

SESSION: O-001 - HIV / AIDS

MO-001 MIGRATION LARGELY EXPLAINS VARIATION IN AFRICAN HIV EPIDEMIC

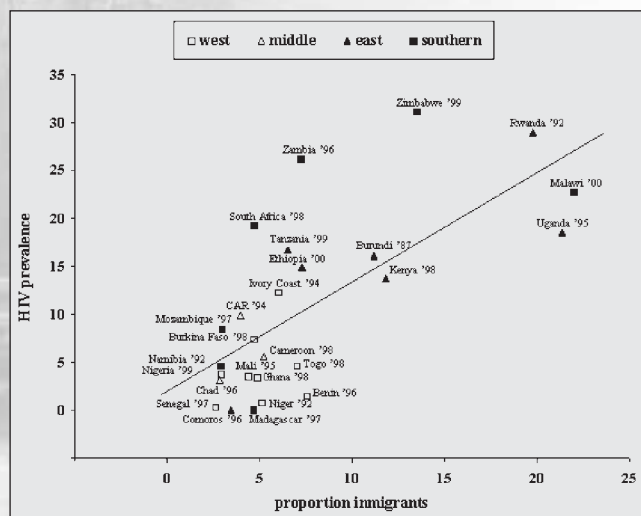
H.A.C.M. Voeten¹, S. Gregson², B. Zaba³, R.G. White³, J.D.F. Habbema¹
¹ Erasmus MC, Univ. Med. Center Rotterdam, Rotterdam, The Netherlands
² Imperial College, London, United Kingdom
³ London School of Hyg & Trop Med, London, United Kingdom

Objectives: The contribution of migration to HIV spread has long been recognised, but its effect at the population level has never been assessed. We measured the association between urban in-migration and HIV prevalence for 26 sub-Saharan African countries.

Methods: In this ecological study, linear regression was used to measure the association between urban in-migration in the last 12 months, based on the most recent Demographic and Health Survey (DHS) data, and urban HIV prevalence, derived from HIV sentinel surveillance. As possible socio-economic confounders we tested the effects of Gross National Product (GNP) per capita, the Gini index (representing income inequalities), and adult literacy.

Results: For women, HIV prevalence shows a strong association with the proportion of recent in-migrants, with 50% of the variance (Pearson R²) explained, $p < 0.001$. The association is also strong for east Africa and moderate for southern Africa. Of the tested confounders, only adult literacy improved the model significantly (from R²=50% to 59%), but recent in-migration remained highly significant ($p < 0.001$). Adult literacy by itself explained 22% of the variance in HIV prevalence. For men we found similar but less strong effects, possibly because fewer DHS data were available.

Conclusions: Recent in-migration is the strongest single predictor of HIV prevalence in urban sub-Saharan Africa, and potential socio-economic confounders cannot account for this effect. HIV interventions should therefore focus more on migrant groups. Also, structural interventions that reduce the need to migrate could be considered (e.g. income-generating projects), as well as interventions that reduce single-sex migration (e.g. employers' providing of family accommodation).



Figur 1: HIV prev. by proportion female in-migrants, Africa

MO-002 INTRAVAGINAL WASHING AND INCREASED RISK OF HIV-1 ACQUISITION AMONG KENYAN WOMEN: A 10-YEAR PROSPECTIVE COHORT STUDY

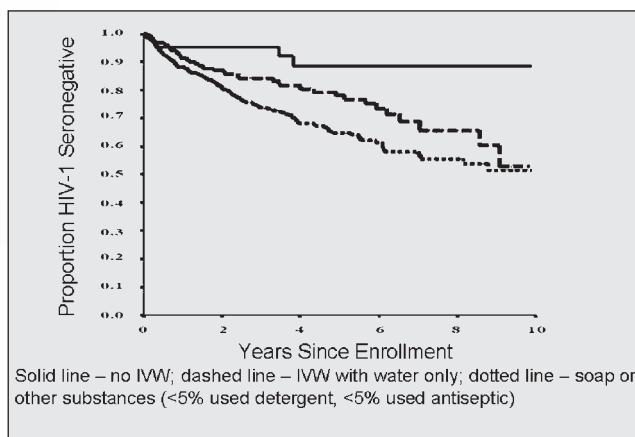
R.S. McClelland¹, L. Lavreys¹, W.M. Hassan¹, K.N. Mandaliya², J.O. Ndinya-Achola³, J.M. Baeten¹
¹ University of Washington, Seattle, WA, United States of America
² Coast General Hospital, Mombasa, Kenya
³ University of Nairobi, Nairobi, United States of America

Objectives: No prospective study has examined the risk of HIV-1 acquisition associated with intravaginal washing (IVW), although intravaginal practices have been identified as potentially important contributors to HIV-1 susceptibility. Our objective was to evaluate the contribution of IVW to incident HIV-1 infection.

Methods: We used data from a 10-year prospective cohort study of risk factors for HIV-1 acquisition among 1,270 Kenyan female sex workers. Intravaginal washing practices were ascertained at study enrollment. At monthly follow-up visits, women were interviewed about risk behavior, contraceptive and condom use. Samples were collected for laboratory diagnosis of HIV-1 and genital tract infections.

Results: Women in this population rarely reported douching with a stream of water, but the majority reported IVW either with water (293 women; 23%) or with soap or other substances (906 women; 71%). The most common IVW method was with a finger (998 women; 79%). Most of the remaining women reported using a piece of cloth. Compared to women who did not report IVW, there was an increased risk for acquiring HIV-1 among women who performed IVW with water (adjusted HR 2.64, 95% CI 1.00-6.97) or with soap (adjusted HR 3.84, 95% CI 1.51-9.77) after adjustment for demographic factors, sexual behavior, and sexually transmitted infections. Furthermore, women who performed IVW with soap or other substances were at higher risk for HIV-1 compared to those who used water alone (adjusted HR 1.47, 95% CI 1.02-2.13). A significantly higher risk of HIV-1 acquisition was present throughout the 10-year study period (Figure 1).

Conclusions: In populations where IVW is common, this practice may be an important factor promoting the spread of HIV-1. Interventional trials aimed at modifying potentially harmful intravaginal practices should be evaluated as a possible female-controlled HIV-1 prevention strategy.



Figur 1: Kaplan-Meier plot of HIV-free survival by IVW practice

MO-003 ASSOCIATIONS AMONG STDs, ACUTE HIV INFECTION, AND HIV SHEDDING, LILONGWE, MALAWI

I.F. Hoffman¹, C.D. Pilcher¹, S. Galvin¹, C. Mapanje², F.E.A. Martinson², D.A. Chilongozi², K. Powers¹, W.C. Miller¹, S.A. Fiscus¹, M.S. Cohen¹

¹ *University of North Carolina, Chapel Hill, North Carolina, United States of America*

² *UNC Project, Lilongwe, Malawi*

Objectives: To identify STD patients with acute HIV infection (AHI), to determine associations between STD presentation and AHI, and to describe the dynamics of HIV-RNA concentration in blood and genital secretions following STD treatment.

Methods: Men and women presenting to an STD Clinic in Malawi received STD management and were offered HIV VCT. Consenting patients received 2 rapid HIV tests, and those with negative or indeterminate antibody results returned in 1 week to receive final HIV results. HIV RNA and Western Blots (WB) were conducted to determine who had AHI, defined as rapid negative/ indeterminate, RNA positive, and WB negative/indeterminate. Patients with AHI were followed for 16 weeks and provided blood and genital secretions. **Results:** 497 (34.3%) women and 1450 total STD patients enrolled. 583 (40.2%) were HIV chronically infected, 20/867 (2.3%) rapid test negative/indeterminates had AHI, including 14/20 (70%) with genital ulcer disease (GUD), 6/20 (30%) with GUD and inguinal adenopathy (IA), 7/16 males (43.8%) with urethral discharge, and 3/4 females (75%) with pelvic inflammatory disease. Univariate analysis showed only GUD and GUD with IA were associated with AHI. Among 5 men with AHI and an STD, the HIV-RNA mean changes from 1 to 16 weeks post-STD treatment was -0.99 log (6.0 to 5.0) in blood plasma, and -2.49 log (4.5 to 2.0) in the seminal plasma. Data from additional AHI patients with STD treatment will be presented. **Conclusion(s):** AHI is common in this setting. Patients with GUD are at high risk of AHI, and GUD patients that test HIV antibody negative/ indeterminate should be considered for further HIV antigen testing/ behavioral interventions. The seminal HIV concentration among men dually infected with AHI and an STD is extraordinarily high, resolves rapidly, and points to the urgent necessity of identifying such patients in real time.

MO-004 HIGH STD INCIDENCE IN PERSONS WITH EARLY HIV INFECTION USING A STRATEGY OF FREQUENT AND COMPREHENSIVE STD SCREENING

P.V. Chin-Hong¹, E. Vittinghoff¹, D. Benet², S. Buchbinder¹, M. Da Costa¹

¹ *University of California, San Francisco, SAN FRANCISCO,*

United States of America

² *Abt Associates, Inc., BOSTON, United States of America*

Objectives: Recommendations for frequency of STD screening in HIV-infected individuals are based on limited data. We determined the prevalence, incidence and predictors of STDs from routine screening in a population of individuals enrolled in a prospective study of early HIV infection.

Methods: Every 3-6 months from February 2004 to February 2005, we tested asymptomatic participants for pharyngeal, urethral and rectal gonorrhea (GC) and chlamydia (CT) by strand displacement amplification (BD ProbeTec ET, Becton Dickinson). We screened for

syphilis using VDRL with TPPA confirmation. We collected interview data on sexual behavior and substance use. We used generalized estimating equation regression analyses to account for repeated measures in each participant and to identify predictors of infection. **Results:** Among 292 individuals, 95% were gay men, 5% were heterosexual women and 10% had ≥ 1 STD at baseline. The incidence ≥ 1 STD was 49 per 100 person-years (py). The incidence of pharyngeal GC was 22 per 100py, followed by rectal CT (19 per 100py), rectal GC (7 per 100py), urethral CT (5 per 100py), urethral GC (3 per 100py), pharyngeal CT (2 per 100py) and syphilis (1 per 100py). If only syphilis and urethral STDs were evaluated, the STD prevalence was 3% and STD incidence was 9 per 100py. Younger age predicted higher risk for an incident STD (OR = 2.0 per 10 year decrease, 95% CI 1.2-3.4) but not baseline number of sex partners, condom or drug use.

Conclusions: The high incidence of STDs supports guidelines for more than annual STD screening in HIV-positive individuals with early infection. Pharyngeal and rectal infections were the most common incident STDs, and a large proportion of STDs would have been missed without routinely screening these sites. Targeted screening based on sexual history and drug use alone may have limited benefit.

MO-005 MOLECULAR TYPING OF HLA*B35 AND FUT2 GENE IN HIV-2 INFECTED INDIVIDUALS: A COHORT STUDY IN THE GAMBIA

L.M. Yindom¹, A. Jaye¹, S. McConkey¹, M.S. van der Loeff¹,

A.A. Awasana¹, G. Sirugo¹, M. van der Sande¹, J. Todd², H. Whittle¹

¹ *Medical Research Laboratories, Banjul, Gambia*

² *LSHTM, London, United Kingdom*

Objectives: HIV-1 and HIV-2 are both prevalent in West-Africa. HIV-2 causes AIDS though majority of infected subjects are long-term non-progressors. HLA*B alleles have been positively or negatively associated with HIV-1 infection but little is known of its role in HIV-2 infection. Similarly, the human Fucosyltransferase-2 (FUT2) gene that determines the secretor and non-secretor status in human and is suspected of influencing susceptibility to HIV infection has received little attention in HIV-2 infected individuals. This study determined the frequency of HLA*B35 and FUT2 in relation to indicators of disease progression such as viral load and CD4 count.

Methods: The frequencies of HLA*B35 allele and FUT2 gene were determined by PCR-SSP technique in a cohort of 209 HIV-2 infected and 118 uninfected women in The Gambia. **RESULTS:** We found the presence of HLA*B35 allele in 47.9 % of infected subjects and 38.1% of healthy controls, matched by ethnicity. Similarly, non-functional FUT2 gene was found in 26.8% of HIV-2 infected and 34.8% of uninfected women respectively (P = 0.13). A trend of association was observed between HLA*B35 and disease progression based on absolute CD4 count (P = 0.06). No association was found between secretor or non-secretor status and survival amongst HIV-2 infected and uninfected subjects.

Conclusion: These findings suggest that HLA*B35 may play a role in individual susceptibility to HIV-2 and/or rate of progression to AIDS; and that non-secretor status may either singly or in tandem with other host genes influence susceptibility to HIV-2 infection.

MO-006 SAFETY ASSESSMENT OF THE VAGINAL MICROBICIDE TMC120 IN HEALTHY AND HIV-1 POSITIVE WOMEN

V. Jespers¹, J. Van Roey², G. Beets², A. Buvé¹

¹ Institute of Tropical Medicine, Antwerpen, Belgium

² Tibotec Bvba, Mechelen, Belgium

Objective: The primary objective of this trial was to evaluate the safety, tolerability and systemic absorption of a microbicide gel containing TMC120, a new potent investigational non-nucleoside reverse transcriptase inhibitor.

Methods: Randomised, controlled double-blind phase I trial of a gel containing different concentrations of TMC120 (25µM, 50µM, 150µM) versus placebo. Sixty-four women were enrolled; 48 healthy women (28 not sexually active and 20 sexually active) and 16 HIV infected (not sexually active) women. Altogether 52 women received the active product. Participants applied the gel twice daily for 7 days and were seen at 4 scheduled visits. Local toxicity was assessed by colposcopy before gel application, after 4 hours and on day 8. Systemic toxicity was determined by liver and kidney tests and blood counts. Plasma levels of TMC120 were measured on day 1 and 7 at 1, 2, 4 and 8 hours.

Results: All TMC120 concentrations were well-tolerated and there were no apparent differences in safety parameters. Four women had treatment-emergent mild cervical findings (3 petechiae, 1 erythema) of less than 5 mm. Three (one placebo) findings were doubtfully related and one (TMC120 50µM) possibly related to study medication. On day 1 plasma levels of TMC120 were quantifiable in 7 of 52 participants (lower limit of quantification 0.05ng/ml). On day 7 TMC120 was found in plasma in 3 of 14 women using the 25µM concentration; 14 of 16 women using the 50µM concentration; and all 22 women using the 150µM concentration. The plasma levels were not different for healthy/infected and sexually active/inactive groups and were in the 0.1ng/ml range.

Conclusion: The TMC120 vaginal gel was well-tolerated in this short study by both healthy and HIV-1 infected women. The plasma levels of TMC120 were very low, but the implications of this finding will need to be assessed in further studies.

SESSION: O-002 - MULTIPLE STI: METHODOLOGICAL ASPECTS AND ANALYSIS

MO-101 VALIDITY OF PATIENT-REPORTED SEXUALLY TRANSMITTED DISEASES

M.L. Kamb¹, C.T. Phung², D. Newman¹, T.A. Peterman¹, C.K. Malotte³, J.M. Zenilman⁴, G.A. Bolan⁵, M. Fishbein⁶, J.M. Douglas¹

¹ Centers for Disease Control (CDC), Atlanta, GA, United States of America

² Univ Florida Medical College, Gainesville, FL, United States of America

³ Long Beach Health Dept., Long Beach, CA, United States of America

⁴ Baltimore City Health Dept, Baltimore, MD, United States of America

⁵ San Francisco Health Dept, San Francisco, CA, United States of America

⁶ Annenburg School, Philadelphia, PA, United States of America

Objectives: Researchers often use patient-reported STD history to assess risks or outcomes. We sought to assess validity of self-reported STDs.

Methods: We used prospective data from a counseling trial. Participants were HIV-negative, heterosexual patients >13 years from 5 US STD clinics who had interviews at enrollment, 3, 6, 9, and

12 months and STD tests at 6 and 12 months or when they had symptoms/concerns (interim visits). Interviewers asked about diagnosis/treatment of specific STDs during the prior 3 months. Clinical records had pertinent diagnostic information. Laboratory tests were gonorrhoea culture and PCR, chlamydia PCR, wet mount or culture for trichomonas, and syphilis serology. We assessed patients interviewed within 100 days of an interim exam for STD testing, comparing STDs reported in the subsequent interview to the clinical/laboratory records.

Results: Of 4328 participants, 490 (231 men; 259 women) had 540 interim visits for STD checks with subsequent interviews; 138 (26%) had discrepancies between patient report and clinical/laboratory records. In 86 interviews (62% of errors), patients denied an infection when an STD was documented in the clinical record. In 38 interviews (28% of errors), patients reported an STD was treated at the clinic, but the chart had no record of infection. In 14 interviews (10% of errors), patients misidentified their infection. Men were twice as likely to report incorrectly; race/ethnicity, age, site, and time between STD diagnosis and self-report were not associated with discrepant report.

Conclusions: Even within a 3-month interval, 26% of patient-reported STDs were incorrect. Longer intervals would likely yield larger error. This analysis probably underestimates error: Clinicians and patients were provided substantial education and observation, we assessed only the study clinic and patients may have sought care elsewhere, and many STDs are asymptomatic. All these factors would yield additional underreport.

MO-102 INCIDENCE AND RISK FACTORS FOR URETHRAL AND ANAL GONORRHOEA AND CHLAMYDIA IN A COHORT OF HIV-NEGATIVE HOMOSEXUAL MEN IN SYDNEY

F.Y. Jin¹, G.P. Prestage¹, S.C. Kippax², B. Donovan³, C.M. Pell⁴, P.H. Cunningham⁵, J.M. Kaldor¹, A.E. Grulich¹

¹ National Centre in HIV Epidemiology, Sydney, Australia

² National Centre in HIV Social, Sydney, Australia

³ University of Sydney, Sydney, Australia

⁴ Taylor Square Private Clinic, Sydney, Australia

⁵ St Vincent's Hospital, Sydney, Australia

Objectives: To determine incidence and risk factors for urethral and anal gonorrhoea and chlamydia in a community-based cohort of HIV-negative homosexual men in Sydney, Australia.

Methods: The Health in Men study is a cohort study of homosexual men which enrolled participants from 2001-2004. All participants underwent annual interviews and were offered screening for gonorrhoea and chlamydia using nucleic acid amplification (BDProbeTec) on anal swabs and urine ('interview diagnoses'). In addition, men reported diagnoses of gonorrhoea and chlamydia that were made elsewhere between interviews ('interval diagnoses'). Detailed data were collected on specific sexual practices with casual and regular partners.

Results: 1,427 men were enrolled, and one year follow up was 85%. The incidence of interval and interview cases of gonorrhoea and chlamydia are listed in the table: 48% of all anal infections but only 10% of all urethral infections were detected at interview. Risk factors for interval and interview diagnoses were similar, suggesting that self-report was accurate. For both anal and urethral infections, risk

factors included the number of recent sexual partners, unprotected anal intercourse (UAI) with casual partners, UAI with HIV-positive or unknown HIV status partners, and known contact with a person with gonorrhoea or chlamydia. For urethral infections, insertive UAI was a significant risk factor (RR 1.81, 95% CI 1.15-2.85 for gonorrhoea, and RR 2.13, 95% CI 1.53-2.96 for chlamydia). For anal infections, receptive UAI was a significant risk factor for both gonorrhoea (RR 3.97, 95% CI 2.24-7.04) and chlamydia (RR 2.97, 95% CI 1.95-4.53).
 Conclusions: Incident gonorrhoea and chlamydia are common among HIV-negative homosexual men in Sydney. Risk behaviours are similar to HIV transmission risk factors. These men have both behavioural and biological risks for HIV acquisition, and these data point to the need for frequent sexual health screening in this population.

	Interval diagnoses	Interview diagnoses	Either interval or interview diagnoses	Incidence (per 100 person years) ¹	95% CI
Urethral gonorrhoea	83	6	89	4.23	3.41-5.18
Anal gonorrhoea	49	23	70	3.32	2.60-4.18
Urethral chlamydia	160	20	179	8.51	7.35-9.79
Anal chlamydia	51	63	110	5.25	4.33-6.29

1. Incidence of combined interval and interview diagnoses

Figur 1: Incidence of gonorrhoea and chlamydia

MO-103 MALE CIRCUMCISION AND RISK OF SYPHILIS, CHANCROID AND GENITAL HERPES: A SYSTEMATIC REVIEW AND META-ANALYSIS

H.A. Weiss¹, S.L. Thomas¹, S.K. Munab², R.J. Hayes¹

¹ London School of Hygiene & Tropical Medi, London, United Kingdom

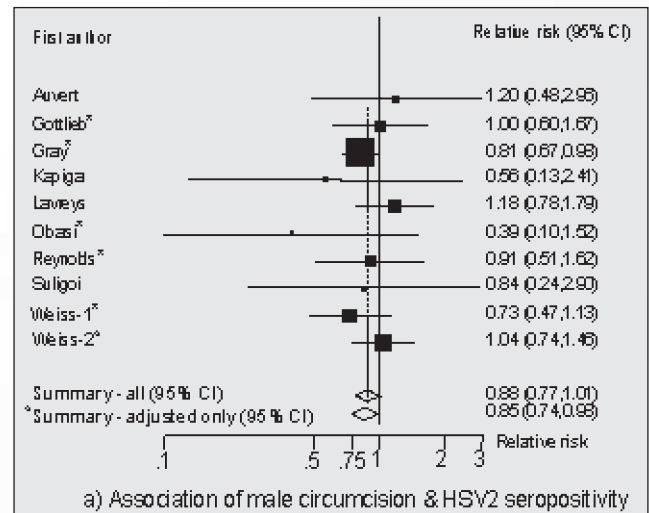
² Uganda Virus Research Insitute, Entebbe, Uganda

Objectives: Male circumcision is associated with a reduced risk of HIV infection. This may be partly due to a protective effect of circumcision on other STI, especially those causing genital ulcers. The objective of this study was to conduct a systematic review and meta-analysis to quantify the association between male circumcision and infection with Herpes simplex virus type 2 (HSV2), *Treponema pallidum* or *Haemophilus ducreyi*.

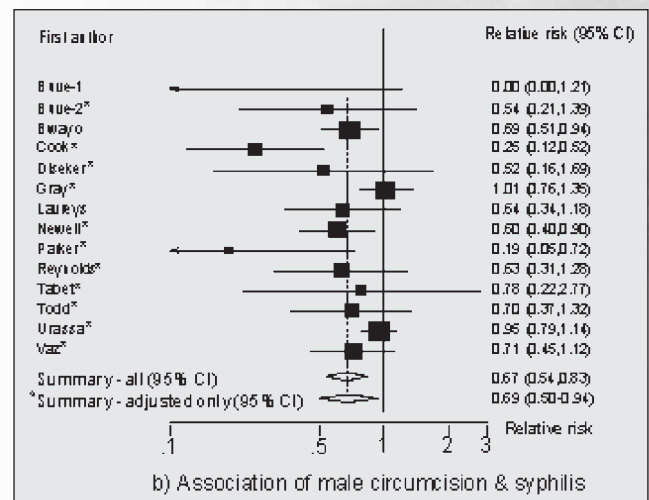
Methods: PubMed and Embase databases (1950-2004) were searched using keywords and text terms for Herpes Simplex, syphilis, chancroid, ulcerative sexually transmitted diseases or their causative agents, in conjunction with terms to identify epidemiological studies. References of key articles were hand-searched. Two authors reviewed all abstracts using established inclusion/exclusion criteria. Relevant data from each included study were extracted using standardized forms. Crude and adjusted relative risks (RR) were included in random effects meta-analyses where appropriate.

Results: 26 papers fulfilled the inclusion criteria for at least one infection. Six of the seven studies of chancroid found a strongly reduced risk among circumcised men (risk ratios from 0.12-1.11), as did most studies of syphilis (summary risk ratio=0.67, 95% confidence interval 0.54-0.83), although for the latter there was significant heterogeneity in study findings (p=0.01). The association of circumcision and HSV2 infection was of borderline statistical significance (summary risk ratio=0.88, 95% confidence interval 0.77-1.01).

Conclusions: This first systematic review of male circumcision and ulcerative sexually transmitted infections supports the belief that circumcised men are at substantially lower risk of chancroid and syphilis. There is less association of male circumcision with HSV2, in contrast to the strong association with HIV. These results indicate that potential male circumcision interventions to reduce HIV in high risk populations may provide additional protection against sexually transmitted infections.



Figur 1: Forest plot of RR for circumcision & HSV2



Figur 2: Forest plot for RRs of circumcision & syphilis

MO-104 APPLICATION OF THE CASE-CROSSOVER DESIGN TO REDUCE UNMEASURED CONFOUNDING IN STUDIES OF CONDOM EFFECTIVENESS

D.L.W. Warner¹, M. Macaluso¹, H.D. Austin², D.K. Kleinbaum², L. Artz³, M.E. Fleenor³, I. Brill³, D.R. Newman¹, E.W. Hook III³

¹ CDC, Atlanta, GA, United States of America

² Emory University, Atlanta, GA, United States of America

³ University of Alabama, Birmingham, AL, United States of America

Objectives: In vivo studies offer inconclusive evidence of condom effectiveness against curable sexually transmitted diseases (STDs). Uncontrolled confounding of characteristics between condom users and nonusers (e.g., exposure to infected partners) may explain the

lack of effect. To minimize confounding, we used case-crossover methodology (where each case is its own control) to examine condom effectiveness versus gonorrhea and chlamydia (Gc/Ct).

