenge. The second step was the I Workshop of Surveillance, carried out in October of 2006. The summit had the participation of representatives of all levels of the health system, in addition to external participants, representing academic institutions, NGOs, health department from others states, and from the National STD/AIDS Program. As a special guest we also had a representative of STI control in California, USA. The summit resulted in the definition of diseases to include under surveillance by syndromic approach (genital ulcers, cervical discharge and urethral discharge) and by etiologic approach (chlamydia in those aged 25 or less, gonorrhea and syphilis in adults). A multidisciplinary task force group was also established, in charge of elaborating and following-up an STI surveillance proposal for the City of São Paulo, as well as to collaborate with the monitoring of the implementation of the syndromic approach in the primary care network of São Paulo City. Up to now it was possible to develop a set of monitoring indicators and identify the main strategies of surveillance to be adopted: a combination of universal and sentinel approach. The notification of the diseases under syndromic approach will be done twice a year, in specific months. The sentinel surveillance will take place in all referral centers for STI and AIDS care. It will collect data systematically on all cases of syphilis and gonorrhea, a sub-set (based on age 25 or less) of the Chlamydia cases. The set of indicators was deeply discussed in a expanded meeting carried out in March of 2007, among local and regional public health personnel, with the objective of access the acceptability, feasibility and sustainability of the proposal, that was agreed with no restrictions incorporating suggestions. The process is placing STI in another level of relevance in a democratic process that includes public health officials and representatives of community councils and carries a genuine enthusiasm in spite of a considerable challenge to overcome .

P-572 GLOBAL ESTIMATES OF THE INCIDENCE OF FOUR CURABLE SEXUALLY TRANSMITTED INFECTIONS

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Objective: To update for 2005 the World Health Organization 1995 (333 million) and 1999 (340 million) estimates of the annual number of new cases of four curable sexually transmitted infections (STIs: chlamydia, gonorrhea, syphilis and trichomoniasis).
Methods: In 2003-2005, the published literature was searched using MEDLINE for prevalence and incidence data on any of the four STIs; these data were supplemented by data from the 'grey literature' that were opportunistically captured. Data collection concentrated on the period 1997-June 2004, and used defined search and study quality inclusion criteria. Data were compiled separately on defined populations by low risk, e.g., antenatal care attendees, or high risk categories. To update the information, a MEDLINE search was conducted in December 2006 for each country with a population of more than 25 million in 2002. By focusing on those countries with more than 25 million people, 85% of the world population was covered by these updates. In addition, files were updated non-systematically for other countries when studies were provided by WHO Regional Offices. When STI data were lacking, neighboring country data were applied. Assumptions of duration of infection, proportion of individuals asymptomatic, proportion treated, disease ratios, and sex ratios were updated and applied, which was the same method used in 1995 and 1999. Global and regional estimates were generated based on the data for low risk males and females during the period 2000-2005 using UN population estimates of 15- 49 year olds.
Results: Globally, limited data were available from countries and the amount of data approximated those available in 1995 and 1999. Global and regional estimates will be presented for the four infections by gender, as well as information which indicates data availability by country.
Conclusions: The limited amount of quality data highlights the critical need to strengthen national capacity for STI surveillance, both to improve the design and implementation of national STI programmes and to generate better regional and global estimates of the prevalence, incidence and disease burden of STIs.

P-573 THE PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS AMONG INDIVIDUALS AT HIGH RISK FOR HIV IN DEVELOPING COUNTRY - IMPLICATIONS FOR HIV PREVENTION

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Objective: Sexually Transmitted infections(STI) facilitate the transmission of HIV infection. Knowledge about STI burden in the community will help to design better HIV prevention strategies. With this background this study was carried out to determine the prevalence of sexually trans125 mitted infections in a cohort of individuals who are at high risk for HIV infection.

Methods: This study was carried out with 453 subjects, 18 or older,who are at high risk for HIV infection were recruited for this study. Inclusion criteria for men included a recent STD, recurrent recent sex with a CSW or recurrent recent vaginal sex with an HIV+ partner. For females, inclusion criteria included having had five or more male sex partners in the last year, a current male sex partner who recently injected drugs, a recent STD, recently exchanged sex for money or drugs or has a current male sex partner who is HIV positive. The laboratory tests included PCR for Chlamydia trachomatis and Neisseria gonorrhea, Elisa for HBsAg, anti-HCV and for HSV-2 antibodies, RPR and TPHA for Trepnema pallidum. Inpouch culture for Trichomonas vaginalis.
Results: Of 453 subjects, 51.7%(234) were female, 38.4%(174) with HSV-2, 2.4%(11) with Chlamydia trachomatis, 0.7%(3) with Neisseria gonorrhea, 4.9% (22) with HBV, 3.3% (15) with HCV. 9.5% (43) had syphilis. Of females, 2.3% (10) tested positive for Trichomonas vaginalis. Women were more likely to be infected with HSV-2 (p=0.001) and Chlamydia trachomatis (p=0.01), but there was no statistical correlation between gender and Neisseria gonorrhea, HBV, HCV, TPHA positivity.
Conclusion: There is a high prevalence of HSV-2 in this cohort of HIV negative high risk individuals. Suppressive therapy for HSV-2 should be planned in preventing transmission among individuals at high risk for HIV infection.

P-574 THE FIRST INDIAN HEALTH SERVICE STD SURVEILLANCE REPORT, 2004

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Background/Objective: Data on sexually transmitted disease (STD) rates for American Indians/Alaska Natives (AI/AN) by region are not readily available. The objective was to describe chlamydia, gonorrhea, and primary and secondary syphilis rates among AI/AN for 2004 nationally and by AI/AN region.
Methods: Crude annualized rates for chlamydia (CT), gonorrhea (GC), and primary and secondary syphilis (P&S) were calculated for the U.S. and for AI/AN living in counties on or near reservations in 6 geographic regions: East (E), Northern Plains (NP), Southern Plains (SP), Southwest (SW), Pacific Coast (PC), and Alaska (AK). Numerators were based on county-level STD cases reported to CDC, and denominators were based on census population estimates. These rates were compared to 2004 STD rates for the U.S. Rates are presented as per 100,000/population.
Results: In 2004, among all race/ethnicities, AI/AN had the second highest CT rate (705.8), which was 4.9 times higher than the rate for whites (143.6). AI/AN had the second highest GC rate (117.7), which was 3.5 times higher than the rate for whites (33.3). AI/AN (tied with Hispanics) had the second highest P&S rate (3.2), which was 2 times higher than the rate for whites (1.6). AI/AN chlamydia rates were higher in three regions; AK (1,599.8), NP (978.9), and SW (829.4), as compared to the chlamydia rate in the general U.S. population (319.6). GC rates for AI/AN in the AK (263.2) and NP (126.5) regions were higher than the GC rate in the U.S. general population (112.4). For P&S, only the SW region (9.7) had a rate that was notably higher than the U.S. rate (2.7). Four regions (E, NP, SP, AK) reported no P&S cases in 2004.
Conclusions: AI/AN populations are disproportionately affected by STDs. In 2004, among all races and ethnicities, AI/AN had the second highest rates of CT, GC, and P&S. Certain AI/AN regions had significantly higher STD rates as compared to other regions. Ongoing STD surveillance is needed for AI/AN populations by region. Further investigation is needed to determine why specific STDs are more prevalent in different AI/AN regions to determine the completeness of reporting.

POSTER SESSION: STD'S AND WOMEN

P-575 SEXUALLY TRANSMITTED INFECTIONS AMONG WOMEN WHO HAVE SEX WITH WOMEN: POLICY AND RESEARCH IMPLICATIONS

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Objectives: To review current literature regarding sexual health outreach, education, and treatment among women who have sex with women (WSW) in order to identify future policy and research implications.
Methods: We conducted a systematic review of health research literature by searching PubMed for the terms 'women who have sex with women,' 'lesbian,' 'gay,' 'homosexual,' 'sexually transmitted disease,' 'sexually transmitted infection,' 'sexual behavior,' 'sexual identity,' 'risk,' 'health,' 'sexual history,' and 'sexuality' to identify articles published between January 1, 1995 and February 1, 2007. We included studies that had data on WSW and sexual health topics and excluded studies that did not report these data.
Results: Many WSW have varied sexual histories (as many as 85% of WSW have engaged in sexual acts with men), misconceptions about sexually transmitted infection (STI) risks, and inadequate education from health care providers. It has been suggested that only 6% of WSW received any sexual health education from a healthcare provider, while the self-reported lifetime prevalence of STIs among WSW has been documented as high as 21%. Obstacles to educating the WSW community and encouraging safer behavior include misperceptions of risk, lack of rigorous research, minimal funding for research and services, and little political support.
Conclusions: WSW should be a higher priority group for long-term research funding and rigorous research, including intervention evaluation. Healthcare providers at all levels should receive more training on how to best serve the WSW populations. Healthcare and prevention messages should focus on sexual behavior as opposed to sexual orientation identity.

P-576 HORMONAL CONTRACEPTION USE AND RISK OF STI INFECTION AMONGST SOUTH AFRICAN WOMEN

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Objectives: To determine the association between the use of injectable projestin contraception and risk of infection with Neiserria gonorrhoea (GC), Chlamydia trachomatis (CT), bacterial vaginosis (BV) and Trichomonas vaginalis (TV) among South African women
Methods: From August 1999 through May 2001, HIV-1 negative women were recruited from family planning clinics in Orange Farm, South Africa. Criteria for inclusion in the study included age 18- 40 years, sexually active in the past 3 months, not pregnant or planning to become pregnant for 12 months, consenting to HIV testing and other study procedures, willing to be contacted at home for follow-up, and not using or planning to use oral contraceptive pills. Women using progestin injectable contraception (DMPA or Nur-Isterate) and non-hormonal contraceptive users were recruited in approximately equal numbers. Eligible participants were seen at enrolment and at 4 follow-up visits over a 12 month period. Participants were interviewed by means of a structured questionnaire at each visit and tested for HIV and STIs. Infections with CT and GC were detected on clean-catch urine using ligase chain reaction (LCx; Abbot Laboratories). Vaginal swabs were cultured on Diamond's media for detection of TV. BV was assessed using Nugent's criteria. To assess the association between use of injectable projestins and incident STI infection, we used multivariable poisson regression models with generalized estimating equations (GEE) to compute the 3 month risk of STI infection by use of HC or not. Separate models were constructed for each of the four STIs examined.

Results: A total of 551 HIV negative women using progestin injectable contraception or not returned for at least one follow-up visit. At baseline, 54.7% of women were using an injectable method of contraception, 3.9% tested positive for GC, 14.1% for CT, 7.5% for TV and 35.9% for BV. In unadjusted models, the rate ratio (RR) of infection with GC amongst women using projestin contraception compared to those not using was 1.29 (95% CI 0.75-2.22), the risk of CT was 1.09 (95% CI 0.79-1.49, TV it was 0.63 (95% CI 0.34-1.11) and for BV it was 0.83 (95% CI 0.73-0.96). In multivariable GEE models adjusting for age, condom use, STI status at previous visit and HIV status (study visits at which women tested positive for pregnancy were not included), the RR for GC among women using injectable contraception compared to those not using was 1.02 (95% CI 0.50-2.11), for CT it was 1.04 (95% CI 0.62-1.76), for TV it was 0.66 (95% CI 0.23-1.85) and for BV it was 0.85 (0.73-0.99). Women who sero-converted to HIV were also at significantly increased risk of GC, BV and TV infection.
Conclusions: In this study of progestin injectable contraceptive use and risk of STI acquisition we found that use of the method was associated with a decreased risk of infection with Bacterial Vaginosis. There was no significantly increased risk of infection for GC, CT or TV amongst women using injectable contraception compared to women not using any hormonal method.

P-577 ADVERSE PREGNANCY OUTCOMES AMONG PREGNANT WOMEN ATTENDING STD CLINICS

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Objective: Rates of preterm birth and low birth weight have continued to rise over the last decade in the United States. A primary goal of STD detection and treatment is to prevent adverse pregnancy outcomes. We sought to identify predictors of adverse pregnancy outcomes (preterm birth and low birth weight) among pregnant women seeking STD care.
Methods: We abstracted birth certificate data for pregnant women who had a STD clinical evaluation during 1996-2002 and delivered singleton infants. All pregnant women were tested for bacterial vaginosis (BV), chlamydia (CT), gonorrhea (GC), trichomoniasis (TV), and early syphilis (ES). We compared factors identified in the STD clinic for each category of pregnancy outcome: Group 1: preterm birth (< 37 weeks gestational age) only; Group 2: low birth weight (< 2500 gm) only; Group 3: preterm and low birth weight; Group 4: term and normal birth weight. We compared factors associated with each outcome using Student's T-test and Pearson's chi-square test. We tested associations of STDs with these outcomes using multiple logistic regression.
Results: Among 1531 pregnant women seen in the clinics, 767 (50%) were matched to singleton births with post-natal data available. The distribution of births by pregnancy outcome was: Group 1: 53 (6.9%); Group 2: 32 (4.2%); Group 3: 91 (11.9%); and Group 4: 591 (77.1%). 97% were African American (mean age = 22.3), 39% reported prior elective termination of pregnancy, and 60.1% reported at least 1 antenatal care visit in the 1st trimester. On average, pregnant women with preterm or low birth weight infants (Groups 1-3) had less antenatal care visits than those with term and normal birth weight infants (Group 4) [mean # of visits 8.30 vs.9.95, p=0.002]. Prevalence of maternal infection with outcome data was 54.7% (BV: 30.5%; CT: 14.0%; GC: 7.3%; TV: 14.7%; ES: 0.8%). Older age and cocaine use were the only significant predictors for all adverse pregnancy outcomes (Groups1-3). History of previous preterm infant and use of alcohol and intravenous drugs were risk factors for low birth weight only (Group 3). After adjustment for older age, history of preterm birth, use of alcohol, cocaine, and intravenous drugs, CT during the 1st trimester of pregnancy was associated with Group 3: low birth weight only (aOR=3.53, CI 1.12-11.14); and GC in the 1st trimester was associated with Group 1: preterm birth only (aOR=3.27, CI 1.12-9.58).
Conclusions: The prevalence of adverse pregnancy outcomes among pregnant women receiving care at STD clinics is high. Prospective studies designed to characterize the gaps experienced by these women at high risk for adverse pregnancy outcomes are needed. The STD clinic visit may represent a critical opportunity to target interventions that will improve perinatal outcomes.

P-578 CLINICAL EXAMINATION OF ACUTE PELVIC INFLAMMATORY DISEASE (PID) RELATED TO CHARACTERISTICS OF SEXUALLY TRANSMITTED DISEASE(STD)

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Objective: Appropriate treatment for pelvic inflammatory disease (PID) is extremely important for the management of acute disease and for the prevention of long-term morbidity. PID should be diagnosed and treatment should be initiated if the patient has adnexal tenderness or cervical motion tenderness with no other apparent cause. However, there are several microorganisms causing the similar clinical symptoms of PID and the selection of the antibiotics for PID is still problematic. Cultural confirmation of the microorganisms is time-consuming. It may be beneficial if the microorganisms causing the PID can be presumed with clinical laboratory data since proper selection of initial antibiotics can be determined immediately. This study is designed to describe the characteristics of acute PID on the laboratory tests and to clarify if the representative microorganisms causing PID, namely Chlamydia trachomatis and Neisseria gonorrhoeae, can be estimated with the laboratory tests.
Methods: A total of 29 patients with acute PID treated in 2 facilities between Apr. 2002 and Dec. 2006 were retrospectively studied.Acute PID was clinically diagnosed with lower abdominal tenderness, cervical motion tenderness and adnexal tenderness with elevated body temperature (38°C or above) and abdominal rebound tenderness. At initial consultation, laboratory tests of white blood cell count (WBC) and plasma C reactive protein (CRP) were examined. At the same time, presence of C. trachomatis and N. gonorrhoeae was in cervical mucus detected by polymerase chain reaction (PCR) and by PCR or cultural method, respectively. The correlation between the WBC count , CRP and the microorganisms detected in endocervical mucus were retrospectively analyzed with Mann-Whitney U test.
Results: In nine patients (31%), C. trachomatis was detected in endocervical mucus. On the other hand, N. gonorrhoeae was detected in 6 patients (20%). In one patient, both C. trachomatis and N. gonorrhoeae was detected, and this patient was eliminated from this study. There was a significant difference in WBC counts among the group positive for C. trachomatis (median: 8700/ul, range: 5500-9800/ul), N. gonorrhoeae (median: 22600/ul, range: 15600-27100/ul) and the group negative for both (median: 14000/ul,range: 7500- 22500/ul), respectively ($p<0.005$). Plasma CRP value was significantly lower in the group positive for C. trachomatis (median: 0.1mg/dl range:0-9.7mg/dl) than the group positive for N. gonorrhoea (median: 9.9mg/dl range: 1.6-13.6mg/dl) ($p<0.005$). However, the difference of plasma CRP value between the group positive for N. gonorrhoeae (median: 10.2mg/dl range: 0-32mg/dl) and the group negative for both was not significant ($p=0.92$).
Conclusions: In the acute PID caused by C. trachomatis, blood WBC count usually would not be elevated more than 10,000/ul and plasma CRP value is significantly lower than the cases of acute PID caused by other microorganisms including N. gonorrhoeae. When the blood WBC count is higher than 15,000/ul, N. gonorrhoeae would be highly suspected as the cause of acute PID. Our study suggests that blood WBC count and plasma CRP value are useful marker at initial consultation of acute PID to presume microorganisms and to select proper antibiotics for the treatment.

P-579 INCIDENCE OF SEVERE PELVIC INFLAMMATORY DISEASE AND FITZ-HUGH-CURTIS SYNDROME IN ADOLESCENTS

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Objectives: The incidence of severe pelvic inflammatory disease (PID) and Fitz-Hugh-Curtis syndrome (FHCS) are incompletely known in adolescents. The purpose of our study was to determine their incidence in a cohort of incarcerated adolescents, who are known from our previous research to be at high risk for PID.
Methods: In this prospective cohort study, we evaluated females at the Harris County (Texas, USA) Juvenile Detention Center from April 2000 to February 2007. In patients who met the criteria for the diagnosis of PID of the Centers for Disease Control and Prevention, we determined the proportion that developed severe PID, which has been defined as PID that includes peritonitis or tubo-ovarian abscess. We also identified those who complained of right upper quadrant pain that responded to therapy for PID. We considered these adolescents to have symptomatic FHCS.
Results: The 154 subjects' mean age (SD) was 15.7 (1.7) years; 39% were Hispanic, 35% black, and 26% white; 58 had chlamydial, 12 gonorrheal, and 20 combined infections, so that 58% had one or both infections. Fifty-two percent had had more than three partners; 76% had been sexually active the month before admission; 48% had used a condom at last intercourse; 24% had a new partner in the month before admission; 9.1% had traded sex for drugs or money; 24% has a history of previous gonorrheal or chlamydial infection; and 5.6% had a history of previous PID. No subject had severe PID (one-sided 97.5% confidence interval 0%-2.4%); all improved with currently-recommended outpatient therapy. Seventeen of 154 subjects (11%) had constitutional symptoms (fever, nausea, and/or vomiting), defined by us as indicating moderately severe PID. Five of 154 (3.2%, 95% confidence interval 1.1%-7.4%) had symptomatic FHCS.
Conclusion: In 154 adolescents who had PID, we identified none with severe disease and only a small proportion (3.2%) who had symptomatic FHCS. These results suggest that neither is a significant problem in this age group.

P-580 BEHAVIORAL INTERVENTIONS AND ABUSE: RESULTS OF A TWO-YEAR CONTROLLED RANDOMIZED TRIAL IN MINORITY WOMEN

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Objective: To evaluate efficacy of gender- and culture-specific behavioral interventions, compared to interactive STI counseling for high-risk minority women with a history of physical or sexual abuse and substance use over two years.
Methods: Women with a non-viral STI were treated and enrolled in a randomized trial. Follow-up screens and interviews occurred at 6 months and 1 and 2 years. The primary outcome was subsequent infection with chlamydia and/or gonorrhea. Comparisons of primary outcomes were made by self-reports of physical or sexual abuse and substance use categorization. We employed logistic regression based on intention-to-treat.
Results: Overall, analyses of abuse and reinfection during Year 1 (n=755) indicated that women with a history of physical or sexual abuse had a reinfection rate of 29.0%, versus 23.8% for women without abuse (p=0.12). Corresponding rates for Year 2 (n=748) were 24.3% versus 17.6% (p=0.03); and for Years 1-2 cumulative analysis (n=735), 43.8% versus 33.0% (p=0.004). The unadjusted association between abuse and reinfection was stronger for adolescents than for adults: among adolescents (<19 years), reinfection rates for abused versus non-abused in Years 1, 2, and cumulative analyses were 42.7% vs. 30.8% (p=0.03), 32.7% vs. 22.0% (p=0.03), and 59.4% vs. 43.3% (p=0.004), respectively. Corresponding rates for adults (age 19+) were 17.8% vs. 17.0% (p=0.84), 17.4% vs. 12.7% (p=0.23), and 30.7% vs. 22.3% (p=0.08), respectively. Rates of reinfection stratified by adolescent status and substance risk found adolescents and abused women in the low/moderate substance risk category consistently had significantly higher rates of reinfection. Among women in the high substance risk category, no clear difference was seen between non-abused adolescents and adults; however, abused adolescents again had consistently and significantly higher reinfection rates than abused adults. Among adults we found higher rates of reinfection among non-abused women; however, among adolescents, we observed higher rates among abused women. Among women in the ultra-high substance risk category, power was limited by sample size, but reinfection rates were consistently higher among abused women, and among adolescent women. Analyses of individual abuse questions identified differences between the substance risk categories. Among the low/moderate risk category, adolescent and adult women reporting each abuse item were generally more likely to be reinfected over the 2-year period. The single exception to this pattern was for adolescents reporting a partner acting 'with extreme jealousy'. This pattern was stronger for adults (6 out of 10 items statistically significant) than for adolescents (2 out of 10 statistically significant). Among the high risk category, however, adult women reporting abuse had consistently lower rates of reinfection (statistically significant for 5 of the 10 items). Among the ultra-high risk category, adolescent women reporting most abuse items had lower rates of reinfection, whereas adult women reporting abuse had higher rates.
Conclusions: Sexually transmitted infection disproportionately effects African-and Mexican-American women with a history of physical or sexual abuse. Risk-reduction interventions significantly decreased infective episodes with chlamydia and/or gonorrhea in the two-year study period for non-abused women. Abused women, particularly adolescents and substance users had significantly increased infective episodes in the same study periods.

P-581 SEXUAL MINORITY WOMEN, SEXUAL HEALTH SCREENING, AND HEALTH INSURANCE COVERAGE IN THE UNITED STATES

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Objectives: To determine the prevalence of past year sexual health screening and health insurance coverage among sexual minority women. To assess whether sexual orientation identity and sex of sex partner impact STI testing, HIV testing, Pap smears, and pelvic exams, independent of factors that should affect use.
Methods: Analysis of the 2002 National Survey of Family Growth data representing U.S sexually experienced females age 18-44 (n=6,592). Orientation identity was defined as heterosexual, bisexual, lesbian or 'something else,' and partner choice (past-year) as: women who had sex with only women (WSW), men and women (WSMW), only men (WSM), or no partner.
Results: Measures of orientation identity and partner choice were incongruent (p<0.0001). 42% of bisexuals lacked health insurance, a significantly higher estimate than heterosexuals (23%) and lesbians (22%) (p<0.0001). While 41% of WSMW did not have health coverage compared to 23% of WSM, 18% of WSW and 23% of females with no past year partners (p<0.0001). STI testing was reported by 24% of all females, HIV testing by 28%, Pap smears by 71% and pelvic exams by 66%. In crude analyses, partner choice and orientation identity were predictive of STI testing, Pap smears and pelvic exams, but not HIV testing. Controlling for predictors, bisexuals vs heterosexuals were significantly less likely to receive Pap smears (OR:0.63) and pelvic exams (OR:0.63), and lesbians were about half as likely as heterosexual women to receive Pap smears (OR:0.51) and pelvic exams (OR:0.57). The prevalence of recent Pap smears did not differ between lesbians and bisexuals, nor did the receipt of pelvic exams. Orientation identity was not predictive of STI or HIV testing. WSW vs WSM were significantly less likely to have STI testing (OR:0.26) or Pap smears (OR:0.36) , but not pelvic exams or HIV testing. WSW vs WSMW had significantly reduced STI testing (OR:0.25), yet did not differ for other tests. WSMW and WSM did not differ on screening.