Methods: Data were analyzed from a prospective cohort study of barrier contraception of 1,122 female STD clinic patients in Alabama. Participants were assessed for condom use and Gc/Ct for six monthly visits. Associations between consistent (100%) condom use and number of unprotected sex acts in past month and incident Gc/Ct were compared between case-crossover analyses (conditional logistic regression) and cohort analyses (unconditional logistic regression, with GEE).

Results: Case-crossover analyses of 228 case intervals (ending in Gc/Ct) and 743 matched noncase intervals (183 women) revealed consistent condom use without breakage or slippage was associated with significantly reduced risk of Gc/Ct relative to non-use (adjusted risk odds ratio (ROR)=0.49, 95% CI: 0.26, 0.92). By comparison, cohort analyses of 245 case intervals and 3,896 noncase intervals (919 women) revealed no significant reduction in Gc/Ct from consistent use (aROR=0.79, 95% CI: 0.53, 1.17). Dose-response relationships between the number of unprotected sex acts and infection were stronger in case-crossover (p for trend=0.009) than cohort analyses (p for trend=0.18).

Conclusions: These findings suggest epidemiologic studies confounded by unmeasured differences between users and nonusers likely underestimate condom effectiveness against infections. Case-crossover methodology provides an additional technique for reducing unmeasured confounding in condom effectiveness studies.

MO-105 SEXUAL NETWORKS AND RISK OF CHLAMYDIA AND GONORRHEA IN HIGH-RISK ADOLESCENTS

C.M. Fichtenberg¹, S.Q. Muth², N.S. Padian³, J.M. Ellen⁴

¹ Johns Hopkins School of Public Health, Baltimore, United States of America

² Quintus-Essentials, Colorado Springs, CO, United States of America

³ University of California, San Francisco, CA, United States of America

⁴ Johns Hopkins University, Baltimore, United States of America

Background: Characteristics of sexual networks are thought to affect the risk of acquiring sexually transmitted infections (STIs), however there is little empirical data in adolescents.

Objectives: To describe the structure and composition of the sexual networks of high-risk adolescents and to identify network and individual characteristics that are associated with gonorrhea and chlamydia infection.

Methods: A household sample of African American adolescents was recruited from a high STI-incidence area of San Francisco. Their locatable sex partners and their sex partners' sex partners were also recruited. All participants were tested for gonorrhea and chlamydia using NAATs. Participants' sexual networks were characterized in terms of structure (size and centralization) and composition (who is in the network – in terms of age, race/ethnicity, condom use, drug use, and criminal justice history). Participants were also characterized in terms of their network positions (centrality).

Results: A total of 518 sexually active individuals were interviewed. With their partners, they constituted 264 separate networks ranging in size from 2 to 28. In the sample of 470 individuals who were tested for gonorrhea and chlamydia, individual-level demographic (age,

gender or race/ethnicity) and behavioral (number of partners, condom use, age at first sex, drug use, criminal justice history) characteristics were not statistically significantly associated with infection. However, infected individuals were more central in their networks than non-infected individuals (36 vs. 25%, p=.01). In addition, networks with at least one infected member were larger in size (5 vs. 2.9, p=.0004), more centralized (32.7% vs. 13.9%, p=.0001) and characterized by a wider age range (4.1 vs. 2.9yrs, p=.03) than networks with no disease.

Conclusions: Infection with gonorrhea or chlamydia is more closely related to network characteristics than to individual characteristics, confirming the importance of sexual networks in disease transmission in adolescents.

MO-106 THE IMPORTANCE OF TRANSMISSIBILITY IN EVALUATING COST-EFFECTIVENESS OF STI PREVENTION: LESSONS FROM SIMULATION STUDIES

D.N. Fisman¹, J Edmunds²

¹ Drexel University Sch. of Public Health, Philadelphia, United States of America

² Health Protection Agency, London, United Kingdom

Objectives: Transmissibility is one of the defining attributes of sexually transmitted infections (STI). However, most economic evaluations of STI control strategies fail to take transmissibility into account. We explored the nature and direction of distortion of cost-effectiveness assessment when transmissibility is ignored through construction of mathematical models simulating control of a hypothetical bacterial STI.

Methods: We constructed a 'susceptible-infectious-susceptible' (SIS) model of infection for disease in a same-sex population with rates of partner change based on those seen in men who have sex with men in the United Kingdom. The pathogen was characterized by a high likelihood of asymptomatic infection, and disease or carriage resolved an average of 12 weeks after infection if treatment was not received. Cost-effectiveness ratios were defined as dollars per symptomatic episode cured or prevented, and were generated using both a conventional 'Bayesian tree' approach, and using a transmission model.

Results: Using a standard tree approach, costs per symptomatic episode cured or prevented were unvarying at \$30 per case, regardless of prevalence, sexual behavior, or time-horizon. Identification of asymptomatic infection was never economically attractive. When cost-effectiveness was assessed using a transmission model, the economic attractiveness of the intervention increased markedly, with cost-per-case cured or averted declining

Year of Program	Cases cured	Cumulative Incidence of Disease		Cumulative Cost (\$)	Standard Tree Model	Transmission Model
		Treated	Untreated		Cost per Case Cured or Averted	Cost per Case Cured or Averted
1	49 660	397 276	525 678	\$1,490 33	\$30 01	\$8 37
2	126 379	1011 031	1519 463	\$3,791 91	\$30 00	\$5 97
5	440 810	3526 477	5176 770	\$13,224 53	\$30 00	\$6 32
10	1008 702	8069 613	11373 083	\$30,261 59	\$30 00	\$7 02

Table: Model-based estimates of effectiveness, cost, and cost-per-case averted or cured using a standard tree model and a transmission model. Cost-effectiveness estimates are more favorable when transmissibility is considered.

Figur 1: Table comparing model outputs

from \$30 to \$6-\$9 per case, depending on the time-horizon used. Cost-effectiveness was further enhanced through screening for asymptomatic infections, and as rates of partner change increased.

Conclusions: Incorporating transmissibility into cost-effectiveness analyses of STI control strategies allows more realistic modeling, and captures features that cannot be captured by more typical static models. These features include the potential health and economic impact associated with eliminating asymptomatic or silent infections and externalities associated with reducing the number of infectious people in a community.

SESSION: O-001 - CONGENITAL SYPHILLIS

MO-201 AN OVERVIEW OF THE IMPORTANCE OF CONGENITAL SYPHILIS

G. Schmid

Objectives: To review the rationale for a global emphasis on eliminating congenital syphilis.

Methods: Literature synthesis.

Results: The number of pregnancies affected annually by congenital syphilis is uncertain (and estimated elsewhere at this programme; Stoner B et al), but is conservatively estimated at one-half million live births and one-half million stillbirths. Thus, globally, it is a leading cause of fetal and neonatal death but, unlike other major causes, congenital syphilis is easily preventable requiring three steps: 1) attendance at antenatal care (ANC); 2) attendance early; 3) testing for syphilis and, if needed, treatment. Globally, only 68% of women attend ANC and the median time of first attendance is late, the mid-second trimester. Most countries have policies for testing pregnant women but, diminishing the value of ANC services, testing is frequently not performed. The economics of improving these measures is compelling. Numerous economic evaluations in industrialized countries have shown that even at low prevalences of maternal infection testing is cost-effective. Recently, in Tanzania, preventing congenital syphilis in live-born neonates was shown to be highly cost-effective, but including stillbirth as an outcome made it a public health bargain – \$110.03 per DALY saved excluding stillbirths but only \$10.56 per DALY saved if stillbirths were included.

Conclusions: Congenital syphilis is an important health problem and highly cost-effective to prevent, while newer testing methodologies make testing more feasible in primary healthcare settings. 'Packaging' congenital syphilis prevention with other, increasingly emphasized programmes targeting pregnant women, e.g., Making Pregnancy Safer, prevention of mother-to-child HIV transmission, can result in synergies that enhance the value and cost-effectiveness of all.

MO-202 CONGENITAL SYPHILIS: A REVIEW OF COUNTRY POLICIES AND PROGRAMMES

S. Hawkes, M. Hossain, N. Broutet

Objectives: To identify and describe national maternal and congenital syphilis (CS) control policies.

Methods: A systematic review of 14 existing country policies and programmes was conducted in order to compare and contrast the strategies currently used by countries with varying geographical, socio-economic and epidemiological ranges. Surveillance data from published or unpublished sources and epidemiological studies for CS and maternal syphilis, fertility, antenatal care attendance, syphilis screening in pregnant women, and treatment rates were considered.

Results: An historical overview of global syphilis control policies demonstrated that current control measures are simply an adaptation of strategies developed over a century ago. Technological advances in serological testing and treatment have resulted in the development of cost-effective strategies capable of decreasing CS incidence when offered systematically to all pregnant women. However, countries had varying levels of success in their goals. Policies are only as effective as the implementing health system and its users - factors which cannot be quantified through a comparison of policies and epidemiological data alone.

Conclusions: The following recommendations are made based on this review:

- (1) On a national-level, identify barriers hindering successful policy implementation in order to design appropriate interventions and address operational and logistical flaws.
- (2) Incorporate maternal and CS control strategies into existing national MCH, STI and HIV/AIDS control efforts in order to ensure accountability, the development of appropriate interventions, and the efficient allocation of funds in each setting.
- (3) Standardize and strengthen international and national surveillance systems to better assess the magnitude of the epidemic and place an appropriate emphasis on the issue.
- (4) Develop and implement appropriate monitoring and evaluation systems to ensure programme sustainability.

MO-203 REVIVAL OF CONGENITAL SYPHILIS CONTROL IN THE HIV DECADE - EXPERIENCE FROM KENYA

M. Temmerman¹, P. Glchang²

¹ Ghent University, Ghent, Belgium

² University of Nairobi, Nairobi, Kenya

Introduction: Screening and treatment of syphilis during pregnancy is considered to be highly cost effective and is a national health policy in many countries. Nevertheless, this intervention is often not implemented in poor resource countries with high syphilis prevalence because of financial, operational, cultural and logistical constraints. In Kenya, with an estimated national syphilis prevalence of 3-5%, efforts have been made to increase coverage and efficacy of congenital syphilis prevention programmes.

Data: A national congenital syphilis control programme has been in place for more than 20 years. In Nairobi, the programme is in the power of the public health department of the Nairobi City Council (NCC) and has been subject to monitoring, evaluation, and innova-

tion since the early 1990s. Initially, all women attending antenatal clinics were bled at the clinic and the blood samples were transported to a central laboratory. Rapid plasma reagin (RPR) reactive patients were referred for treatment to a central STD clinic. In 1992, a cost effectiveness analysis of this syphilis control strategy revealed that less than 60% of pregnant women attending city council clinics were screened, and only 9% of RPR positive women were adequately treated. This led to an intervention supported by the Commission of the European Communities (CEC) whereby the formerly centralised syphilis screening programme was decentralised to 10 large antenatal clinics. These clinics were strengthened to perform RPR card testing and provide treatment on the spot at the time of the first antenatal visit. As a result of this approach virtually all pregnant women attending one of the clinics were screened, and 87% of seroreactive women were treated as well as 50% of their partners. Quality control however remains an issue. Conclusions: Perinatal HIV transmission programmes can draw lessons from the congenital syphilis programmes, and integrate screening as much as possible in routine care. New and rapid field tests are urgently required to improve the capacity and efficacy of congenital syphilis interventions.

MO-204 THE UTILITY OF A NEW RAPID TEST IN A PROGRAMME IN SOUTH AFRICA / ON-SITE RAPID ANTENATAL SYPHILIS SCREENING WITH AN IMMUNOCHROMATOGRAPHIC STRIP IMPROVES CASE DETECTION AND TREATMENT IN RURAL SOUTH AFRICAN CLINICS

R.N. Bronzan¹, M. Wesigwa-Kayongo², D. Narkunas¹, G.P. Schmid³, G.A. Neilsen⁴, P. Dlal², N. Makwedini⁵, C. Ryan¹

¹ Centers for Disease Control and Prevention, Atlanta, GA, United States of America

² University of Transkei, Umtata, Republic of South Africa

³ World Health Organization, Geneva, Switzerland

⁴ Family Health International, Bangkok, Thailand

⁵ Department of Health, Eastern London, South Africa

Objectives: Congenital transmission of syphilis is a significant cause of adverse pregnancy outcomes. In South Africa antenatal syphilis screening at clinics is performed by off-site laboratories, but unreliable transport and poor client follow-up impede effective treatment. On-site screening allows immediate treatment, reducing syphilis-related adverse pregnancy outcomes. We compared the effectiveness of three strategies for syphilis screening at rural antenatal clinics: on-site qualitative rapid plasma reagin (RPR), on-site treponemal immunochromatographic strip (ICS) test, and the standard-practice off-site quantitative RPR/Treponema pallidum hemagglutination assay (TPHA).

Methods: Nurses at eight rural clinics were trained to perform the RPR and ICS tests. Women aged >18 years presenting for antenatal care were offered on-site syphilis screening with immediate treatment. The two on-site tests were alternated weekly. At eight standard-practice clinics, retrospective chart reviews were conducted to determine the percent of women who were successfully diagnosed and treated for syphilis using off-site testing.

Results: On-site screening was completed for 1250 women. The on-site ICS resulted in the highest percentage of pregnant women correctly diagnosed and treated for syphilis (89.4% for on-site ICS,

63.9% for on-site RPR, 60.8% for off-site RPR/TPHA). The on-site ICS outperformed the on-site RPR because of greater sensitivity for detecting active syphilis. The off-site RPR/TPHA was less effective than the on-site ICS due to poor client return rates. Conclusion: Use of the on-site ICS test for syphilis screening at rural antenatal clinics can reduce syphilis-related adverse outcomes of pregnancy by providing accurate diagnoses and allowing immediate treatment for pregnant women with active syphilis.

MO-205 ADVANCEMENT OF CONGENITAL SYPHILIS SURVEILLANCE IN RUSSIA / ENHANCING CONGENITAL SYPHILIS SURVEILLANCE IN RUSSIA – A NEW STRATEGY FOR ADVANCING PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF SYPHILIS AND HIV INFECTION

L.I. Tikhonova¹, L. Zohrabyan², J. Heffelfinger², A. Shakarishvili²

¹ Russian Federal Agency for Health and Social Development Central Research Institute for Skin and Venereal Diseases, Moscow, Russia;

² Centers for Disease Control and Prevention, Atlanta, GA, United States of America

The number of reported congenital syphilis (CS) cases in Russia increased 26-fold (from 29 to 743 cases) during 1991-1999, mirroring the 26-fold rise in syphilis rates among women ≥ 18 years of age during this period of sociopolitical and economic turmoil following the collapse of the Soviet Union. However, the true burden of CS in Russia is underestimated because CS diagnoses are based on clinical or laboratory findings and presumptive cases are not considered. A recent study of risk factors for CS in Russia revealed that of 1,071 pregnant women who completed ≥ 20 weeks' gestation and had reactive serological tests for syphilis, 35% received no prenatal care (PNC) and 45% were first tested for syphilis at ≥ 28 weeks' gestation. Sixty-four percent (544/850) women with active syphilis delivered infants with confirmed or presumptive CS (presumptive CS defined as cases among infants whose mothers were not treated for syphilis before delivery). Based on these data, Russia implemented measures to 1) enhance CS case ascertainment and reporting using clinical, serological, and epidemiological criteria; 2) improve the diagnostic algorithm for classifying cases; 3) increase the use of PNC services; and 4) foster collaboration between pediatricians, obstetricians, and dermato-venereologists to improve the prevention, diagnosis, and treatment of CS. During 2004-2005, an active CS surveillance system (CSSS) was piloted in seven regions. Preliminary findings demonstrate that the CSSS is sensitive and provides useful information. The CSSS also collects information about the HIV status of pregnant women, allowing the prevalence of CS, antenatal HIV infection, and maternal behavioral factors to be monitored accurately. Russia's commitment to developing an evidence-based approach to monitoring and evaluating CS and antenatal HIV trends has been instrumental in the early success of the CSSS. Implementation of CSSS nationwide will enhance the allocation of resources toward preventing mother-to-child transmission of syphilis and HIV in Russia.

SESSION: O-004 - HUMAN PAPILLOMAVIRUS

MO-301 CONDOMS PREVENT INCIDENT ANAL HUMAN PAPILLOMAVIRUS (HPV) INFECTION IN MEN: THE EXPLORE STUDY

P.V. Chin-Hong¹, E. Vittinghoff¹, D. Benet², S. Buchbinder¹, M. Da Costa¹, T. Darragh¹, F. Judson³, B. Koblin⁴, K. Mayer⁵, J.M. Palefsky¹

- 1 University of California, San Francisco, San Francisco, United States of America
- 2 Abt Associates, Inc., Boston, United States of America
- 3 Denver Dept. Public Health, Denver, United States of America
- 4 New York Blood Center, New York, United States of America
- 5 Fenway Community Health Center, Boston, United States of America

Objectives: The U.S. Food and Drug Administration recently evaluated accuracy of condom labeling regarding HPV transmission risk. They reviewed largely cross-sectional studies with inconsistent findings. We determined the impact of condoms in decreasing incident anal HPV and dysplasia in men who have sex with men (MSM).

Methods: This multisite prospective study recruited 1409 HIV-negative MSM. During each twice-yearly visit, we assessed anal HPV infection by PCR, obtained anal cytology and collected behavioral data including condom use. We used generalized estimating equation regression analyses to account for repeated measures in each participant and to identify predictors of incident HPV infection and anal dysplasia.

Results: Of 1409 MSM followed for up to 36 months, 40% reported always using condoms for receptive anal sex (RAS). At baseline 60% were HPV-infected, 15% had low-grade squamous intraepithelial lesions (LSIL) and 5% had high-grade SIL (HSIL). The incidence of anal HPV was 57 per 100 person-years (py), LSIL: 13 per 100py and HSIL: 5 per 100py. In univariate analyses, less frequent condom use during RAS was associated with incident anal HPV infection and incident LSIL, but not incident HSIL (image-2). After adjustment for sexual activity, substance use and age, a higher proportion of condom use in the previous 6 months was associated with lower incident anal HPV infection (P<0.001). There was moderate evidence for condom use in preventing incident LSIL (P=0.07), but no evidence for condom use in preventing incident HSIL (P=0.80).

Conclusions: Condoms protect against incident anal HPV infection and likely LSIL in a population with a high prevalence of disease. Given increasing rates of HPV-associated anal cancer and limited

treatment options for anal HPV disease, condoms should be encouraged as a strategy to prevent anogenital HPV acquisition and could bolster messages for use in HIV prevention.

MO-302 THE SENSITIVITY OF ANAL CYTOLOGY SCREENING TO DETECT ANAL DYSPLASIA CONFIRMED BY ANAL BIOPSY IN A POPULATION OF HIV-POSITIVE MEN WHO HAVE SEX WITH MEN (MSM)

R.D. Cranston, B.J. Brown, S.D. Hart, S.L. Hirschowitz, G. Cortina, A.A. Moe
UCLA, Los Angeles, United States of America

Objective: To assess the sensitivity of exfoliative anal cytology samples to detect anal dysplasia in a population of HIV infected MSM
Methods: HIV-positive MSM presenting for primary care at the UCLA Center for AIDS Research and Education (CARE) Clinic had routine anal cytology screening performed using a water-moistened Dacron swab and the ThinPrep collection method. All patients with abnormal anal cytology results were referred for high-resolution anoscopy (HRA) with biopsy of any visually dysplastic lesion based on cervical colposcopic criteria.

Results: A total of 249 patients had anal cytology screening between 2/02 and 12/04. 175 anal cytology specimens were abnormal and 93 subsequently had paired anal biopsy results following HRA. The histological grades were: normal, low grade squamous dysplasia/condyloma, high grade squamous dysplasia, and carcinoma. Biopsy results showed high-grade dysplasia in 50 cases, low-grade dysplasia in 38 cases, and 4 cases had normal squamous epithelium. The sensitivity of abnormal anal cytology to detect any grade of anal dysplasia (low-grade and high-grade) was 94%. The sensitivity of abnormal anal cytology to detect high-grade dysplasia was 96%.
Conclusion: The grade of anal cytology has previously been shown to correlate poorly with the grade of anal biopsy findings. The findings in this clinical cohort indicate that any grade of abnormality of anal cytology is a sensitive test for the detection of anal dysplasia.

MO-303 PREVALENCE AND EPIDEMIOLOGIC FACTORS ASSOCIATED WITH ANAL INTRAEPITHELIAL NEOPLASIA 2-3 AMONG HIV-POSITIVE WOMEN

M. Palefsky¹, E.A. Holly¹, J.T. Efrid¹, N. Jay¹, T.M. Darragh¹, M. Da Costa¹, M. Cohen², H. Minkoff³, R.M. Greenblatt¹

- ¹ UCSF, San Francisco, United States of America
- ² Core Center, Cook County, Chicago, United States of America
- ³ Maimonides Medical Center, New York, United States of America

Objectives: The incidence of HPV-associated anal cancer is higher in HIV-positive women than women in the general population. Little is known about the anal cancer precursor, anal intraepithelial neoplasia (AIN) 2-3, among HIV-positive women. The goal of this study was to characterize prevalence and epidemiologic factors associated with AIN2-3 among HIV-positive women.

Methods: 471 HIV-positive women were enrolled at three sites of the Women's Interagency HIV Study (San Francisco, Chicago and Brooklyn) in an ongoing prospective cohort study. Women were studied with anal cytology and anal HPV testing using MY09/MY11 PCR. Women with abnormal cytology underwent high-resolution anoscopy with biopsy of lesions. Blood for CD4+ level and HIV viral load, medical history and behavioral data were obtained.

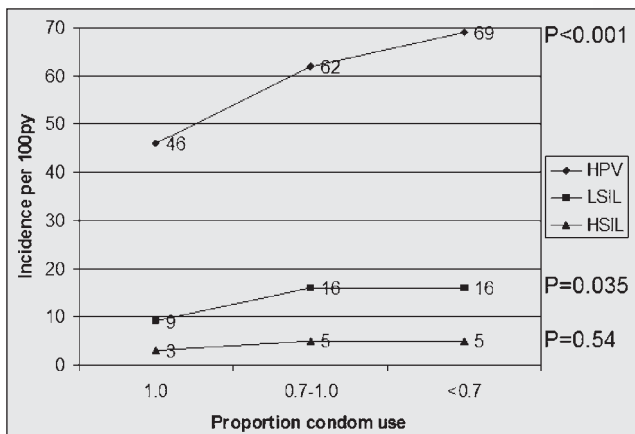


Figure 1: Condom use decreases incident HPV

Results: At baseline, among 443 women with evaluable cytology and histology, 53 (12%) were diagnosed with AIN1 and 39 (9%) with AIN2-3. Among women with evaluable HPV data (beta-globin-positive), 96/290 (33%) women with no anal disease and 65/89 (73%) women with AIN were HPV-positive. In multivariate analyses, factors associated with AIN2-3 included anal infection with HPV16/18 (OR 11, 95%CI 3.6-32), use of highly active antiretroviral therapy (HAART) (OR 3.0, 95%CI 1.1-8.3) and history of anal warts (OR 4.4, 95%CI 1.4-14). HIV viral load and CD4+ levels were not significant factors for AIN2-3 after adjustment for the other factors. Conclusions: HIV-positive women have a high prevalence of anal HPV infection and AIN, including AIN2-3. Epidemiologic factors independently associated with AIN2-3 include infection with HPV16/18 and history of anal warts. HAART does not lower the odds for AIN2-3. HIV-positive women, including those on HAART, should be considered for routine anal cytology screening to prevent anal cancer, similar to cervical cancer prevention programs.

MO-304 RANDOMIZED CONTROLLED EVALUATION OF SELF SCREENING FOR ANAL CANCER AMONG GAY MEN

M. Lampinen¹, M.L. Miller¹, K. Chan¹, D. van Niekerk², P. Granger³, R. Taylor⁴, D. Cook⁵, A.J. Schilder¹, R.S. Hogg⁶
¹ BC Centre for Excellence in HIV/AIDS, Vancouver, Canada
² BC Cancer Agency, Vancouver, Canada
³ Vancouver Coastal Health, Vancouver, Canada
⁴ St. Paul's Hospital, Vancouver, Canada
⁵ BC Centre for Disease Control, Vancouver, Canada
⁶ University of British Columbia, , Canada

Background: Self-collection of anorectal swab specimens by gay men could facilitate large HPV natural history and anal intraepithelial neoplasia (AIN) treatment studies. Objectives: Compare self- versus clinician-collection procedures with respect to specimen adequacy; concordance of cytologic results and patients' subjective experience. Methods: Paired self- and clinician-collected anal Dacron swabs for liquid-based (ThinPrep™) cytologic evaluation were collected in a randomly-assigned order at the same visit from young, mostly HIV-1 seronegative gay men in Vancouver. Self-administered questionnaire items were used to and assess collection preferences and to compare patients' (scaled) ratings of each collection procedure. Results: Among 222 patient-clinician paired specimens collected between Jul 2003 and May 2004, most specimens were adequate for cytologic evaluation, though self-collected specimens were less likely to be so (83% vs 92%, p=0.0006). Cytologic results were completely concordant in 139 (63%) of pairs. Abnormalities, noted in 21% of self-collected and 21% of clinician-collected swab specimens (with expected poor agreement, kappa=0.352), included (respectively): ASCUS (5%, 5%); low-grade AIN (13%, 13%) and high-grade AIN (3%, 3%). High-grade cytologic results were observed in swabs collected by both patient and clinician (n=2), patient only (n=5), and clinician only (n=4). Among 12 cases of high-grade AIN detected during anoscopic evaluation of 60 (81%) of men with a cytologic abnormality, few had a corresponding cytologic diagnosis by either self- (n=1) or clinician- (n=2) collection procedures. No significant difference between collection procedures was

observed with regard to patients' subjective rating of pain (both very low) but self-collection was reportedly less embarrassing (p<0.0001), more 'private' (p=0.05) and more uncomfortable (p=0.004). Preferences for future swab collection included: self (34%), clinician (24%), and no preference (42%). Conclusions: Self-collection of anorectal specimens for cytologic screening for research purposes appears to be feasible and highly acceptable to young gay men.

MO-305 HUMAN PAPILLOMAVIRUS (HPV) INFECTION, GENOTYPE DISTRIBUTION AND CERVICAL DYSPLASIA IN RELATION AMONG HIGHLY SEXUALLY-EXPOSED WOMEN WITH HIV-1 INFECTION IN BOBO DILOULASSO, BURKINA FASO.

M.N. Rousseau Didelot¹, N. Nagot², V. Costes-Martineau³, X. Vallès⁴, A. Ouedraogo², P. Van de Perre⁵, M. Segondy¹, P. Mayaud⁶, I. Konate²
¹ Saint-Eloi, Montpellier Cedex 5, France
² Centre Muraz, Bobo-dioulasso, Burkina-Faso
³ Gui de Chauliac, Montpellier, France
⁴ London School of Hygiene and T, London, United Kingdom
⁵ Arnaud de Villeneuve, Montpellier, France
⁶ London School of Hygiene & Tropical Med, London, United Kingdom

Methods: We performed a cross-sectional study nested within a cohort of highly sexually-exposed women in Bobo-Dioulasso, Burkina Faso. Cervical samples were collected with the ThinPrep Pap Test (Cytyc, Montrouge, France) using a Cervex brush. The Bethesda system was used to classify cervical cytological abnormalities while HPV typing was performed using the INNO-LiPA HPV Genotyping v2 test (Innogenetics, Ghent, Belgium). HPV DNA sequencing was performed when genotyping could not be achieved with INNO-LIPA. Results: HPV DNA was detected in 238/360 (66.1%) of the beta-globin-positive samples and 437 HPV strains belonging to 37 types were identified. The most frequent HPV subtypes were HPV-52 (14.7%), HPV-35 (9.4%), HPV-58 (9.2%), HPV-51 (8.3%), HPV-16 (5.9%). 52.5% of the women had a multiple (2 to 7) HPV infection. Cervical squamous intraepithelial lesions (SIL) were identified in 88/366 (24.0%) women with interpretable cytology: 74 (20.2%) had low-grade SIL(LSIL) and 14 (3.8%) had high-grade SIL (HSIL). Prevalence of human immunodeficiency virus type 1 (HIV-1) was 36.5%. HIV-1-seropositivity was associated with increased rates of high-risk HPV infection, multiple HPV infection and 13 of 14 HSIL cases.

	HIV+	HIV-	
	(N=126)	(N=223)	
HPV types	n (%)	n (%)	P ^a
High risk HPV types ^b	51 (40)	64 (29)	0.006
Low risk HPV types ^b	21 (17)	32 (14)	0.3
Both HPV types ^b	39 (31)	25 (11)	<0.001
HPV negative	16 (13)	102 (46)	<0.001

Figur 1: Prevalence with HPV types according to HIV status

HPV16 or HPV18 were present in 64% (9/14) of HSIL samples. HR-HPV infection (OR=6.8), oral contraceptives (OR=3.5), CD4 count <200/mm³ (OR=3.1) and smoking (OR=2.7) were also likely to be associated with HSIL.

Conclusion: The present study confirms the burden of HPV-related cervical lesions in young African women and that HIV-1 positive women were at higher risk of HR-HPV, LSIL and HSIL. A vaccine including HPV-16 and HPV-18 would prevent about two third of HSIL in this population.

HPV and HIV-1 status (N=349) ^a	Cervical lesions ^b	L-SIL	H-SIL
	No. (%)	No. (%)	No (%)
HPV- HIV- (N = 102)	7 (6.9)	7 (6.9)	0(0.0)
HPV- HIV+ (N = 16)	2 (12.5)	2(12.5)	0(0.0)
HPV+ HIV- (N = 121)	19 (15.7)	18(14.9)	1(0.8)

Figur 2: Cervical lesions according to HPV and HIV status

Factor	N/total (%)	Crude		Adjusted		P
		OR	CI	OR	CI	
HR-HPV infection	13/14 (93)	15.47	1.7-107.7	6.78	0.8-57.4	0.08
CD4 count <200/mm ³	5/10 (50)	3.72	1.0-14.5	3.11	0.5-19.7	0.23
HIV1 infection	13/14 (93)	25.42	3.1-210.1	17.79	2.9-160.4	0.01
HSV2 infection	11/14 (79)	1.53	0.5-6.0	0.74	0.1-4.7	0.75
Smoking	1/14 (7)	0.95	0.1-7.6	2.67	0.2-36.5	0.46
Oral contraception	3/11 (27)	2.84	0.7-11.4	3.50	0.7-18.1	0.14

Figur 3: Analysis of risk factors for HSIL

MO-306 SENTINEL SURVEILLANCE FOR HUMAN PAPILLOMAVIRUS AMONG WOMEN IN THE UNITED STATES, 2003-2004

S.D. Datta¹, L. Koutsky², J. Douglas¹, S. Ratelle³, .P Kerndt⁴, J. Shlay⁵, B. Weaver², J. Zenilman⁶, E.P. Unger¹, M. Hagensee⁷, H. Weinstock¹
¹ Centers for Disease Control (CDC), Atlanta, United States of America
² University of Washington, Seattle, WA, United States of America
³ Mass. Dept of Public Health, Boston, MA, United States of America
⁴ LA County Dept. of Health Svcs, Los Angeles, CA, United States of America
⁵ Denver Public Health, Denver, CO, United States of America
⁶ Johns Hopkins University, Baltimore, United States of America
⁷ Louisiana State University, New Orleans, LA, United States of America

Objective: National HPV Sentinel Surveillance (HSS) for cervical infection with high-risk human papillomavirus (HR-HPV) is being conducted in 29 clinics in geographically diverse cities (Boston, MA; Baltimore, MD; New Orleans, LA; Denver, CO, Seattle, WA; and Los Angeles, CA) as part of a multi-year surveillance project to estimate national burden of disease and inform prevention efforts in the U.S.

Methods: Surveillance was conducted among women (aged 14-65 years) due for routine screening cervical cytology screening at STD, family planning, and primary care clinics. We collected demographic information and cervical specimens for HR-HPV testing

(Digene Hybrid Capture 2, Gaithersburg, MD) and abstracted cervical cytology results from medical records. This analysis includes data collected from subjects enrolled between January 2003 and December 2004.

Results: The total number of women enrolled and tested was 6270. Overall HR-HPV prevalence was 22.5% (STD clinics 27.8% [504/1812], Family Planning clinics 23.7% [594/2502], Primary Care clinics 16.1% [315/1956]). Prevalence by age group was: 14-19 years 35.4% [208/588]; 20-29 years 29.1% [882/3026]; 30-39 years 14.1% [199/1409]; 40-49 years 11.5% [97/844]; 50-65 years 6.4% [25/393]. Among different racial/ethnic groups HR-HPV prevalence was 23.5% [579/2460] in non-Hispanic Whites, 25.1% [367/1461] in non-Hispanic Blacks, 20.1% [302/1500] in Hispanics, and 28.7% [50/174] in other racial/ethnic groups. HR-HPV prevalence by cervical cytology was: Normal 16.7% (881/5279); ASC-US 45.0% (202/449); ASC-H 57.1% (12/21); LSIL 89.3% (242/271); HSIL 91.2% (31/34); and Other 20.8% (45/216).

Conclusion: These data demonstrate a consistently high prevalence of HR-HPV among women of different race/ethnicities, age groups, and clinic types and showed a decreasing prevalence with increasing age. The largest number of HR-HPV infections was among women with normal cervical cytology.

SESSION: O-005 - MYCOPLASMA GENITALIUM

MO-401 MYCOPLASMA GENITALIUM, HERPES SIMPLEX VIRUSES AND ADENOVIRUSES IN NON-GONOCOCCAL URETHRITIS

C.S. Bradshaw¹, S.M. Tabrizi², T.R. Read¹, C.A. Hopkins¹, M.B. Moss¹, S.M. Garland², C.K. Fairley³

¹ Melbourne Sexual Health Centre, Melbourne, Australia
² Royal Women's Hospital, Melbourne, Australia
³ University of Melbourne, Melbourne, Australia

Objectives: To determine the role of Mycoplasma genitalium (MG), herpes simplex and adenoviruses in non-gonococcal urethritis (NGU), and to establish the efficacy of azithromycin for MG.

Methods: A case-control study of men with symptoms of NGU (cases) and men without symptoms of NGU (controls) attending Melbourne Sexual Health Centre, Australia, was conducted between March 2003-2004. Symptoms and sexual behaviour were measured by questionnaire, and clinicians recorded signs on a standardized proforma. A first pass urine was obtained from participants and tested by PCR for: Chlamydia trachomatis (CT), MG, Trichomonas vaginalis, Ureaplasma urealyticum & parvum, Gardnerella vaginalis, Herpes simplex virus 1&2 (HSV1,2) and adenoviruses. Cases had a urethral Gram stain and were treated with 1g of azithromycin. A test of cure was performed at one month for MG, and azithromycin treatment failures were retreated with moxifloxacin 400mg daily for 10 days, with repeat test of cure.

Results: 329 men cases and 307 men controls were enrolled. CT, MG, adenoviruses and HSV1 were significantly more common in cases than controls (p<0.01). Cases with adenovirus and HSV1 were more likely than cases with CT and MG to have urethral meatitis (p<0.00) and sex with men (p<0.01). Adenoviruses were associated with oral and anal sex (p<0.05), while CT and MG were associated with female sexual partners and vaginal and oral sex. Azithromycin failure occurred in 9 (28%) men with MG. Five (55%) azithromycin

failures had sexual partners from south-east Asia compared to 6 (26%) azithromycin responsive infections. Moxifloxacin cured all azithromycin treatment failures.

Conclusion: Adenoviruses and HSV1 were significant causes of NGU and in contrast to CT and MG were associated with meatitis and sex with men. Azithromycin failure was unexpected and occurred in 28% of men with MG. Moxifloxacin was highly effective in treating these infections.

MO-402 DETECTION OF MYCOPLASMA GENITALIUM IN VAGINAL, CERVICAL, AND URINE SPECIMENS BY TMA AND PCR

J.K. Wroblewski¹, L.E. Manhart¹, K.A. Dickey², M. Hudspeth², P.A. Totten¹

¹ University of Washington, Seattle, United States of America

² Gen-Probe Incorporated, San Diego, United States of America

Objectives: Mycoplasma genitalium (MG) is becoming recognized as a possible cause of idiopathic sexually transmitted disease (STD) syndromes including urethritis, cervicitis, endometritis, and pelvic inflammatory disease. Because MG is difficult to culture, nucleic acid amplification tests (NAATs) are required to detect infection and define the epidemiology of this bacterium. In this study, we compared two research-use-only NAATs, an RNA-based transcription-mediated amplification (TMA, Gen-Probe Incorporated) and a DNA-based PCR assay (Dutro et al., 2003) for detection of MG infection in genital specimens from men and women.

Methods: TMA and PCR assays were performed on archived, frozen samples of first void urine, cervical, and self-obtained vaginal swab specimens from 284 women and on first void urine specimens from 353 men reporting to the Public Health Seattle-King County STD Clinic.

Results: MG was detected in women by TMA and PCR respectively as follows: (i) 36 (13%) and 39 (14%) vaginal specimens ($\kappa=0.923$), (ii) 26 (9%) and 23 (8%) cervical specimens ($\kappa=0.843$), and (iii) 25 (9%) and 28 (10%) urines ($\kappa=0.687$). Combining all specimen results, TMA and PCR detected 41 (95%) and 42 (98%) of 43 MG-infected women. In men, MG was detected in 24 (7%) by TMA, 26 (7%) by PCR, 32 (9%) by either test ($\kappa=0.791$). Because the TMA assay is highly automated, the throughput was at least 3-fold higher than that of the PCR assay.

Conclusions: Agreement between the research TMA and PCR assays was high. For both tests, the sensitivity of the assay was highest in vaginal swab specimens compared to cervical swabs or urine. The research TMA assay is well-suited for high-throughput screening for MG infection.

MO-403 MYCOPLASMA GENITALIUM INFECTION AS A CAUSE OF CERVICAL INFECTION AND URETHRITIS IN MOZAMBIQUE

L. Newman¹, C. Taboy¹, C. Chen¹, E. Folgosa², D. Danavall¹, I. Nhatave²,

R. Bastos⁴, R. Ballard¹

¹ CDC, Atlanta, GA, United States of America

² Eduardo Mondlane Medical School, Maputo, Mozambique

³ Ministry of Health, Maputo, Mozambique

⁴ Maputo Central Hospital, Maputo, Mozambique

Objectives: To determine Mycoplasma genitalium (MG) infection rates among men with urethral and women with vaginal discharge in Mozambique and to assess impact on the performance of syndromic management algorithms when MG is included as an outcome.

Methods: In Mozambique, an algorithm validation study was conducted among 286 women with vaginal discharge, and MG prevalence determined among 132 men with urethral discharge. Urine specimens were tested by in-house multiplex real-time polymerase chain reaction (PCR) for MG, Neisseria gonorrhoeae (NG), Chlamydia trachomatis (CT), and Trichomonas vaginalis (TV). We assessed impact of identifying NG/CT/MG rather than NG/CT on vaginal discharge algorithm performance through positive predictive value (PPV), percentage of over-treatment, and cost per infection treated; and the proportion of urethral discharge cases associated with an identifiable etiology.

Results: MG was identified in 9.1% of urethral and 9.1% of vaginal discharge patients. Five of 12 men (41.7%) and 12 of 26 women (46.2%) with MG did not have other infectious causes of urethritis or cervicitis (GC/CT/TV in men, GC/CT in women). Among men, 66.7% of those with MG demonstrated microscopic evidence of urethritis, compared to 93.8% if NG, 78.6% if CT, 66.7% if TV, and 38.9% without an etiological agent. Among women, 63.6% of those with MG demonstrated cervicitis, compared to 53.5% if NG, 44.0% if CT, and 41.0% without an etiological agent. Inclusion of MG in the vaginal discharge algorithm increased PPV 29.9% to 34.4%, decreased over-treatment from 70.1% to 65.6%, and decreased cost per infection treated 1.119 to 0.974 USD. An etiology was identified in 74% of urethral discharges without consideration of MG, 78% including MG.

Conclusions: MG was associated with symptomatic urethritis and cervicitis, frequently in association with other pathogens. Testing for M. genitalium improved performance of the syndromic management algorithm for vaginal discharge.

MO-404 ANTIBODY RESPONSE TO MYCOPLASMA GENITALIUM IN PATIENTS WITH URETHRITIS

H.F. Svenstrup¹, J.S. Jensen², S. Birkelund¹, G. Christiansen¹

¹ Aarhus University, Aarhus C, Denmark

² Statens Serum Institut, Copenhagen, Denmark

Objective: Mycoplasma genitalium causes non-chlamydial non-gonococcal urethritis (NCNGU). The most immunogenic protein of M. genitalium is MgPa, but the serological response against M. genitalium in patients with urethritis has not been thoroughly investigated. The objective of this study was to examine the antibody response to M. genitalium in serum from 99 men attending a venereal disease clinic with and without urethritis.

Methods: Patients' sera were tested for IgG and IgM antibodies using whole cells of M. genitalium as antigen in immunoblotting and graded as absent, weak (negative) or strong for MgPa (positive). To investigate for possible cross-reactions to the closely related Mycoplasma pneumoniae a commercial ELISA test (medac) was used. Previously, urethral swab specimens from the patients were tested for M. genitalium by PCR (Jensen et al., 1993).

Results: Twenty-six (26%) of the 99 men were strongly seropositive to MgPa and 17 (17%) of the men were PCR positive for M. genitalium. Twelve (71%) PCR positive men reacted strongly with MgPa. Of men with urethritis 15 (29%) were MgPa seropositive, which was not significantly different from the 11 (23%) men without urethritis ($p=0.649$, Fisher's exact test). Previous episodes of urethritis were recorded for 50 men. Of those men with acute urethritis but no

previous urethritis 5/25 (20%) were seropositive, whereas 10/27 (37%) men with acute urethritis and a history of urethritis were seropositive to MgPa. None of the PCR positive men had IgM antibodies to *M. genitalium*. Of 46 *M. pneumoniae* seropositive men (39%) were also seropositive to MgPa.

Conclusions: This study showed a significant correlation between MgPa seropositivity and *M. genitalium* PCR positivity. Seropositivity to MgPa was not correlated to acute urethritis or to previous urethritis. However, men with recurrent urethritis were more likely to have antibodies to *M. genitalium* than were men without urethritis and/or previous urethritis.

MO-405 RISK FACTORS FOR MYCOPLASMA GENITALIUM IN A PROSPECTIVE COHORT STUDY OF FEMALE SEX WORKERS IN NAIROBI, KENYA

C.R. Cohen¹, M. Nosek¹, A. Meier², S. Astete², N.R. Mugo³, P. Totten²

¹ University of California, San Francisco, San Francisco, United States of America

² University of Washington, Seattle, United States of America

³ Kenyatta National Hospital, Nairobi, Kenya

Objectives: *Mycoplasma genitalium* (MG) has been identified in the genitourinary tract of women with evidence of being sexually transmitted. This study explored risk factors for MG in a highly exposed female cohort.

Methods: Sex workers in Nairobi, Kenya, 18-35 years of age were enrolled. Subjects were followed a median of 14 months (IQR: 6-24 months) until time of MG infection or censoring. At the initial visit and every two months, cervical samples were collected for MG, *C. trachomatis* (CT) and *N. gonorrhoeae* (GC) testing by PCR.

Results: Of the 299 subjects, 258 provided MG samples following baseline. 77 subjects acquired 107 MG infections, giving an annual incidence of 22.3/100 women-years. Fifty-six (52%), 20 (19%), 11 (10%) and 20 (19%) MG infections were detected once, and lasted 2, 4, and 76 months, respectively. Both CT (HR=2.4, 95% CI 1.5-4.0) and GC (HR=2.4, 95% CI 1.2-3.5) since enrollment were associated with an increased risk of MG. In multivariate analysis, women \geq 25 years old (Adjusted HR=.37, 95% CI .19-.71), and those who lived longer in Nairobi (AHR=.97 per year, 95% CI .94-.99) had a decreased risk of MG. 30% of women were HIV-infected, and HIV infection correlated with an increased risk of MG (AHR=2.0, 95% CI 1.1-3.5). 9% of consistent condom users relative to 20% of inconsistent users were MG infected at baseline ($p < .02$). Condom use was not associated with incident MG infection.

Conclusion: The relatively high incidence of MG, greater than that for both CT (14.0%) and GC (8%), and association with common STI risk factors supports its importance as a potentially common, albeit asymptomatic STI in women. In addition, the significant association between MG and HIV-infection suggests the possibility of MG as an opportunistic infection.

MO-406 HETEROGENEITY OF THE MGPB GENE IN MYCOPLASMA GENITALIUM, A MECHANISM FOR PERSISTENCE?

S.L. Iverson Cabral¹, S.G. Astete¹, C.R. Cohen², P.A. Totten¹

¹ University of Washington, SEATTLE, United States of America

² University of California, SAN FRANCISCO, United States of America

Objectives: *Mycoplasma genitalium* (MG) is associated with reproductive tract disease in women and may persist in the lower genital tract for months. To explore the hypothesis that antigenic variation of the immunodominant MgPa protein, encoded by the *mgpB* gene, occurs in vivo providing a potential mechanism for MG immune evasion and persistence, we analyzed *mgpB* sequence heterogeneity in the MG type strain G-37, and in a woman persistently infected with MG.

Methods: The *mgpB* gene was aligned with the MG partial repeat (MgPar) sequences in the MG G-37 genome. Regions of the *mgpB* gene with homology to the variant MgPar sequences were classified as sites capable of recombination, and predicted to be regions of diversity. Using primers that target conserved, single copy sections of the *mgpB* gene, these potentially heterogeneous segments were amplified, cloned, and sequenced from a stock culture of G-37. A similar strategy was used to amplify the *mgpB* gene from cervical samples collected longitudinally from a female sex worker in Nairobi, Kenya who was persistently infected with MG (? 21 months).

Results: The *mgpB* gene from the culture strain G-37 was heterogeneous; sequences that diverged from the published genome sequence were identical to the MgPar sequences, consistent with recombination between the *mgpB* expression site and the MgPar sequences. Similarly, the *mgpB* sequences from the MG infected woman were heterogeneous with a minimum of 17 different *mgpB* variants identified during her long-term infection with a single strain of MG.

Conclusions: The *mgpB* sequences derived from a laboratory strain and from a persistently infected woman are heterogeneous, providing evidence for recombination between the expressed *mgpB* gene and silent MgPar sequences; variation of the antigenic MgPa protein may contribute to the persistence of infection.

SESSION: O-006 - STI INTERVENTIONS IN VULNERABLE GROUPS

MO-501 HAS THE AMREF MINE HEALTH PROJECT MADE AN IMPACT ON HIV, STI AND MALARIA PREVALENCE IN THE GEITA GOLD MINE AND SURROUNDING COMMUNITIES?

P. Bidwell¹, D. Watson-Jones², J. Changalucha³, D. Ross², A. Gavyole¹, F. Mohammed¹, L. Knight², A. Ngwalle¹, L. Ndeki¹

¹ AMREF, Mwanza, Tanzania

² LSHTM, London, United Kingdom

³ NIMR, Mwanza, Tanzania

Objectives: Baseline surveys in 2000/1 found high STI and variable HIV prevalence in communities surrounding 2 Gold Mines. A community health project was established in partnership with Anglo Gold/Ashanti, DTP Terrassement, Kahama Mining Limited, NIMR and LSHTM to address these issues. A further survey was conducted in 2004 to determine any changes in HIV, STI and malaria prevalence and risk behaviour.

Methods: A cross sectional survey was conducted April-May 2004 in Geita Gold Mine and in the surrounding community of Geita Town. Participants were selected from 6 groups: male and female Tanzanian mineworkers, expatriate mineworkers, male and female community members aged 15-54 years and female recreational facility workers (FRFWs) (women working in bars, guesthouses etc.) aged 16-35 years. HIV, STI and malaria prevalence were measured along with awareness and risk behaviour.

Results: HIV prevalence has not risen significantly in any group since 2001. There was a significant decrease in HIV prevalence seen in male community members from 18.8% in 2001 to 3.4% in 2004. Decreases were also seen in female community members and FRFWs, though non-significant. There was an improvement in sexual health knowledge, a reduction in those paying for sex and increased condom use. Bed net use had increased significantly.

Conclusions: Results are encouraging, since in the absence of an HIV/AIDS intervention, the HIV prevalence would've been expected to increase in an expanding mining and business community like Geita. The fact that the HIV prevalence has not risen significantly in any group whilst knowledge and condom use has increased is likely to be the result of increased awareness, behaviour change and project activities. It's difficult to know what the trends in the HIV epidemic would have been in the absence of these activities.

MO-502 COMBINING ECONOMIC LIVELIHOOD AND BEHAVIORAL INTERVENTIONS TO REDUCE HIV/STI RISK AMONG ADOLESCENT FEMALE ORPHANS IN ZIMBABWE

M.S. Dunbar¹, M.J. Kang², S. Laver², C. Maternowska¹, I. Mudekunya², J. Roley¹, N.S. Padian¹

¹ University of California, SF, San Francisco, CA, United States of America

² UZ-UCSF Research Programme, Belgravia, Zimbabwe

Objective: HIV/STI behavioral interventions are not sufficient to achieve sustained safe-sex behavior among adolescents. We tested the feasibility of a combined economic livelihood and behavioral intervention to increase relationship power/control and thus reduce risk among female orphans in Zimbabwe.