Conclusions: Across identity and behavioural subgroups, 18-42% of females lacked health insurance, with bisexuals and WSMW having significantly higher rates than other groups. Controlling for predictors, lesbians and bisexuals were less likely to receive Pap smears and pelvic exams than heterosexuals, while STI and HIV testing did not differ by orientation. WSW were less likely to obtain Pap smears than WSM, and less likely to receive STI testing than either WSM or WSMW. Sex of sex partner was not predictive of HIV testing. Correspondence to Jennifer Jairam: jjairam@uwo.ca

P-582 WHY DO WOMEN DOUCHE? A LONGITUDINAL STUDY WITH TWO ANALYTIC APPROACHES

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Objectives: Vaginal douching has been associated with several adverse reproductive tract outcomes, including bacterial vaginosis (BV) and enhanced susceptibility to HIV. Although douching is commonly practiced, the reasons why women douche have not been clearly delineated. We applied two different analytic approaches in a longitudinal study to examine why women douche.
Methods: As part of a longitudinal study of vaginal flora, non-pregnant women (n=3620) were assessed quarterly for one year at research clinics in Alabama. Participants reported on their demographic characteristics, and time-varying factors including lifestyle, feminine hygiene product use, sexual risk behaviors, and vaginal symptoms. Clinical and laboratory findings were obtained at each assessment. The authors applied conditional logistic regression (CLR) to determine the individual-level factors that differ for a woman between her reported douching and non-douching intervals. In the CLR, a woman serves as her own control, and confounding by demographic and time-independent factors is eliminated. Findings were compared to a conventional population-level analysis utilizing generalized estimating equations (GEE).
Results: Thirty percent of participants reported douching in every three-month study interval and 28% douched in some but not all intervals. The CLR model indicated a woman was more likely to douche in an interval when she reported a 'fishy' vaginal odor (odds ratio (OR) 2.74; 95% confidence interval (CI) 1.55-4.84), vaginal irritation (OR 1.52; 95% CI 1.10-2.11), summer month (OR 1.37, 95% CI 1.13-1.67) or an increase in number of sex partners (≥3 vs. 0, OR 2.42, 95% CI 1.11-5.26). Treatment for BV or trichomoniasis (OR 0.72, 95% CI 0.59-0.89) and absence of menses (OR 0.37, 95% CI 0.28-0.50) were negatively associated with douching. Odds ratios derived from individual-level analysis were farther from the null than the comparable population-level estimates.
Conclusions: A large number of women continue to perceive douching as a necessary part of feminine hygiene, and vaginal odor remains a habitual concern among these women. Predictors of feminine hygiene practice can be utilized in developing douching cessation and prevention interventions. Further, conditional logistic regression applied in prospective studies can provide valuable insights into time-varying factors. rbrotman@jhsph.edu

P-583 CERVICAL AND VAGINAL INFECTIONS AMONG PRIMARY HEALTH CARE AND FAMILY PLANNING CLINIC ATTENDEES - IMPLICATIONS FOR THE DESIGN OF SUCCESSFUL CONTROL STRATEGIES IN MOZAMBIQUE

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Objectives: To compare the prevalence of genital tract infections among women attending primary health care clinics (PHCCs) with symptoms of vaginal discharge with that among women presenting for contraceptive advice at family planning clinic services (FPCs) in Mozambique.
Methods: We studied consecutive women presenting with a vaginal discharge at two PHCCs (N=391) and attending four FPCs (N=440) in Mozambique from March through August 2003. Consenting participants completed a structured questionnaire, provided serum for syphilis serology, and first catch urine for the detection of Chlamydia trachomatis, Neisseria gonorrhoeae, Trichomonas vaginalis and Mycoplasma genitalium using real-time multiplex PCR. In addition, on speculum examination, a vaginal swab was taken for diagnosis of bacterial vaginosis and candidiasis using microscopic examination of Gram-stained vaginal smears.
Results: Among symptomatic women examined at the PHCCs, 30% were found to be infected with one or more cervical pathogens, including 18% with gonorrhea and 12% with chlamydial infection. In addition, 35% had trichomoniasis, 12% candidiasis and 67% bacterial vaginosis. Eight percent of women were found to be sero-positive for syphilis (RPR+/TPPA+). Although the primary reason for attendance at FPCs was not for treatment of infections, 88 of the 440 FPC attendees acknowledged the presence of an abnormal vaginal discharge upon questioning. The burden of infection was also high among women at the FPCs where 16% were infected by one or more cervical pathogens, including 11% with gonorrhea and 11% with chlamydial infection, while 31% had trichomoniasis, 14% candidiasis and 61% bacterial vaginosis. Overall, 40% of FPC attendees were infected with a least one cervical or vaginal sexually transmissible pathogen, while 7% were sero-positive for syphilis. Among the 72 FPC attendees who had cervical infections (16%), 53% were symptomatic and were treated syndromically; an additional 18% had infections identified by the clinician based on speculum examination. The remaining 29% of cervical infections were not recognized by patients or clinicians and would have remained untreated. In addition, symptomatic infection was significantly associated with detection of N. gonorrhoeae, but not with any other sexually transmitted infection (STI) in both PHCC and FPC groups.
Conclusion: In Mozambique, the overall burden of STIs and other genital tract infections in women was high among both symptomatic women at PHCCs and women presenting for family planning services. Venues such as FPCs may offer an opportunity to identify and treat both symptomatic and asymptomatic women. The use of syndromic management for women presenting with vaginal discharge, regardless of service venue, is an important element for successful STI control. However, supplementation of syndromic management with innovative approaches to identify asymptomatic or unrecognized infections would further reduce the burden of STIs in Mozambique. Approximately 60% of women studied had bacterial vaginosis; an intervention strategy that aggressively targets this infection may be warranted in order to reduce its prevalence and potential adverse consequences in the general population.

P-584 RISKS OF CHLAMYDIA AND GONORRHEA IN HIV-INFECTED WOMEN

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Background: STI screening is recommended as a routine component of HIV primary care though there are very limited data for selective screening guidelines for gonorrhea (GC) and Chlamydia (CT) screening in HIV-infected women.
Objective: To determine risk factors for CT and GC infection in women receiving HIV care.
Methods: We abstracted medical record data for HIV-infected women enrolled in an observational cohort of persons getting continuity care through The Johns Hopkins HIV Service between January 1996 and January 2006. Clinical events were abstracted from the standard medical record by trained staff and then linked to laboratory test results. We examined demographic and clinical risk factors associated with either a positive CT result alone or CT/GC as a combined outcome.
Results: Of 7399 women enrolled in the clinical cohort, 1036 women had a gonorrhea or Chlamydia test result performed in the Johns Hopkins Hospital laboratory and linked to the abstracted medical record. Of these, 74 (7.1%) were positive for either CT (45/74), GC (54/74), or for both (25/74). Women having a positive CT test were more likely to be younger than 35 years of age (OR = 2.8, 95% CI 1.3-6.4) than women with negative CT tests. A positive test for CT/GC as combined outcome was also strongly associated with age (OR < 35 yrs = 3.0, 95% CI 1.7- 5.4) and marginally associated with high CD4 count (OR CD4 > 400 = 1.6, 95% CI 1.0-2.7). Neither CT nor CT/GC as a combined outcome was associated with HIV transmission risk, race, HIV viral load or being prescribed highly active antiretroviral therapy.
Conclusions: Younger age is a significant risk for CT and GC infection in HIV-infected women. Screening algorithms for CT/GC in HIV-infected women should be driven by age similarly to those devised for women seeking other clinical reproductive health services. kpage2@jhmi.edu

P-585 FEMALE ANAL SEX PREVALENCE AND CORRELATES SAN FRANCISCO, 19972006

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Objectives: Although the San Francisco municipal STD clinic screens men who have sex with men for rectal STDs, no rectal screening is performed among women. To provide information for decision-making about expanding rectal screening, we sought to determine the frequency of reported receptive anal sex among women in STD clinic and non-STD clinic populations in San Francisco.
Methods: Data came from two sources. We first analyzed data from clinician encounters at the STD clinic with women aged >15 years during 1997'2006. Encounters with clinicians who examined >100 females and who assessed frequency of anal sex in >50% of encounters were analyzed. Anal sex was assessed for the previous 2 months. Significant variables were included in multivariable logistic regression. Second, we analyzed data from a 2006 survey of women aged 15'35 years entering the California Department of Motor Vehicles (DMV) office in San Francisco.
Results: Data from 10,516 STD clinic visits with seven clinicians were analyzed. Anal sex was assessed during 6,284 visits (59.8%). Women who were black (64.1% versus 58.5%; P<.0001), visited the clinic during 2006 (77.2% versus 56.3%; P<.0001), or had multiple male sex partners (85.5% versus 54.7%; P<.0001) were more likely to have been asked about anal sex. Of the 786 females (12.5%; 95% confidence interval [CI], 11.7'13.4) who reported anal sex, 410 (52.2%; 95% CI, 48.6'55.7) reported never using condoms for anal sex. Prevalence of anal sex did not vary by year. Multivariable analysis indicated that women who were aged >19 years, were nonblack, who never used condoms for vaginal sex, and who had greater numbers of sex partners were more likely to report anal sex (Table). Of those who reported anal sex, 686 were tested for genital chlamydial infection, and 482 were tested for gonococcal infection. Chlamydia positivity was 4.4% (95% CI, 3.0'6.2) and gonorrhea positivity was 1.5% (95% CI, 0.6'3.0). No association was identified between anal sex and genital STD infection. A total of 110 women with a mean age of 24.7 years were surveyed at the DMV. Of the 103 women who gave information about anal sex, 13 (12.6%; 95% CI, 6.9'20.6) reported having receptive anal sex during the previous 3 months, and 23.1% (3/13) reported using a condom with their last sex partner for anal or vaginal sex. In this limited sample, no significant differences by age, race/ethnicity, partner race/ethnicity, or condom use were identified in reported anal sex.
Conclusions: Among women attending an STD clinic and young women from the general population in San Francisco, approximately 13% reported recent receptive anal sex. More than half did not use condoms with anal sex. Thus, these women were at risk for rectal STDs (e.g., gonorrhea and chlamydia), infections that are typically asymptomatic. STD clinics might improve gonorrhea and chlamydia case finding by screening women for rectal STDs. On the basis of these findings, the municipal STD clinic will begin focused rectal STD screening among women and assess the prevalence of rectal infections among this population.

Multivariable model* of predictors of receptive anal sex during the past 2 months among female STD clinic patients — San Francisco, 1997–2006 (N = 6,284)

	Anal sex (%)	OR†	95% CI†
Age (yrs)			
15–19	7.6	Ref.	
20–29	12.8	1.67	(1.22–2.28)
30–39	14.4	1.89	(1.36–2.63)
≥40	11.9	1.53	(1.04–2.25)
Number of partners (during previous 2 months)			
0	2.8	Ref.	
1	11.3	4.42	(1.39–14.04)
2	14.8	6.44	(2.01–20.67)
≥3	34.3	13.12	(4.08–42.24)
Race/ethnicity			
Black	8.4	Ref.	
White	16.5	2.08	(1.58–2.59)
Hispanic	13.8	1.91	(1.49–2.45)
Asian	10.8	1.42	(1.07–1.89)
Other/unknown	13.1	1.68	(0.95–2.95)
Condom use (vaginal sex)			
Always	9.7	Ref.	
Sometimes	12.5	1.24	(0.98–1.55)
Never	14.7	1.78	(1.39–2.28)

Figure 1: Receptive anal sex predictors

P-586 NON-GONOCOCCAL NON-CHLAMYDIAL MUCOPURULENT CERVICITIS: A UNIQUE SYNDROME?

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Objectives: Mucopurulent cervicitis (MPC) frequently remains without microbiological diagnosis, although N. gonorroheae (GC) and C. trachomatis (CT) are known etiologies. The associations of non-gonococcal non-chlamydial MPC (MPC NOS) with sexual risk behaviors, reproductive tract disease, and contraceptive use have

been poorly studied. We compared women with a diagnosis of MCP CT, MPC GC, and MPC NOS for differences in sexual history, reported symptoms, and physical examination findings.

Methods: Women presenting to either of two Baltimore City Health Department STD clinics between 1996-2000 who were tested for CT (nucleic acid amplification test on endocervical swab) and GC (endocervical culture) and who were found to have a cervical discharge on examination were included in the analysis. Women who had more than one visit satisfying these criteria only had the first visit included in the analysis. Subjects positive for both GC and CT or with data missing for either of these tests were excluded. Physical examination findings, sexual behaviors, including behaviors of sexual partners, prior sexually transmitted diseases, contraceptive choice, recent antibiotic administration, illicit drug use, and current genital infection variables were included in the analysis. Multivariable logistic regression models were constructed using significant covariates and odds ratios (OR) with 95% confidence intervals (CI) are presented.

Results: Of 18,644 women, 2986 met the inclusion criteria (95% African American, 4% Caucasian, median age 25.5 years +/- 8.3). Among these women, 514 (17%) were diagnosed with MPC CT, 226 (8%) with MPC GC and the remaining 2,246 (75%) with MPC NOS. Concomitant diagnoses of bacterial vaginosis (40%) and trichomoniasis (20%) were noted in 40% and 20% of women in each of the three groups. Women with MPC NOS were older than women with MPC CT (mean age 27.1; 95% CI, 26.7-27.5 vs 21.4; 20.9-21.9 yrs, p=0.0) and older than women with MPC GC (mean age 24.8; 23.8-25.8, p=0). On multivariable analysis, when compared to MPC CT, MPC NOS was associated with complaints of genital irritation and odor (aOR 1.40; 1.10-1.79), exposure to antibiotics in the preceding two weeks (aOR 1.57; 1.15-2.14) and a decreased odds of cervical ectopy (aOR 0.69; 0.55-0.87). When compared to MPC GC, MPC NOS was similarly associated with exposure to antibiotics within the preceding two weeks (aOR 1.54; 1.00-2.35).

Conclusions: Older age and use of antibiotics in the preceding two weeks appear to be the strongest factors that distinguish MPC NOS from MPC CT, as most risk behaviors and physical findings are not reliably predictive. A majority of women with MPC NOS are treated empirically for GC, CT, or both while clinicians await the results of more definitive tests. A more complete understanding of the etiology of MPC NOS may help inform prevention and management strategies.

P-587 THE RELATIONSHIP BETWEEN TRICHOMONAS VAGINALIS AND ENDOMETRITIS

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Objectives: Neisseria gonorrhoeae, Chlamydia trachomatis, and bacterial vaginosis-associated organisms have long been recognized as important components of the microbiologic etiology of pelvic inflammatory disease (PID). The role of T. vaginalis in the pathogenesis of PID is unknown. We explored the relationship between T. vaginalis and endometritis among women at-risk for PID.

Methods: 997 women at-risk for PID were enrolled in this study if they had a current diagnosis of chlamydia, gonorrhea, bacterial vaginosis (BV) or mucopurulent cervicitis, or if they reported a recent sexual exposure to either N. gonorrhoeae, C. trachomatis or nongonococcal urethritis. Vaginal fluid was tested for T. vaginalis and bacterial vaginosis, and cervical swabs were assayed for C. trachomatis and N. gonorrhoeae. An endometrial biopsy was performed to detect histologic endometritis.

Results: T. vaginalis infection was present in 113 (11.3%) women, C. trachomatis was identified in 20.1% and N. gonorrhoeae in 9.9%. Endometritis was detected in 125 women (12.5%). 25.7% of women with T. vaginalis infection and 10.9% of uninfected women had endometritis [p<0.001, OR 2.8 (1.7, 4.7)] After controlling for potential confounding factors, T. vaginalis was strongly associated with endometritis (Table). Endometritis was present in 14% of women with BV, while the rate of endometritis increased to 30% in those women with BV who were co-infected with T. vaginalis.

Conclusion: Trichomonas vaginalis infection is associated with histologic endometritis. Among women with BV, T. vaginalis co-infection doubled the rate of endometritis. T. vaginalis may be an important factor in the pathogenesis of PID but its role remains to be defined.

	Endometr t s	Odds Ratio	95% C
BV	14%	1.8	1.0, 3.4
Gonorrhea	33%	3.5	2.1, 5.9
C-lamydia	23%	2.3	1.5, 3.7
T. Vaginalis	26%	2.6	1.5, 4.3

POSTER SESSION: SYPHILIS

P-588 STI SCREENING OF SOCIAL AND SEXUAL CONTACT NETWORKS OF SYPHILIS-INFECTED URBAN ADULTS: WHAT IS THE YIELD?

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Objectives: To determine if screening the reported social and sexual network contacts of newly infected syphilis patients yields more sexually transmitted infections (STIs) than screening sexual network contacts alone.

Methods: Between March 2001 to December 2005, patients diagnosed with primary, secondary or early latent syphilis who presented to public health clinics were recruited as part of a social and sexual network study in an urban setting with a high prevalence of STIs. Trained interviewers administered to participants a survey soliciting information on demographics, STI/HIV risk behaviors and social and sexual contacts. Biologic specimens were collected for syphilis, HIV, gonorrhea and chlamydia testing. After the survey, participants were asked to refer their social and sexual contacts to the study for enrollment and participation. Contacts of index participants (first tier) and their contacts (second tier) were also asked to refer social and sexual contacts. Using Stata, directed dyads between index participants and a contact were created and coded as either sexual or social as reported by the index participant. Any index participant that did not have a contact enrolled in the study was dropped. Using Pajek, contacts of the index participant were used to create two types of networks: 1) social and sexual network components of indexes; and 2) sexual network components of indexes. For the sexual network components, any component that did not contain an index participant was deleted. The number of newly identified STI-infected contacts for each type of networks was summed. STI infections in the contacts included syphilis, HIV, gonorrhea and chlamydia.

Results: Thirty percent (56/184) of syphilis-infected index participants had at least one contact enrolled in the study. The syphilis-infected indexes resulted in the subsequent enrollment of 138 social and sexual contacts and 56 network components. The network components had an average size of 3.5 individuals and the largest component included 17 individuals. Together the contacts yielded 33 STIs including 17 syphilis cases. Sixteen percent (29/184) of syphilis-infected index participants resulted in the enrollment of at least one sexual contact. The syphilis-infected indexes resulted in the subsequent enrollment of 32 sexual contacts and 29 network components. The network components had an average size of 2.1 individuals and the largest component included 3 individuals. The sexual contacts yielded 13 STI infections including 11 syphilis cases.

Conclusions: The social and sexual contacts (versus the sexual contacts) of syphilis-infected patients resulted in more and on average larger network components and yielded almost three times more infected contacts. The data suggests that traditional methods of disease contact tracing may be enhanced and yield greater numbers of undiagnosed STIs by including the elicitation of social contacts in addition to sexual contacts.

P-589 TEMPORAL TRENDS IN SEX PARTNER MEETING VENUES AND LOCATIONS AMONG MSM WITH SYPHILIS IN CONNECTICUT, USA: A CHANGING EPIDEMIOLOGY OF TRANSMISSION DYNAMICS

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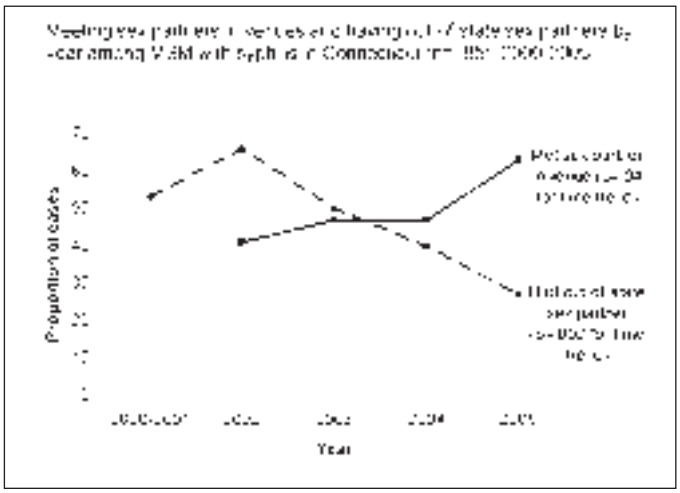
Objectives: Knowing how and where men who have sex with men (MSM) with syphilis meet sex partners is critical for understanding transmission dynamics and preventing further spread of infection. Most of what we know about the current epidemiology of syphilis has been reported from major metropolitan areas with large MSM communities, and much less is known about the current epidemiology of syphilis in other parts of the United States. The goal of the present study was to explore trends over time in sex partner meeting venues and out-of-state sex partners in Connecticut, a state with moderate syphilis prevalence.
Methods: The present analyses are based on health department records collected during interviews with early syphilis cases among MSM from 2000 to 2005. Sex partner meeting venues consisted of all places reported by cases and included gay bars and clubs, bathhouses, the Internet, public spaces, private parties, bookstores, newspaper advertisements, and massage parlors. Location of sex partners during the time in which cases likely acquired their infection was classified as in-state and out-of-state.
Results: Among 185 MSM (mean age 36 years, 56% white, 37% HIV-positive), 52% percent reported meeting sex partners at venues that facilitate multiple and/or anonymous sexual encounters including gay clubs or bars (22%), Internet (18%), and adult bookstores (12%). Meeting sex partners in venues increased over the study period from 41% to 63% (p=.04 for time trend) and was associated with non-metropolitan residence of the case. Forty-three percent of cases had an out-of-state sex partner during the time in which they likely acquired their infection. Having out-of-state sex partners decreased during the study period from 53% to 27% (p=.002 for time trend).
Conclusions: Trends in syphilis in Connecticut from 2000-2005 that show significant declines in acquiring infections from out-of-state sex partners suggest that local transmission within the state may be increasing. While this may increase the utility of local prevention efforts such as partner notification, it may also be a signal that transmission beyond the core group of MSM is beginning to occur. Furthermore, knowledge about the increased use of venues to meet sex partners can be used to target local prevention efforts. These efforts may be especially important in places like Connecticut where many cases (60% in the present study) reside in non-metropolitan areas. The overall increase in cases in the state during this period makes prevention efforts urgent, and continued monitoring of spread within and beyond the current core group of MSM is greatly needed. Though the generalizability of these findings to other parts of the US is unknown, the moderate prevalence in CT is similar to many other states and may therefore be informative of transmission dynamics at the national level.



P-590 DEMOGRAPHIC CHARACTERISTICS OF THE INCREASED NUMBER OF CASES OF SYPHILIS SEEN MIAMI DADE COUNTY IN THE LAST 10 YEARS

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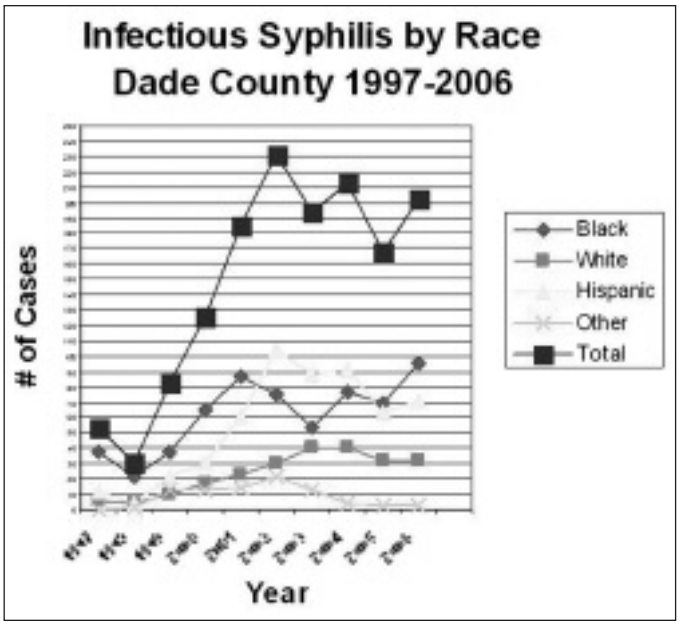
Introduction: After years of nationwide declining rates of syphilis, in the year 2000 it became apparent that in some cities the rates of syphilis began to increase. In some counties, like Miami-Dade, it also became clear that the demographic composition began to change: in the year 2002 for the first time ever, Hispanics were the ethnic group with the majority of cases.
Objectives: To assess the demographic composition of the cases of primary and secondary syphilis seen in Miami-Dade County in the last ten years.
Methods: In the State of Florida reactive syphilis serologic results and suspected cases of syphilis are reported to the health department. Presumptive/suspected and confirmed cases of syphilis are then reported to the Florida Department of Health and the CDC. Analysis of the 1997-2006 data is reflective of positive morbidity obtained in this timeframe.
Results: In 1999 there were 82 cases of infectious syphilis reported in Miami-Dade County. After that year the number of cases increased steadily each year up to 231 cases in 2002 and 213 cases in 2004 and finally a decrease to 166 cases in 2005. The average percentage of cases of infectious syphilis in Miami-Dade County in the last ten years per race/ethnicity is as follows: African Americans 42%, Hispanics 7%, Caucasians 16% and others 6%. Historically and also during most of these years, most cases were diagnosed in African Americans, except from 2002 to 2004 when most of the cases were in Hispanics. The increased number of cases seen during these years was also characterized for a disproportionate increase in men (in 2002, 86% of the cases of infectious syphilis were in men). Among the men who provided information on their sexual partners, most (63%) reported male sexual partners. There have also been important shifts in the age of the cases of infectious syphilis in this County: The number of cases among people 30 years and older have fluctuated as follow: In 1990 (56%), 1995 (60%), 2003 (75%), 2004 (64%) and 2005 (62%).
Conclusions: The increased number of cases of infectious syphilis in Miami-Dade County in the last ten years that peaked in 2002 was driven by a disproportionate increase in cases seen in older Hispanic men.