Methods: A sample of 50 orphans (having lost at least one parent) aged 16-19 was recruited from two urban/peri-urban communities near Harare. Using ACASI and face-to-face interviews, we collected information on demographics, knowledge, behavior, reproductive health, and relationship power/control (modified Pulerwitz scale), and tested for HIV, HSV-2 and pregnancy. The 6-month-long intervention combined micro-credit (business training, loans, mentorship, and peer groups) with sessions on HIV/reproductive health and relationship negotiation. Measures were repeated at 3 and 6 months; qualitative and quantitative data were collected on intervention delivery.

Results: At baseline, 43% had ever had sex and 57% had ever used a male condom. Prevalence was 8% for HIV, 16% for HSV-2 and 20% for pregnancy. Training attendance averaged 79% and 80% received a loan. At six months, more participants had their own income (44% from 6%, p<.01), and could answer all HIV knowledge questions correctly (38% from 16%, p<.01). Although not statistically significant, relationship power scores were related to condom use (80% in highest vs 40% in lowest tertile), and relationship power scores in the highest tertile at follow-up increased in sexual (50%

from 11%) and non-sexual (38% from 5%) relationships. Only 5% repaid loans. Participants cited Zimbabwe's economy, insufficient training, lack of family support and vulnerability to theft/coercion as barriers to economic success.

Conclusions: Although this feasibility study was not powered to detect differences in outcomes between baseline and follow-up, results suggest that a combined intervention has potential to increase relationship power/control and reduce risk, but that micro-credit may not be the best livelihood option within this context.

MO-503 USING PARTICIPATORY METHODS TO ASSESS THE RISKINESS OF RURAL COMMUNITIES FOR ADOLESCENTS: AN ANALYSIS OF RISK MAPS IN THE REGAI DZIVE SHIRI PROJECT

L.F. Langhaug¹, M. Mutisi², O. Mutanga², B. Manyonga², O. Gore², M. Masiyiwa², F.C. Cowan¹, R. Power¹

¹ University College London, Mutare, Zimbabwe

² University of Zimbabwe, Harare, Zimbabwe

Objectives: The Regai Dzive Shiri Project is a community randomised trial of an adolescent reproductive health intervention in rural Zimbabwe. Study impact will be measured using cumulative incidence of HIV, HSV-2 and unintended pregnancy. Additionally, participatory methods were used to assess riskiness of communities for adolescents as perceived by young people, teachers and clinic staff. Changes in perception will be measured over time.

Methods: At baseline, we asked groups of young people, peer educator volunteers and teachers to draw geographical maps of their communities indicating areas perceived as high risk for young people. These maps were coded and analysed using principles of grounded theory. Risk venues were extracted from each map. Pairwise ranking then assessed the relative importance of these community risks.

Results: Over 80 risk maps were collected, coded and analysed. Baseline characteristics of maps were similar for early and deferred communities. While some venues were consistently identified as risky by all groups, many were linked to one group of people. Young people persistently identified 24 hour prayer meetings and schools as risky whereas these venues were not identified as risky by teachers. Instead, teachers were more likely to indicate the home as high risk. Hierarchy of risk also varied between groups of people. Pairwise ranking broadened our understanding of risk, differentiating between venues where risk behaviours actually occur versus those where appointments for future risky behaviour take place. In-depth interviews with young people have explored this data further and concur with the risk venues highlighted in these risk maps.

Conclusions: Participatory methods provide a novel way of exploring sexual risk within communities. Interestingly some risks identified had not emerged using other methods. Young people and adults identified different risk venues. Some risks will be difficult for adolescents to combat without additional community support.

MO-504 MEASURING THE IMPACT OF MALE AND FEMALE CONDOM PROMOTION AMONG SEX WORKERS IN MADAGASCAR

T. Hatzell¹, P.J. Feldblum¹, K. van Damme², M.D. Nasution¹, E.L. Wong¹, T.W. Grey¹

¹ Family Health International, Research Triangle Park, United States of America

² University of North Carolina, Antananarivo, Madagascar

Objectives: To measure changes in levels of protected sex acts and STI prevalence with the addition of the female condom to male condom distribution targeting sex workers; and to assess whether the effect of male and female condom distribution varies by type of promotional intervention.

Methods: 1000 sex workers were followed for 18 months. All participants were exposed to peer education throughout the study. For months 1-6 they had access to male condoms only; the final 12 months they had access to male and female condoms. At the start of each phase, half the participants were randomly assigned to receive supplemental clinic-based counseling on condom use. Participants were interviewed about condom use at baseline and every two months. At baseline and months 6, 12, and 18 they were tested and treated for chlamydia, gonorrhea and trichomoniasis

Results: In the first phase, multivariate regression revealed that the odds of reported male condom use was significantly greater and the odds of STI re-infection was significantly lower in the group benefiting from supplemental clinic-based counseling. Focusing thereafter on the addition of the female condom, average proportion of protected sex acts with clients rose from 78% at month 6 to 83% and 88% at months 12 and 18, respectively. STI prevalence among all participants declined from 37% at month 6 to 27% and 25% at months 12 and 18 months, respectively. Multivariate analysis showed female condom introduction and the clinic-based supplement were significantly associated with increased condom use and decreased STI prevalence.

Conclusions: Addition of the female condom to male condom distribution targeting a high-risk population produced a public health benefit that was sustained with extended exposure. The impact of promoting use of either condom can be heightened through more concentrated counseling on risk reduction.

MO-505 EFFICACY OF TWO PROJECT SAFE BEHAVIORAL INTERVENTIONS DURING 3 FOLLOW-UP YEARS: RESULTS OF A RANDOMIZED TRIAL

N. Shain¹, A.E.C. Holden¹, J.M. Piper¹, J.E. Korte¹, J.D. Champion¹, S.T. Perdue¹, F.A. Guerra²

¹ Univ. of Texas Health Science Center, San Antonio, United States of America

² San Antonio Health District, San Antonio, United States of America

Objectives: To evaluate long-term efficacy of our standard (SAFE; Shain et al, NEJM 340:93, 1999) and enhanced (includes option of support groups) culture- and female-specific, cognitive behavioral intervention. We have already demonstrated that both interventions were effective for the first two follow-up years (SAFE 2, Shain et al, STDs 31:401, 2004). Outcomes are any and multiple infective episodes with GC and/or CT.

Methods: Mexican- and African-American adolescents and women with a current non-viral STD were interviewed, counseled, examined, treated, and randomized to standard intervention, enhanced intervention, or controls. Participants were interviewed, examined, and screened for gonorrhea and chlamydia at 6, 12, 24, and 36 months (brief interview and optional exam at 18 and 30 months) in San Antonio, Texas. Women were encouraged to return to the clinic for suspected problems; they were screened for GC and CT, as needed. Multiple logistic regression analysis (intention to treat), controlling for group differences in variables independently related to outcome, was used to determine group differences in infection rates.

Results: 725 women (80 percent under age 25) were enrolled. The 3-year cumulative analysis sample (women with all annual visits) consisted of 623 women. Adjusted infection rates are listed in the table below.

Conclusions: Mexican- and African-American women assigned to either intervention had significantly lower infection rates with CT and/or GC than controls at Years 1 and 2 and cumulatively through Year 3. They also had significantly fewer repeat infections. Enhanced-intervention participants, particularly those attending support groups, experienced the best results, suggesting the potential of support groups to further reduce infection rates.

	Individual Years (%)			Years 0-3 Cumulative (%)		
	1	2	3	any	at least 2	at least 3
Infections (No.)						
Intervention	1	2	3			
Control	26.8	23.1	24.4	52.2	25.7	13.9
Standard	15.7*	14.7*	21.6	41.5 [#]	15.6*	3.7*
Enhanced	15.4*	14.8*	19.8 [§]	37.8*	13.2*	5.0*

[#]P=0.56, *P< .01, [§]14.9% for women who actually attended support groups

Table 1

MO-506 EVALUATION OF A COMBINED CLINICAL AND SOCIAL INTERVENTION FOR STI PREVENTION WITH SEX WORKERS IN CORUMBÀ, BRAZIL

S.A. Lippman¹, M. Chinaglia², A. A. Donini³, D. Kerrigan⁴, A. Reingold¹, E. Bortolanza³, J. Díaz²

¹ University of California, Berkeley, Berkeley, CA, United States of America

² Population Council, Campinas, Brazil

³ Projeto Encontros, Corumbà, Brazil

⁴ Johns Hopkins University, Baltimore, United States of America

Objectives: Sex workers (SW) experience increased susceptibility and vulnerability to STI due to environmental factors, such as little access to services, and social barriers, such as competition and discrimination, which discourage participation in public life, forging of cohesive communities, and seeking of prevention and care. We aim to evaluate the effect of a combined clinical and social intervention to combat STI incidence in a population of sex workers.

Methods: The study employs a longitudinal cohort design to determine whether a multi-component intervention, including medical and psychological services, peer education, and collective activities

to decrease stigma and build social cohesion, will decrease incident STI infections in a cohort of sex workers. Participants respond to a questionnaire, receive a gynecological exam and counseling by trained psychologists, and provide a sample for PCR detection of CT and NG at three month intervals for five visits. Exposure to the intervention is measured by the participant's clinical visit schedule, including personalized counseling, and participation in project activities, workshops and community events.

Results: 420 female and male sex workers were recruited. At baseline, 16% and 5% of participants were positive for chlamydia and gonorrhoea respectively. Preliminary results indicate a 50% reduction in incident STI over the course of the study. Qualitative data collected during bi-monthly focus groups demonstrate an improved sense of acceptance and receptivity at health services, increased SW social networks and cohesion, and a reduction in perceived social prejudices. Quantitative analysis to evaluate the temporal association of increased intervention participation and decreased STI incidence is forthcoming.

Conclusion: Preliminary results indicate that complementary clinical and social STI/HIV prevention strategies, which combat discrimination both in the health care sector and in the community, offer a feasible and effective means to reduce incident infections in a marginalized group.

SESSION: O-007 - HERPES SIMPLEX VIRUS INFECTION

MO-601 PREVALENCE OF INFECTION WITH HERPES SIMPLEX VIRUS TYPES 1 AND 2 IN AUSTRALIA: A NATIONWIDE POPULATION-BASED SURVEY

A. Mindel¹, R. Taylor², J. Taylor³, C. Marks¹, J. Shaw⁴, A.L. Cunningham³

¹ Westmead Hospital, WESTMEAD, NSW, Australia

² University of Sydney, SYDNEY, NSW 2006, Australia

³ Westmead Millennium Institute, WESTMEAD, NSW, Australia

⁴ International Diabetes Institute, VICTORIA, Australia

Background: Recent studies demonstrating that prior HSV 2 infection is a risk factor for HIV transmission, and the recent development of a HSV vaccine candidate have emphasised the need for worldwide population-based studies of HSV 1 and 2 seroprevalence. To date the only nationwide seroprevalence studies have been conducted in the USA.

Method: We conducted a nationwide population-based study of HSV 1 and 2 seroprevalence in Australia using serum and socio-demographic data collected between 1999 and 2000 for a representative study of risk factors for diabetes in over 11,000 adults. A stratified random sample of 4,000 sera was tested for HSV 2 and 1,000 for HSV 1, with sampling and weighting for various demographic factors.

Findings: The seroprevalence of HSV 2 in the Australian population was 12% with a peak of 14-16% in the 35 – 54 year age group and subsequent decline. Prevalence in women (16%) was twice that in men (8%). Rural and remote had a lower prevalence (9%) than metropolitan populations (13%) and Indigenous had a higher prevalence (18%) than the non-Indigenous populations. The seroprevalence of HSV 1 was 76% with significant differences by age group, sex and Indigenous status, but less marked than for HSV 2. The Indigenous population had a seroprevalence close to 100%.

Interpretation: These are the first nationwide data to compare with US studies. They show that previous Australian studies of antenatal populations in Sydney were only an approximation to nationwide figures and allow planning for combating HIV transmission in high prevalence populations and for future deployment of a genital herpes vaccine.

MO-602 HERPES SIMPLEX VIRUS TYPE 2 (HSV-2) ACQUISITION AMONG MEN WHO HAVE SEX WITH MEN (MSM): EFFECT ON HIV ACQUISITION AND EFFECT OF EXPLORE BEHAVIORAL INTERVENTION

E.L. Brown¹, A. Wald¹, R.A. Morrow², A. Cent¹, E. Krantz¹, G. Beauchamp³, B. Sugimoto⁴, B. Koblin⁵, C.L. Celum¹

¹ University of Washington, Seattle, United States of America

² Children's Hospital, Seattle, United States of America

³ Fred Hutchinson Cancer Research Center, Seattle, United States of America

⁴ California Dept. of Health, Richmond, United States of America

⁵ New York Blood Center, New York, United States of America

Objectives: To evaluate the effect of prevalent and incident HSV-2 infection on HIV acquisition and determine the effect of the EXPLORE behavioral intervention on HSV-2 acquisition among MSM.

Methods: 4,295 high-risk MSM participated in Project EXPLORE, a randomized controlled trial of an intensive behavioral intervention designed to reduce HIV acquisition. Participants were followed for an average of 3.25 years. Sexual risk behavior data and blood samples were collected semiannually for HIV and HSV-2 testing. HSV-2 testing was performed using the Focus HerpeSelect-2 type-specific ELISA.

Results: Of the 3902 participants with valid HSV-2 results, 782 (20%) were HSV-2 seropositive at enrollment, 2933 (75.2%) remained seronegative, and 187 (4.8%) acquired HSV-2 during follow-up for an HSV-2 incidence of 2.1/100 person-years (95% CI: 1.8-2.4). Of those who acquired HSV-2, 96 were in the intervention arm and 91 were in the control arm (adjusted HR: 1.1, 95% CI: 0.8-1.5). Baseline covariates associated with HSV-2 acquisition included age (adjusted HR=1.2 for every 10 years younger, 95% CI: 1.0-1.5), any unprotected receptive anal intercourse (adjusted HR=1.8, 95% CI: 1.3-2.4), number of male partners (adjusted HR=1.2 for increasing quartile of partners, 95% CI: 1.1-1.4) and any HIV-positive male partner (adjusted HR=1.5, 95% CI: 1.1-2.0). Of these 3902 participants, 235 (6%) acquired HIV for an incidence of 2.0/100 person-years (95% CI: 1.8-2.3). Twenty-one (11.2%) of 187 who acquired HSV-2 during follow-up also acquired HIV, compared with 66 (8.4%) of 782 who were HSV-2 seropositive at baseline and 148 (5.0%) of 2933 who remained HSV-2 negative.

Conclusions: HSV-2 acquisition was associated with high-risk sex behavior and younger age. The EXPLORE behavioral intervention did not affect HSV-2 acquisition rates. HIV acquisition rates were increased by 68% in participants with prevalent HSV-2 and by 124% in participants with incident HSV-2.

MO-603 EFFECT OF TOPICAL RESIQUIMOD 0.01% GEL ON HSV-2 GENITAL SHEDDING: A RANDOMIZED CONTROLLED TRIAL

K.E. Mark¹, T.C. Meng², S. Selke¹, M.L. Huang³, P. Liu², T. Warren⁴, S. Tying⁵, V. Bergland², L. Corey¹, A. Wald¹

¹ University of Washington, Seattle, WA, United States of America

² 3M Pharmaceuticals, St. Paul, MI, United States of America

³ Fred Hutch Cancer Research Ctr, Seattle, WA United States of America

⁴ Westover Heights Clinic, Portland, OR, United States of America

⁵ Univ. of Texas Hlth Science Ctr, Houston, TX, United States of America

Objectives: Resiquimod (R-848), an investigational immune response modifier and toll-like receptor 7 ligand, stimulates production of cytokines and promotes a Th1 acquired immune response to herpes simplex virus type 2 (HSV-2).

Methods: We conducted a randomized, double-blind, vehicle-controlled trial to assess the efficacy of resiquimod 0.01% gel for reducing mucosal HSV-2 shedding. HSV-2 seropositive healthy adults applied resiquimod or vehicle gel topically to HSV lesions 2 times weekly for 3 weeks. After treatment completion, participants collected daily anogenital swabs for HSV DNA PCR and completed a symptom diary for 60 days. All recurrences during the subsequent 8 months were treated with study gel. During the final 60 days, participants again collected daily swabs to assess mucosal shedding. Differences in shedding and lesion rates by treatment group were compared using the Wilcoxon rank-sum test.

Results: Thirty-one of 36 resiquimod and 38 of 39 vehicle recipients collected swabs for the initial shedding evaluation period. The shedding rate was lower for resiquimod compared with vehicle recipients [242 of 1758 days (13.8%) versus 428 of 2108 days (20.3%), $p=0.08$], as was the lesion rate [207 of 1873 days (11.1%) versus 488 of 2222 days (20.2%), $p=0.03$]. Because the sponsor terminated the study early, only 15 resiquimod and 14 vehicle recipients provided data for the second shedding evaluation period. Nonetheless, the lower shedding rate among resiquimod recipients persisted [118 of 809 days (14.6%) versus 221 of 761 days (29.0%), $p=0.009$], as did the lower lesion rate [44 of 844 days (5.2%) versus 189 of 800 days (23.6%), $p<0.001$].

Conclusions: Topical resiquimod decreases HSV-2 shedding and recurrent lesion days, demonstrating for the first time an in vivo anti-viral effect by a toll-like receptor ligand. Further studies should be conducted.

MO-604 LONGITUDINAL HSV-2 AND HIV-1 GENITAL SHEDDING: BASELINE RESULTS OF TWO GENITAL HERPES SUPPRESSIVE THERAPY TRIALS AMONG WOMEN TAKING HAART OR NOT NEEDING HAART IN BURKINA FASO (ANRS 1285)

N. Nagot¹, A. Ouedraogo¹, L. Vergne¹, I. Konate¹, P. Mayaud², H.A. Weiss², V. Foulongne³, P. Becquart³, M. Segondy³, P. Vande Perre³

¹ Centre Muraz, Bobo-dioulasso, Burkina-Faso

² LSH&TM, London, United Kingdom

³ CHU Montpellier, Montpellier, Burkina-Faso

Objectives: To evaluate the longitudinal relationship of HIV-1 and HSV-2 genital shedding among women taking HAART and women not needing HAART in Bobo-Dioulasso, Burkina Faso.

Methods: 215 dually HIV and HSV-2-seropositive women, were followed up fortnightly for 3 months for assessment of HIV-1 and

HSV-2 genital shedding as a baseline phase of two HSV-2 suppressive therapy trials. HSV-2 DNA and HIV-1 RNA were quantitated in cervicovaginal lavages enriched with a cervical swabbing (eCVLs) using real-time PCR.

Results: Preliminary data included 1124 visits. The mean CD4 count at the first visit was 278/mm³ and 506/mm³ in the ARV and non ARV groups, respectively. Among the 154 women not on ARV, HIV-1 RNA and HSV-2 DNA shedding was detected at least once in eCVLs from 107 (69.5%) and 61 (39.6%) women respectively. Among the 61 women on ARV, HIV-1 RNA shedding was detected in eCVLs from 33 (54.1%) women and HSV-2 DNA was detected in eCVL from 32 (52.5%) women.

In the non ARV group, shedding HIV-1 at least once was more frequent among women shedding HSV-2 one time or more (78.7%) than among non HSV-2 shedders (63.4%) ($p=0.05$). The same trend was observed for the ARV group (59.4% vs. 48.3%, $p=0.45$). Similarly, the geometric mean HIV-1 shedding was higher among HSV-2 shedders from the non ARV group (3.62 vs 3.34 log copies/ml, $p=0.05$) but there was little difference among those on ARV. Median HIV plasma viral load was also higher among the HSV-2 shedders in the non ARV group (5.03 vs 4.46 log copies/ml, $p=0.001$). **Conclusion:** These preliminary data confirms the hypothesis underlying the trials rationale based on cross-sectional studies of a clear association between HSV-2 and HIV shedding. This association seems to persist on HAART, although to a lesser extent.

MO-605 AETIOLOGY OF GENITAL ULCER DISEASE AMONG WOMEN IN GHANA AND CENTRAL AFRICAN REPUBLIC: RANDOMISED TRIAL OF EPISODIC ACYCLOVIR TREATMENT IN ADDITION TO SYNDROMIC MANAGEMENT (ANRS 1212 STUDY)

G. Gresenguet¹, H.A. Weiss², E. Frost³, H. Bouhla⁴, N. Khonde⁵, P. Mayaud², J. Pepin³, L. Belec⁴

¹ CNRMST/SIFDA, Bangui, Republic Central Africa

² London School of Hygiene & Tropical Medi, London, United Kingdom

³ University of Sherbrooke, Quebec, Canada

⁴ INSERM U743, Paris, France

⁵ WAPTCAS, Accra, Ghana

Objectives: Despite evidence of an aetiological shift in genital ulcer disease (GUD) in Africa, and an increased risk of HIV transmission associated with HSV-2, GUD syndromic management (SM) guidelines do not include herpes treatment. We describe the aetiologies and characteristics of GUD among women enrolled in an RCT of episodic acyclovir treatment added to SM in Ghana and Central African Republic.

Methods: Interviews, genital and blood sampling were conducted prior to randomisation (D0) and at follow-up visits over a month. GUD aetiology was determined by PCR of a lesional swab for *H ducreyi*, *T pallidum*, HSV-1 and -2, *C trachomatis* (LGV) and *K granulomatis*. Other samples included cervico-vaginal lavages for the measurement of genital shedding of HIV-1 RNA and HSV-2 DNA by real-time PCR. Blood was tested for HSV-2, syphilis, and HIV serologies. Ulcer healing was defined as >90% reduction in the area of the largest ulcer.

Results: Of 235 women already enrolled, complete data is available for 85 women in Accra and 46 in Bangui. Overall, 69 (53%) of women

had HSV-2 PCR-positive ulcers; no case of bacterial infection was identified except one case of LGV. Only 4% of women had serological evidence of syphilis in Accra. There was a high proportion of GUD without aetiology (45%). Interestingly, in 10 cases, EBV was the only organism found (8 of whom were HIV+ individuals). HIV prevalence was 40% in Accra and 67% in Bangui. HIV-positive individuals, especially those with CD4 counts <200/mm³, were significantly more likely to have HSV-2 ulcers, ulcers of longer duration, more ulcers and ulcers which take longer to heal.

Conclusion: HSV dominates GUD aetiologies in these two African cities particularly, and bacterial aetiologies are no longer found. GUD-SM guidelines should thus be revised in these countries.

MO-606 THE IMPACT OF HSV-2 ON NEW HIV INFECTIONS INCREASES OVER TIME: THE CHANGING ROLE OF SEXUALLY TRANSMITTED INFECTIONS IN SUB-SAHARAN AFRICAN HIV EPIDEMICS

E.E. Freeman¹, K.K. Orroth¹, J.R. Glynn¹, R. Bakker², R.G. White¹, A. Buve³, R.J. Hayes¹

¹ London School of Hygiene & Tropical Med., LONDON, United Kingdom

² Erasmus Medical Center, Rotterdam, Netherlands

³ Institute of Tropical Medicine, Antwerp, Belgium

Objective: To understand the impact of HSV-2 and other sexually transmitted infections (STI) on HIV incidence 5 years, 10 years, and 15 years after the introduction of HIV in four sub-Saharan African cities.

Methods: The STDSIM mathematical model was fitted to the data from the Multicentre Study of factors determining the different prevalences of HIV in sub-Saharan Africa (in Kisumu, Kenya; Ndola, Zambia; Yaounde, Cameroon; and Cotonou, Benin) to simulate the 1997 HIV and STI epidemiology in the populations. In order to estimate the proportion of new HIV infections attributable to HSV-2 and other STIs over time, the effect of the STIs on HIV acquisition and transmission were removed 5, 10 and 15 years into the simulated HIV epidemics (HIV introduced in the early 1980s).

Results: The only STIs with a major impact on new HIV infections were HSV-2 and chancroid. The proportion of incident HIV attributable to HSV-2 infection (the population attributable fraction, PAF) increased with maturity of the HIV epidemic, as can be seen in the table below. The PAF was 8%-28% 5 years into the epidemic, but grew to 34%-47% 15 years after the introduction of HIV. In contrast, the proportion of incident HIV attributable to chancroid decreased

Population attributable fraction (PAF) of HIV incidence due to HSV-2 at different time points in the epidemic			
City	5 years after HIV introduction	10 years after HIV introduction	15 years after HIV introduction
Kisumu	8.0%	17.8%	34.5%
Ndola	10.3%	27.2%	33.9%
Cotonou	28.4%	37.7%	46.9%
Yaounde	17.0%	35.8%	37.9%

Table 1: Population attributable fraction

over time with strongest effects 5 years after HIV introduction and weakest effects 15 years after.

Conclusions: Although HSV-2 appears to have a limited impact on HIV incidence in the early stages of sub-Saharan African HIV epidemics when the epidemic is concentrated in core groups, it has an increasingly large impact as the epidemic progresses. In generalised HIV epidemics, in which the impact of interventions against curable STIs appears to be limited, interventions against HSV-2 may have a key role in HIV prevention.