P-591 PRENATAL SYPHILIS SCREENING RATES MEASURED USING MEDICAID CLAIMS AND LINKED ELECTRONIC MEDICAL RECORDS DATA

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Background: To prevent congenital syphilis, CDC and professional organizations recommend universal prenatal syphilis screening. State-level or larger-scale evaluations of adherence to these guidelines have relied on administrative data. We measured prenatal syphilis screening rates in Indiana women with prenatal Medicaid coverage and compared electronic medical records to examine the completeness of syphilis screening claims in Medicaid administrative data.
Methods: In statewide Indiana Medicaid claims data, diagnosis and procedure codes were used to identify women who delivered an infant between 10/01/1998 and 09/30/2002. Claims for prenatal syphilis tests, for an obstetric panel which includes syphilis tests, and for prenatal visits were extracted. The proportion of the study women who had prenatal syphilis tests was estimated. Claims data were compared with laboratory reports for a subset of the study population who received prenatal care in a large public hospital and its affiliated clinics served by an electronic medical records system.
Results: Among 74,188 women with one delivery in statewide Indiana Medicaid claims data, 60% had a prenatal syphilis screening claim, and 15% had two or more. The proportion of women who had prenatal syphilis tests identified by Medicaid claims data varied significantly ($p<0.05$) from 5% for women enrolled in Medicaid for 1 month to 72% for women enrolled for more than 9 months. Women with a prenatal visit claim were significantly ($p<0.05$) more likely than women without a prenatal visit claim to have a syphilis screening claim (69% vs. 22%) during pregnancy. Among 3960 women for whom both Medicaid claims and laboratory data were available, 49.8% had at least one prenatal syphilis test in Medicaid claims, but more than 99% had at least one laboratory report of a syphilis test. Among 1221 of 3960 women who had more than 9 months in Medicaid, 61% had at least one prenatal syphilis test in Medicaid claims, and more than 99% had at least one laboratory report of a syphilis test. Among 1175 of those 1221 women who had syphilis tests before the labor and delivery week (the 40th week), 53% were identified having had a syphilis test in the claims data; among 919 of those 1175 women who also had syphilis tests during the 40th week, only 20% were identified as having had syphilis tests in the claims data; and among 33 women who had syphilis tests only during the 40th week, 30% were identified as having had syphilis tests in the claims data.
Conclusions: Measurements made using Medicaid administrative data appear to substantially underestimate true prenatal syphilis screening rates. Our study has identified several reasons for low rates of syphilis tests using claims data: many women were not enrolled in Medicaid for their entire pregnancy, and many syphilis tests performed were not documented in the claims data, especially during the labor and delivery week. Improving quality of Medicaid claims data is needed for the data to be valuable in health research.

P-592

SEROLOGICAL RESPONSE TO DOXYCYCLINE OR TETRACYCLINE VERSUS BENZATHINE PENICILLIN G FOR TREATMENT OF PRIMARY SYPHILIS

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Objective: To assess the serologic response from treatment of primary syphilis with benzathine penicillin G compared to doxycycline.
Methods: We reviewed the charts of all primary syphilis cases that were reported to Alberta Health and Wellness STD Services between 1980-2001 to extract serologic testing results (rapid plasma reagin (RPR) and antibody titre) and treatment information (2.4MU benzathine penicillin G single dose intramuscularly or 100mg oral doxycycline or tetracycline for 15 days). Treated patients who returned for repeat serologic testing and who were not HIV-positive were selected for analysis. An adequate positive response was defined as a minimum 4-fold decrease in RPR antibody titre within 6 months following treatment initiation. The rate of response was calculated and factors associated with a positive response were identified by logistic regression adjusted for age.
Results: Of the 334 primary syphilis cases with available treatment outcome data, 314 (94.0%) received penicillin and 20 (6.0%) doxycycline or tetracycline. Overall, a positive treatment response was observed in 312 (93.4%) patients by at least 6 months. Of the remaining 22 patients with a negative response, 21 were among those treated with penicillin for a failure rate of 6.7% (p=0.77 compared to doxycycline/tetracycline (5.0%)). The estimated median time to positive response was 68.0 days (mean=101.6[SD5.1]) in penicillin and 49.0 days (mean=87.8[SD16.7]) in patients treated with doxycycline/tetracycline. When comparing positive and negative responders adjusted for age, positive serologic response was associated with initial antibody titre of >1:16 (OR=2.84[1.15-6.99]) but not with gender, ethnicity, sexual orientation, or year of initial serology.
Conclusion: Although the approximate failure rate for treatment of doxycycline/tetracycline was not significantly different than for penicillin, the former had a shorter time to positive response. Initial antibody titre may be important to consider in predicting response rates.

P-593 CHARACTERISTICS OF PATIENTS WITH POSITIVE SYPHILIS SEROLOGY IN ISRAEL

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An increase in the prevalence of syphilis has been recently documented in Western Europe and North America. In Israel, a rise in the incidence of primary and secondary syphilis was observed since the mid nineties, reaching its peak of 3.4 cases/100,000 population in 2000 which was followed by a decline in the rates.

Objectives: to describe the demographic and clinical characteristics of patients referred to a single infectious diseases clinic in the Tel Aviv area, Israel for positive syphilis serology.
Methods: 115 patients with positive syphilis serology were seen as out-patients or during hospitalization between July 2003 and December 2006. All serology results were confirmed at the Ministry of Health Reference Laboratory. Information collected included demographic data, clinical history, and sexual behavior details. HSV, HIV and HBV serology was requested as part of patient workup.
Results: The main reasons for performing serology were pregnancy (in 68 % of patients), neurological abnormalities (13%), and history of contact (7%). VDRL was negative in 36.5% of cases, weakly positive in 20%, a titer of 1:1-1:2 was documented in 30.5% , and a titer >1:4 in 13% of cases. In 66% of patients there was no history of syphilis-related symptoms. On the basis of serological findings and clinical history the following diagnoses were established: previously treated syphilis - 41% of cases; late latent (or of unknown duration) syphilis - 28%; serological scar (positive treponemal tests, negative VDRL, no history of intentional therapy for syphilis) - 17%; false-positive serology - 6%; early latent syphilis - 3.4%; neurosyphilis - 2.6%; primary syphilis - 1.7%; congenital syphilis - 0.8%. Potentially infectious syphilis was present in 5% of cases (early latent in 4, and primary syphilis in 2). The mean age was 34.3 yrs (range, 19-86 yrs; 1 neonate). The M:F ratio was 1:5.3. The majority of patients (79.6%) were married or had a steady partner at the time of testing. 8.7% were born in Israel, 77% in the former USSR, 7.9% in Ethiopia, and 6% elsewhere. Of those not born in Israel, 88% immigrated in 1992 or later. The mean age of sexual debut was 17.8 yrs (range, 13-25 yrs), the mean number of lifetime sexual partners was 6.5, and only 24% of the patients reported regular use of condoms with new sexual partners. History of other STDs was reported by 28.4% of patients, the most common being trichomoniasis. HSV-2 specific Antibodies were detected in 56% of patients, HBsAb in 39%, HBsAg in 1.3% and one patient was a known HIV-seropositive.
Conclusions: Most cases of positive syphilis serology were found among recent immigrants and resulted from infection acquired in the country of origin. Although transmission to Israeli-born individuals was documented, it has remained rare because most cases among immigrants were at a non-infectious stage.

P-594 VALIDATION OF THE TPR GENE RESTRICTION FRAGMENT LENGTH POLYMORPHISMS OBTAINED WITH THE TREPONEMA PALLIDUM TYPING SYSTEM BY SEQUENCE ANALYSIS

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Objectives: The reproducibility of the tpr gene restriction profiles obtained with the T. pallidum typing system has been questioned. In order to address these concerns, we performed DNA sequencing to validate the MseI restriction fragment length polymorphisms (RFLPs) within the tpr E, G, and J genes among selected strains.
Methods: Three laboratory isolates and 5 clinical strains of T. pallidum which were typed previously and had tpr RFLP patterns a (n=2), b (n=1), d (n=3), e (n=1), and f (n=1) were analyzed by sequencing. Nested PCR amplicons of the tpr E, G, and J genes, as obtained for typing, were gel purified, cloned into the pCRII vector using the TOPO TA cloning kit and sequenced on an ABI 3100 sequencer. The respective sequences were aligned with the tpr E, G, and J genes of the Nichols strain, which has the RFLP 'a' profile, using the MegAlign 5.08 software. Nested PCR amplicons of the tpr E, G, and J genes were also digested with MseI and analyzed using an Agilent Bioanalyzer 2100 instrument.
Results: Sequencing data revealed the position of MseI restriction sites within the tpr E, G, and J genes and corresponding restriction fragment sizes for RFLP profiles a, b, d, e, and f. One clinical strain which was characterized as RFLP pattern 'a' with the typing system, was identical to the Nichols strain with respect to the position of its MseI sites within the three tpr genes. Another clinical strain, which had the RFLP 'b' pattern, lacked the third MseI restriction site due to a point mutation at that site in the tpr G gene. The position of the MseI sites in all other strains were the same within tpr E and G, respectively. The RFLP 'd' pattern results from a point mutation in the third MseI site in the tpr J gene. Three strains with the RFLP 'd' pattern were sequenced and all three gave identical results with respect to the position of the respective MseI sites within the tpr genes. Two of these strains (laboratory strains JV1 and Street 14) were originally reported as having the RFLP 'f' pattern but sequencing proved they were in fact RFLP type 'd'. The RFLP 'e' pattern, which initially appeared to be the result of a missing tpr J gene, was actually due to a tpr G-like ORF in the tpr J gene, which is almost identical to tpr G except for a 69-bp tpr J nucleotide signature at the 3' end. The RFLP 'f' pattern resulted from a clinical strain having two alleles of the tpr J gene, the first allele was identical to the Nichols strain with 4 MseI sites whilst the second allele had 3 MseI sites.
Conclusion(s): This study demonstrates a sequence basis for five unique restriction patterns identified by the typing system for T. pallidum. These data confirm the validity and reliability of PCR-RFLP analysis of the tpr E, G, and J genes of T. pallidum for strain typing.

P-595 EVALUATION OF TREPONEMA PALLIDUM SCREEN ELISA, A NEW RECOMBINANT ENZYME LINKED IMMUNOASSAY FOR THE DIAGNOSIS OF SYPHILIS

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Objectives: The serologic detection of specific antibodies to Treponema pallidum is of particular importance in the diagnosis of syphilis. The purpose of this study was to evaluate diagnostic performances of Treponema pallidum Screen ELISA (DRG, Marburg, Germany) a new enzyme linked immunoassay in comparison with WB and TPHA.
Methods: Study group. 102 serum samples were obtained from patients attending the STD outpatients clinic of the St. Orsola Hospital in Bologna, Italy, and suffering from different stages of syphilis. Moreover, 92 additional sera were obtained from the blood bank of the St. Orsola Hospital in Bologna. WB. A native 'home made' WB was used. An IgG test was considered positive when at least three out of the four following T. pallidum antigens were present: TpN15, TpN17, TmpA and TpN47. Treponema pallidum Screen ELISA. Treponema pallidum Screen ELISA (DRG, Marburg, Germany) is new a solid phase immunosorbent assay prepared with recombinant treponemal antigens for the determination of specific T. pallidum antibodies in human serum or plasma. Testing was performed following the manufacturer's instructions and all the specimens showing equivocal results were tested twice. TPHA. TPHA (AlfaWasserman, Milan, Italy) was performed following the manufacturer's instructions.
Results: Blood donors serum samples. All the 92 blood donors samples were negative when tested by all the methods. WB, TPHA and Treponema pallidum Screen ELISA showed to be 100% specific. Syphilis serum samples. 101 out of 102 samples were identified as positive by ELISA, whereas one sample gave a border-line result. All the 102 samples were WB positive, whereas TPHA identified 99 positive specimens. The concordance between WB and EIA was 99.0%, whereas the concordance between TPHA and ELISA was 98.0%.
Conclusion: The Treponema pallidum Screen ELISA showed to be a very sensitive and specific method for the laboratory diagnosis of syphilis.

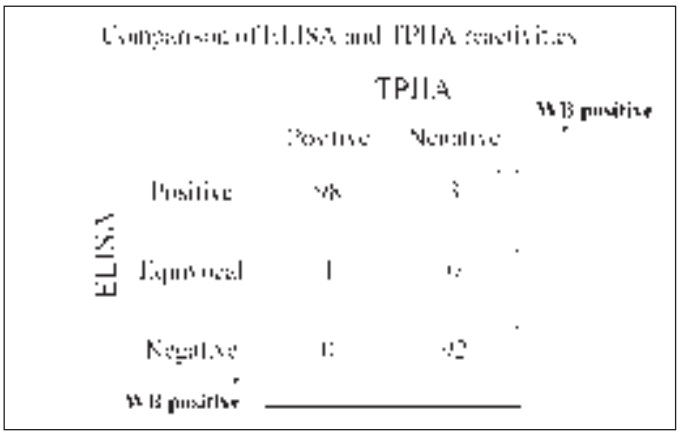

Figure 1: Comparison of ELISA and TPHA

P-596 EVALUATION OF LIAISON TREPONEMA SCREEN FOR THE LABORATORY DIAGNOSIS OF NEUROSYPHILIS

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[2]CHU Sart Tilman, LIEGE, Belgium
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[4]DiaSorin, SALUGGIA, Italy

Objectives: The purpose of this study was to evaluate diagnostic performances of LIAISON_ Treponema Screen (DiaSorin, Saluggia, Italy) on paired CSF and serum samples obtained from 22 patients suffering from different stages of syphilis to asses the CNS involvement.
Methods: Study group. A total of 22 paired CSF and serum samples were obtained from Belgian patients suffering from different stages of syphilis; 7/22 patients had clinical signs consistent with neurolue. Moreover, 24 CSF samples were obtained from patients presenting clinical symptoms of acute septical or aseptical meningitis. LIAISON_ Treponema Screen. LIAISON_ Treponema Screen (DiaSorin, Saluggia, Italy) is a qualitative sandwich chemiluminescence immunoassay (CLIA) method for determination of specific antibodies to T. pallidum. Commercial serologic tests. The following tests were used: TPHA (AlfaWasserman, Milan, Italy) and VDRL (Dade Behring, Marburg, Germany). Testing was performed following the manufacturer's instructions and all the specimens showing equivocal results were tested twice. WB. A native 'home made' WB was used. An IgG test was considered positive when at least three out of the four following T. pallidum antigens were present: TpN15, TpN17, TmpA and TpN47.
Results: In order to assess the specificity of the CLIA method the 24 CSF samples obtained from patients with acute septical or aseptical meningitis were screened by LIAISON_ Treponema Screen. No positive result was found in this group of samples. TPHA and VDRL confirmed the negativity of all the samples studied by CLIA. All the 22 syphilitic serum samples were positive when tested by the three treponemal assays. VDRL identified 17 reactive sera, whereas the remaining 5 sera were negative (they were obtained from patients with previously treated syphilis). When the 22 CSF samples from syphilitic patients were tested, 15 were reactive by CLIA, 12 were positive by WB, and 10 were positive by TPHA. Finally, only 2 were positive by VDRL. These 2 CSF samples were obtained from patients with the clinical diagnosis of suspected neurosyphilis; these samples presented also an index of intrathecal antibody production >2. Index was calculated as follows: [CSF TPHA _ serum albumin (g/L)]/[serum TPHA _ CSF albumin (g/L)]. Three extra patients of the group with clinical signs consistent with neurolue showed an index of intrathecal antibody production >2, but their CSF VDRL was negative. Finally, the last 2 patients of this group had both CSF VDRL and index negative.
Conclusions: The diagnosis of neurosyphilis, or more often the definite exclusion of neurosyphilis as a clinical possibility, remains a difficult problem. It is widely accepted that a positive VDRL in the CSF is sufficient to diagnose neurosyphilis, if there is no blood contamination, but CSF VDRL is known to have low diagnostic sensitivity. The primary value of LIAISON_ Treponema Screen in CSF may be to exclude the possibility of neurosyphilis if the test result is negative. On the contrary, a positive result obtained by LIAISON_ Treponema Screen is not sufficient to diagnose neurosyphilis.

P-597 ACCEPTABILITY AND RESULTS OF A SYPHILIS RAPID TEST AMONG SEX WORKERS IN SOUTH BRAZIL

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Objectives: sex workers are more aware to acquire STD due to their exposition to multiple partners and violence. Access to diagnose tests and treatment not always happen, especially due to a tendency of marginalizes them by society and by health professionals. Measure syphilis prevalence on this high risk population will provide important information about this STD and related socioeconomics and behavioral factors. This study aimed to evaluate compliance by sex workers to be submitted to a syphilis rapid test on their work place and to approach this specific population to improve their access to health care.
Methods: in 2006 a research was conducted among sex workers with at least 18 years old, in a medium size city in south Brazil. A questionnaire and a syphilis rapid test were applied. People with a reagent test received specialized treatment and free medication. This project was approved by the Ethical Board of the Faculty of Medicine.
Results: 322 sex workers have been interviewed and tested, 76% were female. Syphilis prevalence was 7,5% (female: 5,9%; male: 12%). Most (34%) had between 22- 29 years old and 4% at least 50 years old. About skin color 18% declared them selves black and 18% mixed races; 21% had less than 4 scholar years; 55% received more than 3 minimum wages per month; and 52% worked only during the night shift. About habits, 73% were smokers, 47% ingest alcohol daily, and 56% already experienced some kind of illicit drugs. About condom use during sex encounters 87% used always, 10% sometimes and 3 % never. 34% did not have condon at the interview moment. 57% never had been tested to syphilis (male: 71 %; female: 53%), compared with 12% that had never been tested to HIV. Among those men who already had been tested the main motives are find their selves in risk, curiosity and associated with HIV test; among women this are pre natal care, associated with HIV test and boss solicitation. 28 sex workers refused to be part of the study, most because they were afraid to collect blood. We also find a great lack of information about DST among this population. Among those who tested positive to syphilis, 6 (25%) go to the medical appointment and had been treated.
Conclusion: even tough being a group with a great potential to be infected with STD, we still have a great misinformation and a low percentage to STD tests among sex workers, especially among men. HIV tests are more common, probably because AIDS have more media exposition, although syphilis is more prevalent in our country. We verified a good compliance with rapid test, probably because they don't need to go to a clinic or laboratory. Tough, compliance to medical appointment and treatment are very low, even with facilitated access. These findings show that we have to develop ways to bring the medication along with the test. Measures that improve the access of this population to STD information, diagnostic and treatment must be part of public health programs.

P-598 REPEAT TYPES IN THE ACIDIC REPEAT PROTEIN (ARP) OF TREPONEMA PALLIDUM DIFFERENTIATE THE SUBSPECIES OF T.PALLIDUM AND SUGGEST POSSIBLE ROLES FOR THE PROTEIN

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Objectives: Sequencing of one strain of each of the three subspecies of T. pallidum showed variation in the repeat types in subspecies pallidum but only a single repeat type in subspecies pertenue and endemicum. We expanded the sequencing project to over fifteen strains to determine if this difference between the subspecies was real and compared it to the related species Treponema paraluiscuniculi.
Methods: Treponemes of the three species were grown in rabbits and the arp gene was sequenced from the isolated DNA. The arp gene was cloned from the Nichols strain of T. pallidum subsp. pallidum and expressed in E. coli. Experiments were performed to determine its binding characteristics.
Results: All strains of subspecies pertenue and endemicum sequenced (a total of 8 isolates from widely separated locations) showed only a single type of repeat. In contrast, syphilis strains showed various repeat types which varied in four amino acids of the twenty within the repeat sequence. The related species T. paraluiscuniculi contained a homolog of the arp gene which had a number of different repeat types like subspecies pallidum; all but one of these repeats were unique to paraluiscuniculi. A potential fibronectin binding motif was identified within the arp repeat sequence.
Conclusions: The arp protein shows repeat variations in subspecies pallidum that are not found in the other two subspecies of T. pallidum. Similar variations are also found in the related venereal pathogen of rabbits, T. paraluiscuniculi. These variations may be related to the mode of pathogenesis since they are found in the venereal pathogens but not in the pathogens transmitted by other means.

P-599 TRENDS IN INFECTIOUS SYPHILIS IN CANADA: 1997-2006

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Objective: To examine recent epidemiological trends of infectious syphilis in Canada; to compare reported rates in 2006 to national goals established in 1997 to contextualize the need for renewed public health focus on STI prevention, management, treatment and control.
Methods: Infectious syphilis cases (primary, secondary and early latent infection), reported to the Public Health Agency of Canada (PHAC) through routine surveillance between 1997 and 2005, were analysed by age and gender. Historical data were examined for reference and preliminary analyses for 2006 were also included.
Results: The rate of infectious syphilis declined from 1984 (9.1 cases/100,000) reaching a low of 0.4/100,000 in 1997. Preliminary projected rates for 2006 indicate an almost 13-fold increase from 1997 to >5.0/100,000, far above the national goal to maintain rates <0.5/100,000 by the year 2000. Unlike other bacterial STIs, which disproportionately affect young people, the largest burden of syphilis is in older age groups; males over the age of 30 years accounted for approximately 70% of all cases between 2002 and 2005. Since 2002, males have accounted for over 80% of all syphilis cases in Canada. An increase in the male-to-female case ratio between 1997 (1.3:1) and 2004 (8:1) suggests that male-male transmission was increasing over this time period. In 2004, reported rates among males had more than doubled compared with 2002 and increased by over 13-fold since 1997; rates among females increased by 33% and more than doubled respectively for the same periods. In 2005, while slight decreases from 2004 were seen in rates overall (to 3.2/100,000) and in males over 30 years of age, rates increased slightly in younger males and in women of all age categories; the male-to-female case ratio dropped to 5:1. The number of congenital syphilis cases has also increased from 2 cases in 2004 to 11 cases in 2005 and case counts are projected to be >11 for 2006.
Conclusions: There have been significant increases in reported cases of infectious syphilis observed since 1997, making targets difficult to attain. Sustained regional outbreaks have largely driven these increases, especially in older MSM although heterosexual outbreaks have also occurred. Slight decreases seen in 2005 are likely due to reporting delay and changes in reporting systems since preliminary 2006 estimates indicate upward trends continue; further analysis for 2006 will provide a more detailed picture. A national syphilis working group between PHAC and the provinces and territories has been set up in an effort to control this epidemic and serves as a forum for exchanging information, experiences and best practices in syphilis prevention and control. Locally relevant and multifaceted, innovative gender-based approaches to promotion, prevention and intervention strategies will be required to control this infection. Adressing common risk factors and behaviours associated with STIs and bloodborne pathogens can only enhance these efforts.

P-600 ELIMINATING CONGENITAL SYPHILIS IN CHICAGO - HAVE WE TURNED THE CORNER?

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Objective: Between 1998 -2006, primary and secondary (P&S) syphilis in women in Chicago decreased by 83%, from 158 to 27 cases. During this time, cases of congenital syphilis (CS) also decreased by 80%, from 53 to 10 cases. Surveillance for congenital syphilis in Chicago was enhanced in 2003. Our objectives were to characterize the CS cases reported between 2004-2006.
Methods: Surveillance data for CS cases reported in Chicago between 2004-2006 were analyzed. Data for 2006 is provisional through February 23, 2007.
Results: From 2004-2006, 49 cases of CS (20 in 2004, 19 in 2005 and10 in 2006) were reported. All presumptive cases and syphilitic stillbirths were included. The demographic characteristics of the 49 mothers did not change over the three year period. In 2004 and 2005, the median age was 24 years, increasing to 27 years in 2006 (range 15 - 41 years). Overall, 15% were < 20 years of age. The mothers were predominantly African-American (70% in 2004, 79% in 2005 and 91% in 2006) and most were unmarried. From 2004'2005, six stillbirths were reported among 39 cases of CS. No syphilitic stillbirths were reported in 2006. Among mothers of CS cases, seven (14%) had P&S syphilis, 23 (47%) had early latent syphilis and 11 (22%) were diagnosed with late latent syphilis. Information on toxicology screening was available for 25 mothers (51%). Maternal or infant drug screening revealed that 8 (32%) had a positive toxicology results for cocaine or opiates. Additionally, nine (18.3 %) women were co-infected with gonorrhea, chlamydia or both during their pregnancy. Information on prenatal care was available for 35 (71.4%) women; 10 (28.5%) received no prenatal care. In 2004, 12/20 (60%) mothers of CS cases reported having >= one prenatal visit, which decreased to 9/19 (47%) in 2005 and 4/10 (50%) in 2006. Among 25 women who received prenatal care, CS cases were attributed to failure to screen the mothers for syphilis in 6 (24%) cases, while inadequate response to treatment or treatment failure was reported in 11 (44%) cases. Congenital syphilis cases associated with maternal non-penicillin treatment were seen prior to 2004, however, none were reported during the evaluation period, as all women were treated with benzathine penicillin. All live-born infants were asymptomatic at birth and diagnosed solely because of a positive maternal serologic test for syphilis.
Conclusions: Our data support findings from previous years, which showed a correlation between syphilis and maternal illicit drug use. The major reason for the failure to prevent congenital syphilis in Chicago continues to be a failure to screen during pregnancy or to treat syphilis adequately. Activities targeting prenatal care providers, emphasizing the importance of screening and adequate treatment during pregnancy, must be enhanced in order to eliminate CS in Chicago.

P-601 IS TIME ON OUR SIDE? TIMELINESS OF PATIENT INTERVIEWS AND PARTNER TREATMENT FOR SYPHILIS, UNITED STATES, 2004-JUNE 2006

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Objectives: Timely interviews of persons with Primary and Secondary syphilis (P&S) and rapid treatment of their contacts can prevent syphilis transmission. Performance measures established for U.S. STD control programs in 2004 included two measures to address this timeliness issue: timeliness of interviewing the index client; and timeliness of treatment of the contacts identified. We reviewed reporting on these measures to assess completeness of reporting, validity, the number of persons interviewed, and the number of contacts treated.
Methods: Performance measures were reported to CDC from 4-six month intervals between January 2004 and June 2006. We looked at the number of P&S clients interviewed within 14 days of specimen collection and the number of P&S cases reported during the measurement period. We also looked at the number of contacts that were either treated for diagnosed infection or preventively treated within 14 days after the interview of the index case. For validation purposes we compared the number of P&S cases reported to the CDC Surveillance system in 2005 to the number of cases reported in the performance measures database; differences that were both >5 cases and >10% were considered threats to validity.
Results: 57 project areas reported at least 1 syphilis case and at least 1 interview in one or more of the four 6-month intervals, and are included in this analysis. 17 programs did not report in the first interval for one of the timeliness variables and 26 missed reporting in a subsequent interval. Concerning validity, 18 of the project areas either under-reported or over-reported (>5 cases and >10%) the number of syphilis cases that were reported in the 2005 Syphilis Surveillance report. 11 programs under-reported their number of syphilis cases and 7 programs over-reported their syphilis cases. The programs reported a total of 15,637 cases of P&S. 7727 index cases (49.4 %) were interviewed within 14 days of specimen collection. 6428 contacts were treated within 14 days of the index case interview (83.2 per 100 persons interviewed, 41.1 per 100 cases of P&S). For each 6-month interval, the programs' mean percentage of P&S interviewed within 14 days ranged from 56.9 to 59.3. The 10 best performers at interviewing averaged 94.7% within 14 days, while the 10 worst averaged 21.6%. The programs' mean percentage of contacts treated within 14 days of interview ranged from 46.1 to 53.2 per 100 cases of P&S. The 10 best performers at treating contacts within 14 days averaged 107 per 100 cases of P&S, while the 10 worst averaged 11.
Conclusion: Over the past 2 years, 49% of persons diagnosed with syphilis in the US were interviewed within 2 weeks of specimen collection and 83 partners were treated within 14 days for every 100 interviews. The variability across programs suggests there is room for significant improvement.