MO-607 HERPES SIMPLEX VIRUS TYPE 2 INFECTION INCREASES HIV ACQUISITION IN MEN AND WOMEN: SYSTEMATIC REVIEW AND META-ANALYSIS OF LONGITUDINAL STUDIES

E.E. Freeman¹, H.A. Weiss¹, J.R. Glynn¹, P.L. Cross², J.A. Whitworth³, R.J. Hayes¹

¹ London School of Hygiene & Tropical Med., London, United Kingdom

² Barts, London, United Kingdom

³ Wellcome Trust, London, United Kingdom

Objective: To estimate the sex-specific effect of Herpes simplex virus type 2 (HSV-2) on the acquisition of HIV infection.

Background: HSV2 is strongly associated with HIV infection, and gender differences in HSV2 epidemiology suggest that the effect of HSV-2 on HIV may vary by gender. There is little published evidence exploring this effect.

Design: Systematic review and meta-analysis of longitudinal studies.

Methods: PubMed, Embase, and relevant conference abstracts were systematically searched to identify longitudinal studies in which the relative timing of HSV-2 infection and HIV infection could be established. Where necessary, authors were contacted for separate estimates in men and women, adjusted for age and a measure of sexual behaviour. Summary adjusted relative risks were calculated using random-effects meta-analyses where appropriate.

Results: Eighteen studies which adjusted for age and at least one measure of sexual behaviour were identified (after contacting authors). HSV-2 seropositivity was a statistically significant risk factor for HIV acquisition in general population studies of men (summary adjusted relative risk 2.7; 95%CI 1.9-3.9) and women (3.1; 95%CI 1.7-5.6), and among men who have sex with men (1.7; 95%CI 1.2-2.4). The effect in high-risk women showed significant heterogeneity with little overall evidence of an association.

Conclusions: Prevalent HSV-2 infection is associated with a three-fold increased risk of HIV acquisition among both men and women in the general population. Given the high prevalence of HSV-2 in many populations, interventions against HSV-2 are likely to be important in prevention of HIV infection in both men and women.

SESSION: O-008 - MSM: HIV-RISK, HIV-PREVENTION, AND HIV-TESTING

TO-001 SEROSORTING IN CYBERSPACE: THE INTERNET FACILITATES HIV SEROSTATUS DISCUSSIONS AMONG MEN WHO HAVE SEX WITH MEN (MSM)

C.A.M. Rietmeijer, L.V. Lloyd

Denver Public Health Department, Denver, United States of America

Background: Serosorting (limiting unprotected sex to perceived HIV seroconcordant partners) is common among MSM and may reduce HIV transmission. We studied serosorting by recruitment venue, focusing on the Internet as facilitating this potentially preventive behavior.

Methods: Serosorting and risk behaviors were studied among MSM visiting an urban sexually transmitted infections (STI) clinic. To compare behaviors by venue, the study was limited to MSM who exclusively recruited sex partners in each of 4 environments: Internet (IN), bathhouse (BH), other public sex venue (PS), and social environment (SE). **Results:** 1,054 MSM were included: 159 (16%) recruited on the IN, 259 (25%) in BH, 286 (27%) in PS, and 350 (32%) in SE. Demographics were similar among groups. MSM recruiting on the IN were significantly more likely to report 100% knowledge of their partners' HIV status (51.3%), compared to 30.9% of MSM in BH, 29.4% in PS, and 24.7% in SE. MSM recruiting on the IN and in BH had more total/new partners in the previous 4 months and MSM recruiting on the IN were more likely to report unprotected anal intercourse (UAI). Furthermore, MSM recruiting on the IN had higher rates of gonorrhea (22.6%) compared to MSM in BH (16.5%), PS (13.1%), or SE (16.5%). MSM reporting 100% serosorting were significantly less likely to test positive for HIV.

Conclusions: MSM seeking sex partners on-line were more likely to serosort, have UAI, and have been diagnosed with gonorrhea, suggesting that MSM may forego safer sex practices based on serosorting and that the Internet facilitates this strategy. Public health prevention programs should seriously consider endorsement of serosorting behaviors. The Internet may be a particularly useful venue for such interventions.

TO-002 LOG IN TO YOUR HEALTH: TAILORED ADVICE ON HIV AND STI TESTING AT WWW.SOATEST.NL

D.T. van Schaik¹, J. de Wit², J.E.A.M. van Bergen¹

¹ STI Aids the Netherlands, AMSTERDAM, The Netherlands

² Utrecht University, UTRECHT, The Netherlands

Objectives: Among Dutch MSM (men who have sex with men) the Internet is frequently used for chatting and dating. Internet dating results in most cases (81%) in sexual intercourse. Only a small percentage (54%) of Dutch MSM is ever tested for HIV.

The objective of this study was to stimulate MSM to get tested by providing a web based tailored HIV and STI testing advice using www.soatest.nl. The website was designed for all populations.

Methods: A randomised controlled trial (RCT) was carried out (August-September 2004) among male users of www.soatest.nl who self-identified as homosexual. Men were randomly allocated to a baseline intervention, or one of two possible interventions using additional health promotion strategies to promote behaviour change.

Results: In the study period over 3000 MSM used the website for HIV and STI testing advice, and 300 men participated in the study. After a six week follow up, about half of the MSM who participated in the study went for a HIV test.

A tailored HIV testing advice using personalized risk information and persuasive communication techniques improves the intention of MSM to get tested significantly. Reasons for not following up on the advice were predominantly stated as not getting around to be tested. This suggests an even better result after a longer period of time. In the first three months that the website was online over 23,000 people received a tailored test advice.

Conclusions: Tailored Internet advice on HIV and STI testing which is easy to access, fulfils in a need. The randomised study trial in addition shows that combining a tailored testing advice with health promotion strategies is of additional value on the intention to get tested among MSM.

TO-003 DOES THE INTERNET LEAD TO RISKIER SEX AMONG GAY MEN?

G.J. Bolding¹, M. Davis¹, L. Sher², G. Hart³, J. Elford¹

¹ City University, London, United Kingdom

² Royal Free & UC Medical School, London, United Kingdom

³ MRC Public Health Science Unit, Glasgow, United Kingdom

Objectives: To examine whether the excess risk for HIV and STI seen among gay men who look for sex through the Internet occurs with men they meet online (through the Internet) rather than offline (in bars, clubs, etc).

Methods: In 2002-2003, 4225 London gay men were surveyed in an HIV treatment clinic (n=523; response rate 72%); an HIV testing clinic (n=404; 72%); gyms (2002, n=921; 2003, n=543; 60%); and on Internet sites (2002, n=1250; 2003, n=579; response rate unknown). All men completed a self-administered, anonymous questionnaire. High risk sexual behaviour was defined as unprotected anal intercourse (UAI) with a casual partner of unknown or discordant HIV status.

Results: Half the men in the clinics and gyms had used the Internet to look for sex. Men who looked for sex through the Internet were more likely to report high risk sexual behaviour than other men (eg, HIV negative men, testing clinic 24.6% v 12.4%; adjusted odds ratio 2.0, 95% CI 1.1, 2.3; p<0.05). However, they were just as likely to meet their high risk UAI partners offline as online (eg, HIV negative men, Internet sample; met online only 9.7%, offline only 11.1%; McNemar, p=0.6). Some HIV positive men reported UAI with casual partners who, like themselves, were HIV positive. These men were more likely to meet online rather than offline, (eg clinic sample: met online only 9.9%, met offline only 3.8%, McNemar p<0.05).

Conclusion: In relation to HIV transmission, sex with online partners was no more risky than sex with offline partners. There was no evidence that the Internet per se led to HIV risk among gay men. However, by serosorting online, HIV positive men met casual UAI partners of the same HIV status through the Internet. This presents a risk of STI and cross infection.

TO-004 THE ROLE OF HIV TESTING IN RISK PERCEPTIONS AND SAFER SEX: QUALITATIVE RESULTS FROM AN INVESTIGATION INTO RISK FACTORS FOR SEROCONVERSION AMONG GAY MEN WHO HIV TEST

G. Elam¹, N. Macdonald¹, K. Fenton¹, V. Gilbert¹, F. Hickson², J. Imrie³, C.A. McGarrigle¹, R. Power³, B. Evans¹

¹ HPA - Centre for Infections, London, United Kingdom

² Sigma Research, London, United Kingdom

³ RF & UCL Medical School, London, United Kingdom

Objectives: Recently acquired HIV infections among gay men continue to be diagnosed in the UK whilst behavioural studies indicate increases in risk behaviour. The MRC funded INSIGHT study combines qualitative and quantitative methods to understand risk factors for seroconversions in gay and bisexual men who had recently tested positive (cases) or negative (controls), having tested negative during the two years prior to the recent test.

Methods: A subset of 48 respondents to the case-control survey were followed up using in-depth interviews to explore the context of seroconversion. Purposive selection ensured diversity in demographic, socio-economic and behavioural characteristics and analysis, informed by grounded theory, was conducted with the aid of Framework and NVIVO.

Results: Regular testing and negative test results played an important role in affirming safer sex practices, risk perceptions and sexual lifestyles, but when these practices were flawed or inconsistent, cases identified that their previous negative test results were a green light for continued risk behaviour. The period leading up to the test and receipt of test results formed a period of reflection and review of past sexual behaviour and possible exposures to HIV. During this time, men engaging in risk behaviour formed expectations of whether their test result would be negative or positive. For these men, a negative result could be interpreted as evidence of perceived immunity or imbued risk practices with a sense of diminished likelihood of HIV transmission.

Conclusions: HIV testing continues to play an important role in prevention strategies: negative test results were an important motivational factor for controls to remain HIV negative. Without informed and critical review of past risk behaviour and understanding of the implications of negative results, such results can facilitate continued exposure to HIV transmission routes.

TO-005 HIV TESTING RATES AMONG MEN WHO HAVE SEX WITH MEN IN SAN FRANCISCO AND AMSTERDAM: IMPLICATIONS FOR HIV SPREAD

N.D. Dukers¹, H.F. Raymond², K. Page-Shafer³, I.G. Stolte¹, U. Davidovich¹, H. Fennema¹, R.A. Coutinho⁴, W. McFarland²

¹ GG&GD Amsterdam, Amsterdam, The Netherlands

² AIDS Department, San Francisco, United States of America

³ Caps, San Francisco, United States of America

⁴ Nat. Inst. for Health & the Environment, Bilthoven, The Netherlands

Objective: Knowledge of HIV serostatus enables persons to consider treatment and practice behavioural risk reduction. In the United States and Australia, HIV testing was promoted since the start of the epidemic. In other countries, such as the United Kingdom or The Netherlands, testing was discouraged until the era of highly

active antiretroviral therapy (HAART). This study assesses the level of testing and HIV care among men who have sex with men (MSM) in San Francisco. Testing rates are compared with MSM in Amsterdam. **Methods:** In 2004, the US national Behavioural Surveillance Survey was conducted on 1007 MSM in San Francisco and included questions on HIV testing and treatment. In Amsterdam, testing rates were assessed among 1379 MSM visiting the STD clinic (in 2003) and 2430 MSM participating in a Dutch online survey (in 2002/2003).

Results: In San Francisco, 95.6% of MSM reported ever testing for HIV. In Amsterdam testing history ranged from 52% in the online survey to 72% at the STD clinic. In San Francisco, 15.9% were HIV positive; 98% of those reporting HIV positive status had seen their health care provider for HIV care; 78.6% ever used antiretroviral treatment (55.6% when diagnosed in the HAART era). Among those who reported being HIV negative, 54.1% tested in the past six months; younger MSM and men who reported a higher number of partners tended to have a more recent test.

Conclusions: In San Francisco, the majority of MSM ever tested for HIV. It is encouraging to see that the highest risk group tests frequently and the majority of seropositives seeks health care. A high rate of serostatus awareness enables adoption of behavioural risk reduction strategies. A high rate of treatment uptake lowers the viral pool. These factors help to prevent HIV spread. In Amsterdam testing should be further promoted.

TO-006 RELATION BETWEEN TEMPORAL INCREASES IN BOTH UNSAFE SEX WITH CASUAL PARTNERS AND CRYSTAL METHAMPHETAMINE USE IN A COHORT OF YOUNG GAY MEN IN VANCOUVER

M. Lampinen¹, A.J. Schilder¹, M.L. Miller¹, K. Chan¹, R.S. Hogg², M. Rusch²

¹ BC Centre for Excellence in HIV/AIDS, Vancouver, Canada

² University of British Columbia, , Canada

Background: Previous studies of gay men associate unprotected anal intercourse with casual partners (CP-UAI) and use of crystal methamphetamine (CM). However, the extent to which recent increases in CP-UAI may be attributed to CM use is not known.

Objective: To relate the increasing trends in both CP-UAI and CM use among gay men.

Methods: Prospective cohort of 261 HIV-seronegative gay men followed stably between 1997 and 2002. CP-UAI and CM use were defined as any during the previous year. Adjusted odds ratios (OR) with 95% confidence intervals (CI) were computed using generalized estimating equations. Lifetable methods were used to estimate cumulative incidence.

Results: During 5 years follow-up, an estimated 54.8% and 28.4% of men reported any CP-UAI and any use of CM, respectively. Increases in CP-UAI (from 19.2% to 25.5% of men annually, p=0.02) and in use of CM (from 11.5% to 15.5% of men annually, p=0.02) were significant, as was the overall association between CP-UAI and use of CM (OR 1.56, CI 0.98 – 2.48). However, the trend in CP_UAI was independent of CM use (adjusted OR 1.07 per annual visit, CI 0.99 – 1.15) and CM use was reported during only a small percentage of those [58 (18%) of 316] study visits at which CP-UAI was reported (only half of these reported CM use before or during sexual encounters). CM use was reported at 113 (12%) of 931 study visits without mention of CP-UAI. Of note, fewer than 10% of

individuals' transitions from no CP-UA1 one year to some CP-UA1 the next mentioned any use of CM.

Conclusion: In this cohort of young HIV-seronegative gay men, recent increases in CP-UA1 were independent of CM use. Elimination of CM use would yield only a small reduction in the proportion of similar men reporting CP-UA1.

SESSION: O-009 - VAGINITIS: TRICHOMONIASIS, BACTERIAL VAGINOSIS

TO-101 TRICHOMONAS VAGINALIS AND HIV VAGINAL SHEDDING

P. Kissinger¹, A. Amedee², R.A. Clark², J. Dumestre², L. Wenthold¹, K. Theall¹, L. Myers¹, T.A. Farley¹, D.H. Martin²

¹ Tulane University, New Orleans, United States of America

² Louisiana State University, New Orleans, United States of America

Objectives: The purpose of this study was to examine the association between *Trichomonas vaginalis* (TV) and HIV vaginal shedding.

Methods: A cohort of women attending an HIV outpatient clinic in New Orleans who tested positive for TV (N=84) and a sample of TV negative controls (n=113), frequency matched on ARV status were followed. Women were tested at baseline, one and three months for TV via culture and for cell free HIV RNA in the vaginal fluids and for other STIs. Only women who attended at least one follow-up visit (94%) were included in the analysis. Generalized estimating equations was performed to examine the association between infection with TV and HIV vaginal shedding.

Results: Women (N=187) were mostly African American (86.3%), median age was 38 (range 19-61), median plasma viral load was 13400 (range 51-818575), and 59.0% were on ARV. Only 26.8% had detectable HIV in their vaginal fluids, and of those the median viral load was 620.5 (range 52-89300). Women with TV were twice as likely to be shedding at baseline (crude POR = 2.35, 95% CI=1.21-4.58) and over time (POR=1.98, 95% CI=1.32-2.96). Collectively, factors associated with presence of detectable vaginal HIV included: TV (adjusted OR=2.36, 95% CI=1.41- 3.95), elevated (> 10,000 copies) plasma viral loads (adjusted OR=5.12, 95% CI=3.02- 8.66) and being on ARV (adjusted POR=0.37, 95% CI=0.22-0.63). A significant interaction between TV and time was detected, as expected following successful TV treatment.

Conclusion: TV was associated with a higher likelihood of having detectable cell free HIV in the vaginal fluids. Treating TV decreased the proportion of women with detectable vaginal virus. These findings have important implications for the prevention of sexual and perinatal HIV transmission.

TO-102 HOW SITE SPECIFIC ARE THE HUMAN FLAGELLATED TRICHOMONADS?

T. Crucitti¹, J. Vandepitte¹, C. Mulenga², E. van Dyck¹, A. Buvé¹

¹ Institute of Tropical Medicine, Antwerp, Belgium

² TDRC, Ndola, Zambia

Objectives: Three flagellated trichomonads are found in humans: *Trichomonas vaginalis* (Tv), *Trichomonas tenax* (Tt), and *Pentatrichomonas hominis* (Ph). They are considered having a specific tropism for the genitourinary tract, the oral cavity, and the large

intestine, respectively. The objective of this study was to confirm the site specificity of these trichomonads, using Nucleic Acid Amplification Tests (NAATs).

Methods: The study groups were 523 girls aged 13-16; 199 sex workers; and 307 pregnant women, in Ndola, Zambia. Consenting participants were interviewed about their socio-demographic characteristics, genital hygiene practices and sexual behaviour. Samples from mouth, vagina and rectum were collected using self-administered swabs which were tested with NAATs for Tv, Tt, and Ph.

Results: Tv was detected in the vagina only in 24.2% of women; in the mouth and in the rectum only in 0.2% of women. 0.3% of women had Tv in the vagina and mouth and 1.5% had Tv in the vagina and rectum. Detection of Tv in the rectum was associated with Tv in the vagina (p<0.05). The prevalence of Tv in the vagina did not differ by study group. However the prevalence was higher in sexually active adolescents than in adolescents who denied sexual activity (39% vs 22%, p<0.0005). Tt was detected in the vagina and the rectum in 0.5% and 2.4% of study participants. Ph was detected in specimens from the rectum only in 0.2% of participants.

Conclusion: Using NAATs, Tv was detected in the vagina but also in the mouth and rectum; Tt was found in the mouth but also in the vagina. This confirms what was found in a study among pregnant women in The Gambia. More studies are needed to determine the clinical significance of the presence of Tv in the extragenital sites and of Tt in the vagina.

TO-103 PERFORMANCE OF CULTURE AND PCR FOR DETECTION OF TRICHOMONAS VAGINALIS IN THE MALE PARTNERS OF INFECTED WOMEN IN THE US

M. Hobbs¹, D.M. Lapple¹, L.F. Lawing², J.R. Schwabke², M.S. Cohen¹, H. Swygard¹, J. Atashili¹, P.A. Leone¹, W.C. Miller¹, A.C. Sena¹

¹ University of North Carolina, Chapel Hill, NC, United States of America

² University of Alabama at Birmingham, Birmingham, AL, United States of America

Objectives: We examined *T. vaginalis* detection in the male sexual partners of women with trichomoniasis. We compared the performance of culture and PCR-ELISA in urethral swabs, urine and semen. Methods: Women with trichomoniasis were identified by a positive vaginal swab wet mount or culture and were asked to identify their most recent and most frequent sexual partner. Male partners aged 18 yrs and older were eligible for the study; subjects provided written informed consent. Men received standard care and treatment as contacts to trichomoniasis. Urethral swabs were inoculated into the InPouch TV system. First-void urine and semen sediment were used to inoculate cultures and for PCR. Cultures were read daily up to 5 days after inoculation. PCR with primers TVK3/7 was performed and amplified products were detected by ELISA as previously described.

Results: *T. vaginalis* culture-positive specimens from men required significantly longer incubation periods than vaginal swab specimens. Men with wet mount-positive female partners were more likely to have trichomoniasis, and urethral swab cultures from men with urethritis were more likely to be positive after just one day of incubation. Trichomonads were detected by at least one positive test in 205/280 (73.2%) men who submitted at least one specimen for culture and at least one specimen for PCR. InPouch TV culture

detected 46/205 (22.5%) cases, and PCR detected 201/205 (98.0%). Testing multiple specimens by culture or PCR increased the number of cases identified.

Conclusions: Even in this population of sexual partners of women with wet mount or culture-proven trichomoniasis, culture in men was inefficient, and identification of cases by PCR was improved by testing multiple specimens. Studies relying solely on culture or PCR of a single specimen will underestimate *T. vaginalis* infection in men.

TO-104 HIGH RECURRENCE RATES OF BACTERIAL VAGINOSIS AND ABNORMAL FLORA OCCUR OVER 12 MONTHS IN WOMEN TREATED WITH 7 DAYS OF ORAL METRONIDAZOLE

C.S. Bradshaw¹, A.N. Morton¹, M.B. Morris¹, M.B. Moss¹, S.M. Tabrizi², S.M. Garland², L.B. Horvath³, I. Kuzevska³, C.K. Fairley³

¹ Melbourne Sexual Health Centre, Melbourne, Australia

² Royal Women's Hospital, Melbourne, Australia

³ University of Melbourne, Melbourne, Australia

Objectives: To establish the recurrence rate of BV in symptomatic women following treatment with 7 days of oral metronidazole over 12 months, and to investigate the behavioural and microbiological factors associated with recurrence.

Methods: 143 women with symptomatic BV women attending Melbourne Sexual Health Centre, Australia, were recruited into a cohort study between July 2003-2004. All women were screened for Chlamydia trachomatis by PCR and for Neisseria gonorrhoea, Trichomonas vaginalis and Candida spp by culture. Women were diagnosed with BV if they had a Nugent score ≥ 7 (87%) or intermediate flora with ≥ 3 Amsel criteria (13%), and were treated with 7 days of oral metronidazole (400mg bd). Symptoms and behavioural practices were measured by questionnaire at the enrolment visit and at 1,3,6&12 months. Women self-collected high vaginal swabs and smears for Gram stain and returned them by post at 1,3,6&12 months, they were reviewed if they developed symptoms of BV in between. The study endpoint was a Nugent score ≥ 7 .

Results: The recurrence rate of BV (Nugent score ≥ 7) was: 20%(95%CI 14,28%) by one month, 38%(29,47%) by 3 months, 49%(40,58%) by 6 months and 59%(49,68%) by 12 months (n=119). While the recurrence rate of abnormal flora (Nugent score ≥ 4) was: 36%(28,45%) by one month, 56%(47,65%) by 3 months, 66%(57,74%) by 6 months and 77%(69,84%) by 12 months. 126 women (88.2%) reported taking all medication. 20% of enrolled women were lost to followup. The microbiological (Gardnerella vaginalis and Atopobium vaginae) and behavioural factors associated with relapse will be presented. Conclusions: To date data on longer term recurrence of bacterial vaginosis has not been available. Despite recommended optimum therapy with 7 days of oral metronidazole 77% of women experienced recurrence of abnormal flora and 58% experienced recurrence of BV over 12 months.

TO-105 DETECTION OF NOVEL BACTERIA ASSOCIATED WITH BACTERIAL VAGINOSIS (BV)

D.N. Fredricks¹, K.K. Thomas², T. Fiedler¹, K. Ringwood², J.M. Marrazzo²

¹ Fred Hutchinson Cancer Research Center, Seattle, United States of America

² University of Washington, Seattle, WA, United States of America

Objective: We identified 3 novel bacteria in vaginal fluid from subjects with BV that are related to low guanine + cytosine content Gram-positive bacteria in the Clostridiales order. We sought to assess the sensitivities, specificities, and odds ratios for BV based on detection of these bacteria in vaginal fluid by bacterium-specific 16S rDNA PCR, and to compare these results to PCR assays for Gardnerella vaginalis and Mobiluncus curtisii. Methods: We studied baseline vaginal fluid samples from 105 women (41 BV+ and 64 BV- by Amsel criteria). Species-specific 16S rDNA PCRs were used to detect the three novel bacteria, designated BV associated bacterium (BVAB) 1, 2, and 3, and two bacteria previously associated with BV, G. vaginalis, and M. curtisii. All PCR products were sequenced to confirm their identity. Results: Each PCR assay could detect 1-100 cloned 16S rDNA molecules per reaction. No PCR inhibitors were detected. The sensitivity, specificity, and odds ratio with 95% confidence interval for BV in each PCR assay were: BVAB1 (37%, 98%, 36 (22-53)), BVAB2 (83%, 95%, 99 (21-579)), BVAB3 (34%, 98%, 33 (4-1402)), G. vaginalis (100%, 44%, infinity (9-infinity)), and M. curtisii (51%, 86%, 6 (3-16)). Each bacterium was significantly associated with BV (p<0.001). Conclusions: Detection of BVAB 1, 2 or 3 by bacterium-specific PCR was highly specific for BV. Detection of BVAB 2 in vaginal fluid yielded the highest combination of sensitivity and specificity. Although all subjects with BV had G. vaginalis detected by PCR, this assay had poor specificity for BV, confirming results from cultivation-based studies. M. curtisii was detected in half of the subjects with BV. BVAB 1, 2, and 3 are novel bacteria that are significantly associated with BV and may play a role in BV pathogenesis.

TO-106 IS BACTERIAL VAGINOSIS A RISK FACTOR FOR HIV INFECTION? A META-ANALYSIS OF PUBLISHED STUDIES

J. Atashili¹, P.M. Ndumbe², C. Poole¹, A.A. Adimora³, J.S. Smith¹

¹ University of North Carolina-Chapel Hill, Chapel Hill, United States of America

² FMBS, University of Yaounde I, Yaounde, Cameroon

³ Univ. of North Carolina, Chapel Hill, Chapel Hill, United States of America

Objectives: Bacterial vaginosis (BV) may be a risk factor for HIV infection. No systematic review has yet been conducted to determine the extent to which BV may increase a woman's HIV risk. This meta-analysis aims to obtain a summary measure of the association between BV and HIV seropositivity.

Methods: Nineteen eligible studies were identified, together including 26,019 women. Analyses were conducted overall and by strata of study design, BV diagnosis method and risk profile of study population (low versus high HIV risk). Random effects models were used to obtain aggregate measures of association accounting for heterogeneity in study results.

Results: Of the 19 studies identified, only two (10.5%) used cohort designs. Sixty-four percent of results were for HIV high-risk groups. BV was positively associated with HIV seropositivity in all but one study. Overall, BV was positively associated with HIV seropositivity,

with a summary crude relative risk (RR) of 1.6 (95% confidence intervals (CI): 1.3- 1.9) and a summary adjusted RR of 1.9 (CI: 1.5-2.3). Summary results were broadly similar for cohort studies and cross-sectional studies. Summary RRs for low and high HIV-risk populations were 2.0 (95% CI: 1.5- 2.5) and 1.4 (95% CI: 1.1-1.7), respectively. There was no evidence of publication bias. Conclusion: BV may increase HIV risk by 60%. There is an indication that the BV-HIV association is stronger for women in low HIV-risk groups. Despite the modest magnitude of this association, high BV prevalence reported in many populations may result in high proportions of HIV infections being attributable to BV. More prospective studies are needed to accurately evaluate the causal association between BV and HIV.

SESSION: O-010 - SYPHILIS

TO-201 SEROLOGICAL RESPONSE TO SYPHILIS TREATMENT IN HIV INFECTED AND UNINFECTED PATIENTS

K.G. Ghanem¹, A.M. Rompalo¹, W.W. Cheng², E.J. Erbelding¹

¹ Johns Hopkins University, Baltimore, Maryland, United States of America

² Stanford University, Palo Alto, California, United States of America

OBJECTIVE: HIV+ patients treated for syphilis may be at increased risk for serological failure. We compared number of follow-up serologies and serological response to therapy between HIV infected and uninfected patients.

METHODS: Patients known to be HIV+ who were diagnosed and treated for syphilis at the public STD clinics in Baltimore, Maryland from 1992-2000 were eligible. Results of their serological follow-up were compared to those of clinic patients whose HIV test was negative at the time of syphilis treatment. We searched a statewide syphilis registry that included data from public and private clinics for follow-up serologies. We included all persons who had at least one follow-up serological test titer within 400 days. We defined failure as lack of a 4-fold drop in RPR titer at 400 days post-treatment, or a 4-fold increased titer between 30 and 400 days.

RESULTS: Of 450 HIV+ syphilis patients, 129 (30%) met the inclusion criteria; 152 of 803 (20%) known HIV- patients were similarly eligible. 65% of participants had early syphilis. HIV+ patients had more serologic follow-up (HIV+ 2.1 tests; HIV- 1.4 tests; $p < 0.001$). There were 24 failures in the HIV+ group and 4 failures in the HIV- group ($p < 0.001$). The median times to successful serological responses in the HIV+ and HIV- groups were 278 days (95% CI 209-350) and 126 days (95% CI: 108-155), respectively ($p < 0.001$). In a multivariable Cox proportional hazards model adjusting for age, syphilis stage, treatment type, previous history of syphilis, and number of follow-up visits, there was an increased risk of serological failure among the HIV+ group (HR 7.7, 95%CI: 2.1-28.5; $p = 0.002$).

CONCLUSION: HIV+ patients treated for syphilis may be at higher risk of serological failure. Aggressive surveillance of co-infected patients is vital to ensure appropriate serological response in this high risk group.

TO-202 TYPING OF TREPONEMA PALLIDUM (TP) GENES TO TRACK SYPHILIS TRANSMISSION ROUTES IN AMSTERDAM, THE NETHERLANDS

S.M. Bruisten¹, M. Dierdorff¹, M. Kolader¹, R.A. Coutinho², J.S.A. Fennema¹

¹ GG&GD Amsterdam, Amsterdam, The Netherlands

² Nat. Inst. for Health & the Environment, Bilthoven, The Netherlands

Introduction: Syphilis incidence has increased dramatically in Amsterdam from 5/100.000 in 1998 to 32/100.000 cases in 2003. This may be due to increased unsafe sexual behaviour of homosexual men resulting from a diminished perceived threat of AIDS. The TP surface proteins encoded by repeat genes (Tpr) A to K are polymorphic and involved in partial host immunity.

Objective: To develop a typing technique for TP to track syphilis transmission.

Methods: From 2002 to 2004 we studied 199 cases of primary syphilis (96% men). Swabs of genital lesions were used for TP PCR diagnostics. Positive isolates were thereafter used for sequencing analysis of the TprK gene spanning the variable domains V3-V5. Phylogenetic trees of amino acid sequences allowed cluster analysis. Structured questionnaires were used in the Amsterdam STI clinic to collect socio-epidemiological information, and routine contact tracing was performed.

Results: Four patients had two anatomical locations TP-PCR positive on one visit, and 2 patients visited the clinic twice (recidivists) during the study period, resulting in 205 nucleic acid isolates. In 161 (79%) a single TprK sequence type was obtained. In the other isolates either TprK PCR was negative or sequencing implied the presence of at least two TprK types. The isolates of 3 patients with dual positive lesions revealed identical sequences, however in one other patient two different TprK types were found. The isolates of both recidivists also showed two different TprK genes. Despite the fact that none of the TP-patients were known sexual partners, we identified 19 clusters of identical isolates. Cluster size varied from 2 to 4 patients. These clusters may reveal links which remained unknown by classical contact tracing.

Conclusion: Typing the V3 to V5 domains of the TprK gene shows potential to identify transmission routes for syphilis.

TO-203 RAPID AND LARGE INCREASE IN AZITHROMYCIN RESISTANCE IN SYPHILIS WHILST STEADY LOW AZITHROMYCIN RESISTANCE IN GONORRHEA 2000-2004

J.D. Klausner¹, S.J. Mitchell¹, S.A. Lukehart², C. Gordones², J. Engelman¹, G.I.S.P. CDC³

¹ San Francisco Dept. of Public Health, San Francisco, United States of America

² University of Washington, Seattle, United States of America

³ Centers for Disease Control, Atlanta, United States of America

Objectives: With the recent identification of azithromycin-resistant *Treponema pallidum* infection in San Francisco, we compared the epidemiology of azithromycin resistance in syphilis to the epidemiology of azithromycin resistance in gonorrhoea during the same period in San Francisco.

Methods: Routine surveillance for antibiotic resistance is conducted at the municipal STD clinic in San Francisco: 25 urethral isolates of gonorrhoea (GC) are tested monthly from patients by standard agar

dilution (decreased azithromycin susceptibility = MIC > 1.0 ug/ml) as part of the CDC Gonococcal Isolate Surveillance Project (GISP); a systematic sample of consecutive patients with syphilis are tested for azithromycin resistance by the molecular identification of a specific mutation in the 23s rRNA gene associated with azithromycin resistance in *T. pallidum*.

Results: From 2000 to 2004 the prevalence of azithromycin resistance in syphilis increased from 0 to 56% ($p < .001$) whereas during the same period azithromycin resistance in gonorrhea remained very low 0.5% (7/1367). All (100%) of the evaluated syphilis cases ($n=123$) were in men who have sex with men (MSM) compared to 70% of gonorrhea cases ($n=1367$) ($P < .01$). The 7 azithromycin resistant gonorrhea cases were in MSM for a prevalence of 0.7% (7/957); 3 were in 2000 and 1 in each subsequent year.

Conclusions: While the prevalence of azithromycin resistance in *T. pallidum* increased dramatically from 2000 to 2004, the prevalence of azithromycin resistance in gonorrhea remained very low. Given similar community-level antibiotic use and the low threshold for the development of antimicrobial resistance in *Neisseria gonorrhoeae*, the widespread distribution of azithromycin-resistant *T. pallidum* may reflect the selection and rapid spread of a unique strain.

TO-204 CHANGES IN DEMOGRAPHICS AND RISK BEHAVIORS OF EARLY SYPHILIS CASES DEPENDING ON EPIDEMIC PHASE

C.M. Schumacher¹, K.T. Bernstein¹, J.M. Zenilman², A.M. Rompalo²

¹ Johns Hopkins School of Public Health, Baltimore, Maryland, United States of America

² Johns Hopkins University, Baltimore, United States of America

Objective: To compare the descriptive epidemiology and individual risk factors between phases of the large epidemic of early syphilis in Baltimore, Maryland, USA, 1994-2004.

Methods: Using the morbidity records of early syphilis reported to the Baltimore City Health Department between January 1994 and November 2004, epidemic phases were defined using the epidemic curve for all early syphilis cases drawn from estimated infection dates. Demographic characteristics and self-reported risk factors were compared using multinomial logistic regression.

Results: Four epidemic phases were defined: Growth 1 (January 1994 - December 1995), Hyperendemic (January 1996 - June 1997), Decline (July 1997 - December 2001) and Growth 2 (January 2002 - November 2004). In bivariate analyses, the proportion of primary, secondary and early latent cases diagnosed in the Growth 1, Hyperendemic and Decline phases were similar; however, diagnoses of primary and secondary syphilis were more common than early latent in the Growth 2 period. During both growth phases, females were less likely than males to be diagnosed [Growth 1 Odds Ratio (OR) 0.77 (95% Confidence Interval 0.69-0.87)], Growth 2 OR 0.61 (0.52-0.71)], and cases were more likely to report more than 5 sex partners [Growth 1 OR 1.56 (1.24-1.96), Growth 2 OR 1.45 (0.92-2.27)]. Compared to infections that occurred in the Growth 1 phase, cases in the Hyperendemic phase were less likely to report injection drug use [OR 0.65 (0.51-0.82)] and sex for drugs or money [OR 0.68 (0.52-0.90)]. Conclusions: The outbreak in Baltimore, Maryland suggests that demographics and risk behaviors among early syphilis cases changes over the course of an epidemic. During early epidemic

syphilis, infections may more likely occur among individuals reporting riskier behaviors; target populations for outreach and intervention may need to be reassessed throughout the time course of an epidemic.

TO-205 EFFECTIVENESS OF COMMUNITY-BASED SCREENINGS FOR CONTROL OF SYPHILIS OUTBREAKS IN MEN WHO HAVE SEX WITH MEN (MSM)

C. Ciesielski¹, R.H. Kahn², M. Taylor³, K. Gallagher⁴, L. Prescott⁵, S. Arrowsmith⁶, J. Klausner⁵

¹ Chicago Department of Public Health, Chicago, United States of America

² Centers for Disease Control & Prevention, Atlanta, GA, United States of America

³ Department Health Services, Los Angeles, United States of America

⁴ Department of Health, New York, NY, United States of America

⁵ Department of Public Health, Houston, United States of America

⁶ Centers for Disease Control, Atlanta, GA, United States of America

Objectives: To control syphilis outbreaks in MSM, screenings in community venues such as bars and bathhouses are frequently conducted to identify persons with infectious syphilis. Yet the public health benefit of these activities remain undefined. Our objective was to quantify the yield of targeted syphilis outreach screening in community-based venues in Chicago, Ft. Lauderdale/Miami, Houston, Los Angeles, New York City, and San Francisco.

Methods: Data were collected from health departments' MSM syphilis outreach screening activities between 1999-2004 conducted in community settings, such as commercial sex venues (including bathhouses), bars, mobile vans, and jails.

Results: Of the 14,143 syphilis screening tests (STS) conducted at MSM-oriented venues, 132 (0.9%) new cases of syphilis were identified. Of these, 105 (0.8%) were early syphilis (ES), with 23 cases being primary and secondary syphilis. The highest prevalence of newly identified ES were produced from screenings in jails (1.3%, 51 cases/3,853 STS) and sex venues (1.2%, 29 cases/2,511 STS). Of the 869 STS obtained in MSM-oriented bars, 8 (0.7%) new ES cases were identified. Overall, these outreach screening activities identified just 2.6% (97/3,595) of the ES cases reported in the seven jurisdictions. The number of person-hours needed to identify each ES case during outreach screening in Chicago was 106 in bars, and 84 in bathhouses.

Conclusions: These data suggest that highly targeted outreach screenings conducted in very high risk venues during outbreak situations may not detect many persons with syphilis. The low number of infectious syphilis identified during these outreach screening events and the time intensity to find them suggest that their direct impact on decreasing syphilis transmission may be negligible. Nevertheless, other benefits of outreach screenings such as increasing awareness of syphilis may be substantial and beneficial to outbreak control.

TO-206 EVALUATION OF A 'SYPHILIS BLITZ' FOR SUCCESS OF NEW SYPHILIS CASE FINDING

L.H. Laura Herrera¹, P.B. Phyllis Burnett², G.O. Glen Olthoff², J. Ellen¹, E. Erbeling¹

¹ Johns Hopkins University, Baltimore, Maryland, United States of America

² CDC/STD/BCHD, Baltimore, Maryland, United States of America

Objectives: Screening for syphilis in community venues may have low yield, even in communities with high syphilis morbidity. We evaluated the success of community-based screening in finding new syphilis cases during a 'Syphilis Blitz' occurring in the Baltimore region in 2004.

Methods: In fall of 2004, in response to a rapidly escalating syphilis outbreak with a broad epidemiologic profile (women engaging in prostitution and their clients, drug users, men having sex with men [MSM], recent Latino immigrants), the Baltimore City Health Department and Maryland Department of Health and Mental Hygiene implemented intensive community-based screening to enhance other syphilis control efforts (a 'Syphilis Blitz'). The CDC supported the Blitz by deploying additional field investigators to augment local efforts. Information on social hangouts of cases and other high-risk sexual network members and sex partner meeting places arising from case-cluster interviews was compiled and provided to outreach staff on a daily basis to direct screening activities. Screening continued at venues until they were no longer productive in reaching those with risk behaviors characteristic of the evolving epidemic.

Results: From September 1, 2004 to October 31, 2004, 1335 persons were screened for syphilis in community venues. Of those, 29% (387) reported heroin or cocaine use, 15% (200) reported exchanging sex for drugs/money, 3.8% (51) were MSM, and 14% (184) were Hispanic. Of those screened, 7.9% (105) were serologic reactors and 1.3% (17) represented new cases of early syphilis. During the Blitz, 13% of new syphilis cases in Baltimore were identified through community-based screening, compared to only 1.6% identified through community screening in the prior 6 months.

Conclusion: Syphilis screening directed by case-cluster interview methods can be highly effective in reaching those with high risk behaviors and identifying cases of early syphilis.

SESSION: O-011 - STRATEGIES FOR STI PREVENTION AND CONTROL

TO-301 GLOBAL STRATEGY FOR THE PREVENTION AND CONTROL OF SEXUALLY TRANSMITTED INFECTIONS 2005-2010

F.J. Ndowa

World Health Organization, Geneva, Switzerland

A global strategy for the prevention and control of STIs has now been agreed after a series of regional and global consultations. The document explains the reasons for prioritizing STI control and lays out an array of old and new approaches to achieve key strategic goals. The new strategy will refocus attention on the importance of STI control as this has been overlooked amid the scaling up of responses to HIV/AIDS over the past five years.

How does the new global strategy plan to take things forward? The two most important principles of STI control are prevention of STIs and the prompt detection and treatment of infection when preven-

tive efforts fail. The strategy presents arguments for a coherent and effective programme requiring a sound policy environment, efficient procurement and delivery of the necessary commodities, and an array of support components. The Strategy also presents new ideas about STI control and innovative programmes to promote healthy behaviour

Call for action: The strategy outlines five specific activities that are feasible and, based on available evidence, provide the most promising prospects of significant STI and HIV reduction at the national level. This workshop will serve as a forum to present and discuss some of the key features of the Global Strategy for STI prevention and control, including strategies for genital ulcer disease control and strategies for the elimination of congenital syphilis, and the action areas that are proposed to countries to implement and to the global community to support.

TO-302 ERADICATION OF CHANCROID: STRATEGIC APPROACHES FOR A SUCCESSFUL INTERVENTION

TO-303 STI CONTROL: PERIODIC PRESUMPTIVE TREATMENT AS A STRATEGY TO CONTROL SEXUALLY TRANSMITTED INFECTIONS: EXPERIENCES IN THREE AFRICAN COUNTRIES

J. van Dam¹, L. Ndhlovu²

¹ Population Council, New York, United States of America

² Population Council, Johannesburg, South Africa

Prevention and treatment of sexually transmitted infections (STI) in high-frequency transmitters have the potential to reduce the prevalence of STIs both in the target population and among their partners. Presumptive treatment of STIs can reduce the prevalence of disease, but questions remain regarding the optimal frequency of treatment and its effectiveness against different causative organisms. Studies conducted in South Africa, Zimbabwe and Zambia sought to further explore the impact of STI prevention and control interventions, including periodic presumptive treatment (PPT) targeting high-frequency transmitters. Cross-sectional population-based studies failed to demonstrate a decrease in STI rates in one study, while a second study proved problematic in terms of data collection. Hypothesized reasons for the lack of impact include: insufficient awareness of sexual networks and their dynamics, a rapidly changing economic situation, insufficiently implemented or insufficiently targeted interventions, and weaknesses in data collection.

TO-304 ELIMINATING CONGENITAL SYPHILIS - A GLOBAL HEALTH PRIORITY

N. Broutet

World Health Organization, Geneva, Switzerland

Syphilis remains a global problem with an estimated 12 million people infected every year, despite the existence of effective prevention measure, such as condoms and effective cheap treatment options. It is estimated that over two million pregnant women are infected with *Treponema pallidum*. An estimated 50% of these pregnancies will end in foetal or perinatal death, low birth weight babies or babies born with congenital syphilis. A large reduction in congenital syphilis is feasible with a relatively simple set of existing interven-

tions focusing on maternal and newborn care. The strategy proposed by the World Health Organization for the elimination of congenital syphilis at country level consists of four pillars:

- Political commitment and advocacy
- Increasing and improving access to health services ? ensuring that all pregnant women are screened and adequately treated
- Appropriate strategies for screening and treatment of pregnant women and their partners, and of infants born to mothers not treated during pregnancy and
- Monitoring and evaluation

The presentation will outline the key messages and areas of action that are recommended at country level, including increased advocacy and awareness at international and national levels and a sustained commitment to implementation.

TO-305 STI CONTROL AT THE COMMUNITY LEVEL: EXPERIENCE FROM THE AVAHAN PROJECT IN INDIA

R. Washington, Arahan Project, India

See Page 118

SESSION: O-012 - CHLAMYDIA TRACHOMATIS

TO-401 A MARKOV MODEL FOR RISK OF CHLAMYDIAL INFECTION AND CONDOM EFFECTIVENESS

W. Tu, J.D. Fortenberry, J. Wu, B.P. Katz

Indiana University School of Medicine, Indianapolis, United States of America

Objectives: To prospectively estimate the risk of Chlamydia trachomatis (CT) infection per sexual encounter with or without condom protection by using longitudinally collected infection and behavioral data.

Methods: 101 women (age 14 and 17 years, 92% African American) were examined quarterly (for 6 to 18 months) for CT and were treated if infected. Condom protected and unprotected sexual episodes between the visits were recorded. Repeatedly measured infections were considered to be a Markov process. CT infection status at any given quarterly visit was modeled as a function of the infection status at the previous visit and the sexual encounters between the visits. To accommodate the differential risk among the subjects and covariate effects, a linear predictor with random subject effect was included. Treatment failure probability and condom effect were also modeled explicitly.

Results: The mean lifetime number of sexual partners at enrollment was 3.4 (Median 3; SD 3.8). The median number of follow-up visits was 5. At enrollment, 13 subjects (12.87%) tested positive for CT. The estimated probability of acquiring CT via one unprotected encounter with a partner of unknown infection status was 0.008 (95% CI: 0.004-0.014). The probability of CT acquisition with condom protection was 0.003 (95% CI: 0.002-0.007). Treatment failure probability was estimated as 0.076.

Conclusions: Per exposure CT infection probability reflects organism transmissibility as well as population prevalence. Thus, it is a population specific characterization of the infection risk. Earlier models have not estimated CT infection risk among adolescents. In this study, the CT risk was reduced by over 60% through the use of condoms.

TO-402 GENITAL CHLAMYDIA INFECTION AND INFERTILITY; A REVIEW OF THE EVIDENCE

L.A. Wallace¹, A. Scoular², S. Wadd¹, G. Hart³, M. Reid³, P. Wilson⁴, D. J. Goldberg¹

¹ *Health Protection Scotland, Glasgow, United Kingdom*

² *Greater Glasgow NHS Board, Glasgow, United Kingdom*

³ *University of Glasgow, Glasgow, United Kingdom*

⁴ *Primary Care NHS Trust, Glasgow, United Kingdom*

Objective: To determine the excess risk of infertility in women infected with genital chlamydia by performing a systematic review of the literature.

Methods: A written protocol, agreed by all collaborators, was established to define the criteria for performing the review. The protocol included; (i) search terms, (ii) inclusion and exclusion criteria, (iii) eleven suitable databases for article searching, and (iv) reliability and validity standards.

A search strategy was devised and used to create a library of abstracts and titles for which no abstract was available. Reader#1 scanned the abstracts and titles for relevance to the research question and divided them into two libraries: 'papers for further analysis' and 'papers not relevant'. The former consisted of abstracts of original articles, reviews, and titles, for which no abstract was available, incorporating keywords relevant to the study. Reader#2 reviewed a 10% random sample of the two libraries. Both readers agreed on which papers to include for validation.

Results: The initial search generated 3,004 abstracts and titles for review; 451 were selected for further analysis. Preliminary results indicate only one article satisfies the inclusion criteria: a longitudinal study measuring pregnancy rates in adolescent females with and without evidence of chlamydia infection at baseline; no statistically significant difference in pregnancy rates was found. Hand-searching of references from recent reviews, (published since 2000), added no further papers.

Conclusion: Preliminary results indicate that only one study, describing the excess risk of infertility in a cohort of women with and without genital chlamydia infection, has been published. Major resource implications are inherent in the drive to implement extensive chlamydia screening programmes which are based on the premise that untreated infection may cause infertility; clearly, the evidence base for this requires further research, probably of a statistical modelling nature.

TO-403 INCREASING CHLAMYDIA POSITIVITY, DECREASING BEHAVIORAL RISK AND FEWER CLINICAL FINDINGS AMONG WOMEN ATTENDING REGION 10 FAMILY PLANNING CLINICS IN THE U.S., 1997-2004: IS NAAT TESTING THE REASON?

D. Fine¹, D.J. Mosure², L.W. Dicker², S. Berman²

¹ *Center for Health Training, SEATTLE, WA, United States of America*

² *CDC, ATLANTA, GA, United States of America*

Objectives: The Region 10 Chlamydia Project provides chlamydia screening and treatment to women at 150 family planning clinics. Our objective was to assess trends in risks associated with chlamydia and chlamydia positivity in women aged 15-24 years from 1997-2004. **Methods:** We calculated chlamydia positivity by demographics, behavioral risk history, and clinical findings for 500,126 women

aged 15-24 years, from 1997-2004. Multivariate models were used to assess changes in chlamydia positivity.

Results: Risk factors for chlamydia included: visit year (OR=1.03), age < 20 years (OR=1.35), non-White race (OR=1.63), chlamydial infection in the past year (OR=1.82), nucleic acid amplification testing (NAAT) (OR=1.36), self-reported behavioral risks (OR=1.96), and having clinical findings (OR=2.91). From 1997-2004, the proportion of women reporting risk behaviors declined. There was a 12% decrease in women having a new partner (21.6% to 19.1%); a 14% decrease for a woman's partner having multiple partners (9.2% to 7.9%); and a 4% decrease for women with symptomatic partners (2.3% to 2.2%). The proportion with one or more clinical findings declined 14% (8.6% to 7.4%). Almost a third more women reported having chlamydia in the past year, 2.6% (1997) to 3.4% (2004). Except for decreasing numbers of women age < 18 screened (24.2% to 18.7%), age and race distributions remained stable. NAAT usage increased from 13.4% to 86.8%. Annual chlamydia positivity increased 46% (3.9% to 5.7%).

Conclusions: Known risk factors for chlamydia, i.e., sexual behaviors, clinical findings, and younger age decreased over time, while positivity increased. Reported chlamydia history and use of advanced test technology increased from 1997 to 2004. Clearly, the increase in chlamydia was associated with increasing use of NAATs rather than shifts in risk profile or prevalence of clinical signs. However, the possibility of additional, unmeasured factors affecting chlamydia positivity cannot be excluded.