P-602 CURRENT EPIDEMIOLOGY OF INFECTIOUS SYPHILIS IN OTTAWA CANADA

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Objectives: To describe the epidemiology of an outbreak of infectious syphilis in Ottawa, Canada in order to determine the timeliness and choice of antibiotic treatment and the adequacy of follow up with the goal of identifying effective intervention strategies.
Methods: Retrospective chart review of infectious syphilis cases from January 2001 to June 2006 in Ottawa, an urban centre of approximately 1 million people.
Results: During the study period, the rate of infectious syphilis in Ottawa rose more than ten-fold from 0.2/100,000 in 1997-1999 to 2.8/100,000. A disproportionate number of cases were male (M:F ratio of 19:1) with greater than 80% of males self-identifying as men who have sex with men (MSM). The MSM affected were older, more likely to be HIV positive and have a higher number of sexual partners than the general MSM community in Ottawa. There was an overall lack of condom use in both heterosexual individuals and MSMs in our study, with MSMs more likely to use barrier protection. Among MSMs, 92.2% and 60% of individuals reported inconsistent use of condoms during oral and anal sex respectively, suggesting that oral sex is an important contributor to the current syphilis epidemic. Eighty-five percent of men listed the internet and bathhouses as venues for meeting sexual partners; however, this was no different than the general MSM community in Ottawa, suggesting that the choice of venue may not be a significant risk factor. Although the majority of sexual partners were from the Ottawa area, 37% of MSMs reported sexual encounters with men from the cities of Montreal and Toronto. Fifty-six percent of infections presented as secondary syphilis and there was no correlation between HIV status and stage of infectious syphilis at presentation. The most common presenting feature of secondary syphilis was a diffuse maculopapular rash; however, HIV positive individuals were twice as likely to present with visceral manifestations and greater than 25% of HIV positive patients required treatment for neurosyphilis. There was a substantial delay between serological diagnosis and treatment, such that 35% of individuals waited greater than 20 days for therapy. Compared to HIV negative individuals, HIV co-infected patients were treated 4x more often with extended antibiotic regimens. Post treatment follow-up was poor, with less than one-half of cases returning for their six month appointment in both the HIV positive and negative groups. Review of the serological success of treatment regimens was greatly hindered by this lack of follow-up.
Conclusions: Multiple sexual partners, unprotected oral sex, and age among MSM were the predominant risk factors contributing to the syphilis epidemic in Ottawa. The majority of cases were HIV-positive and those co-infected with HIV were more likely to have visceral and CNS involvement, and receive extended antibiotic regimens. The interconnection of urban sexual networks has likely contributed to the dynamics of local syphilis transmission. The synchronicity of the syphilis incidence among these three cities suggests that effective intervention will require a coordinated regional approach.

P-603 PROSPECTIVE RISK FOR STILLBIRTH IN DEVELOPED AND DEVELOPING SETTINGS

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Objectives: Congenital syphilis (CS) remains a public health problem globally, accounting for 500,000 stillbirths each year in addition to other serious adverse pregnancy outcomes. Although CS is preventable with maternal syphilis screening and treatment, a simple and affordable intervention, effective screening has proven hard to implement in many settings. To better inform CS elimination efforts, we compared patterns of stillbirth in countries with high and low syphilis rates to understand (1) the extent to which disparities appear to be associated with preventable causes such as maternal syphilis and (2) whether stillbirth rates vary by gestational age in ways that suggest specific gestational dates for syphilis screening.
Methods: We searched the published literature and referenced studies to identify stillbirth studies that included gestational age as early as 24 weeks. Using the Delft method and these data, we calculated the prospective risk (PR) of stillbirth at each gestational week from population-based data of live deliveries and stillbirths for each study. We used true and logarithmic scales to compare differences between stillbirth frequencies and timing in countries with high and low syphilis rates as defined by available data.
Results: Based on publications through July 2006, we identified 1,794 stillbirth studies. After review, 16 had collected data that potentially allowed for calculation of PR. We obtained data from 11 (69%), representing 7 nations, for further analysis. Most (88%) were conducted from 1980-2000. Of these 11 studies, 4 were from

the US over different time periods, 5 from other developed nations, and 2 from developing nations. Data from 6 studies in developed nations after 1980 showed markedly consistent curves with low PRs. US data from 1958-80 had an intermediate PR curve. The 2 recent developing nation studies and the US 1946-53 data (prior to widespread maternal syphilis screening) showed PRs for stillbirth 7 to 11 times higher than the New York City 1987-89 data. PRs generally declined consistently until average time of delivery (40 weeks).

Conclusions: The higher PR in developing settings describes substantial preventable fetal mortality presumably due in large part to syphilis. The steady decline of all PRs across gestational ages to full pregnancy term week suggests no obvious gestational age as a syphilis screening target, supporting WHO recommendations for early antenatal syphilis screening at first opportunity and repeat testing later. These data also suggest stillbirth surveillance is a potential means of monitoring the impact of national maternal syphilis screening programs. Email: ewy2@cdc.gov

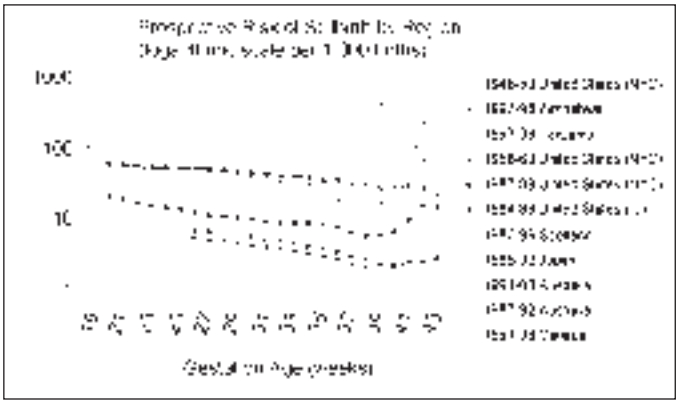

Figure 1: Prospective Risk of Stillbirth by Region

P-604 PREVALENT ERRORS IN THE CLINICAL CASE MANAGEMENT OF SYPHILIS IN CALIFORNIA: FAILURES IN FIGHTING THE EPIDEMIC

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Objectives: An analysis of syphilis surveillance data suggests that practices of many health care providers are inconsistent with guidelines for management of the disease. In 2005, 2,748 cases of early syphilis were reported in California, representing a 23 percent increase in the number of incident cases over the previous year, and the continuation of an upward trend in Treponema pallidum infections that began five years earlier. The epidemic is concentrated among men who have sex with men, a significant proportion of whom are also HIV-positive. Widespread lack of proper diagnosis, prompt treatment, and effective public health case management threatens efforts to halt the progress of the epidemic.

Methods: To describe the clinical and public health management lapses in 2005 related to early syphilis within the Centers for Disease Control and Prevention's California Project Area, a random sample of primary (n = 54), secondary (n = 177), and early latent cases (n = 137) -- one-third of the incident cases in this period -- was reviewed. Additionally, a convenience sample of neurosyphilis cases and other cases with significantly poor outcomes was reviewed.

Results: This review revealed: 1) one-sixth of symptomatic patients had delayed diagnosis and treatment due to missed or mis-identified symptoms (ulcer, palmar/plantar rash, etc.); 2) the majority of patients with symptoms experienced treatment delays, with the proportion presumptively treated being outpaced by the proportion who had delays from 8 to 95 days; 3) reporting was delayed in all but one-seventh of cases, with more than one-tenth of cases never being reported by the provider; and 4) non-treponemal test titer was obtained on the day of treatment in only one-third of cases. Case report review revealed numerous practice inconsistencies, including failure to assess cerebrospinal fluid despite positive serum rapid plasma reagin and symptoms suggestive of neurosyphilis, as well as prescribing treatment regimes that are inconsistent with guidelines.

Conclusions: The lapses outlined in this review represent missed opportunities for providing recommended medical care for affected individuals and for limiting disease spread to partners and other contacts. Education of providers, in both diagnosis and treatment of syphilis, and regarding the legally defined public health responsibilities of the clinician, is critical to halting the progress of this epidemic. Continued surveillance and research are necessary to clarify areas in need of improvement and to capitalize on opportunities for prevention.

P-605 HIGH TITER SYPHILIS SEROREACTIVITY DATA IN CORRECTIONAL SETTINGS MORE ACCURATELY MONITORS INCIDENT SYPHILIS TRENDS IN A CITY WITH LOW SYPHILIS RATES AMONG HETEROSEXUALS: SAN FRANCISCO, 1997 2006

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Objectives: Early syphilis rates in San Francisco increased more than five fold between 1997 and 2006. Since 1999 more than 75% of early syphilis infections occurred among men who had sex with men (MSM). Non-treponemal test seroreactivity in jails has been used to examine the burden of syphilis infection among heterosexuals nationally. Our objective was to determine the validity of this measure as a marker for untreated syphilis infection in San Francisco jails during a period with low, local heterosexual transmission of syphilis.

Methods: VDRL (Venereal Disease Research Laboratory) qualitative and quantitative titers test results from San Francisco jails between 1997 and 2006 were examined by gender, and linked with treponemal confirmatory testing, syphilis reactor grid case disposition, and final syphilis diagnosis. Per national surveillance protocols, positivity included both reactive and weakly reactive VDRLs. High-titer VDRL results were defined as a dilution of 1:16 or greater. Early syphilis includes primary, secondary and early latent syphilis. All syphilis diagnoses excluded diagnoses made within 30 days from a previous diagnosis in the same individual.

Results: There were 33,909 VDRL tests performed in San Francisco detention facilities during 1997 ' 2006. Test volume peaked in 1999-2001 as a result of increased screening efforts; male screening averaged 2394 per year (range 680 ' 4116) and female screening averaged 997 per year (range 396 ' 1837). Of the 23,941 test performed on men, 750 (3.1%) were reactive or weakly reactive, 69 (0.29%) were reactive at a high-titer, 65 (0.27%) were diagnosed with syphilis, and 22 (0.09%) were diagnosed with early syphilis. Figure 1 shows trends in the proportion of any reactive VDRL, reactive tests at high titers and any syphilis diagnosis. The final dispositions on male reactive or weakly reactive syphilis titers include 298 (40%) biological false positives, 296 (39%) serofast and other non-syphilis titers, 43 (6%) latent syphilis, 22 (3%) early syphilis and 91 (12%) unknown or refused disposition. Of the 9,968 test performed on women, 434 (4.4%) were reactive or weakly reactive, 25 (0.25%) were reactive at a high-titer, 26 (0.26%) were diagnosed with syphilis, and 8 (0.08%) were diagnosed with early syphilis. See figure 2 for trends over time. The final dispositions on female reactive or weakly reactive syphilis titers include 213 (49%) serofast and other non-syphilis titers, 146 (34%) biological false positives, 17 (4%) latent syphilis, 7 (2%) early syphilis, and 51 (12%) unknown or refused disposition.

Conclusion(s): The proportion of total reactive non-treponemal tests in jails was an inaccurate surveillance tool for monitoring syphilis trends among heterosexuals in San Francisco during a period of low heterosexual transmission. Monitoring titers greater than or equal to 1:16 provided more accurate trends about total untreated syphilis infectins detected in these settings. The value of using any reac-

tive non-treponemal test to examine the burden of syphilis infection among correctional populations should be evaluated carefully within the context of local epidemiology.

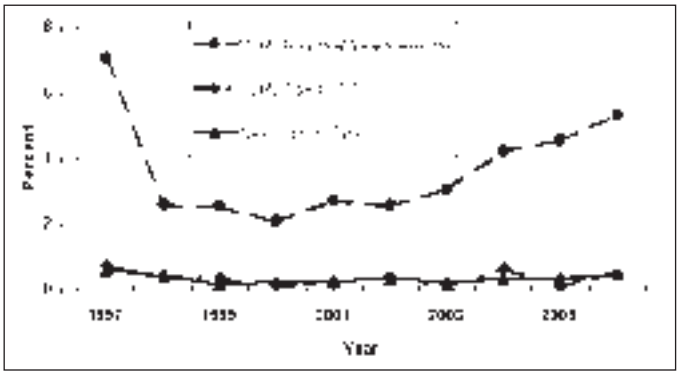

Figure 1: Adult Male Detention

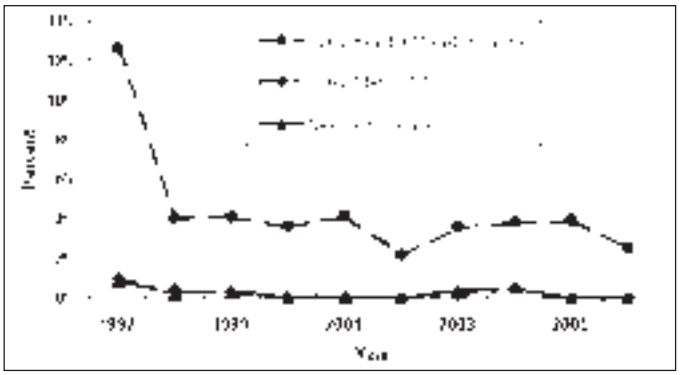

Figure 2: Adult Female Detention

P-606 CLINICAL USE OF REAL-TIME PCR TO DIAGNOSE PRIMARY SYPHILIS

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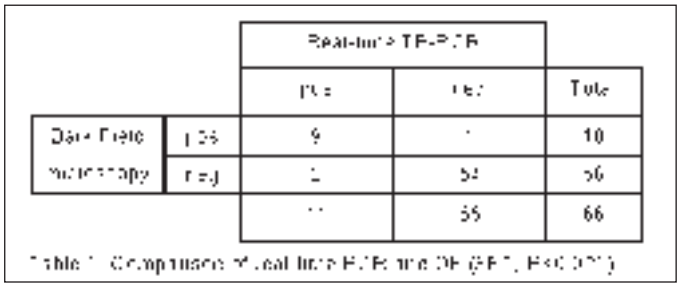
Objectives: Determining the value of a real-time Taqman PCR for Treponema pallidum (TP)* diagnosis for routine diagnostic laboratories. Diagnosis of primary syphilis, based on clinical grounds, poses problems because other micro-organisms can cause similar ulcerative symptoms. A primary syphilis diagnosis can be made by dark field microscopy (DF), however, DF requires a lot of experience. Syphilis serology can support the diagnosis of primary syphilis in some cases but poses a diagnostic delay and may be false negative, early during infection.
Methods: Patients with genital ulcers were included. We wanted to evaluate direct detection methods of TP so we compared TP-PCR with DF as gold standard. Combined syphilis serology (TPPA, FTA, VDRL) was also performed and interpreted according to standard clinical practices. Serology was used to help clarify discrepant results.
Results: From December 2006 to February 2007 84 patients were included; 18 patients were excluded because of incomplete data. Of the remaining patients (n=66) 47 were male and 19 female. TP-PCR and DF results are described in table 1. Both TP-PCR and DF were positive in 9 patients whereas in 54 patients both tests were negative. In 2 patients TP-PCR was positive but DF negative. One patient had been treated with penicillin 12 days before sample collection. The other patient showed a TPPA seroconversion (TPPA positive, FTA dubious, and VDRL positive) within the past 4 months based on previous serology. One patient was TP-PCR negative but DF positive. In this patient serology was TPPA positive, FTA positive, and VDRL negative, which can be interpreted as an early incubating infection or a late infection. Since DF was positive, an early incubating infection is most likely. Therefore, the TP-PCR test result was considered false negative in this patient, but the combined serology results suggest that DF also may be false positive. There was significant correlation between DF and TP-PCR according to the Fisher Exact Test (P<0.001).
Conclusions: The TP-PCR shows high potential for a fast primary diagnosis in routine diagnostic laboratories. For this comparative study we will continue to include more patients and an update will be presented during the ISSTDR meeting. *Koek AG, Bruisten SM, Dierdorp M, van Dam AP, Templeton K. Specific and sensitive diagnosis of syphilis using a real-time PCR for Treponema pallidum. Clin Microbiol Infect. 2006; 12: 1233-6.



		Real-time TP-PCR		
		[illegible]	[illegible]	Tota
Dark Field [illegible]	[illegible]	9	[illegible]	10
[illegible]	[illegible]	[illegible]	54	56
		[illegible]	55	66

[illegible] Comparison of real-time PCR and DF (FET, P<0.001)

P-607 SEROLOGICAL FOLLOW-UP OF INFANTS DIAGNOSED WITH CONGENITAL SYPHILIS IN SHANGHAI, CHINA: IMPLICATIONS IN THE IMPLEMENTATION OF DIAGNOSTIC CRITERIA

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Objective: The number of reported congenital syphilis (CS) cases is rapidly increasing in the past decade in China. CS diagnosis is a challenging task in most medical facilities resulting in both false-positive and false-negative reports if the diagnostic criteria are not strictly followed. At first trimester, pregnant women in local resident are registered and examined which is including a screen test for syphilis at family planning clinics and obstetric hospitals. If the maternal syphilis is found, treatment for infection is started to prevent CS. This study aimed to investigate the status of the misdiagnosis of CS so as to emphasize the implementation of diagnosis criteria.
Methods: 99 infants diagnosed with CS in the past five years in Shanghai and 57 of their mothers were enrolled into this study. The serological surveillance of 'CS' infants were prospective followed-up interval of three month for upto 24 months after birth by testing the serological reactivities using RPR and TPPA, or to the time point when the serological reactions became negative. Sera from the infants' mothers were also examined for RPR and TPPA as the same team of follow-up CS. The medical histories were retrospectively collected by examining hospital records.
Results: Medical charts showed that all 99 infants were both positive for RPR and TPPA at delivery. About 20% (20/99) exhibited syphilis-related clinical signs/symptoms, and 23.23%(23/99) displayed osseous damages. Less than 16% of infants had a positive result of the syphilis-specific IgM. About 72% (41/57) mothers received syphilis treatments during their pregnancy due to the sero-positive results. In the further follow-up, the cumulative RPR negative rates of the CS infants were 44.21%, 63.97, 72.67%, 83.88% and 87.10% at 1, 3, 6, 12 and 18~24 months after birth, respectively; and the cumulative TPPA negative rates were 1.14%, 18.59, 44.57%, 66.74% and 74.42% at 1, 3, 6, 12 and 18~24 months after

birth, respectively. all mothers tested at the end time point of fellow-up CS were TPPA positive and 81.3% had RPR positive results, persistently, even most of their baby's sera converted to negative.

Discussion and Conclusion: This study shows that more than 74% of the 'CS' infants had a negative TPPA reaction after birth fellow-up. The false-positives are resulted from the transplacental transfer of the maternal immunoglobublin G (IgG). The high rate of CS misdiagnosis may be due to the lack of following the diagnostic criteria in medical facilities. This study suggests that the prevalence of congenital syphilis should be re-evaluated. Medical service providers should be re-educated for the diagnosis of CS. The established criteria of CS diagnosis should be completely implemented in all related medical facilities and professionals.

Keywords: Congenital syphilis, diagnosis, RPR, TPPA. Fellow-up of serological reactivity Acknowledgement: We thanks Dr. Mingmin Liao (The University of Saskatchewan, Canada) and Dr. Ann Jolly, (The University of Ottawa, Canada) for the critique and extensive editing on this paper. Email:weiming_gu2003@yahoo.com.cn

P-608 TITLE: INCREASES IN SYPHILIS AMONG MEN WHO HAVE SEX WITH MEN ATTENDING STD CLINICS, 2000-2005

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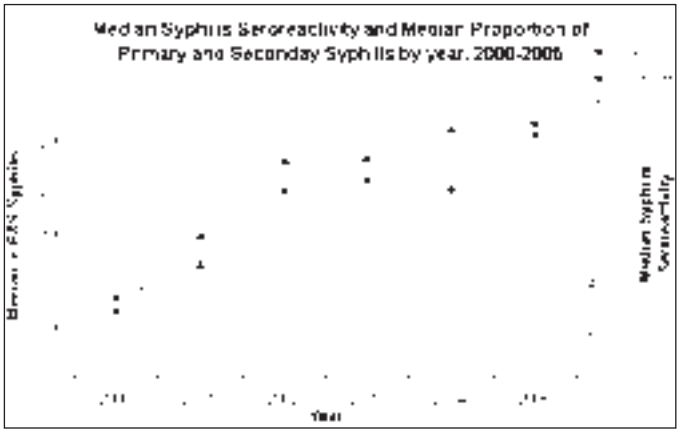
Objectives: To describe syphilis seroreactivity and primary and secondary (P&S) syphilis among men who have sex with men (MSM) attending STD clinics from 2000-2005 and to identify the prevalence of drug use and sexual behaviors among MSM with P&S syphilis.

Method: Trend data were analyzed from 2000-2005 for 75,082 MSM visits, as part of the MSM Prevalence Monitoring Project, in 8 US cities: Seattle, WA; San Francisco, CA; Houston, TX; Chicago, IL; Denver, CO; New York, NY; Philadelphia, PA; and the District of Columbia. City-specific medians were calculated for: the proportion of MSM visits that included nontreponemal testing for syphilis; the proportion of syphilis tests that were reactive, and the proportion of syphilis tests associated with a diagnosis of P&S syphilis. City-specific medians were also calculated for recent drug use and sexual behavioral variables. Behavioral variables included: having had anal sex, having had only oral sex, exchanging sex for drugs or money, and number of sexual partners.

Results: Median age of MSM was 34 years (range: 15-80 years); 62% were white, 15% were Hispanic, 9% were black, 6% were 'Other' race. From 2000-2005 the median percent tested for syphilis stayed consistent; in 80% (range: 62-90%) of MSM visits, a nontreponemal serological test for syphilis was done. Overall, median syphilis seroreactivity increased from 3% (range: 2-7%) in 2000 in 6 cities to 11% (range: 5-13%) in 2005 in 8 cities, with every site observing increases. Of MSM tested, median percent diagnosed with P&S syphilis increased from 0.7% (range: 0.2-1.1%) in 2000 in 4 cities to 2.6% (range: 1.4-4.4%) in 2005 in 6 cities (Figure). Syphilis seroreactivity and P&S syphilis were correlated (r=0.89, p=0.02). Overall, 39% of MSM diagnosed with P&S syphilis were positive for HIV compared with 14% of MSM without P&S syphilis (p<0.0001); this difference did not change over time. In 2004 and 2005, age, race/ethnicity, and sexual behaviors did not differ for MSM with P&S syphilis and MSM without P&S syphilis. Median methamphetamine use in MSM diagnosed with P&S syphilis was 10% (range: 0-52%) compared with 4% (range: 3-10%) in MSM without P&S syphilis (6 cities). Median poppers use in MSM with P&S syphilis was 12% (range: 0-25%) compared with 6% (range: 4-13%) in MSM without P&S syphilis (5 cities). Median cocaine use in MSM with P&S syphilis was 10% (range: 0-19%) compared with 2% (median range: 2-8%) in MSM without P&S syphilis (5 cities). Median Viagra use in MSM with P&S syphilis was 14% (range: 3-35%) compared with 5% (range: 1-6%) in MSM without P&S syphilis (4 cities). Differences in drug use were not statistically significant.

Conclusions: Syphilis is increasing among MSM attending STD clinics, which reflects similar increases in MSM in the general US population. MSM attending STD clinics with P&S syphilis were more likely to have used drugs than MSM without P&S syphilis; though differences were not statistically significant. Similar results have been reported by cities on the west coast; this is the first time this has been documented in multiple cities across the US.



P-609 INCREASE IN SYPHILIS DIAGNOSES IN BELGIUM AND NEED FOR FURTHER INFORMATION ON RE-INFECTIONS

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Background: In Belgium, there are two sentinel surveillance networks that register syphilis cases. The sentinel surveillance by a network of physicians started in October 2000 and includes a broad range of STI. The sentinel laboratory network included syphilis since 2002, in reaction to the syphilis outbreak observed in 2001.

Objectives: To analyze and compare the data on syphilis collected between 2000 and 2005 by two sentinel surveillance systems in Belgium.

Methods: The network of physicians consisted in 2005 of 50 registration sites spread over the country; only active and recent syphilis cases are registered. In the laboratory network, 110 laboratories spread over the country are participating in the surveillance of a large range of infectious diseases; the case definition used for syphilis is RPR/VDRL>1:4 and a positive treponemal test. Both systems are based on a voluntary participation. The network of physicians collects more detailed information about the patients, while the representativeness of the laboratory network is higher (around 70%).

Results: Between 2002 and 2005, the laboratory network observed a continuous increase in the number of syphilis cases registered, from 114 in 2002 to 359 in 2005 (p<0,01). This increase was observed in almost all provinces, but of all cases registered (N=893), most were found in urban areas, like Antwerp (35%) and Brussels (23%). The increase was observed as well in women as in men, but 85% of all cases were men. 58% of men were aged between 30 and 44 years. An increase was observed in all age groups. Of men aged between 30 and 44, respectively 64 and 141 cases were registered in 2002 and 2005 (+ 120%). The network of physicians registered 374 syphilis diagnoses between October 2000 and the end of 2005, of which 93% concerned men (N=348). 81% of men reported

a homo/bisexual orientation (N=283); sexual orientation was unknown for 5% of men. For 276 of these 283 syphilis diagnoses in MSM (men who have sex with men), the HIV status was known; in 59% of these diagnoses, the HIV status was positive (N=163); in 88% of these cases, HIV seropositivity was known before syphilis diagnosis. The data of the network of physicians indicate that the increase in syphilis diagnoses manifests in MSM. However, information that allows quantifying re-infections was lacking until now in both networks.

Conclusions: The two sentinel surveillance systems in Belgium provide complementary information which allows getting a more complete idea of syphilis epidemiology by comparing the data of both networks. An analysis of the data collected between 2000 and 2005 shows that syphilis incidence is still increasing, despite extra prevention efforts. The observation of HIV positive MSM being aware of their infection and being diagnosed with a new episode of syphilis is alarming. Focused and innovative prevention activities should be continued. Furthermore, STI surveillance in Belgium will be optimized by organizing STI surveillance in HIV positive patients followed by physicians, in order to meet the need for information on syphilis re-infections.

P-610 INCREASES IN SYPHILIS TESTING FOLLOWING A SYPHILIS AWARENESS MEDIA CAMPAIGN CHICAGO, ILLINOIS, 20042006

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Objective: Prior to 2001, syphilis occurred primarily among heterosexual adults of low socioeconomic status in Chicago. Epidemic increases of syphilis occurred among men who have sex with men (MSM) beginning in 2001 and syphilis cases continued to decline among heterosexual populations in the city during this period. In response to syphilis increases, a syphilis marketing campaign to increase syphilis testing ran from October 2003 to December 2004 targeting MSM to raise awareness of syphilis and the need for routine syphilis screening. We evaluated community-wide syphilis testing patterns following the launch of the syphilis awareness media campaign to identify changes in syphilis testing behaviors from 2004 to 2006. .

Methods: We reviewed of the prevalence rate and the number of tests performed at a convenience sample of 27 large community hospitals and clinics in Chicago from 2004 to 2006, and compared the testing dates with the date of the syphilis awareness media campaign.

Results: Of the 27 hospitals and laboratories evaluated, the number of tests performed annually increased from 2004 to 2006. In 2004, 93,173 were tested with 1,193confirmed reactive syphilis tests. In 2005, 132,862 syphilis tests were performed with 1,682 confirmed reactive syphilis tests representing an increase of 43% in the number of tests performed in 2005 compared to 2004. In 2006, 172,606 syphilis tests were performed, with a yield of 2,018 confirmed reactive syphilis tests representing an increase of 30% over 2005. Overall, the number of syphilis tests performed increased by 83% from 2004 to 2006

Conclusions: We observed increases in syphilis testing in the years during and following the implementation of a syphilis awareness media campaign.

P-611 RISK FOR SYPHILIS IN CHINA'S STI CLINIC POPULATION: A CROSS-SECTIONAL STUDY OF 11,500 PATIENTS IN GUANGXI PROVINCE

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Objective: To measure the prevalence of syphilis among the STI clinic population in Guangxi Autonomous Region (Guangxi) in Southwestern China and to assess the socio-economic and behavioral characteristics associated with infection.

Methods: We undertook a cross-sectional survey and syphilis and HIV serologic testing of 11,473 adult male and female patients attending 14 community and hospital-based dermatovenereal clinics across eight cities in Guangxi Autonomous Region between December 2004 and February 2006.

Results: 1,297 (11.9%) patients demonstrated positive RPR and TPPA results with serologic testing. 58% (752) of sero-positive subjects presented with a genital ulcer, palmar/plantar rash or inguinal lymphadenopathy. Female sex (OR 2.23, CI95%: 1.69-3.00, p<0.001), limited education (middle school, OR 1.70, CI95%: 1.11-2.62, p=0.023; primary school or less, OR 1.98, CI95%: 1.13-3.46, p=0.017) and income greater than 30000 RMB (OR 1.91, CI95%: 1.18-3.10, p=0.009) were associated with serologic status. Syphilis infection was significantly more prevalent in City 2 (19.5%, OR 3.07, CI95%: 1.83-5.16, p<0.001), City 4 (16.6%, OR 1.90, CI95%: 1.10-3.28, p=0.011) and City 8 (13.8%, OR 1.83, CI95%: 1.13-2.97, p=0.006), and also in participants with multiple partners (OR 1.54, CI95%: 1.16-2.06, p=0.003). The HIV co-infection rate was 1.8%.

Conclusions: Syphilis infection and HIV co-infection reach alarming rates in China's STI clinic population and there is substantial evidence to suggest generalized spread of disease through commercial sex and bridging populations. Syphilis control is deserving of China's highest priority. Rigorous screening for syphilis and HIV testing in STI clinics should be considered as reasonable measures for control.

P-612 IMPROVING STRATEGIES FOR SYPHILIS CONTROL IN CHINA: DEVELOPING A RISK SCORE ALGORITHM FOR MASS SCREENING AND TESTING

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Objective: Testing and treatment guidelines in China are based on symptomatic criteria, and undervalue risk assessment and asymptomatic infection. Such missed opportunities for case detection are particularly serious in China's STI patients, in whom prevalence is high. The objective of our study was to develop a screening tool and risk score algorithm of behavioral and health indicators to instruct heath providers on syphilis serologic testing in China's STI population.

Methods: Results of syphilis serologic testing and behavioral survey of 10695 patients attending STI clinics in Guangxi, Autonomous Region were used to assess a screening tool of behavioral and health indicators for syphilis testing. Two algorithms were developed to assign risk values to each screening item and to compute risk scores for STI patients. The first algorithm uses the results of univariate analysis to weight the risk value of indicators; the second algorithm assigns an equal arbitrary value of 1.0 to each indicator. Performance (sensitivity and specificity) of algorithms and risk-score cut-offs were calculated, compared and assessed.

Results: 40.9% (519) of sero-positive patients did not show hallmark signs of syphilis (genital ulcer, lymphadenopathy or palmar/plantar rash). 6.8% of patients with other non-specific signs and symptoms ('atypical') carried infection with syphilis. Our screening tool included questions on HIV status, multiple partners, condom use, commercial sex, drug use and being MSM. The second algorithm outperformed the first; screening based on answering 'yes' to any of the above screening questions (risk score cut-off of 1.0) or meeting China's current screening criteria (presentation of any hallmark sign of syphilis infection) detects 83.2% of syphilis infection in all STI patients while testing only 71.2% of the patients.
Conclusions: Selective testing for syphilis based on a constellation of signs/symptoms, behavioral and health risks improves case detection and reduces the number needing tested among the high prevalence STI community; however universal testing of all STI clinic patients and other high risk populations will be required to address the Chinese syphilis epidemic.

P-613 NON-TREPONEMAL AND TREPONEMAL SEROLOGIC REVERSION RATES IN HIV-POSITIVE PATIENTS INFECTED WITH SYPHILIS

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Objectives: Studies in the pre-HIV era document >95% reversion rates of non-treponemal syphilis serological tests (RPR) in subjects with early syphilis (ES). A larger study in the 1980s reported 63% seroreversion at 36 months in ES, but the HIV serostatus of participants was unknown. Predictors of seroreversion included low pre-treatment RPR titers and a first episode of syphilis. Our goal was to evaluate long-term seroreversion rates among HIV-positive patients infected with syphilis.
Methods: We assessed incident syphilis episodes between 1995 and 2006 in a large urban HIV clinical cohort in which comprehensive demographic, clinical and therapeutic data were collected longitudinally. Staging and treatment of syphilis were based on established CDC criteria. We defined RPR seroreversion as loss of reactivity of a previously positive RPR. All RPRs were confirmed by FTA-ABS positivity. We used Cox Proportional Hazards models with intra-subject clustering to adjust for confounders and repeated measures. Hazards Ratios (HR) and robust 95% confidence intervals (CI) are reported.
Results: 180 subjects [33% female, 88% Black, mean age 38.6 years, median initial CD4 cell count and HIV viral load 280 cells/ml and 18,191 copies/ml, respectively; 61.4% received highly active antiretroviral therapy (HAART) during follow-up, 17% were virologically undetectable at initial visit (<400 copies/ml)] contributed 231 incident cases of syphilis [62 (26.8%) ES, 128 (54.6%) late latent/unknown duration (LL), and 41 (17.7%) neurosyphilis (NS); 55.4% reported a previous history of syphilis]. Mean number of RPRs was 4.1 (median 4.0); mean duration of follow-up was 4.0 years (median 3.4). There were a total of 28/231 (12%) RPR seroreversions [8/62 (12.9%) ES, 15/128 (11.7%) LL, and 5/41 (12.2%) NS]; 3/28 seroreversions occurred 12 months after therapy and 10/28 at 36 months; overall median seroreversion time was 4.0 years. Table 1 summarizes the significant predictors of seroreversion. In 26 of 28 subjects with post-seroreversion serologies, 23/26 (88.5%) had subsequent positive RPR serologies documented with fluctuating titers ranging from 1:1 to 1:4. None had evidence of clinical failure and none were retreated. 3/26 (11.5%) had >4-fold increased RPR titers without clinical symptoms and were retreated. No subjects had seroreversion of their treponemal specific confirmatory tests (FTA-ABS) during follow-up.
Conclusions: RPR seroreversion is rare among HIV infected patients; when it does occur, it is transient, inconsistent, more common among white subjects, those with low pre-treatment titers, early stage disease, and more advanced immunosuppression. Whether lack of seroreversion contributes to the high serological failure rates observed in this population is unknown.

	Adjusted* HR (95%CI)
Pre-treatment RPR titer	
Syphilis Stage	
CD4 cell count (cells/ml)	
White vs. Black	
HAART use >6 months during follow-up	

*Adjusted for age, sex, syphilis stage, pre-treatment RPR titer, CD4 cell count, HAART use during follow-up, previous history of syphilis, HIV RNA and baseline CD4 count

P-614 ARE INCREASES IN EARLY LATENT SYPHILIS A HARBINGER OF SYPHILIS EPIDEMICS?

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Objectives: Conventional disease control wisdom states that an increase in early latent (EL) syphilis foreshadows an increase in primary and secondary (P&S) disease. We determined whether incidence trends in early latent syphilis predicted trends in primary and secondary syphilis.
Methods: We used quarterly syphilis surveillance data from Baltimore, Maryland, USA between 2002 and 2005 to determine whether 1) trends in the number of all cases of EL, 2) trends in the number of high titer(RPR > 1: 16) 3) trends in the proportion of all early syphilis cases staged as EL, or 4) trends in the proportion of all early syphilis cases staged as high titer EL were qualitatively and quantitatively correlated to trends in P&S syphilis within the same reporting quarter, 3 months (1 quarter), or 6 months (2 quarters) into the future. We used percent agreement to assess the similarity of qualitative trends in EL and P&S incidence. For quantitative evaluation, we plotted changes in P&S versus changes in EL to assess their correlation.
Results: Qualitatively, incidence trends in reported P&S agreed with those of all reported EL case 63% (10/16 quarters) of the time within the same quarter, 33% of the time 3 months later, and 43% of the time 6 months later. Agreement was similar when trends in P&S cases were compared to trends in high titer EL cases. No apparent patterns emerged when we plotted the percent change in P&S versus the percent change in EL, or when percent change in P&S was plotted versus percent change in high titer EL. The percent agreement between changes in the proportion of all early syphilis cases staged as EL was 38% within the same quarter, 47% one quarter later and 43% 6 months later. Percent agreement between changes in P&S and changes in the proportion of all early cases staged as high titer EL was 38%, 33% and 71%, respectively. Increases in P&S cases were weakly linearly correlated with increases in the proportion of cases staged as EL that occurred 6 months prior; increases in P&S cases also were weakly linearly correlated with increases in the proportion of high-titer EL cases that had occurred 6 months prior.
Conclusions: A rise in early latent syphilis is unlikely to be a predictor of increases in primary and secondary syphilis.

P-615 COMPARITIVE EVALUATION OF SYPHILIS ABBOTT ARCHITECT CHEMILUMINESCENT IMMUNO ASSAY AND RPR TEST FOR THE DETECTION OF SYPHILIS INFECTION USING TPPA TEST AS GOLD STANDARD

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Objectives: Abbott Architect Chemiluminescent Immuno Assay (CLIA) is a fully automated test for the detection of syphilis infection. In this study we compared this newly developed assay with the routine Rapid Plasma Reagin (non treponemal) test using the Treponema pallidum Particle Agglutination Test (TPPA) as the gold standard.
Methods: A total of 134 syphilis positive and 120 syphilis negative banked sera were tested with the Abbott Architect CLIA and the RPR test. Positive sera were characterized by being TPPA reactive and negative sera were characterized by being TPPA non-reactive. Sensitivity, specificity, positive predictive and negative predictive values (PPV and NPV) were determined.
Results: The sensitivity and specificity of the Abbott assay was 97.0% and 92.5.0 when compared to the confirmatory TPPA test. The PPV and NPV were 93.5% and 96.5% respectively. The RPR was 94.0% sensitive and 81.7% specific. The PPV and NPV were 85.1% and 92.5% respectively.
Conclusions: In this study, the Abbott Architect CLIA performed better than the non-treponemal RPR test and relatively well compared to the TPPA test. This automated method has advantages and disadvantages. Therefore this automated treponemal assay can be used for the detection of syphilis infection, depending on the laboratory's requirements, budget and clinical setting.

P-616 SYPHILIS TRENDS IN PUERTO RICO, 2000-2006

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Objectives: To compare three stages of Syphilis (Primary and Secondary, Early Latent and Late Latent) in Puerto Rico between 2000 and 2006 and determine the Syphilis rates in Puerto Rico, by age and gender during 2006. Determine the rates of Syphilis by health region in Puerto Rico during the period 2005-2006
Methods: Data from the US Census Bureau and Puerto Rico STD Surveillance Office was used to describe the demographic characteristics and geographic distribution of Syphilis cases in Puerto Rico during 2006.
Results: The percentage of Primary and Secondary syphilis was higher in male than in female, an average of 19%, in the last 7 years with exception of 2001. On the other hand, Early and Late Latent syphilis percentage were always higher in males for the same period f time, an average of 16% and 28% respectively. The ages 20 to 34 years old had the highest percentages of Primary and Secondary syphilis for this period. The same was observed with Early Latent Syphilis in the ages 20 to 40 years old and with Late Latent syphilis in the ages 40 to 44 years old. From 2000 to 2006, the rate of Primary and Secondary Syphilis decreased 17.6% (from 4.58 to 3.8 per 100,000 populations). The rate of Early Latent Syphilis decreased 44.3% between 2000 and 2006, (from 17.4 to 9.7 per 100,000 populations) and the rate of Late Latent Syphilis decreased 8.7% (from 12.6 to 11.5 per 100,000 populations).
Conclusions: The rates of Primary and Secondary, Early Latent and Late Latent Syphilis, reported in Puerto Rico decreased during the seven years. Unfortunately the rate of Congenital Syphilis had slightly increased. Syphilis remains a major public health problem in Puerto Rico, especially among women and men aged 20-44 years. Collaboration with media organization, public health professionals, Community Based Organizations, and other partners working in STD and HIV is essential for the successful elimination of syphilis in Puerto Rico

P-617 IMPLEMENTING AND EVALUATING A DIRECT-MAIL INTERVENTION TO IMPROVE SYPHILIS PATIENT CARE BY PRIMARY CARE CLINICIANS IN AN URBAN U.S. COMMUNITY

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Objective: Despite national efforts to eliminate syphilis from the United States, rates of infectious syphilis have continued to increase. We describe the development, implementation, and evaluation of a small-media intervention to increase syphilis awareness, appropriate use of diagnostic tests and medications, and appropriate sex partner referral strategies by primary healthcare providers in the greater metropolitan area of St. Louis, Missouri.
Methods: In 2004 and 2005, formative qualitative interviews and focus groups among primary care physicians and nurse-practitioners (N=32) highlighted areas of knowledge deficit with regard to syphilis diagnosis, treatment, and partner referral. Key informants facilitated the development of full-color, laminated, ready-reference small-media guides for physicians and mid-level healthcare providers. Topic areas included recognizing syphilis lesions; using proper laboratory tests to confirm syphilis infection; using CDC-approved treatment regimens for syphilis; and referring sex partners of patients with infectious syphilis to appropriate health authorities for clinical evaluation and empiric treatment. Pocket guides were mailed directly to St. Louis-area primary care physicians and mid-level healthcare providers, using publicly-accessible practitioner address lists. Impact evaluation questionnaires were subsequently mailed to clinicians approximately six to eight weeks after distribution of the small-media guides, with up to three follow-up phone calls for non-responders. Improvement in syphilis care was assessed by clinicians' self-reported measures of quality as a result of receiving the intervention vehicle.
Results: Syphilis lesion recognition guides (N=515) and clinical management protocols (N=660) were sent by direct mail to primary care providers' office addresses; 68 mailed guides (5.8%) were returned due to incomplete or improper addresses. Impact evaluation responses were received from 234 (45.4%) of the 515 providers who were targeted to receive the lesion recognition guides. Clinicians reported that the guides provided new and important information about syphilis (76.0%); that the guides were helpful in their clinical practice (68.8%); and that the guides were visually appealing and easy to understand (67.9%). The majority of respondents stated that the guides had a positive impact upon their choice of syphilis laboratory tests (61.5%) and choice of medications to treat syphilis (55.5%). However, fewer than half of all respondents indicated that the guides had positively impacted their partner management and referral practices (37.6%).
Conclusion: Lesion recognition and clinical management small-media guides were successfully distributed to primary care clinicians using a direct-mail intervention strategy. Self-reported impact was greater for improving direct patient care than for enhancing sex partner referral to public health authorities. Future interventions among clinicians should emphasize the role of appropriate partner management strategies for syphilis control and prevention at the community level.

P-618 SYPHILIS OUTBREAK IN CATAO, PUERTO RICO, 2006

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Objectives: To describe the characteristics of the outbreak, to profile the cases that resulted and to discuss the strategies used to manage it.
Methods: During the second quarterly STD report (April-June/2006) of the health region of Bayamón it was noticed that there were an excessive number of cases in the municipality of Cataño. Due to the surplus of cases, the disease intervention specialist of the area met with the STD outbreak management team to dis-

cuss them. All the data present in the interview records was analyzed and recommendations were made. The next step included the re-interviewing of some of the people who initially didn't reported any sexual partners, checking their addresses, more testing (VDRL, TPPA, conventional HIV) and the revision of the medical records of identified patients to verify compliance and adequacy of treatment.

Results: A group of physicians, nurses, health educators, counselors, disease intervention specialists and members of the HIV Outreach Community Team, were also involved in the management of this outbreak. A total of 51 people got tested during this outbreak, 33% of them were women and 66.7% were men. The mean age was 46 year old. The closer look of these cases, the re-interviews of the same cases and the testing of their contacts and suspects finally yielded 14 syphilis cases, 6 in men and 8 in women (1-710, 3-720 and 10-730) and 3 new HIV cases, all males. The most reported risk factors were sex with women (41%), sex with men (17%), use of injectable drugs (9.6%) and sex with injectable drug user (9.6%).

Conclusions: It was seen that all the infected people in this particular outbreak were having sex more or less in the same chain of transmission and in the same community. One of the strategies used to manage the situation were the integration of components of other areas and programs (HIV Outreach Community Team, Elimination of Syphilis Project and Disease intervention specialists). This event also leads us to revise and improve the existing plan for Syphilis outbreak management. This was an example that even in a place or situation with little resources, cooperation between near by areas regarding material and personal can make a difference in the managing of an infectious disease.

P-619 MODELLING LOCALISED SYPHILIS OUTBREAKS IN THE UNITED KINGDOM

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Objectives: Syphilis has been increasing in the United Kingdom since late 1990s and is of particular concern in London, which, in 2005, had one of the highest rates of primary and secondary syphilis in the United Kingdom. A rise of 1520% in rates of diagnoses of infectious syphilis (primary and secondary) in males has been reported between 1998 and 2004. This is largely as a result of a number of localised outbreaks that occurred during this period [1].Our objective then is to model local outbreaks of syphilis in the United Kingdom.

Method: We have developed a mathematical model to represent of these stochastic heterogeneous outbreaks. We explore the effects of topology of different contact networks and the influence of heterogeneity within sexual partnerships to see the extent to which these help in sustaining the outbreaks

Results: We find for the cases where the reproductive number R0=1 we have a localised outbreak which naturally subsides without any intervention, for the cases where R0>1 we frequently have a sustained outbreak which is most likely to spread out of the high risk group into the larger low risk community. We explore the effects of topology of different contact networks and the influence of heterogeneity within sexual partnerships to see the extent to which these help in sustaining the outbreaks.

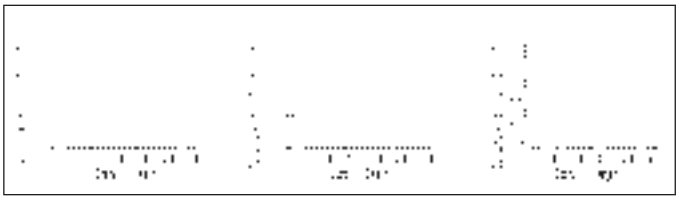

Figure 1: Simulation of local syphilis outbreaks.

P-620 CONGENITAL SYPHILIS EPIDEMIOLOGY IN CALI, COLOMBIA

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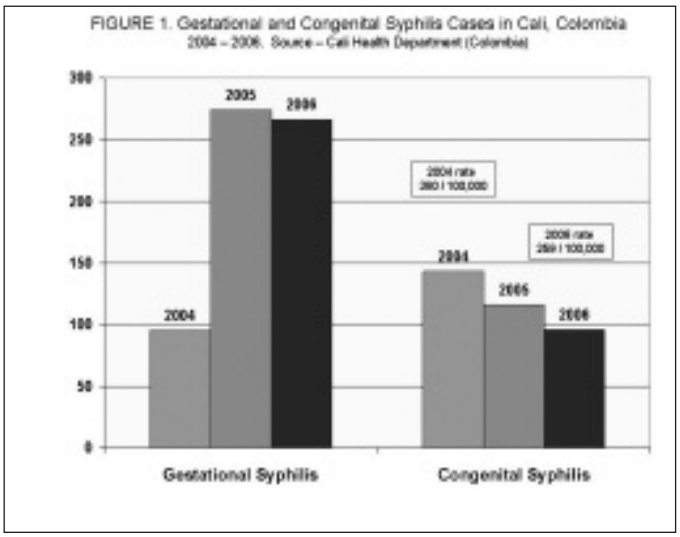
Objectives: Congenital syphilis has deleterious consequences to both the fetus and newborn child. In 2004, the city of Cali´s Health Department reported 143 cases of congenital syphilis (rate of 380 per 100,000 live newborns). Little information was available then about each case of congenital syphilis or the incidence of gestational syphilis in the city. With this in mind and in collaboration with the Cali Health Department we developed an active surveillance program to improve gestational syphilis diagnosis and treatment and to better understand the epidemiology of congenital syphilis in the city.

Methods: To improve gestational syphilis case ascertainment, we instituted citywide campaign targeting pregnant women from high risk, underserved communities, in order to steer them into early prenatal care which included serologic testing and proper treatment for syphilis. At the same time we implemented and educational campaign directed towards health care professionals to improve their ability to diagnose and treat gestational syphilis according to WHO's Congenital Syphilis Elimination Plan. Lastly, we engaged health care administrators to both promote and facilitate the implementation of the surveillance program. We also analyzed key variables associated with each case of congenital syphilis. All gestational and congenital syphilis cases were reported to the Cali Health Department using standardized surveillance forms. A presumptive diagnosis of gestational syphilis was made in pregnant women with a documented reactive non treponemal test (RPR) > or = 1:8 dilutions or in the case of a lower titer if a confirmatory treponemal test (serodia TP.PA) was available. Women with positive non treponemal titers < 1:8 dilutions were also considered to have gestational syphilis if they were deemed to be at high risk for acquiring the disease according to an established algorithm. All congenital syphilis cases were diagnosed according to CDC criteria.

Results: During the active surveillance period (2004-06) we identified 540 cases of gestational syphilis; a significant increment compared to the number of cases in 2004 (Figure 1). Most (29.5%) gestational syphilis cases were diagnosed in women between 15 and 19 years of age and the majority were identified in women living in very poor regions of the city. In the same period, congenital syphilis cases decreased by 32 %. Of 96 cases of congenital syphilis reported in 2006; maternal reinfection (47%) in the last trimester of pregnancy was the most important cause. Other causes included a lack of prenatal care (20.2%), gestational syphilis diagnosis and treatment after week 34 of gestation(14.9%), inadequate maternal treatment (13.8%) and lack of prenatal diagnosis or treatment (3.2%).

Conclusions: This study shows that the city of Cali has very high rates of congenital syphilis. High gestational syphilis rates are also indicative that venereal syphilis is highly endemic in the city. The Health Department's surveillance plan has resulted in a significant increase in the total number of reported gestational syphilis cases. Not surprisingly, in the same period, we also noted a very important decrease in congenital syphilis rates. Despite the progress shown here, additional public health campaigns are needed in order to eliminate congenital syphilis in this population.