TO-404 SUBSEQUENT SEXUALLY TRANSMITTED INFECTIONS IN WOMEN INFECTED WITH CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHEAE

C. Wright, D. Middleton

Family Planning Council, Philadelphia, Pennsylvania, United States of America

Objectives: To characterize rates of subsequent STIs in women infected with Chlamydia trachomatis, Neisseria gonorrhoeae, or both organisms.

Methods: Records from January 2003 to June 2004 were reviewed for 1531 women diagnosed with chlamydial, gonorrheal, or dual infections and subsequently retested at Philadelphia family planning clinics. Average age at initial infection was 19.8 years (range 12.0-48.0 years). Subsequent infection was defined as an infection occurring 30 days or more after the initial infection.

Results: The overall rate of subsequent infection was 30.0%. Average time to subsequent infection was 4.6 months (range 1.0-17.6 months). Subsequent infection rates were highest in adolescents aged 15 and younger (36.7%) and lowest in women aged 30 and over (15.2%). Of the 1531 subjects, 1279 (83.5 %) were initially infected with chlamydia, 156 (10.2%) with gonorrhoea, and 96 (6.3%) were dually infected. The rate of subsequent infection was 30.2% in women with initial chlamydial infections, 20.5% in women with initial gonorrhoeal infections, and 41.5% in women with initial dual infections. The latter rate is significantly higher than that in women with single chlamydial or gonorrhoeal infections ($p=0.027$ and <0.001 , respectively). The majority (90.6%) of subsequent infections were chlamydial, regardless of the initial infection.

Conclusions: Rates of subsequent STIs following infection with Chlamydia trachomatis and Neisseria gonorrhoeae are high,

particularly in adolescents. Persistent infection or reinfection with the initial infectious organism is common, but infections with organisms other than the initial organism also occur. Women dually infected with chlamydia and gonorrhoea are at particularly high risk of subsequent infection.

TO-405 DETERMINANTS OF CHLAMYDIA RE-INFECTION: THE ROLE OF PARTNER CHANGE AND TREATMENT

D.S. LaMontagne, K. Baster, L. Emmett

Health Protection Agency, London, United Kingdom

Objectives: Rates of chlamydia re-infection have been found to be high and to impact on efforts to control chlamydia through opportunistic screening. However, the impact of sex partner changes and partner treatment on re-infection risk has not previously been quantified. We conducted a prospective cohort study of young women screened for chlamydia in England to investigate the determinants of chlamydia re-infection and inform screening strategies for the evolving National Chlamydia Screening Programme in England. Methods: Over 1,900 women aged 16-24 were screened for Chlamydia trachomatis using nucleic acid amplification on urine at general practice, family planning and GUM clinics between March 2002 and August 2003. Participants were followed for 18 months, tested at six-monthly intervals, with an additional test 3 months after an initial positive. Demographic, clinical, behavioural and partner data were collected at each test. Cox proportional hazard models estimated the effect of covariates on re-infection rates. Results: Among 419 chlamydia-positive women, the re-infection rate was 24.0 (19.2-29.9) per 100 woman-years. Four factors were associated with re-infection rates: reported abdominal pain within six months of the re-infection test (HR=1.9; 1.0-3.4), reported last menstrual period 3 or more weeks prior to the re-infection test (HR=2.1; 1.3-3.6), recent acquisition of new sex partners (HR=2.0; 1.1-3.5), and inadequate treatment of all partners from the initial positive (HR=2.0; 1.2-3.5). New sex partner acquisition and incomplete partner treatment combined quadrupled the hazard ratio (fig. 1). Most re-infections occurred within 6 months of follow-up. Conclusions: The chlamydia re-infection rate was high and driven by two key behavioural factors—women acquiring new sex partners rapidly and inadequate treatment of previous partners. These results suggest that re-screening among women previously infected should occur within 6 months, or sooner if a new sex partner is acquired or there is evidence of an untreated partner.

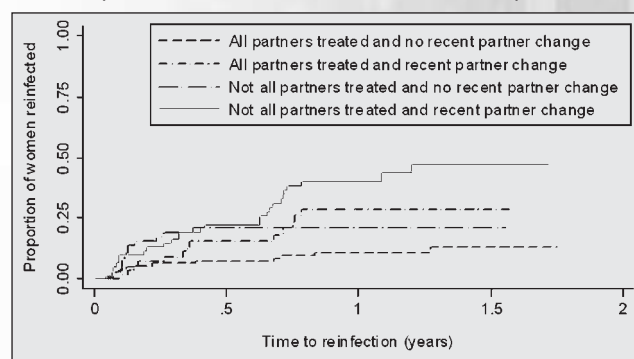


Table 1: Re-infection Kaplan-Meier failure curves

TO-406 'PILOT CHLAMYDIA': RESULTS FROM THE FIRST POPULATION-BASED CHLAMYDIA SCREENING STUDY IN URBAN AND RURAL AREAS IN THE NETHERLANDS

J.E.A.M. van Bergen¹, H. Götz², J. Richardus³, C. Hoebe², J. Broer⁴, I. Veldhuijzen², D. van Schaik¹, T. Coenen¹

¹ Soa Aids Nederland, Amsterdam, The Netherlands

² Municipal Health Service, Rotterdam, The Netherlands

³ Erasmus Medical Center, Rotterdam, The Netherlands

⁴ Municipal Health Service, Groningen, The Netherlands

Objectives: Chlamydia screening programmes are considered but policy recommendations are hampered by the lack of population-based data in the Netherlands. We wanted to determine the prevalence of Chlamydia in 15-29 year old women and men in rural and urban areas, as determined through systematic population-based screening organised by the Municipal Public Health Services (MHS). **Methods:** Stratified national probability survey according to 'area address density' (AAD). 21.000 randomly selected women and men in 4 regions, aged 15-29 year, received a home-sampling kit. Urine samples were returned by mail and tested by polymerase chain reaction (PCR). Treatment was via the general practitioner, STI- or MHS-clinic.

Results: 41% (8383) responded by sending in urine and questionnaire. 11% (2227) returned a refusal card. Chlamydia prevalence was significantly lower in rural areas (0.6%, CI: 0.1-1.1) compared to very highly urbanised areas (3.2%, CI: 2.4-4.0). Infection was associated with degree of urbanisation, ethnicity, number of sex partners and symptoms. A risk profile could be determined and a prediction rule for selective screening is developed.

Conclusion: These data suggest that that nation-wide systematic screening is not indicated in the Netherlands and that targeted approaches are a better option. Roll-out of selective screening is recommended.

SESSION: O-013 - STI INTERVENTIONS: METHODS IN EVALUATION

TO-501 TESTING FOR PROSTATE-SPECIFIC ANTIGEN TO ELICIT ACCURATE SELF-REPORTS OF UNPROTECTED SEX

S.C. Thomsen¹, M. Gallo², B. Janowitz¹, M. Hawken³, M. Hobbs⁴, W. Ombidi⁵, Z. Omungo¹

¹ Family Health International, Durham, NC, United States of America

² Ipas, Chapel Hill, NC, United States of America

³ Columbia University, Dar Es Salaam, Tanzania

⁴ University of North Carolina, Chapel Hill, NC, United States of America

⁵ Int. Centre for Reproductive Health, Mombasa, Kenya

Objective: To determine whether participants will report more unprotected sex if they are informed before beginning the questionnaire that they will be tested for prostate-specific antigen (PSA) in vaginal fluid compared to after completing the questionnaire.

Methods: We conducted a randomized trial of 210 female sex workers from Mombasa, Kenya where half of the group knew (through informed consent) that they would be tested for PSA before they reported on sex and condom use occurring in the previous 48 hours. The other half were invited to participate (through an additional informed consent) in the test for PSA after they had already consented to and reported on these sexual behaviors. A trained

nurse instructed participants to self-swab to collect vaginal fluid specimens, which were tested for PSA using enzyme-linked immunosorbent assay (ELISA).

Results: Reporting of unprotected sex did not differ between those with prior knowledge of the test for PSA and those without this knowledge (14.3% vs. 11.4%; $p = 0.54$). However, women with prior knowledge of the marker test were more likely to report no unprotected sex in the last 48 hours despite biological evidence of semen exposure than those who learned of the test only after answering the questionnaire (18.3% vs. 10.2%; $p < 0.0001$).

Conclusions: Knowing that one's answers to a questionnaire could be verified with a biomarker of semen exposure did not make these respondents more likely to report unprotected sex. In fact, we found the opposite. This calls into question the validity of findings from studies that test different ways of asking about condom use (such as computer-assisted interviewing techniques) but that do not have an objective measure with which to compare responses.

TO-502 WHICH SYPHILIS CONTROL STRATEGIES IDENTIFY LIKELY TRANSMITTERS?

R.H. Kahn¹, T.A. Peterman¹, G. Pierce¹, J. Arno², E.J. Coursey³, S. Berman¹

¹ Centers for Disease Control & Prevention, Atlanta, GA, United States of America

² Marion County Health Department, Indianapolis, IN, United States of America

³ Davidson County Metro Public Health Dpt, Nashville, TN, United States of America

Objectives: Community syphilis persistence may be maintained by relatively small percentages of high-risk persons interacting with a larger group with low to moderately risky behavior. We sought to determine which control strategies identified particularly high-risk syphilis cases. **Methods:** In two cities with recent heterosexual outbreaks data were abstracted for cases from 1997 through 2002. Disease stage and number of sex partners were used to estimate the relative magnitude of future transmission, had the case not been treated. Cases were assigned a transmission 'risk': primary = 0.45, secondary = 0.25, and early-latent = 0.1. A risk score was calculated by multiplying the number of period sex partners by the transmission risk. Cases scoring ≥ 1 were considered high-risk. Cases were stratified by the method used to detect the case.

Results: Of 1700 female early syphilis cases, 174 (10%) were high-risk. Cases were identified by private physicians (28% of all female cases and 16% of high-risk cases), jails (19% of all, 40% of high-risk), partner notification (16% of all, 10% of high-risk), and the STD clinic (9% of all, 13% of high-risk). Of 1863 male cases, 228 (12%) were high-risk. Cases were identified by jails (27% of all male cases and 17% of high-risk cases), STD clinic (21% of all, 39% of high-risk), private physicians (17% of all, 17% of high-risk), and partner notification (14% of all, 11% of high-risk cases).

Conclusions: Private physicians identified the largest number of female cases. However, jail screening was the most productive case detection strategy for identifying high-risk females. The jail identified the largest number of male cases and the STD clinic (self-referred cases) identified the most high-risk males. Partner notification identified relatively few high-risk cases.

TO-503 IMPACT OF RAPID HIV TESTING ON CASE IDENTIFICATION AND FOLLOW-UP OPPORTUNITIES IN NEW YORK CITY'S SEXUALLY TRANSMITTED DISEASE CLINICS

*M.P.H. Blank, M. Mavinkurve, S. Wright, K. Washburn, F. Desire, G. Schlanger, S.R. Rubin
NYC Dept. of Health and Mental Hygiene, New York, NY, United States of America*

In NYC, HIV testing has been available at 10 public Sexually Transmitted Disease (STD) clinics, in confidential or anonymous formats, free-of-charge, on a walk-in basis, six days/week. Conventional HIV ELISA and Western Blot (WB) test results require 10-day turn-around times, posing barriers to testing and receiving results.

Objective: To increase HIV-testing among STD clinic clients; the proportion of clients receiving results, and the number of HIV-positive clients completing referral for HIV care.

Methods: In January 2004, the Bureau of STD Control implemented OraQuick? Rapid HIV-1Ab testing at a rate of 1 clinic/month, until all 10 clinics had integrated its use. We examined: the number HIV-tested, HIV-seropositivity rate, post-test counseling rate and rate-of-referral completion for HIV-positive clients; and compared these figures to 2003, when only conventional laboratory-based HIV-testing was available.

Results: Comparing 2003 and 2004, HIV-testing increased 14.1% from 33,376 to 38,097 (15,047 rapid tests); the number of HIV-positives decreased 2.2% from 552 to 540, (211 preliminary-positives confirmed by WB); seropositivity decreased from 1.65% to 1.44%; the percentage of testers receiving results increased from 77.0% to 84.6%; the proportion of HIV-positives receiving results increased from 78.8% to 87.8%; the proportion of HIV-positives post-tested and referred for care who arrived at the first HIV care appointment within one month of post-testing increased from 80% to 94%. STD clinic first visits increased from 57,234 to 58,568; the proportion with STD diagnoses decreased from 69.4% to 62.2%.

Conclusions: Rapid HIV testing was readily integrated into standard practice, and is associated with increases in number HIV-tested, proportion of persons receiving results and proportion of HIV care referrals completed. Decreases in HIV-seropositivity among those tested, and other STD pathologies among patients, suggest that individuals at-risk may require other types of targeting/incentives for testing.

TO-504 PRAGMATIC OBSTACLES PREDICT RETURN FOR 2ND DOSE OF HEPATITIS B VIRUS VACCINE AMONG STD CLINIC PATIENTS

*G.D. Zimet, S.M. Perkins
Indiana University School of Medicine, Indianapolis, United States of America*

Objectives: To examine potential predictors of return for the 2nd dose of HBV vaccine among patients attending STD clinics.

Methods: Patients attending 2 public health STD clinics were recruited from waiting rooms to complete an audio computer-assisted self-interview (A-CASI). Upon completion of the interview free HBV vaccination was offered. The A-CASI included these health belief scales: fear of shots, vaccine safety concerns, benefits of immunization, worries about infection, and severity of infection. It also included questions about pragmatic obstacles to clinic

attendance, including travel time to the clinic, convenience of clinic hours, and number of children cared for. Logistic regression was conducted to examine predictors of return for the 2nd HBV vaccine dose.

Results: 126 patients received the 1st dose of vaccine and were eligible for a 2nd dose. They were 58% male, 88% African-American, and were 18-54 years old (mean = 28). 21% (n=26) returned for the 2nd dose. Univariate logistic regression identified fewer children cared for (< 3 children) and less travel time to the clinic (< 30 minutes) as significant predictors of return. The 5 health beliefs, convenience of clinic hours, age, gender, and employment status were not significantly related to return. With the 2 significant predictors entered into a multiple logistic regression analysis, adjusted odds ratios and 95% confidence intervals were: 1) Having fewer than 3 children to care for (OR=8.5; 95%CI=1.1-66.5) and 2. Under 30 minutes travel time to clinic (OR=3.7; 95%CI=1.02-13.6).

Conclusions: Health beliefs have been shown to predict 1st dose acceptance of HBV vaccine. The present results indicate that fewer pragmatic obstacles, not health beliefs, predict return for the 2nd dose and suggest that strategies encouraging return will need to address these pragmatic obstacles in order to increase rates of HBV vaccine completion.

TO-505 OPPORTUNISTIC TESTING FOR CHLAMYDIA TRACHOMATIS: UPTAKE AND PREVALENCE DURING A CAMPAIGN TO INCREASE ACCESS TO TESTING AMONG 13-25 YEAR OLDS IN NON-GUM SETTINGS

*M. Williamson¹, G. Scott², K. Carrick-Anderson², K. Kernaghan², G.J. Hart¹
¹ Medical Research Council, Glasgow, United Kingdom
² Royal Infirmary of Edinburgh, Edinburgh, United Kingdom*

Objectives: To assess the uptake of chlamydia testing, evaluate three different screening methods, and examine chlamydia prevalence during a campaign to increase access to testing among 13-25 year olds in non-GUM settings.

Methods: Chlamydia testing was made available through Healthy Respect, a young people's sexual health initiative, via postal testing kits (distributed through commercial venues), onsite at a local sexual health clinic and at local further education colleges in Lothian, Scotland.

Results: 5090 samples were collected between May 2001 and June 2004. 864 (17.0%) of the testers were men and 4226 (83.0%) were women. Postal testing was the main testing source for men (83.9%). Postal testing accounted for half of the tests among women (51.3%), but clinic testing was also a substantial source for women (43.2%). Older men and women were significantly more likely to use postal testing; while women from more deprived areas were most likely to have been tested at the clinic. 98 men (11.3%, 95% CI 9.4%-13.6%) and 417 women (9.9%, 95% CI 9.0%-10.8%) tested positive for chlamydia. Chlamydia positivity was 14.5% (95% CI 7.6-26.2) for men and 11.2% (95% CI 9.9-12.8) for women in the clinic, 11.6% (95% CI 9.5-14.1) for men and 9.1% (95% CI 8.0-10.4) for women who used postal testing, and 7.1% (95% CI 3.3-14.7) for men and 6.0% (95% CI 3.6-9.9) for women at the colleges. Age, test source and deprivation were significantly associated with chlamydia infection for women but not for men.

Conclusions: Substantial chlamydia infection was apparent among those tested in each setting. Postal testing kits are an effective means of targeting a wider population, particularly men; and opportunistic screening at a sexual health clinic is the most effective method of accessing young women who are at high risk of chlamydia infection.

TO-506 DOES AUDIO-COMPUTER ASSISTED SELF-INTERVIEWING (ACASI) IMPROVE REPORTING ON SENSITIVE BEHAVIORS: FINDINGS FROM BRAZIL

C.G. Lippi¹, M.A. Veras², H Jones³, S.A. Lippman³, A. Pinho¹, M. Ribeiro², P. Hewett³, J.H.H.M. van de Wijgert⁴, B. Mensch³

¹ Centro de Saúde Escola Barra Funda, São Paulo, Brazil

² Santa Casa School of Med. Sci., São Paulo, Brazil

³ Population Council, New York, NY, United States of America

⁴ IATEC, Amsterdam, The Netherlands

Objectives: To determine if audio-computer assisted self-interviewing (ACASI) produces increased reporting of sensitive sexual behaviors compared to face-to-face interviewing and to evaluate differences in the association between reporting strategy and sexually transmitted infections (STIs).

Methods: In 2004-2005, 818 women aged 18-40 were recruited from a low-income neighborhood in São Paulo, Brazil to participate in a study aiming to explore strategies to improve diagnostic screening and treatment for gonorrhea, chlamydia and trichomoniasis. Women were randomized to respond to either an ACASI or face-to-face interview on demographic and sexual behaviors during their initial visit and were invited to undergo screening for STIs.

Results: Preliminary results demonstrate higher rates of reporting of most sensitive behaviors in the ACASI arm. Thirty-three percent of participants responding to ACASI reported practicing anal sex in the last 6 months versus 23 percent in the face-to-face arm ($p < .01$). Similarly 66% reported oral sex in the last 6 months by ACASI versus 53% face-to-face ($p < .01$) and 8% reported having ever exchanged sex for drugs, money or favors in ACASI versus 3% in face-to-face ($p < .001$). Reporting was also higher in ACASI for having ever experienced intimate violence (18% versus 16%), although the difference was not significant. Ninety-six percent of the women were tested for STIs, and 13 percent were positive for trichomonas, gonorrhea and/or chlamydia. This presentation will explore the differences in reporting between interview modes and the association between reports of sensitive behaviors and prevalent infections by interview method.

Conclusion: Evaluating and designing programs to prevent sexually transmitted infections require accurate reports of sexual behavior. ACASI, in which study participants respond directly to a computer, appears to provide greater confidentiality and privacy resulting in higher, and most likely more honest, reporting of these behaviors.

SESSION: O-014 - MULTIPLE STIS: INTERACTION AND TREATMENT

TO-601 EFFECTIVENESS OF INPATIENT AND OUTPATIENT TREATMENT STRATEGIES AMONG SUBGROUPS OF WOMEN WITH PELVIC INFLAMMATORY DISEASE FROM THE PEACH RANDOMIZED TRIAL

R. Ness¹, G. Trautmann¹, H.E. Richter², H. Randall³, J.F. Peipert⁴, D.B. Nelson⁵, D.C. Bass¹, D.E. Soper⁶, D. Schubeck⁷, S.G. McNeeley⁸, W. Trout⁹

¹ University of Pittsburgh, GSPH, Pittsburgh, United States of America

² University of Alabama School of Medicine, Birmingham, United States of America

³ Emory University, Atlanta, United States of America

⁴ Women and Infants Hospital, Providence, United States of America

⁵ University of Pennsylvania, Philadelphia, United States of America

⁶ Medical University of South Carolina, Charleston, United States of America

⁷ MetroHealth Medical Center, Cleveland, United States of America

⁸ Wayne State University, Detroit, United States of America

⁹ Ohio State University, Columbus, United States of America

Objective: Among all women with pelvic inflammatory disease (PID), prevention of adverse reproductive consequences appears to be similarly achieved by outpatient treatment and inpatient treatment. We assessed whether outpatient is as effective as inpatient treatment in relevant age, race, and clinical subgroups of women with PID.

Study Design: Women with clinical signs and symptoms of mild-to-moderate pelvic inflammatory disease (n=831) were randomized into a multicenter trial of inpatient treatment initially employing intravenous cefoxitin and doxycycline versus outpatient treatment consisting of a single intramuscular injection of cefoxitin and oral doxycycline. Comparisons between treatment groups during a mean of 84 months of follow-up (retention 69.1%) were made for reproductive outcomes, PID recurrence, and chronic pelvic pain. Results: Outpatient treatment assignment did not adversely impact number of pregnancies (OR 1.27, 95%CI 0.92-1.76), live births (OR 1.08, 95% CI 0.77-1.51), infertility (OR 0.88, 95%CI 0.59-1.32), PID recurrence (OR 0.71, 95%CI 0.48-1.05) or chronic pelvic pain (OR 1.21, 95% CI 0.87-1.67). This was true among women of various races; with or without previous PID; with or without baseline *Neisseria gonorrhoeae* and/or *Chlamydia trachomatis* infection; and with or without severe clinical presentations. This was true even in teenagers and women without a previous live birth. Ectopic pregnancies were more common in the outpatient compared to the inpatient treatment group but because these were so rare, the difference did not reach statistical significance (5 vs.1, OR 5.30; 95% CI 0.61-45.78).

Conclusion: Among all women and subgroups of women with mild-to-moderate PID, there were no differences in reproductive outcomes after randomization to inpatient or outpatient treatment.

TO-602 CHANGING AETIOLOGY OF GENITAL ULCER DISEASE IN DURBAN, SOUTH AFRICA FROM 1988 TO 2004A.W. Sturm¹, P. Moodley¹, P.D.J. Sturm¹, N. O' Farrell²¹ Nelson R Mandela School of Medicine, Durban, South Africa² LSHTM, London, United Kingdom

Objectives: To determine changes in aetiology of genital ulcer disease (GUD) in the background of the HIV epidemic

Methods: The results of laboratory analysis of specimens from 7 studies in patients presenting with GUD to an STD clinic in Durban were compared with each other. The study performed in 1988 used microscopy and culture to diagnose infections with *Haemophilus ducreyi* (HD) and herpes simplex virus (HSV). Serology and microscopy were used for *Treponema pallidum* (TP) and direct immunofluorescence (DIF) for *Chlamydia trachomatis* (LGV). From 1995 onwards, PCR was used for the diagnosis of TP, HD and HSV. From 2000 onwards, a LGV specific PCR was used in stead of DIF. Infections with *Calymatobacterium granulomatis* (CG) were diagnosed by microscopy in all studies. HIV infection was detected by means of serological tests.

Results: The HIV prevalence rose from 5 % in 1998 to 75 % in 2000 and remained at that level. HD and TP were with prevalences of 22% to 53% and 31% to 42% respectively, the most frequent infections till 1998. After that there was a steady decrease to 1% HD and 4% TP in 2004. LGV was diagnosed by microscopy in 3 to 4% till 1998. With the application of PCR this rose to prevalences between 11 in 2000 to 16 % in 2004. HSV prevalence as diagnosed by culture was 10% in 1988. Application of PCR showed an increase from 35 % in 1995 to 48 % in 2000 after which in stabilised with prevalences around 50%. CG infections decreased from 7 % in 1995 to < 1% in 2001. GUD without diagnosis remained stable at + 1/3 of cases.

Conclusions: The fraction of GUD cases with HSV increased in parallel with HIV infection. HD and TP infections kept decreasing after 2000 while LGV increases.

TO-603 IMPACT OF COMPLIANCE TO ANTIMICROBIAL THERAPY ON MICROBIOLOGICAL RESPONSE OF SEXUALLY TRANSMITTED INFECTIONS

P. Moodley, P.D.J. Sturm, A.W. Sturm

Nelson R Mandela School of Medicine, Durban, South Africa

Objectives: Syndromic management guidelines for sexually transmitted diseases (STDs) advocate single dose antimicrobials to ensure adherence. We reported poor response of bacterial vaginosis (BV) to single dose treatment with 2g metronidazole and postulated that this results from too short a course. We therefore increased the duration of metronidazole therapy and measured outcome associated with compliance.

Methods: Genital tract specimens were collected from women with vaginal discharge for detection of STIs and bacterial vaginosis (BV). Patients were treated with metronidazole 400mg 3 x daily for 5 days, ciprofloxacin 500mg stat and doxycycline 100mg 2 x daily for 7 days and followed up at days 3, 5 and 8. Adherence to treatment was measured by testing urine for the presence of ciprofloxacin, metronidazole and doxycycline at each visit. Genital tract specimens were repeated at day 8 to assess microbial eradication.