P-621 PRIMARY SIPHILIS IN AN STI CENTRE IN CHILE: DESCRIPTIVE ACCOUNT OF 51 CASES DIAGNOSED IN 2006

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Objectives: Description of demographic, clinical and management features of all cases diagnosed as Primary Syphilis at a Centre for STI in Chile during the year 2006. Analysis of correlation between treponemal and non-treponemal tests with clinical presentation and response to penicillin therapy.
Methods: A retrospective analysis of clinical notes and laboratory results. 51 cases were found. Full follow up after treatment and diagnosis was possible in 41 cases.
Results: Diagnosis of Primary Syphilis was mainly made in males (73%), young and heterosexuals (84%). The diagnosis was clinical in 78% and confirmed with laboratory results in 85% of the cases.88% of the cases presented as chancres in genitals. 63% presented with a VDRL titrer equal or higher than 1:8 and in all cases where the treponemic MHA-TP test was performed, the result was reactive. However, there were 5 cases with typical chancres but non reactive serology at presentation. All cases were follow up was recorded showed decreasing VDRL titres after treatment with penicillin after 2 weeks of presentation and treatment. Main location of chancres was the penis in men and vulva in women.
Conclusion: Clinical presentation of Primary Syphilis in 2006 in Chile conforms with classical descriptions. Non-treponemic VDRL test does not correlate with early clinical presentation in a significant number of cases which were confirmed later with a treponemic test but confirms its usefulness to measure response to treatment. Clinical recognition of Primary Syphilis is still essential for early diagnosis.

P-622 THE GLOBAL BURDEN OF CONGENITAL SYPHILIS, AND WHY WE CAN ELIMINATE CONGENITAL SYPHILIS NOW

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Objective: To estimate, globally, the numbers of cases of congenital syphilis (CS), review their importance, and determine best practices for the elimination of CS within countries.
Methods: To estimate numbers of cases of CS, we conducted a review of the published and 'grey' literature seeking data from any country on the seroprevalence of syphilis in women (positive reaginic and treponemal test) attending antenatal care 1997-2003; applied WHO (sub)regional seroprevalence means of data to countries from the same WHO (sub)region without data; applied seroprevalence means to United Nations estimates of numbers of births per country to determine the numbers of pregnant women with syphilis; and, using any of three published estimates of the proportion of women having an infected child, we estimated the annual number of CS cases globally. To review the importance of CS and approaches to elimination, we conducted a review of the published literature on the social and economic consequences of CS, and on programmatic aspects of CS prevention.
Results: Maternal seroprevalence was highest in Central and South America and Africa, and lowest in the Eastern Mediterranean and Western Pacific regions. Depending upon assumptions, we estimated the annual number of cases of CS worldwide to be 729,000-1,528,000; these figures would be increased by including women with stillbirth who did not access antenatal care (ANC) but successful therapy for syphilis detected during pregnancy would decrease the clinical importance of these numbers. Few data were found on the social consequences of CS to mothers, with none from the developing world, but industrialized world data indicate fetal death is a traumatic event for women. Preventing CS is highly cost-effective, with the cost per DALY saved of $4-19 in the developing world. At least 68% of pregnant women attend ANC, although often too late to prevent early fetal loss (mean time of first attendance, 5-6 months), but unpublished data show this figure is increasing. The current, successful international emphasis on enhancing attendance at ANC and improving ANC services, development of field-tested simplified, cost-effective point-of-care screening tests for syphilis, and possible combination of syphilis testing in ANC with prevention-of-mother-to-child-transmission programmes for HIV, offer new opportunities around which to form a global consensus to eliminate CS. (schmidg@who.int)
Conclusions: Globally, CS has high medical, economic and, likely, emotional costs. There is little reason why the elimination of CS should not be a public health priority.

P-623 OPPORTUNITIES FOR THE PREVENTION OF CONGENITAL SYPHILIS IN MARICOPA COUNTY, ARIZONA

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Background/Objectives: Arizona had the highest congenital syphilis (CS) rates in the U.S. for years 2003-2005. The majority of these cases were diagnosed in Maricopa County. The objective was to identify barriers to prenatal care and missed opportunities for syphilis screening and treatment.
Methods: Health Department record review was performed for all cases diagnosed in Maricopa County to obtain demographic information and reason for diagnosis. Women that gave birth to infants with congenital syphilis from 2000 through 2005 were interviewed during May-August 2004 and November 2005-March 2006.
Results: During 2000-2005, 131 cases of CS were reported to the Maricopa County Department of Public Health. Ninety-five cases (73%) were Hispanic. Sixty-five (50%) of the mothers were insured. Forty (31%) mothers reported drug use during pregnancy; 23 (18%) reported exchanging of sex or drugs for money. Fifty-seven (44%) described themselves as non-citizens. Fifty-two (40%) of the mothers received no prenatal care. The most common reason for CS diagnosis was no prenatal testing (N = 45, 34%), followed by being tested and having a positive result but not receiving appropriate treatment at least 30 days prior to delivery (N = 33, 25%). Testing positive and receiving treatment during pregnancy but not achieving an adequate non-treponemal titer response versus re-infection occurred in 16 (12%) cases. Eleven (8%) of the mothers tested positive during pregnancy but did not receive treatment prior to delivery. Sixty-seven (51%) of mothers received syphilis testing at their first prenatal visit, 64 (49%) received testing during the third trimester and 52 (40%) received testing at both intervals. Only 4 women (3%) that

received prenatal care were not tested for syphilis during pregnancy. Forty-four women were interviewed for the survey study; of these 34 (77%) reported receiving some prenatal care. Twenty-four of these women (71%) reported attending five or more prenatal visits; 17 (71%) of them received testing at first prenatal visit, 14 (58%) received testing during the third trimester, and 12 (50%) received testing at both intervals. Eight women reported attending between one and four prenatal care visits; four (50%) of them received testing at both intervals and four received no prenatal testing. Of the women reporting sites for prenatal care (N = 33), 13 (39%) reported attending a private provider or clinic, 7 (21%) attended a private hospital clinic, and 8 (24%) attended a public clinic.

Conclusions: We found a large percentage of CS cases could have been prevented through early prenatal testing and/or testing in the third trimester at a time point that would allow for receipt of adequate treatment prior to thirty days of delivery. Increasing the access and uptake of prenatal care that includes syphilis testing early in pregnancy, and again early in the third trimester remains a primary component of congenital syphilis prevention in high morbidity areas. Education of providers and pregnant women may prevent some cases of congenital syphilis by reinforcing these screening recommendations.

POSTER SESSION: VAGINITIS

P-624 NOVEL BACTERIA ASSOCIATED WITH BACTERIAL VAGINOSIS AMONG WOMEN WITH PELVIC INFLAMMATORY DISEASE

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Objectives: As the etiologies of bacterial vaginosis (BV) and pelvic inflammatory disease (PID) are not well understood, we sought to determine the relationships between several novel microbes and BV among a population of women with non-gonococcal, non-chlamydial PID.

Methods: Endometrial and cervical specimens from 50 women with non-gonococcal, non-chlamydial endometritis studied as part of the PID Evaluation and Clinical Health (PEACH) Study were tested for Leptotrichia sanguiengens/amnionii, Atopobium vaginae, and bacterial vaginosis-associated bacteria 1 (BVAB1) using PCR. BV was categorized using Nugent's and Amsel's criteria. Odds ratios adjusted for age and race were estimated using multivariable logistic regression.

Results: L. sanguiengens/amnionii, A. vaginae, and BVAB1 were frequently detected in cervical specimens (62%, 52%, and 28%, respectively). Similarly, these bacteria were often identified in endometrial specimens (L. sanguiengens/amnionii, 48%; A. vaginae, 10%; BVAB1, 4%). Women in whom novel pathogens were detected were generally more likely to have each of Amsel's criteria for BV. For each of these bacteria, there were trends toward associations with BV defined by Amsel's criteria (L. sanguiengens/amnionii adjusted OR 2.86, 95% CI 0.52 ' 15.70; A. vaginae adjusted OR 2.56, 95% CI 0.58 ' 11.43; and BVAB1 adjusted OR 5.65, 95% CI 1.03 ' 31.12) and significant associations with BV defined by Gram stain (L. sanguiengens/amnionii adjusted OR 17.70, 95% CI 2.77 ' 113.04; A. vaginae adjusted OR 19.21, 95% CI 3.74 ' 98.68; and BVAB1 adjusted OR 21.08, 95% CI 2.24 ' 198.47).

Conclusions: L. sanguiengens/amnionii, A. vaginae, and BVAB1 are common among women with non-gonococcal, non-chlamydial PID and are associated with clinical characteristics consistent with BV and BV defined by Nugent's and Amsel's criterias. e-mail correspondence: Catherine L. Haggerty, PhD, MPH, haggerty@pitt.edu

P-625 AN ESTIMATE OF THE BURDEN OF UNDIAGNOSED TRICHOMONAS VAGINALIS INFECTIONS IN NEW YORK CITY SEXUALLY TRANSMITTED DISEASE CLINICS

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Objective: T. Vaginalis (TV) is estimated to be the most common nonviral sexually transmitted infection (STI) in the United States and has been associated with adverse pregnancy outcomes, pelvic inflammatory disease, urethritis, epididymitis, prostatitis and a 1.5 fold increased risk of HIV-I acquisition among women. Despite this, diagnostic testing using wet mount of vaginal fluid with a sensitivity of 60-70% is the norm even in settings dedicated to the diagnosis and treatment of STI. The objective of this study is to estimate the burden of undiagnosed TV in New York City (NYC) Department of Health and Mental Hygiene (DOHMH) Bureau of Sexually Transmitted Disease Control (BSTDC) clinics where 'wet mount' is the only TV diagnostic test available.

Methods: We analyzed data extracted from an electronic medical record system used by 10 NYCDOHMH BSTDC clinics in 2006. The number of wet mounts performed, final diagnoses and total numbers of men and women presenting for evaluation were examined. To estimate the annual expected number of gender specific TV infections, we utilized prevalence data based on recent literature by both J. Schwebke and Van Der Pol in STD clinic populations tested by culture or polymerase chain reaction (PCR). We assumed the prevalence of TV to be 25% among female STD clinic attendees, and 17.5% among male STD clinic attendees, and applied this prevalence to the number of patient visits by gender.

Results: A total of 45,606 women and 58,432 men presented for STI evaluation. Forty percent (18,262/45,606) of women evaluated by a physician were tested for TV and of those, 4% (771/18,262) were found to be TV infected by wet prep. No cases of TV were diagnosed in men as testing was not performed. However, 10,215 cases of nonchlamydial, nongonococcal urethritis were diagnosed in men evaluated by a physician. The expected number of TV cases in women and men at this clinic would be 11,401 (45,606 x .25) and 10,225 (58,432 x .175), respectively. We therefore potentially missed up to 10,630 (11,401-771) cases of TV in women and 10,225 in men.

Conclusion: The high prevalence of TV infection and adverse health consequences of this infection indicate that it is important to diagnose and treat. With the advent of PCR based screening tests that are both highly sensitive and specific we can now consider developing a cost effective protocol to test and treat TV and thereby minimize the adverse consequences of this STI in the attendees of the NYCDOHMH BSTDC clinics.

P-626 EVALUATION OF BV SCREENING AMONG PREGNANT WOMEN: SYRACUSES HEALTHY START PROJECT

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Objectives: Prematurity (birth at <37 weeks gestational age), low birthweight (<2500g), early prematurity (< 32 weeks) and very low birthweight (VLBW) (<1500g) are leading causes of infant morbidity and mortality. Bacterial vaginosis (BV), an imbalance of vaginal microflora, is associated with such adverse pregnancy outcomes. We evaluated whether BV screening and treatment reduced adverse pregnancy outcomes in the Syracuse Healthy Start Project.

Methods: The Syracuse Healthy Start Project, aimed at reducing infant mortality, included early screening/treatment for BV. Prenatal care (PNC) providers seeing women residing in inner-city Syracuse were encouraged to collect a swab for Gram staining at the first prenatal visit. A local hospital laboratory read the Gram stain. Providers were encouraged to treat using a recommended CDC STD Treatment Guidelines regimen. Prenatal and in-patient charts of women delivering between January 2000 and March, 2002 (N=3109) were reviewed for BV screening/treatment, risk factors for adverse outcomes, and gestational age and birth weight data.
Results: 2278 singleton/mother pairs had complete information, were either never screened or screened by Gram stain, and were included in this analysis; 661 (27%) were never BV screened, and 1817 (73%) were screened by Gram stain. Compared to the never screened group, women in the Gram-stain screened group were more likely to be <20 years (22% vs 13%), black (50% vs 41%), single (73% vs 56%), smokers (36% vs 25%), have a history of a previous preterm birth (12% vs 6%) and < 12 years education (40% vs 22%)(all p<0.01). Prenatal care started at (median) 10 weeks for both groups; in the Gram stain screened group, the first screen occurred at 11 weeks (median) and the first treatment was at a median of 14 weeks. Premature delivery (11.4% vs 13.2%), low birthweight (8.6% vs 11.5%), delivery at <32 weeks (2.1% vs 4.4%), and VLBW (1.9% vs 3.8%) were lower in the Gram stain screen/treatment group compared to the unscreened group (p=0.2, 0.02, 0.001, 0.006, respectively). These relationships remained after controlling for age, race, educational attainment, marital status, smoking status, and previous preterm birth.
Conclusions: BV screening/treatment in the Syracuse Healthy Start Project was associated with a reduction in several adverse pregnancy outcomes.

P-627 VARIABLE NUMBERS OF TANDEM REPEATS ENCODE PROLINE-RICH REGIONS IN TWO BSPA-LIKE GENES OF TRICHOMONAS VAGINALIS

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Objective: Preliminary annotation of the T. vaginalis (Tv) G3 genome identified 658 members of the bspA-like gene family. BspA-like proteins contain N-terminal leucine-rich repeat regions (LRRs) predicted to form fibronectin-binding structures. Tv BspA-like-625 (BspA625), identified from cloned cDNA, also contains a proline-rich repeat region (PRR). Whereas the LRRs are present in numerous eubacteria, archebacteria and eukaryotic microbes, the BspA-like PRR appears to be limited to trichomonads. We investigated the distribution of BspA-like PRR sequences in the Tv G3 genome and examined variability in the numbers of tandem proline-rich repeats encoded by 2 bspA-like genes in different Tv isolates.
Methods: Tv strains included 19 isolates from ATCC, 56 recent clinical isolates from 54 women and 10 isolates from 7 men. Trichomonads were routinely grown at 37C in modified Diamond's medium (Remel) under anaerobic conditions or InPouch TV (Biomed) in a 5% CO2 atmosphere. For single colony purification from selected cultures, dilutions were plated on semi-solid agar and incubated at 37C under anaerobic conditions. Individual colonies were expanded in liquid culture. Nucleic acids were prepared with a MasterPure DNA and RNA purification kit (Epicentre). We used nested PCR to amplify PRR-encoding regions from Tv bspA-like genes. For amplification from genomic DNA, a locus-specific forward primer for each of the genes identified below was paired with an outer reverse primer that hybridized to both. Nested primers amplified DNA encoding PRRs from individual target genes in a secondary PCR; products were sequenced on an ABI 3730 analyzer. Sequences were analyzed using Vector NTI software (Invitrogen).
Results: BLAST searches of the Tv G3 genome with nucleotide queries derived from the BspA625 PRR, returned high-similarity hits (P<10-5) with only one other bspA-like gene. The second gene, bspA805 encodes a predicted protein of 805aa. Both predicted BspA-like proteins contained N-terminal LRRs with 23aa repeat units. Whereas bspA625 contained 12 copies of a 21bp repeat encoding the PRR, bspA805 contained 4 copies of a 30bp repeat. Amplified Tv bspA625 sequences from 19 ATCC strains and 41 recent clinical isolates, contained 3-13 copies of the 21bp repeat; 48% of all isolates had 11 repeats. PCR with genomic DNA prepared weekly from cultures passed up to 6 weeks revealed no variation in PRR length during growth in vitro. PCR with Tv DNA from recent vaginal swab cultures occasionally yielded bspA625 products with different PRR lengths. PCR from single colony purified parasites yielded products of uniform size, suggesting bspA625 is a single copy gene. Compared to bspA625, variability in PRRs encoded by Tv bspA805 genes was more limited. Amplified bspA805 sequences from 59 isolates contained 3 or 4 copies of the 30bp repeat; 94% of isolates had 4 repeats.
Conclusions: Only 2 of the 658 putative BspA-like proteins identified in the preliminary annotation of the Tv G3 genome sequence appear to contain a PRR. We are exploring the utility of variable numbers of proline-rich repeats in bspA-like genes for Tv typing. PRR variability at the bspA625 locus can identify infection by multiple T. vaginalis strains in cultures from clinical specimens.

P-629 STABILITY OF CYTOKINES IN VAGINAL SWAB SPECIMENS STORED AT DIFFERENT TEMPERATURES

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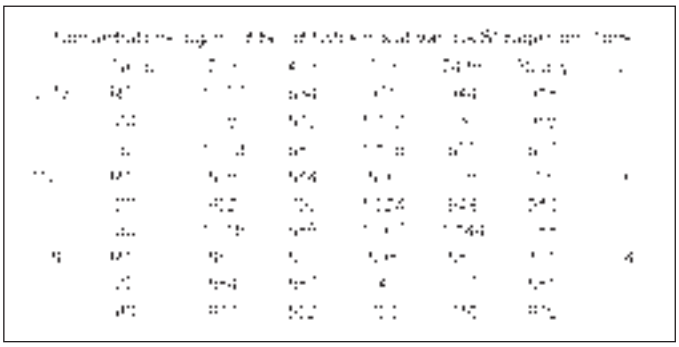
Objective: Optimal transportation and storage conditions for genital swabs collected for cytokine measurements have not been defined. In Phase 1 microbicide studies, measurement of cytokines is being used to assess the impact of microbicide exposure on inflammation. In this study, cytokine levels of vaginal swabs having known amounts of cytokines were stored at various temperatures to determine if there was a decrease in the cytokine levels in vaginal fluid during storage.
Methods: Vaginal swabs were collected from healthy volunteers and placed into 400 µl of Phosphate Buffered Saline (PBS, Mediatech, Inc., Herndon, VA). Swabs and PBS were placed in a Spin-X centrifuge filter unit (Costar, Cambridge, MA) and centrifuged at 12,000 rpm for 20 minutes. All filtered solution was pooled and divided into three tubes. One vaginal fluid solution was spiked with a high concentration (5 fold dilution) of the highest cytokine standard (Upstate, Temecula, CA) and one vaginal fluid solution had a low concentration (50 fold dilution) of the highest standard added. The third vaginal fluid solution was used as a control to measure the endogenous cytokine levels. Aliquots of each set were placed in microfuge tubes and stored at room temperature (RT), 4ºC, -20ºC and -80ºC. One aliquot from each storage condition and each concentration was evaluated to determine the cytokine levels at 2, 4, 6, and 24 hours, using Luminex technology (Luminex Corp., Austin, TX). Cytokine levels were also measured after one month at the various storage temperatures to determine optimal long term storage conditions. P values were calculated for temperature and time using a two-way analysis of variance.
Results: The concentrations (pg/ml) for three representative cytokines tested are shown in the table. IL-1beta levels remained constant whether stored at RT, 4ºC, -20ºC or -80ºC. The concentrations of IL-6, IL-12p40, and GM-CSF did not change during the first 24 hours, but by 30 days had a decrease at RT, but not at 4ºC, -20ºC or -80ºC. By contrast, TNF was stable for 24 hours at all temperatures, but declined after 30 days when stored at -20ºC. IFN-gamma like TNF was stable up to 24 hours, however, all storage temperatures resulted in a decline in the cytokine levels as detected at 30 days.
Conclusion: Stability of cytokines over time in genital samples varies by cytokine and temperature conditions. However, all cytokines evaluated were stable for 24 hours at room temperature. This finding suggests there can be some flexibility in transport of specimens to the laboratory. Because of the rapid decay in TNF and IFN-gamma over the first 30 days of storage, swab samples should be optimally stored at -80 ºC to preserve the broadest range of cytokine activities over time.



P-630 IN VITRO IMPACT OF ENTEROCOCCUS ON METRONIDAZOLE SUSCEPTIBILITY AND IMPLICATIONS FOR BV TREATMENT FAILURE

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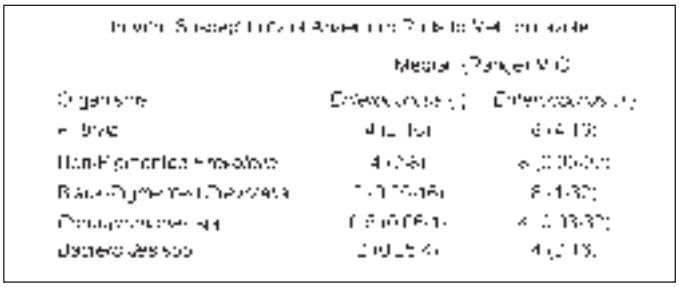
Objective: To evaluate the in vitro susceptibility of anaerobic bacteria to metronidazole in the presence or absence of Enterococcus faecalis.
Method: Antimicrobial susceptibility testing was performed on 40 vaginal isolates of BV-associated microorganisms using the CLSI agar dilution method. Two sets of agar dilutions were used, one with 106 organisms/mL of Enterococcus incorporated into the medium and an identical set of control plates without Enterococcus. The following groups of bacteria were tested in triplicate: P. bivia (n=5), non-pigmented Prevotella spp (n=4), black 'pigmented Prevotella spp (n=5), Porphyromonas spp (n=5), Bacteroides spp (n=5), Peptoniphilus spp (n=5), Anaerococcus spp (n=5), Micromonas spp (n=1), Peptostreptococcus spp (n=1) and Gardnerella vaginalis (n=4). Plates were incubated anaerobically for 48 hours. The MIC was the concentration that had marked reduction of growth of the organism.
Results: The presence of Enterococcus increased the MIC for metronidazole, with the greatest impact observed for the Porphyromonas spp (see Table). In the presence of Enterococcus 6/24 (25%) of the anaerobic gram negative rods were resistant to metronidazole compared to none in the absence of Enterococcus. The presence of Enterococcus inhibited the growth of anaerobic gram positive cocci directly (data not shown). In order to assess whether the presence of Enterococcus in the vagina predicted higher failure to metronidazole treatment, a secondary analysis for a treatment study of 175 women with BV treated with 2g of metronidazole was performed. Only 9 women in this study had > 106 CFU/mL of Enterococcus, but all 9 (100%) failed to respond to metronidazole treatment, compared to 31/54 (57%) of women colonized with < 106 CFU/mL of Enterococcus, and 64/112 (57%) of women lacking Enterococcus (P=0.04).
Conclusion: The presence of 106 Enterococcus decreases the in vitro susceptibility of anaerobic gram negative rods to metronidazole. Dense vaginal colonization by Enterococcus and the impact on metronidazole susceptibility may be a risk factor for BV treatment failure in some women.



P-631 PSYCHOLOGICAL PROBLEMS ASSOCIATED WITH RECURRENT VAGINAL CANDIDOSIS

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Objective: Learn the psychological factors associated with the recurring vaginal candidosis (RVC).
Methods: We observed 42 women patients of our clinic with culture-confirmed vaginal candidosis (group1), who had received specific treatment at least twice during 1 year prior to our study.
Results: All patients of group 1 reported that they had had 5 or more episodes of RVC over the period of 1 year. The control group (group2) included 12 women patients of our clinic, that had no RVC in their anamnesis. Comparative analysis of demographic and psychological characteristics as well as sexual history of patients from groups 1 and 2 revealed no significant differences. At the same time, patients of group 1 much more frequently suffered from depression, were less satisfied with their lives, had low self-appraisal and perceived their lives to be more difficult. In addition, patients of group 1 thought that RVC had considerable impact on their sexual and emotional state.
Conclusion: Thus, RVC is associated with various psychological problems which require urgent development of appropriate methods of treatment.

P-632 VULVOVAGINAL CANDIDIASIS IN AUSTRALIA? LETS TAKE A LOOK DOWN UNDER

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Objectives: To determine: 1) The accuracy in patient self-diagnosis and medical diagnosis of vulvovaginal candidiasis (VVC) in Western Australia; 2) The contributing factors for self-diagnosing rather than seeking a medical diagnosis.
Methods: A cross-sectional cohort community-based study, over a 13-month period, was conducted. All women who presented to participating community pharmacies within a nominated division of general practice in Perth, Western Australia, wishing to purchase a topical antifungal product for their personal treatment of presumed VVC, were invited to participate in the study. Participants completed a detailed questionnaire prior to their immediate referral for evaluation and examination by an experienced medical practitioner. All patients underwent a range of laboratory tests to determine the cause of their symptoms. Chi-square testing for association was performed for univariate comparisons (signs and symptoms, risk factors and past medical history) with that of culture proven VVC. Frequency distributions for categorical variables and summary statistics for continuous variables were conducted.
Results: Ninety-four symptomatic women aged between 19 to 79 years, who self-diagnosed VVC were recruited. Of the 88 women who completed all aspects of the study, 41 (47%) were confirmed to have VVC by culture. The remaining 47 (53%) women either had another infectious cause (10 [11%]: urinary tract infection [4]; bacterial vaginosis [2]; chlamydia [2]; or genital herpes [2]) or their symptoms were not secondary to an infection (37 [42%]). Sixty-three percent of presumptive diagnoses made by medical practitioners based on clinical examination were concordant with laboratory proven VVC. The women avoided seeking medical advice for a number of reasons, including: current presentation as per previous symptoms of VVC (48%); convenience / ready access to treatment (42%); unwillingness or inability to wait to see a doctor and/or questionable benefit in seeing a doctor (23%); and embarrassment (5%).

Conclusions: Over half of the study population self-diagnosed VVC incorrectly. The proportion of correct presumptive diagnoses made by medical practitioners was only slightly greater. Diagnosis based on presenting signs and symptoms alone could result in an incorrect diagnosis and a significant proportion of STIs being missed. The importance of laboratory assessment for VVC ought not to be overlooked. Pharmacists selling over-the-counter antifungals to women self-diagnosing candida, need to be aware of the high likelihood of error. Improving the management of VVC will be dependent on addressing factors influencing women's reluctance to seek medical advice and in addressing the current diagnostic processes. Convenience could well compromise women's health. Author's email: samantha.hilmi@health.wa.gov.au This research was funded by the Australian Government Department of Health and Ageing through the Third Community Pharmacy Agreement Research and Development program.

P-633 PREVALENCE AND CORRELATES OF BACTERIAL VAGINOSIS AMONG A COHORT OF YOUNG MARRIED WOMEN IN MYSORE, INDIA

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Objective: The objective of this analysis was to assess the baseline prevalence and correlates for bacterial vaginosis among young married women enrolled in a prospective cohort study in Mysore, India.
Study Design: A cross-sectional analysis was conducted on baseline data from a prospective cohort study of at-risk women, aged 15-30 years, attending a reproductive health clinic in Mysore between October 2005 and December 2006. After signing an informed consent, all women underwent face-to-face standardized interview, physical examination, HSV-2 serologic testing, endocervical cultures for Neisseria gonorrhoeae, and vaginal swabs for diagnosis of BV by Gram stain and trichomoniasis by culture. Crude and adjusted odds ratios and 95% confidence intervals were estimated from logistic regression analyses.
Results: Of the 898 women, 391 (43.5%) were diagnosed with ≥1 endogenous reproductive tract infection and 157 (17.4%) with ≥ 1 sexually transmitted infection (STI). Only 863 women had gram stained vaginal smears available out of which 165 (19.1, 95% Confidence Interval [CI]: 16.3%-22.2 %) were found to have bacterial vaginosis and 133 (15.4, 95% CI: 12.9%-18.3 %) were in the 'intermediate' stage. Bacterial vaginosis was related to concurrent infections with T. vaginalis (Odds Ratio [OR] = 4.07, 95% CI 2.45-6.72, P < 0.005) and HSV-2 (OR = 2.22, 95% CI 1.39-3.53; P <0.005). BV was significantly associated by univariate analyses with women's own characteristics (age, years of education, religion, being sterilized, years with sexual partner, lifetime oral sex, trichomoniasis, HSV-2 infection) and also with male partners' characteristics (alcohol use, having sex under the influence of alcohol). Multivariable logistic regression showed that age in years (adjusted odds ratio [aOR], 95% CI: 1.06, 1.00-1.12), having a partner who drinks alcohol (1.49, 1.03-2.16), having ever received oral sex (3.33, 1.59-6.94) and having trichomoniasis (3.59, 2.13-6.06) were independently associated with bacterial vaginosis. Muslim women were less likely to have bacterial vaginosis (0.52, 0.32-0.84).
Conclusions: In this population, the prevalence of bacterial vaginosis, at 19%, was relatively low. Coinfection with Trichomoniasis however, was common. Since both are risk factors for HIV, aggressive diagnosis and treatment of these infections may be a cost-effective HIV prevention strategy.

P-634 USING QUANTITATIVE REAL TIME (QRT) PCR TO BETTER UNDERSTAND VAGINAL MICROBIAL COMMUNITIES IN WOMEN WITH AND WITHOUT BACTERIAL VAGINOSIS (BV)

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Objectives: BV and normal vaginal flora have been defined by a limited number of commonly cultivated vaginal species. More recently comprehensive cultivation-independent surveys, using cloning and sequencing of thousands of PCR-amplified 16S rRNA genes, have revealed bacterial species associated with BV that were not previously recognized.. The goal of this study is to develop qRT-PCR panels which can be used to describe the vaginal bacterial ecosystem in women with normal flora and BV both qualitatively and quantitatively.
Methods: Vaginal swab specimens were obtained from 8 women with BV and 5 women with normal flora. For the purposes of this study BV was defined as a Nugent score of 10 and the presence of all 4 of Amsel's criteria. Normal flora was defined as a Nugent score of 0 and the absence of all of Amsel's criteria. qRT-PCR primers were developed using the freeware package PRIMROSE for generating and estimating the phylogenetic range of 16S rRNA oligonucleotide primers. The real time primer design function at the IDTDNA web site was used to evaluate the suitability of PRIMROSE-generated primers for real time PCR. Ten-fold serial dilutions of cloned 16S rDNA sequences were used to generate standard curves and assess the quantitative performance of potential primer combinations. Specificity of assays was verified by sequencing PCR products of ten different vaginal DNA specimens per targeted species. Melt curve and agarose gel analysis were used to verify formation of a single, correct-size product in each PCR. iQ SYBR Green PCR supermix and MyiQ Single-Color Real-Time PCR Detection System (www.bio-rad.com) were used for assay development and analysis of vaginal specimens. The results of each species specific qRT-PCR assay are normalized against a qRT-PCR assay designed to measure total eubacterial 16S rRNA genes in each specimen.
Results: A recently described BV associated bacterium, BVAB1, predominated in seven of eight BV patients and accounted for almost all of the eubacterial rRNA present in the samples. Megasphaera sp. Group 1, Gardnerella vaginalis and Atopobium vaginae were consistently present in BV cases and were approximately 1 to 2 logs lower in concentration than BVAB1. BVAB2 and BVAB3 rRNA concentrations were several logs lower than that of BVAB1 in all cases. All of these organisms were frequently present in normal cases in low concentrations. Lactobacillus crispatus and Lactobacillus iners predominated in three and two normals respectively. L. crispatus was present but at extremely low levels in all BV cases while L. iners was relatively abundant in seven of eight BV cases.
Conclusions: The uncultivated organism, BVAB1, appeared to be predominant in these BV cases. Normal flora has at least 2 very different patterns; one predominated by L. iners and the other by L. crispatus. 'BV associated' organisms are often found in normal cases and vice versa. These preliminary data based on samples from 8 women who met all criteria for BV and 5 who met none of the criteria demonstrate the potential of qRT-PCR to greatly expand our understanding of the vaginal microbial ecology in health and disease.

P-635 EVALUATION OF THE QUICKVUE ADVANCE PH AND AMINES TEST FOR THE RAPID DIAGNOSIS OF BACTERIAL VAGINOSIS IN WOMEN ATTENDING AN STD CLINIC IN NAIROBI, KENYA

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The diagnosis of bacterial vaginosis (BV) remains challenging, especially in resource poor settings where BV is most prevalent. We evaluated the QuickVue Advance_ pH and Amines Test to screen for BV among 558 women attending a referral STD clinic in Nairobi, Kenya. Using Nugent's Gram stain score _ 7, the prevalence of BV was 40%. With Nugent's score _ 7 as the gold standard, the QuickVue Advance_ pH and Amines Test had sensitivity of 41.1% (95% CI 34.7, 47.5) and specificity of 92.5 %, (CI 89, 95.3), (and kappa = .37). The amine test was interpreted as positive in only 102 of 224 with Nugent's score _ 7. This rapid diagnostic test appears insensitive for screening for BV in similar populations.

P-636 ASSOCIATIONS BETWEEN BACTERIAL MORPHOTYPES SEEN ON GRAM STAIN AND INFECTION WITH FASTIDIOUS BACTERIA ASSOCIATED WITH BACTERIAL VAGINOSIS (BV)

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Objectives: Characterize associations between bacterial morphotypes seen on Gram stain of vaginal fluid and infection with three BV-associated bacteria (BVAB1, 2, and 3, newly described members of the Clostridiales order) detected by PCR in vaginal samples. Because BVAB1 and Mobiluncus have similar morphologies by in situ hybridization, we also examined whether detection of BVAB1 by bacterium-specific PCR might be associated with a finding of Mobiluncus morphotypes on Gram stain.
Methods: We studied vaginal fluid samples from 99 women with BV by Amsel criteria. Species-specific 16S rDNA PCRs were used to detect BVAB1, 2, and 3 and Mobiluncus species. Gram stains were performed and scored using the Nugent criteria. Associations between bacterial morphotypes seen on Gram stain and detection of each BVAB by PCR were examined using Fisher's exact test. Where Mobiluncus morphotypes were seen on Gram stain, detection of Mobiluncus species by PCR was compared by BVAB1 status.
Results: The prevalence of both BVAB1 and BVAB3 was identical (34% of subjects), while 79% were positive for BVAB2. All 99 subjects had Gardnerella and Bacteroides morphotypes seen on Gram stain. Detection of Mobiluncus morphotypes was more common in BVAB1 positive women than in BVAB1 negative women (27/34 (79%) vs. 8/65 (12%), RR=6.6, p<0.0001), in BVAB2 positive women (32/79 (41%) vs. 3/20 (15%), RR=2.7, p=0.04) and in BVAB3 positive women (19/34 (56%) vs. 16/65 (25%), RR=2.3, p=0.004). Gram positive cocci were more commonly seen on Gram stain in BVAB1 positive women (26/34 (76%) vs. 32/65 (49%), RR=1.6, p=0.01), and may have been more common in BVAB3 positive women (24/34 (71%) vs. 34/65 (52%), RR=1.4, p=0.09). Lactobacillus morphotypes were seen in 15% of subjects, and were less common in the large number of BVAB2 positive subjects (5/79 (6%) vs. 5/20 (25%), RR=4.0, p=0.03). Fusiform rods were rarely seen (5%), and all were seen in BVAB1 positive subjects (p=0.004). Of 35 subjects with Mobiluncus morphotypes on Gram stain, 26 (74%) had Mobiluncus species identified by PCR, leaving nine unconfirmed. All nine were from subjects who were BVAB1 positive (p=0.08). Mobiluncus species were identified by PCR in 35/64 (55%) of samples without Mobiluncus morphotypes seen on Gram stain.
Conclusions: All three BVAB were positively associated with detection of Mobiluncus morphotypes on Gram stain, especially BVAB1. BVAB1 was also positively associated with Gram positive cocci and fusiform rods. BVAB2 was negatively associated with Lactobacillus morphotypes. The strong association between BVAB1 and Mobiluncus morphotypes may be due both to simultaneous colonization with BVAB1 and Mobiluncus species and to visualization of BVAB1 on Gram stain as Mobiluncus morphotypes.

P-637 VAGINAL BACTERIAL CONCENTRATIONS IN HIV POSITIVE WOMEN WITH AND WITHOUT BACTERIAL VAGINOSIS

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Background: Bacterial vaginosis (BV) is a common vaginal infection associated with several adverse health outcomes, including increased risk of acquiring HIV. Women with HIV and BV have more detectable HIV RNA in the genital tract than women without BV. Cultivation-independent molecular methods have identified several novel bacterial species that are associated with bacterial vaginosis (BV). Using quantitative PCR we sought to determine whether individual bacteria are related to increased concentrations of vaginal pro-inflammatory cytokines and HIV RNA seen in women with BV.
Methods: This cross-sectional analysis analyzed cervicovaginal lavage samples collected from 22 HIV positive women in Seattle, Washington (n=10) and Nairobi, Kenya (n=12). Samples were tested with species-specific quantitative PCR to measure bacterial concentrations. Bacterial vaginosis was diagnosed by Nugent criteria. Quantitative PCR measured vaginal and plasma HIV-1 viral load. Concentrations of IL-1ß, IL-6, IL-8 and secretory leukocyte inhibitor protein (SLPI) were assessed by enzyme-linked immunosorbent assay. Women with gonorrhea, chlamydia or trichomonas were excluded.
Results: Lactobacillus crispatus was detected only in women without BV. Clostridia-like bacteria designated 'bacterial vaginosis associated bacteria' (BVAB) were detected only in women with BV. Women without BV had significantly lower concentrations of Gardnerella vaginalis and Leptotrichia species(p<.001 and p =.004). No difference in bacterial concentrations was seen between American and African women. We found no correlation between vaginal HIV viral load or pro-inflammatory cytokines and specific bacteria, though there was limited power to detect associations.
Conclusion: As in HIV-negative women, several novel bacterial species appear to be highly associated with BV in HIV-1 positive women. These findings are similar between HIV-infected American and African subjects, suggesting that these microorganisms are ubiquitous. Exploration of associations between vaginal flora, pro-inflammatory cytokines and HIV viral load will require a larger population.

P-638 ESTIMATES OF DIRECT MEDICAL COST AND INCIDENCE RATES OF TRICHOMONIASIS IN WOMEN FROM PRIVATE INSURANCE CLAIMS DATA IN THE UNITED STATES: 2001-2005

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Objective: Trichomoniasis is likely the most common STD in the US (an estimated 7.4 million cases annually). Sequelae of trichomoniasis may include increased HIV transmission as well as preterm delivery and pelvic inflammatory disease (PID) in women and infertility in men. It is most commonly diagnosed via wet mount, which is an on-site and inexpensive test that has relatively low sensitivity. Direct probe and culture are also available. Published estimates of the direct medical cost are limited and extrapolated from acute care visits for chlamydia and gonorrhea. We used insurance claims data to characterize diagnostic methods, estimate direct medical costs, and estimate incidence of trichomoniasis in privately-insured women.

Methods: We extracted insurance claims for trichomoniasis for 2001 -2005 from the Medstat Marketscan database using ICD-9 codes 131, 131.0, 131.8, and 131.9. We restricted our analysis to patients who had prescription drug coverage and included all claims for outpatient care for trichomoniasis and drug claims for trichomoniasis treatment 7 days before to 30 days after the initial outpatient visit. Claims were categorized based on the age groupings found in the database; =<17, 18-34, 35-44, 45-54, and 55-64 (ages in years). We used Current Procedures Terminology (CPT) codes to analyze diagnostic methodologies. All costs were adjusted to 2005 US dollars.

Results: Overall average total cost per episode ranged from $91 to $99, but varied by age group, from $81-$92 for women 55-64 to $95-$108 for women younger than 45 ($p < 0.01$). Incidence rates per 100,000 female enrollees were significantly higher ($p < 0.01$) for women aged 18-34 (107 to 150) than those aged =<17 (10 to 15). Extrapolating these claims data to the US population would indicate that incidence rates declined over the period from 244,000 in 2001 to 180,000 in 2005. Most cases appeared to be diagnosed via wet mount, which was four times as common as the next most common diagnostic test (direct probe). Culture was rarely used. Non-specificity of CPT codes inhibited this analysis (some diagnostic tests can appear in claims data using different codes).

Conclusion: Our estimated direct cost per episode is quite substantial and can be attributed to the cost of outpatient claims. Prescription drug costs make up a small proportion of the total cost. Incidence was highest among the age group 18-34, which also has relatively high rates of other STDs. However, our population-wide incidence rate estimates for US population are low. This may be partially due to the fact that our estimate includes a population not representative of the US and is only for women diagnosed with trichomoniasis, which may be a minority of total cases. Although our estimate is for women, we can reasonably assume the same cost per episode for men if they are treated. The potential annual cost of trichomoniasis in the US could be from $673.4 million to $732.6 million if all cases were treated. These costs exclude those for sequelae of trichomoniasis.

P-639 BACTERIAL VAGINOSIS-ASSOCIATED ORGANISMS IN THE PENILE SUB-PREPUCEAL BACTERIAL FLORA OF UNCIRCUMCISED UGANDAN MEN

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Objectives: Bacterial vaginosis (BV) has been associated with the presence of multiple fastidious anaerobic organisms in affected women, including three previously undescribed Clostridiales Order bacteria which we have designated BV-associated bacterium 1, 2, and 3 (BVAB1, BVAB2, BVAB3). Although unprotected sexual intercourse has been a consistent risk factor for BV in many studies, sexual transmission of BV or BV-associated bacteria remains open to debate. Our goal was to assess whether BV-associated bacteria are detectable on the penis and thereby may serve as reservoirs for infecting female partners.

Methods: We studied the sub-prepuceal flora of ten men randomly selected from the intervention arm of two Ugandan trials of male circumcision. DNA was extracted from the eluent of sub-prepuceal swabs collected prior to circumcision and stored in standard transport media (STM) and PCR buffer. We used bacterium-specific quantitative PCR assays targeting bacterial 16S rDNA to detect BV-associated organisms (Gardnerella vaginalis, Leptotrichia, Megasphaera, BVAB2, and BVAB3).

Results: Of the ten men studied (mean age 33.4 years +/-6.8; 5 HIV+), at least one of the following bacteria were detected in 7 men: Gardnerella vaginalis, Leptotrichia, Megasphaera, BVAB2, or BVAB3 (see Figure 1, data shown are limited to the 9/10 swabs in PCR buffer). We found G. vaginalis in 7/10 men, Leptotrichia in 3/10 and Megasphaera in 1/10. BVAB2 and BVAB3 were found together in 2/5 HIV+ men and in no HIV- men. G. vaginalis was found alone in 4/7 men, while Leptotrichia was found only in the presence of G. vaginalis (3/3 men). The two men with both BVAB2 and BVAB3 were also colonized with Leptotrichia and G. vaginalis; Megasphaera was additionally present in one of these two men.

Conclusions: BV-associated bacteria are detectable using highly sensitive PCR assays in the sub-prepuceal area of asymptomatic, uncircumcised men. Further research is necessary to determine the true prevalence of these bacteria in this setting, whether this area might serve as a reservoir for eventual transmission of these organisms to women during intercourse, whether male colonization is a risk factor for recurrent BV, and whether BV-associated bacteria may be associated with penile mucosal inflammation. and co-infection with HIV.

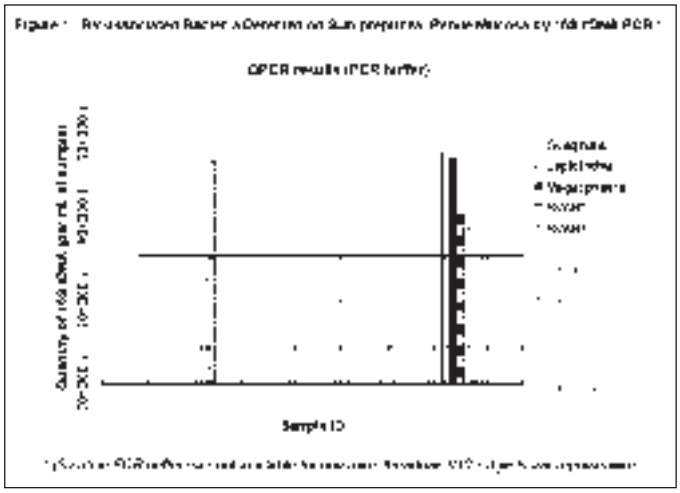

Figure 1: BV-associated Bacteria Detected Beneath Foreskin

P-640 ORNIDAZOLE VERSUS METRONIDAZOLE IN THE TREATMENT OF TRICHOMONAS VAGINALIS

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Objective: Trichomonas vaginalis is a globally common sexually transmitted human parasite. Many strains of T. vaginalis from around the world have been described to be resistant to the current drug of choice, metronidazole. The aim of the study was to compare efficacy of metronidazole and ornidazole in the treatment of urogenital trichomoniasis in men.

Methods: A series of consecutive outpatients attending our STD clinic in 2000-2004 were included in the study. Four hundred twenty seven men aged from 20 to 48 years were randomly assigned to receive either 250 mg metronidazole t.i.d. during 10 days (217 subjects) or 500 mg ornidazole b.i.d. during 10 days (210 subjects). Clinical efficacy was assessed 1, 2 and 3 weeks after end of treatment regimen as well as microbiological efficacy with microscopy and culture.

Results: Clinical efficacy of metronidazole or ornidazole was 57.6% and 94.5%, microbiological efficacy - 77.1% and 98.2%, respectively. Side effects were reported by 59.0% and 3.7%.

Conclusion: Thus, ornidazole is more effective and safe medication than metronidazole in the treatment of T. vaginalis infection in males.

P-641 WHY HAVE THE DIAGNOSIS RATES OF TRICHOMONAS VAGINALIS DECLINED SO DRAMATICALLY AMONG VICTORIAN WOMEN (1947-2005)?

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Objective: Trichomonas vaginalis (TV) is still one of the most common non-viral sexually transmitted infections worldwide, although TV diagnosis rates have decreased considerably in some developed countries over the last two decades. It is unclear why TV has decreased in some countries and not in others, but it has been suggested that Pap smear screening and the increased use of nitroimidazoles may be contributing to this decline. The aim of our study was to investigate the relationship between the introduction of nitroimidazoles into Australia and diagnosis rates of TV among women at a large urban sexual health centre and at a large Pap-smear screening laboratory in Melbourne, the capital city of the State of Victoria, Australia.

Method: This was an ecological analysis of available data sources including: 1) TV diagnosis rates among women attending the Melbourne Sexual Health Centre (MSHC), a large public funded STD clinic in Melbourne; 2) TV diagnosis rates in Pap smears screened by the Victorian Cytology Service (VCS), a large public funded cytology laboratory in Melbourne, and; 3) Nitroimidazole prescription data collected under the Pharmaceutical Benefits Scheme, an Australian Government body that monitors drug prescribing. In addition, gonorrhoea notification data for the State of Victoria were analysed to assess the impact changes in sexual behaviour may have had on TV diagnosis rates.

Results: Between 1947 and 2005, 164,714 women attending MSHC were tested for TV. The TV diagnosis rate among women attending MSHC rose from less than 5% in the late 1940's to between 20 to 30% in the 1960's and then declined to about 5 to 10% for most of the 1970's. From about 1980 onwards TV diagnosis rates fell progressively to less than 1% by 1991 and finally to a nadir of 0.1% in 2004. A similar pattern was seen in TV detected in Pap smears screened at the VCS, but with lower absolute percentages. (Figure) Metronidazole was introduced into Australia in 1961 and tinidazole in 1976 and by 1987 there were 400,000 nitroimidazole prescriptions per year. Pap smear screening in Victoria began in 1965, but only included approximately 20% of women per year (aged 15 to 69) by the mid 1980s. After the 1980s, it gradually rose until the year 2000, when it stabilised at about 35% of eligible women per year. In contrast to TV, gonorrhoea notification rates among women rose through the 1960's and peaked between 1972 and 1974 during the time when TV was experiencing it greatest falls.

Conclusion: The initial decline in TV seen in Victoria was temporally associated with the introduction of effective antibiotics against TV. The further decline to less than 1% was seen when Pap smear screening participation increased during the 1990s. The gonorrhoea notification data show that changes in sexual risk behaviour do not explain the initial and substantial reduction in TV diagnosis but may have contributed to the late reduction in the 1980s.

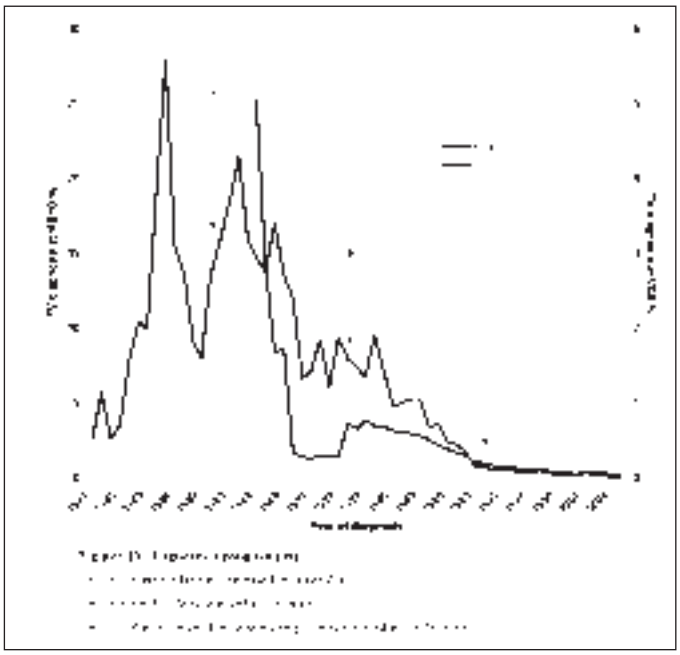

Figure 1: Trichomonas diagnoses among Victorian women

P-642 PERFORMANCE AND VALIDATION OF A CLINICAL PREDICTION RULE FOR TRICHOMONAS VAGINALIS INFECTION IN POPULATIONS OF VARYING PREVALENCE

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Objectives: Clinical prediction rules for T. vaginalis ' the most prevalent non-viral STI globally ' would be useful since >50% of infected women are asymptomatic or have non-specific symptoms. T. vaginalis satisfies criteria for increased case identification since it is prevalent, has extended duration of carriage in women, is not well identified by standard of care diagnostics, can have serious health consequence including increased risk of HIV acquisition, and is treatable with single-dose therapy. We developed a prediction rule in a lower-prevalence STD clinic population and validated it in a higher-prevalence one.

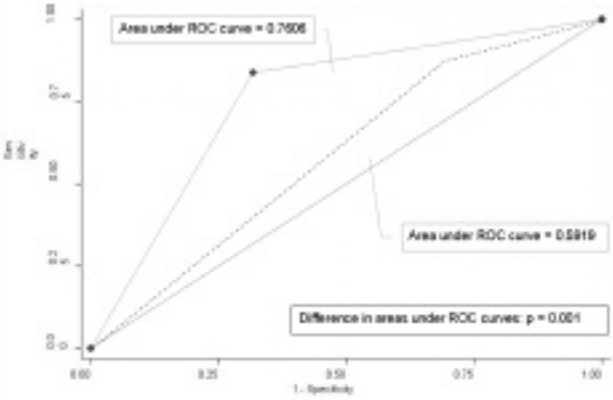
Methods: T. vaginalis infection by InPouch culture was determined among female STD clinic attendees _14 who were receiving pelvic exams in STD clinics in Seattle, Washington (n=390 available) and in Birmingham, Alabama (n=428). We assessed age cutoffs of every 5 years; black race (yes/no); vaginal symptoms (individually or as 'any of'), clinical signs (vaginal discharge as homogeneous or clumpy, yes/no); vaginal fluid pH (cutoffs of 4.5, 4.7, 5.0, or 5.5); and amines (yes/no). All factors associated in bivariate analysis with T. vaginalis infection were considered significant if $p<0.05$. A prediction rule was developed on the Seattle clinic population by applying Akaike's information criteria to the most strongly associated variables. A self-weighted risk score for the prediction rule was generated, and then the final Seattle model and risk score was applied to the Alabama clinic population and assessed for sensitivity, specificity, predictive values, and statistical comparison of the Seattle and Birmingham receiver operating characteristic's area under the curve (AUC).

Results: T. vaginalis infection prevalences were 8.6% (43/497; 95% CI 6.3%-11.5%) in Seattle and 21.0% (92/439; 95% CI 17.2%-25.1%) in Birmingham. Women in Seattle were less likely than women in Birmingham to be black (28% vs. 88%, $p<0.0001$), and to report vaginal symptoms (48% vs. 73%, $p<0.0001$).

The final Seattle prediction model comprising the following risk score components: sign of homogenous vaginal discharge = 3 points, vaginal pH _5.5 =2 points, symptom of vaginal discharge =1 point, and black race =1 point, had a sensitivity of 82.9%, a specificity of 68.3%, and a good AUC of 0.825. Using a risk score of _4 from this model resulted in an OR for T. vaginalis of 11.12 (95% CI 4.18-29.85) and the performance of this risk-score rule among Seattle women was fair (AUC 0.761, 95% CI 0.690-0.831). However, when applied to Birmingham women it performed poorly, with positive predictive value of 25.0% (vs. 20.6% pretest probability/prevalence in the population) and negative predictive value of 84.90% (vs. 79.4% in the population). The AUC of this risk score model in Birmingham was 0.592 (95% CI 0.549-0.634), statistically lower discrimination performance compared to that in Seattle, p=0.001 (Figure 1).

Conclusion(s): Screening criteria that increase the likelihood of determining who might be infected with T. vaginalis may improve treatment and control of this important but neglected STI. Clinical screening criteria for T. vaginalis can be defined but may need to be population-specific.

Figure 1: Receiver operating characteristic curves, *T. Vaginalis* Prediction Rule Risk Score Model in Two STD Clinic Populations of Adult Females



P-643 THE RELATIONSHIP OF CYTOKINE LEVELS AND VAGINAL FLORA IN WOMEN WITH BACTERIAL VAGINOSIS

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Objective: Bacteria vaginosis(BV) is a polymicrobial condition that is associated with increased levels of a number of inflammatory cytokines and chemokines. However, the inflammatory response produced by specific BV-associated microorganisms is poorly understood. Adverse effects associated with BV include increased risk of acquisition of gonorrhea, HIV, HSV-2, and pelvic inflammatory infection. Our objective was to explore the association between vaginal flora and cervical cytokine concentrations among women with BV.

Methods: We enrolled 155 non-pregnant women diagnosed with clinical BV and a Gram stain Nugent score of >4. Vaginal swabs for quantitative cultures and cervical swabs for cytokines were also collected. The levels of interleukin-1_ (IL-1_), IL-2, IL-10, tumor necrosis factor-_ (TNF-_), interferon- _ (IFN-_), and IL-8 were measured using a multiplex fluorescent bead-based immunoassay kit and analyzed with a Luminex 100 (Luminex, Austin, TX) instrument. Vaginal swabs were suspended in modified Hank's solution and serially diluted and plated onto selective and non-selective media for isolation of aerobic and anaerobic organisms. The bacteria were identified using biochemical tests, and anaerobic gram negative rods (GNR) were further identified using 4-methylumbelliferyl derivatives for detection of enzyme activity. The log10 transformed values of the cytokine/chemokine concentration data were used for analysis since they appeared to follow a normal distribution. Student's t-tests were used to compare the cytokine/chemokine concentrations between colonized and non-colonized women. One way analysis of variance was used to evaluate the association between cytokine/chemokine concentrations and microbial density.

Results: Among women with BV the levels of IL-1 _ and IL-10 increased with densities of anaerobic GNR (p=0.01). There was no association between concentrations of Lactobacillus, G.vaginalis, anaerobic gram positive cocci, E.coli, M.hominis, U.urealyticum, or Enterococcus and the cervical levels of the measured cytokines/chemokines. The presence of Prevotella species, not including P.bivia or black-pigmented GNR, was associated with significantly higher levels of IL-1_ (p=0.01), IFN-_ (p=0.002), IL-2 (p=0.009), and IL-10 (p=0.001), however concentration was not related. Decreased levels of IL-8 (p=0.002) and increased levels of TNF-_ (0.01) were associated with the presence of anaerobic gram positive cocci only. With the exception of E.coli and a decrease of IL-10, no other associations were detected between presence or absence of other bacteria isolated and cervical cytokine concentrations.

Conclusions: The data suggests that both anaerobic GNR, specifically Prevotella species, and anaerobic gram positive cocci are associated with a more robust inflammatory response than is seen with other organisms associated with BV. Further work is needed to determine the mechanisms by which these organisms contribute to the inflammatory response associated with BV and if the presence of these organisms are frequently found among women who suffer BV associated adverse outcomes.

P-644 A PILOT STUDY: VAGINAL DOUCHING CESSATION AND RISK OF BACTERIAL VAGINOSIS

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Objective: Current studies evaluating the association of vaginal douching and risk of bacterial vaginosis (BV) have been largely cross-sectional, preventing direct causal inference. Limited prospective data are available. Our goal was to evaluate the risk for BV following douching cessation.

Methods: Reproductive-age women who douche were enrolled in a 4-month intervention study. A one-month douching phase was initiated on day one of the menstrual cycle and was followed by a three-month non-douching phase. Participants were instructed to douche at their preferred frequency in the douching phase. Demographic information was obtained at baseline and participants used daily diaries to report feminine hygiene use, sexual activity, and medications. Vaginal flora Gram stain slides were obtained twice weekly. One-month after study completion, participants were surveyed by phone on resumption of douching practice and submitted a final vaginal sample. BV was diagnosed by Nugent score ≥ 7. Conditional logistic regression was used to evaluate the effect of douching cessation on the risk of BV. Because there is a theoretical risk associated with douching and no known health benefit, a cessation design was selected as a pilot study.

Results: 38 women were enrolled and 4 women were lost to follow-up. The average number of specimens per woman in this analysis was 28.6 (SD 5.7, range 12-33). Six women are still on-study. The mean age was 37.8 years (range 22.2-53.4); 52.9% were African-American. At study entry, participants reported their mutually-exclusive primary reason for douching was to feel clean (47.1%), remove menstrual blood (38.2%), or remove vaginal odor (2.9%). 70.6% reported douching 1-2 times monthly; 14.7% more often. In univariable analysis comparing a participant's douching cessation to her douching observation phase, there was a trend toward reduced risk for BV in douching cessation (OR 0.71; 95% CI: 0.33-1.55). Among women who reported their primary reason for douching was to clean after men-

struation, BV was significantly reduced during douching cessation (OR 0.29, 95% CI: 0.12-0.70, p-value for interaction = 0.02). There was a trend towards lower risk of BV in douching cessation among women who reported weekly douching practice (OR 0.38, 95% CI: 0.11-1.25, p-value for interaction = 0.27). There was little difference in estimates obtained from multivariate analyses, controlling for menstrual cycle, antibiotic use, and sexual activity (such as vaginal intercourse, receptive oral sex, and vaginal lubricant use) in the 3 days before sampling. When surveyed one-month after study completion, 9 of 28 women had resumed douching and none of those 9 women had BV.
Conclusion: This prospective pilot study suggests that vaginal douching after menstruation may contribute to disruption of vaginal flora and to BV. Women who report douching after menstruation or weekly douching may benefit from douching cessation interventions. A large randomized two-treatment two-period (2x2) trial is needed to more precisely define the attributable risk for BV associated with douching. rbrotman@jhsph.edu

P-645 INTRAVAGINAL WASHING AND BACTERIAL VAGINOSIS IN A LONGITUDINAL STUDY OF VAGINAL FLORAA MARGINAL STRUCTURAL MODELING ANALYSIS

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Objective: Vaginal douching has been associated with bacterial vaginosis (BV) in observational studies. This association may be due to confounding by indication-- women douching in response to vaginal symptoms associated with BV. Our aim was to prospectively assess the risk of BV causally associated with vaginal douching using specialized analytic methods to control for time-varying confounding.
Methods: Non-pregnant women (n=3620) were recruited into a prospective study when presenting for routine care at five public health clinics in Alabama. Quarterly assessments were obtained for one year (five visits). Clinical, laboratory, self-reported behaviors, vaginal symptoms, and vaginal Gram stains were obtained at each assessment. BV diagnosis was based on Nugent's Gram Stain score ≥ 7. Since douching is a time-varying, non-randomized 'treatment,' we used the marginal structural modeling approach of Robins and colleagues to estimate the causal effect of various douching patterns (0,1,2,3,4,5 douching intervals) on BV at 12 months. This technique properly accounts for the potential confounding and intermediary role of time-varying vaginal symptoms. Conventional analysis that regresses BV at 12 months on douching pattern and vaginal symptoms will tend to attenuate the effect of douching on BV. The marginal structural approach overcomes this difficulty by seeking to mimic the results that would be obtained had the douching patterns been randomized. The method is based on deriving inverse-probability-of-treatment weights (IPT). IPT methods balance the data in such a way that the relations between confounders and douching are eliminated at each time point.
Results: The participants had a median age of 23.6 years (interquartile range: 20.1, 29.4); 79.9% were non-Hispanic Black. 2315 (64%) provided data at all 5 intervals. Thirty percent (n=1,097) douched in every interval and 41% never douched (n=1,492). Of the 13,591 visits, 40% were classified as having BV. At study entry, participants who used vaginal douches were older and reported lower income, had less educational attainment and had higher prevalence of trichomoniasis and more disrupted vaginal flora scores than those who did not use douche products. Gonorrhea and chlamydia prevalence did not vary by douching status at baseline. Our analysis indicates that for each extra period of douching, there is an increase in the odds of BV at 12 months of 13% (95% CI: 9%-19%). Further, the relative risk for regular douching practice compared with no douching practice was 1.46 (95% CI: 1.28-1.67). There was no interaction between douching and BV with respect to race or age.
Conclusion: Douching was common in this cohort, but there was a spectrum of douching behaviors. Our findings indicate that vaginal douching confers an increased risk for acquisition of BV. In the absence of a randomized trial, these findings provide the best evidence to date of the risk of douching on BV. rbrotman @jhsph.edu

P-646 MALE CIRCUMCISION AND OTHER MALE PARTNER (NON)CORRELATES OF BACTERIAL VAGINOSIS IN A GROUP OF STD CLINIC ATTENDEES IN THE UNITED STATES

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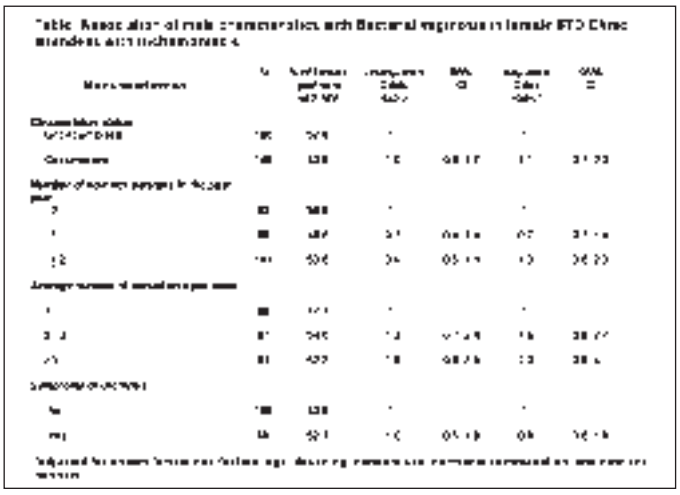
Objectives: There is no consensus as to whether bacterial vaginosis (BV) is a sexually transmitted infection (STI) or not. BV has been associated with the presence of other STIs, including Trichomonas vaginalis, which may create an anaerobic environment that favors BV. To contribute to the understanding of the pathogenesis of BV, we assessed the characteristics of male sexual partners of women identified with trichomoniasis and their association with BV. We were especially interested in the role of male circumcision which has been identified to be associated with other STIs.
Methods: We conducted a secondary analysis of cross-sectional data collected from a prior study of women with trichomoniasis and their male sexual partners from three STD clinics in the US. Female and male participants were interviewed and examined for demographic, behavioral and clinical characteristics. Female participants were also assessed for BV using Nugent criteria, with BV being defined as a Nugent score of 7-10. Male factors assessed in this analysis included age, marital status, education, male circumcision, number of new sexual partners in preceding year, number of sexual partners in preceding 2 months, condom use in preceding 2 months, symptoms (urethral discharge, dysuria or penile itching), and infection with T. vaginalis, Neisseria gonorrhoeae or Chlamydia trachomatis. This assessment was restricted to women with trichomoniasis, thus controlling for the effect of co-infection with T. vaginalis.
Results: A total of 261 female-male pairs were enrolled in the study. Over 95% of participants were African-Americans, with mean female and male ages of 30 (range 18-63) and 33 (range 18-70) years respectively. BV was diagnosed in 53% of the women. Only 17% of the male partners were married, and 31% had some college education. Fifty-seven percent of the male partners were circumcised. Forty percent reported having more than one new sexual partner in the preceding year while 20% reported having more than 2 partners in the preceding 2 months. Seventy six percent of the men were asymptomatic; however, 16% were infected with N gonorrhoeae or C trachomatis. None of the male characteristics that were assessed was significantly associated with BV (see Table). Female partners of circumcised men were as likely to have BV as partners of uncircumcised men (OR (95% CI): 1.0 (0.6, 1.7)). Although not statistically significant, the likelihood of a woman having BV seemed to increase with the frequency of sexual activity (48%, 55% and 62% respectively for couples reporting 1, 2-3 and greater than 3 average sex acts weekly). All of the male characteristics were not associated with BV after adjusting for known female risk factors: age, douching, condom use, hormonal contraception, and new sexual partners (see Table).
Conclusions: In this population of female STD clinic attendees with trichomoniasis and their partners with high risk sexual behavior, BV was not associated with male circumcision, male sexual behavior, male symptoms or STIs. There may, however be a relationship between BV and sexual frequency, which needs to be explored in other populations.



P-647 MICROCHIP TECHNOLOGY IN DETECTION OF VAGINAL FLORA IN WOMEN WITH VAGINAL DISCHARGE

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Objectives: The microbiological diagnosis in women with vaginal discharge is usually based on Nugent criteria; diagnosis of bacterial vaginosis (BV) is based on Amsel or Nugent criteria. Culture test can be used to study bacteria association characteristics. Recent research studies showed opportunities of culture independent methods in further clarification of etiology of vaginal discharge, especially in BV.
Methods: Forty nine sexually active non-pregnant women (age range 17-55 years) with vaginal discharge were examined with 66 tests made in total. In 40 women BV was diagnosed using Amsel criteria. Samples were studied by analysis of the 16S rRNA genes using oligonucleotide microchip technology and by culture. We used PCR for the detection of Atopobium vaginae. Mycoplasma DUO culture test was used for quantitative assessment of U.urealyticum.
Results: Forty two samples obtained from 35 women were studied using oligonucleotide microchip (41 bacteria that are most common in vaginal flora were included). The most common were Lactobacillus fermentum 51% (18), Gardnerella vaginalis 40%(14),Bacteroides distasonis 37% (13), Bacteroides caccae 26% (9), Lactobacillus brevis 23% (8), Clostridium ramosum 26% (9). Other microorganisms were also detected but less common: Fusobacterium nucleatum 17% (6) E.coli 17% (6), Prevotella bivia 14% (5), Enterococcus faecalis 14% (5), Peptostreptococcus anaerobius 14% (5). The most common microorganism, associated with BV was A. vaginae whicht was detected in 33 (82,5 %) out of 40 women with BV. A. vaginae was found in 19 (70%) out of 27 women were U. urealyticum was detected using culture test (>104 CFU), and in none out of 4 women with no pathological signs
Conclusion: Culture independent microchip technology allows to detect a large variety of bacteria in vaginal smears. A. vaginae demonstrated high association with BV. Detection of bacteria associations with different metabolism characteristics may help to understand possible reasons for ineffective standard therapy in BV.

P-648 THE PID AND BV ASSOCIATED BACTERIA ATOPOBIUM VAGINAE, LEPTOTRICHIA AMNIONII AND SNEATHIA SANGUINEGENS ARE NOT ASSOCIATED WITH NGU

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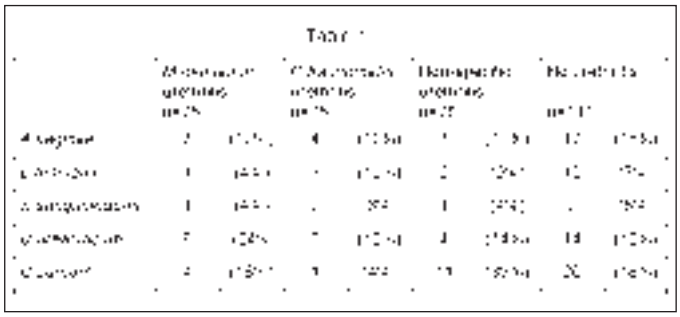
Objectives: Atopobium vaginae, Leptotrichia amnionii and Sneathia sanguinegens are recently discovered anaerobic bacteria that have been isolated from the female genital tract and blood in gynaecologic patients with diseases such as salpingitis, peripartum bacteraemia and tuboovarian abscess and have been associated with bacterial vaginosis (BV). An association between BV and urethritis has been reported. Thus, the objective of this study was to determine the prevalence of these BV associated bacteria in the urethra and urine of men with and without non-gonococcal urethritis (NGU).
Methods: A total of 189 male patients attending a sexually transmitted disease clinic were included in the study. A urethral swab and a first void urine specimen from each patient were tested for A.vaginae, L.amnionii, S.sanguinegens by species-specific real-time PCR assays with TaqMan probes. All specimens had previously been tested for C.trachomatis, M.genitalium and ureaplasmas by PCR. Of the 189 patients, 78 had urethritis (25 C.trachomatis positive, 25 M.genitalium positive and 28 non-specific urethritis) and 111 did not have urethritis.
Results: A total of 27 (14%) patients had A.vaginae positive specimens (10 (13%) patients with urethritis and 17 (15%) without urethritis). 12 (6%) patients had L.amnionii positive specimens (4 (5%) patients with urethritis and 8 (7%) without urethritis) and 11 (6%) had S.sanguinegens positive specimens (4 (5%) patients with urethritis and 7 (6%) without urethritis). There were no statistically significant differences in the prevalence of any of the three bacteria between patients with or without urethritis. However, Ureaplasma parvum was significantly associated with non-specific urethritis when compared with controls and with patients with C.trachomatis urethritis (0.02 and p=0.003, respectively) (Table 1).
Conclusions: Despite the reported association between BV and NGU, we were unable to demonstrate a higher prevalence of recently recognized BV and PID associated bacteria in men with NGU than in men without. Particularly, no association was found in the group of men with non-specific urethritis, i.e. those without other recognized pathogens. U.parvum was associated with non-specific urethritis whereas U.urealyticum was not.



P-649 PREVALENCE AND RISK FACTORS FOR BACTERIAL VAGINOSIS IN HSV-2 SEROPOSITIVE WOMEN IN TANZANIA

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Objectives: Bacterial vaginosis (BV) has been associated with adverse pregnancy outcomes, especially premature rupture of the membranes and preterm birth. The prevalence of BV in sub-Saharan Africa is high for reasons that are not clearly understood. Previous studies have identified vaginal cleansing, sexual behaviour and stage of menstrual cycle as potentially important risk factors for BV. The prevalence of BV and risk factors for BV have been examined in women in Tanzania.
Methods: A randomised, double-blind, placebo-controlled trial of acyclovir (ACV) suppressive treatment (400mg BD) is being conducted in HSV-2 seropositive women in northern Tanzania. Female bar, guesthouse and other similar facility workers were enrolled in the trial; HIV and RTI prevalence were measured at enrolment. BV was diagnosed by the Nugent score. Poisson regression was used to determine which factors were independent risk factors for BV.
Results: 1305 HSV-2 seropositive women were enrolled in the trial. 37.1% were HIV-seropositive, 10.6% had candidiasis, 32.6% had evidence of lifetime infection with syphilis, 5.5% had gonorrhoea, 7.0% had Chlamydia infection and 29.7% had Trichomonas vaginalis (TV) infection. To date, BV results have been analysed for the first 1001 women enrolled. 62.1% had BV, 14.6% had normal flora and 23.3% were intermediate on Nugent scoring. 70.7% reported vaginal cleansing within the past day, and 61.5% reported cleansing more than once a day. Factors independently associated with BV included being unmarried, fewer live births, religion, more alcoholic drinks per week, recent last sex, not using a hormonal method of contraception, using cloths for menstrual hygiene, and using materials other than soap/water to cleanse the vagina. BV was also associated with HIV infection (RR=1.20, CI 1.12-1.27), TV (RR=1.15, CI 1.09-1.22), and PID (RR=1.10, CI 1.02-1.19). BV was not associated with frequency of vaginal cleansing, or stage of menstrual cycle. Although BV was more prevalent among women who had more sexual partners in the past 3 months, that was not a significant independent risk factor for BV.
Conclusions: An extremely high prevalence of BV was observed in female HSV-2 seropositive facility workers in northern Tanzania. Complete data on the whole cohort will be presented. Strategies that reduce preventable risk factors for BV warrant further investigation, given the association of BV and adverse pregnancy outcome and HIV.

P-650 THE EFFECT OF STOPPING VAGINAL DOUCHING ON BACTERIAL VAGINOSIS AMONG FREQUENT DOUCHERS

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Objectives: Whether vaginal douching causes or is a result of BV has been the topic of much debate in recent literature. The purpose of this study was to examine if stopping the practice of vaginal douching among women who douche frequently would reduce the presence of bacterial vaginosis (BV).
Methods: Women, aged 16-24, who reported douching once a month in the past six months and provided informed consent were enrolled in an RCT with interventions to reduce the practice of vaginal douching between January 2005 and August 2005 (n=164). Participants completed audio-computer-assisted-self interviews (ACASI) including questions about douching behaviors, sexual practices, STD/HIV risk behavior, self-efficacy and readiness to change douching practices. Women were interviewed at two and four months post enrollment and screened for BV using gram stain techniques and evaluated using the Nugent score. The subset of women who douched frequently (i.e. > 1/month) were included in this analysis (n=36)
Results: Of the 164, 36 (22%) were frequent douchers. The frequent douchers were all African-American, 78% were employed or a student and the mean age was 21.7 (s.d. 2.3). At baseline, 28% reported > 1 sex partner and 58% had BV. By two months, 58% stopped vaginal douching. At baseline, those who stopped douching were equally as likely as those who continued to have BV [52% vs. 48%, $p < 0.34$], to have multiple partners [3% vs. 20%, $p < 0.47$] and were of similar age [21.2 (s.d. 2.3) vs. 23.3 (s.d. 2.0), $P < 0.46$] but less likely to have BV at follow-up [0% vs. 66.7% $p < .001$].
Conclusion: This study demonstrates a strong association between stopping douching and a reduction in BV among frequent douchers. Health care providers should discourage frequent vaginal douching.

P-651 THE ASSOCIATION BETWEEN HORMONAL CONTRACEPTIVE USE AND BACTERIAL VAGINOSIS IN A RECORD-BASED LONGITUDINAL COHORT

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Objectives: The purpose of this study was to assess the association between hormonal contraceptive use and risk of bacterial vaginosis (BV) diagnosis in a longitudinal cohort.
Methods: This was a record-based longitudinal study of women enrolled in a contraceptive program from April 2005 to October 2006 at two STD clinics operated by the Baltimore City Health Department (BCHD). Women who enrolled in the program were tested for STDs, including BV, at annual visits or if they presented for interim visits with symptoms or STD exposure. They were supplied with hormonal contraceptives of their choice. Information on demographics, STD diagnoses, sexual behavior, past pregnancies, days since last menstrual period, smoking and douching behavior and contraceptive use was abstracted from the medical record. Hormonal contraception was classified as either combined method (pills, the ring and the patch that contain both synthetic estrogen and progestin) or progestin only method (pills and injections that contain only progestin). Contraceptive use was treated as a time-dependent variable. BV was diagnosed according to Amsel criteria. We calculated odds ratios (OR) and 95% confidence intervals (CI)) with logistic regression and used generalized estimating equations (GEE) to correct for correlation between multiple outcomes per subject. We compared the results of this conventional cohort analysis to a case crossover analysis performed with conditional logistic regression. The latter model allows a woman's BV visits to be compared to her non-BV visits and controls for confounding on demographic factors since each participant serves as her own control.
Results: There were 330 women seen in 1,455 visits. BV was diagnosed in 189 (13.0%) of the visits. Women used combined hormonal contraception preceding 17.5% of the visits and progestin alone preceding 17.0%. Logistic regression indicated that at visits preceded by combined hormonal contraceptive use, there was a trend toward decreased risk of BV diagnosis (adjusted OR, 0.66; 95% CI, 0.39 ' 1.10) compared to visits preceded by no use. Additionally, women who used progestin only contraception showed a decreased risk of BV diagnosis, which was statistically significant (adjusted OR, 0.42, 95% CI, 0.20 ' 0.88). A conditional logistic regression model demonstrated similar findings.
Conclusion: Hormonal contraceptive use of any kind may be associated with a decreased risk of BV diagnosis in a high risk population. The results of the two models were similar suggesting that there was little residual confounding due to demographic factors. Further research should focus on the impact of hormonal contraceptive methods in BV prevention.