Results: 13 of 171 women were excluded because of the presence of antimicrobial substances in the urine at baseline. Prevalences of *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Trichomonas vaginalis* and BV were 6%, 6%, 26% and 63% respectively and cure rates at day 8 were 100%, 80%, 89% and 66% respectively. Erratic adherence to treatment was seen in both failures for *C.trachomatis* and in 35/36 failures for BV. For *T.vaginalis*, lack of adherence was seen in 2/5 treatment failures while the remaining 3 appeared to be fully compliant. Adherence to doxycycline vs metronidazole treatment on days 3 and 5 was 86% vs 73% (p=0.003) and 83% vs 49% (p< 0.0001) respectively.

Conclusions: Treatment failures of STDs when using drugs that are not given as a single dose often result from poor adherence to treatment. Adherence to doxycycline treatment was significantly higher than to treatment with metronidazole.

TO-604 LOW TIME CONSUMING STI SCREENING FOR LOW RISK STI CLINIC VISITORS

E.J.M. van Leent, R.L.J. Heijman, H.J.C. de Vries, J.S.A. Fennema GGD Amsterdam, Amsterdam, The Netherlands

The number of patients visiting our sti clinic has been growing from 11.656 in 1995 to 19.188 in 2003. Unfortunately we were not able to see more patients because of logistic limitations. To improve the number of patients seen in our STI clinic, 'trriage' was introduced in 2004.

Method: upon entering the clinic the patients are registrated. During this registration five additional questions were asked for sti risk evaluation. High-risk patients are offered a complete sti check-up by a health care worker, including history taking, and physical examination. Patients who are considered as low-risk were offered a short-track investigation. Only blood samples (for syphilis and hiv-testing) urine-samples (males) or vaginal cotton wool swab (females, self-administered) for Gonorrhoea and *Chlamydia* pcr-tests are collected. If a sti is found after short-track investigation, the patient is invited for a full investigation.

Results: between June 2004 and December 2004 13.423 new patients were seen in our clinic. Compared to the same period in the previous year 1923 additional patients have been seen, an improvement of 16.7%. From the 13.323 visitors 4568 (34%) were considered Low-risk, 8855 patients (66%) were considered High risk. 2472 sti were diagnosed in the High risk group (27.9%), compared to 328 sti in the Low-risk group (7.1%). In the Low-risk group 285 cases of chlamydial infection, 27 cases of gonococcal infection, 14 hiv infections (incidence 0.4%), one case of early syphilis and one case of *trichomonas* infection were found.

With the introduction of short track investigation for low risk patients we are able to see an additional 16.7% patients. The questionnaire used selects visitors with a low incidence of sti (7.1%) compared to the not selected visitors (High-risk group: 27.9%). Analysis of all the individual questions will follow, and sti risk evaluation will be altered to improve high risk selection.

TO-605 PATIENT-DELIVERED PARTNER THERAPY: WHEN AND WHERE SHOULD IT BE USED? PREDICTING ITS IMPACT IN THE USA AND UK

P.J. White¹, M.R. Golden², K.M.E. Turner¹, H.H. Handsfield³, K.K. Holmes³, G.P. Garnett¹

¹ Imperial College Faculty of Medicine, LONDON, United Kingdom

² Public Health, SEATTLE & KING COUNTY, United States of America

³ Center for AIDS & STD, SEATTLE, WA, United States of America

Objectives: Traditional partner notification is costly, inconsistently provided, and often ineffective. Patient-delivered partner therapy (PDPT) – treating the sexual partners of persons with curable sexually transmitted infections (STIs) without requiring clinical evaluation of those partners – can increase the proportion of all gonorrhoea and chlamydial infections treated, with a modest increase in resources. However, receiving medication from partners may deter some individuals from seeking clinic care, who would otherwise have done so; then they cannot be tested for other infections, and their partners cannot be traced. The setting-specific overall impact of these different effects is explored in a mathematical model.

Methods: We developed an individual-based network simulation model of gonorrhoea and chlamydia, incorporating heterogeneity in sexual partner change rates, partnership durations, concurrency, and treatment-seeking behaviour, including response to PDPT. Parameter estimates came from a study conducted in King County, WA, USA, and from the literature. We examined scenarios for the USA, where private physicians provide most care, and for the UK, where publicly-funded clinics predominate.

Results: In the model, an increase, due to PDPT, of 10-20% in the proportion of partners treated reduces the prevalence of chlamydial infection in the USA by 25-40% over 2 years. In the UK, PDPT may help inadequately-resourced STI clinics to escape from a vicious circle where failure to cope with demand for STI treatment leads to high prevalence, hence high incidence, and sustained high demand for treatment. However, if many recipients of PDPT do not seek care, when they would otherwise have done so, then the benefits are reduced.

Conclusion(s): Widespread use of PDPT could substantially reduce the prevalence of gonorrhoea and chlamydial infection. The magnitude of PDPT's impact depends on the underlying sexual and treatment-seeking behaviour of the population, the health care system's treatment capacity, and the response of recipients to PDPT.

TO-606 2005 CDC STD TREATMENT GUIDELINES: NEW RECOMMENDATIONS

K.A. Workowski¹, S. Berman²

¹ CDC/Emory University, Atlanta, Georgia, United States of America

² Centers for Disease Control, Atlanta, United States of America

The CDC Guidelines for the Treatment of Sexually Transmitted Diseases provide an important source of clinical guidance in the prevention and management of STDs. Revisions of pre-existing guidelines are necessary as the management of STDs evolves in response to basic science investigation, clinical research trials, novel antimicrobials, and emerging antimicrobial resistance.

Objective: Development of 2005 STD Treatment Guidelines

Methods: An evidence-based approach incorporating available scientific evidence and systematic review methodology. A comprehensive review of the literature summarized the study type, population and setting, treatment regimen, outcome measures, and quality of the evidence. Critical analysis of the available evidence was conducted at a meeting of consultants that included national and international STD experts, professional organizations, and other agencies representing diverse perspectives on STD treatment. **Results:** Selected highlights from the forthcoming Guidelines include an expanded diagnostic evaluation for mucopurulent cervicitis and trichomoniasis; new antimicrobial recommendations for trichomoniasis; additional data on the clinical efficacy of azithromycin for chlamydial infections in pregnancy; discussion of the role of *Mycoplasma genitalium* and trichomoniasis in urethritis/cervicitis and treatment related implications; emergence of lymphogranuloma venereum proctocolitis among MSM; expanded discussion of the criteria for spinal fluid examination to evaluate for neurosyphilis; the emergence of azithromycin resistant *T. Pallidum*; increasing prevalence of quinolone-resistant *N. gonorrhoeae* in MSM; revised discussion on the sexual transmission of hepatitis C; and nonoccupational postexposure prophylaxis after sexual assault.

Conclusions: The rapidly evolving health care system in the United States presents multiple challenges for guideline development, utilization, and dissemination. The approach to development of CDC STD guidelines will continue to evolve reflecting changes in clinical research, epidemiology, the health care environment, delivery of clinical services, and availability of data addressing effectiveness.

SESSION: O-015 - PREVENTION TRIALS

TO-701 DOES A CHOICE OF CONDOMS IMPACT STI INCIDENCE? A RANDOMIZED CONTROLLED TRIAL

J. Steiner¹, T. Hylton-Kong², J.P. Figueroa², M.M. Hobbs³, F. Behets³, M. Smikle⁴, K. Tweedy¹, S. Powell², L. McNeil¹, A. Brathwaite²

¹ Family Health International, Research Triangle Park, United States of America

² Ministry of Health, Kingston, Jamaica

³ University of North Carolina, Chapel Hill, NC, United States of America

⁴ University of the West Indies, Kingston, Jamaica

Objective: To assess whether providing a choice of condoms to men presenting with urethral discharge would increase condom acceptability, increase self-reported use and decrease incident STI.

Methods: We randomized 414 men presenting with urethral discharge at Jamaica's largest STI clinic to receive either the 'standard' clinic condom or a choice of 4 different types of condoms. Men were treated presumptively at enrollment and followed up at month 1, 2, 4 and 6 for STI testing (gonorrhoea, chlamydia and trichomoniasis) and resupplying of condoms.

Results: Participants in the Choice Group had a strong preference ($p < 0.01$) for the most popular private-sector condom available in Jamaica (Rough Rider). However, this preference did not translate into a difference in acts protected by condoms in the two groups ($p = 0.16$). At the screening visit, participants reported using condoms less than half the time in the previous 7 days (Choice=42%; Control=38%), and during the enrollment visit a week later, the proportion of acts reported as protected more than doubled

(Choice=90%; Control=96%) and stayed similarly high throughout the study. How much of this increase was due to the condom counseling provided as part of the study and how much was due to social desirability bias is not known. The 6-month cumulative probability of first incidence of gonorrhoea, chlamydia or trichomoniasis was slightly higher in the Choice Group (21%; 95%CI 15-28%) vs. the Control Group (17%; 95%CI 11-23%) but the difference in the survival curves was not significant (p-value 0.35).

Conclusion: Our study provides evidence that a choice of condoms may increase perceived acceptability but not lead to increased condom use and subsequently lower STI rates.

TO-702 A RANDOMIZED CONTROLLED TRIAL OF MALE CIRCUMCISION TO REDUCE HIV INCIDENCE IN KISUMU, KENYA: PROGRESS TO DATE

S. Moses¹, R.C. Bailey², K. Agot³, C.B. Parker⁴, I.W. Maclean¹, J.O. Ndinya-Achola⁵

¹ University of Manitoba, Winnipeg, Manitoba, Canada

² University of Illinois at Chicago, Chicago, Illinois, United States of America

³ Nyanza Reprod. Health Society, Kisumu, Canada

⁴ RTI International, Research Triangle Park, N.C., United States of America

⁵ University of Nairobi, Nairobi, Kenya

Background: Many observational studies have shown a protective effect of male circumcision (MC) against HIV acquisition, but observational studies cannot control for confounding, nor address issues of safety and behavioural disinhibition. We report progress from a randomized controlled trial (RCT) of MC to reduce HIV incidence in Kisumu District, Kenya.

Methods: This RCT has two arms: treatment (circumcision) and control (non-circumcision). Sexually active 18-24 year-old men are counselled and tested for HIV. Seronegative men are invited to participate, and consenting men are randomized. Those in the treatment arm are circumcised, and examined 3 and 8 days after surgery. Men in both arms receive intensive risk reduction counselling, and are counselled and tested for HIV at 1 and 3 months after enrollment. They are then followed at 6, 12, 18 and 24 months with additional counselling and HIV testing, STI testing and treatment, and behavioural risk assessment. The total projected sample size is 2776, to detect a 50% reduction in HIV incidence.

Results: Of the first 5183 men screened (up to March 15, 2005), 2179 (42%) were randomized, 1089 to MC, of which 1047 (96.1%) have completed the procedure. 575 men (86% of the expected number) had completed 24 months of follow-up. Total follow up was 1977 person-years (PYs), and 36 HIV seroconversions had occurred. There were 22 adverse events among 21 men (2.0%) considered related to the MC procedure, mainly post-operative bleeding or infection, none severe, and they resolved quickly without sequelae. Incidences of gonorrhoea and chlamydial infection were both 5.3 per 100 PYs.

Conclusions: Recruitment is expected to be completed by September 2005, with final follow-up 24 months thereafter. The investigators are blinded to study arm, but overall HIV incidence to date, although lower than previously observed in Kisumu, is consistent with our original assumptions.

TO-703 A RANDOMISED HSV₂ SUPPRESSIVE TREATMENT TRIAL FOR HIV PREVENTION: DESIGN, ENROLLMENT AND FOLLOW-UP

D. Watson-Jones¹, H. Weiss², J. Chagalucha³, C. Tanton³, D. Everett³, L. Knight³, T. Clayton², I. Hambleton³, M. Rusizoka¹, R. Hayes²

¹ AMREF, Mwanza, Tanzania

² LSHTM, London, United Kingdom

³ NIMR Mwanza Centre, Mwanza, Tanzania

Objectives: Female bar, hotel and other facility workers in NW Tanzania are at high risk of HIV and HSV infection. A randomised HSV suppressive therapy trial is underway in this population to determine whether taking aciclovir will reduce HIV incidence and HIV shedding in HSV2 seropositive women. Enrolment procedures and preliminary follow-up data are described.

Methods: A double-blind, randomised placebo-controlled trial of HSV-2 suppressive therapy with acyclovir (ACV) 400mg bd is being conducted in female facility workers. Following community mobilisation and development of tools to assist in understanding of the trial procedures, women were screened for HIV and HSV2 antibodies. HSV2 seropositive eligible women were enrolled and randomised to aciclovir 400mg bd or placebo. Participants are seen every 3 months and visited between booked visits by an adherence support clinician. Data on adherence are collected through pill counts, self-reporting and random urine testing of ACV metabolites.

Results: 2113 women were screened, of whom 1669 (79.0%) were HSV-2 antibody positive. 1042 eligible HSV+ women attended for follow-up and, of these, 1001 were randomised. RTI prevalence at enrolment of the trial cohort was: 38.3% HIV+, 5.8% N. gonorrhoeae, 7.9% C. trachomatis, 66% bacterial vaginosis, 9.7% candidiasis, 30.5% T. vaginalis, 14.3% active syphilis. Overall attendance rates at 3, 6 and 9 months were 85%, 79% and 76% respectively. There was no significance difference in withdrawal from treatment between HIV+ and HIV- women. Preliminary analysis suggests that at 3, 6, 9 months, tablets were taken >75% tablet days in 80%, 86% and 89% of women respectively (p trend=0.004).

Conclusions: There was a high prevalence of RTI, especially BV, at enrolment of this cohort of female facility workers. Pregnancy was the main reason for withdrawal from study tablets. Adherence to study tablets assessed by tablet counting improved over time.

TO-704 CAN MALE CIRCUMCISION PREVENT ACQUISITION OF HSV-2 INFECTION?

B.A. Auvert¹, A. Puren², D. Taljaard³, J. Sobngwi-Tambekou¹, E. Lagarde¹, R. Sitta¹

¹ INSERM U687, Saint Maurice Cedex, France

² NICD, Johannesburg, South Africa

³ Progressus CC, Johannesburg, South Africa

Introduction: Little is known about the impact of male circumcision (MC) on HSV-2 acquisition. A randomized control intervention trial to evaluate this impact was performed in a region of sub-Saharan Africa with a high prevalence of HSV-2.

Methods: 3274 uncircumcised men, aged 18-24 and wishing to be circumcised, were randomized in a control and intervention group. Men were followed for 21 months with an inclusion visit and follow-up visits at month 3, 12 and 21. Male circumcision was offered to

the intervention group just after randomization and to the control group at the end of 21 month follow-up visit. Male circumcisions were performed by medical doctors. At each visit, sexual behavior was assessed by a questionnaire and a blood sample was taken for HSV-2 serology using the Kalon HSV-2 ELISA. These grouped censored data were analyzed in an 'intention to prevent' univariate and multivariate analysis using the piecewise survival model, and relative risk (RR) of HSV-2 infection (intervention vs. control) with 95% confidence interval (95% CI) and p value was determined.

Results: Loss to follow-up was <10%; <1% of the intervention group were not circumcised and < 2% of the control group were circumcised during the follow-up. We observed no effect of MC during the periods M0-M3 (RR=1.30 p=0.58) and M3-M12 (RR=1.39 p=0.32), but a protective effect in the period M12-M21 (RR=0.30 (0.13 - 0.67) p=0.0032), equivalent to a protection with an efficacy of 70%. When controlling for background characteristics and sexual behavior, including condom use, this last RR was unchanged.

Conclusions: Male circumcision provides a high degree of protection against HSV-2 infection acquisition but one year after surgery. Further studies should examine the reason of this protective effect and long term effect of male circumcision on HSV-2 acquisition.

TO-705 THE PREVALENCE OF HERPES SIMPLEX VIRUS TYPE 2 AMONG HIV-1 INFECTED PERSONS IN AN HIV DISCORDANT RELATIONSHIP IN AFRICA

N.R. Mugo

University of Nairobi, Nairobi, Kenya

Background: An estimated 50% of HIV transmissions in Africa occur in steady relationships. HSV-2 infection has been reported to increase risk of HIV acquisition and transmission 2-5 fold. HSV-2 prevalence in Africa is high: 80-90% among HIV-infected individuals and ~ 60% among high-risk HIV uninfected persons.

Objective: To determine: 1) HIV discordance rates among couples presenting for Voluntary Counseling and Testing (VCT) and 2) HSV-2 prevalence in HIV-infected partners among HIV-discordant couples screened for a proof-of-concept trial of HSV-2 suppression to prevent HIV transmission, Partners in Prevention (Partners trial).

METHODS: Couples are invited to participate in VCT for HIV. Among HIV discordant couples, eligibility for Partners trial entry includes HSV-2 infection in the HIV infected partner and with CD4 count \geq 250 cells/mm³. Data presented includes results of VCT in Nairobi and findings from HSV-2 and CD4 counts from the first 119 couples screened for the Partners trial in Nairobi, Soweto, Gaborone, and Kampala.

Results: In 2004, 2486 couples presented to 19 VCT clinics in Nairobi: 13% were HIV discordant, 6% concordant positive and 79% concordant negative. From the 119 HIV discordant couples screened for the Partners trial in Nairobi, Soweto, Gaborone, and Kampala, 88 (74%) of the HIV-infected partners were HSV-2 seropositive and 90 (76%) had a CD4 count \geq 250. Overall, 58 (49%) were eligible for enrollment. The most common reasons for ineligibility were pregnancy and antiretroviral treatment.

Conclusion: Recruitment of HIV-1 discordant couples is feasible. Most persons at risk for HIV transmission have HSV-2 infection, underscoring the need to test whether HSV-2 suppression can decrease HIV transmission. The Nairobi data from VCT centers indicate the need and demand for couples VCT including at antenatal clinics, which in itself may be a prevention strategy.

TO-706 SERVICES AND TREATMENT OFFERED AT REFERRAL CLINICS IN SOSHANGUVE, PRETORIA, SOUTH AFRICA, TO PARTICIPANTS OF A PHASE 3 TRIAL OF THE MICROBICIDE CARRAGUARD™

N. Cassim, K. Ahmed

University of Limpopo, Medunsa Campus, Medunsa, South Africa

Background: The Phase 3 Carraguard™ trial, currently being conducted in Pretoria, South Africa, is investigating the efficacy of a microbicide vaginal gel, used to prevent transmission of HIV. Women are enrolled if they are sexually active, have no malignancy of the cervix, are not pregnant and are HIV negative. Our site's HIV prevalence is 23.8 %, which compares with the antenatal HIV prevalence rate in Soshanguve (25%). The high HIV prevalence rate creates a responsibility on the site to ensure that participants in the trial (positive at screening and seroconverters) have access to basic and comprehensive health care, including antiretroviral treatment (ART).

Objective: To determine the availability of clinical services and adequacy of care being offered to HIV positive women who screen out or seroconvert during the trial.

Methods: Study staff visited clinics in Soshanguve to evaluate available treatment, equipment, facilities and staff capacity. Interviews with staff working with HIV infected individuals were conducted to identify work related conditions.

Results: All clinics had limitations due to lack of resources, trained staff, space constraints and inadequate treatment for prophylaxis and opportunistic infections. The national Anti Retro Viral roll out program, aims to provide ART to immunocompromised individuals at local clinics, but none of these centres is as yet equipped to do so. ART is presently only available at tertiary institutions having specialist care and better facilities. Clinic staff refers women to these institutions for ART but for various reasons, not all women can make use of these facilities.

Conclusion: The supportive care and treatment provided to HIV women is inadequate. It therefore remains imperative for local authorities and government to create the infrastructure for the expansion of local clinics, to provide better services for HIV positive women, and to facilitate the provision of ART.

SESSION: O-016 - GONORRHOEA

WO-001 IDENTIFICATION OF LOCAL TRANSMISSION CLUSTERS USING MOLECULAR TYPING METHODS IN LONDON

C.L. Risley¹, B. Choudhury¹, C.J. Bishop¹, D.M. Aanensen¹, C.A. Ison², K. Fenton³, H. Ward¹, B. Spratt¹, A.C. Ghani¹

¹ Imperial College London, London, United Kingdom

² Health Protection Agency, London, United Kingdom

³ Centre for Disease Control, Atlanta, United States of America

Objectives: To identify the extent to which local transmission networks contribute to the persistence of gonorrhoea in London by relating clusters of isolates identified using molecular typing techniques to the geographic residence of the cases.

Methods: Demographic and behavioural data were collected from patients attending 13 central London clinics between June and November 2004. Sequence types (ST) were defined using NG-MAST. The locations of patients infected with the same strain were visualised using ArcGIS mapping software. The extent to which ST clusters were geographically localised was tested by calculating the mean distance between cases within- and between-clusters and by using Kulldorf's spatial scan statistic.

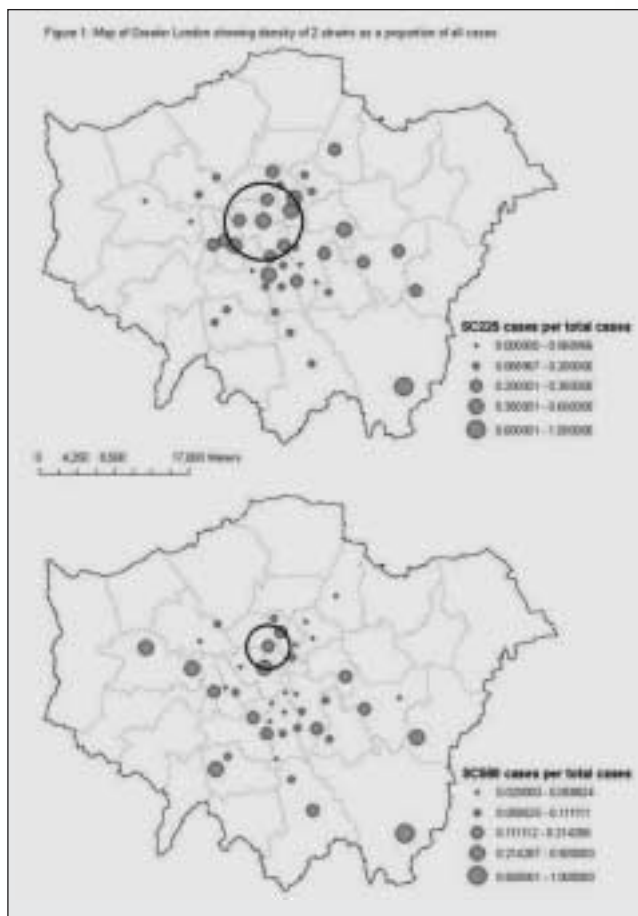


Figure 1:

Results: Demographic data were available for 1728 cases of gonorrhoea and 414 STs over this time period. 95% of cases resided in Greater London with 17% reporting partners from overseas. The mean distance between cases in the same ST (10.1 km) was significantly less than that between cases in different STs (10.8 km, $p < 0.0001$).

Overall the five largest clusters covered 56.19% of all cases, with the clusters containing 358, 314, 52, 79 and 199 individuals respectively. Two of the clusters were significantly associated with geographic location, one to North and Central London with cases mainly in white MSM ($n=358$) and the other to North London consisting of heterosexuals of mixed ethnicity ($n=79$).

Conclusion: Geographically localised transmission of gonorrhoea can be detected in London using NG-MAST. Areas with high local transmission detected by this method could be targeted for prevention and treatment.

WO-002 THE ADDED VALUE OF MOLECULAR TYPING AMONG SEXUALLY TRANSMITTED INFECTIONS (STI)-CLINIC ATTENDEES WITH GONORRHOEA IN AMSTERDAM, THE NETHERLANDS

M. Kolader¹, N.H.T.M. Dukers¹, A.K. van der Bij¹, M. Dierdorp¹, J.S.A. Fennema¹, R.A. Coutinho², S.M. Bruisten¹

¹ GG&GD Amsterdam, Amsterdam, Netherlands

² Nat. Inst. for Health & the Environment, Bilthoven, Netherlands

Objectives: In this study we assessed the (additional) value of molecular typing, in addition to epidemiological data, in identifying risk- and core-groups for *Neisseria gonorrhoeae* (NG)-transmission. **Methods:** All NG-patients at the STI-clinic in Amsterdam, from September 2002 – 2003, were included. NG-isolates were collected during routine STI-examination. RFLP-patterns of *por*- and *opa*- genes were analysed in Bionumerics and combined with epidemiological information pertaining to sexual behaviour six months prior to NG-diagnosis. Isolates with >88% identical RFLP-patterns were defined as one cluster.

Results: Gonorrhoea was diagnosed in 872 patients from whom 1017 NG-isolates were collected from various anatomical locations. Molecular typing revealed 96 clusters of which 12 were defined as large (> 20 patients). Eight large clusters consisted mainly (81-100%) of men who have sex with men (MSM) and three almost entirely (90-100%) of heterosexuals. Compared to patients in heterosexual clusters, patients in MSM clusters were older (median age: 33 years versus 25 years), were more often co-infected with HIV (19% versus 4%) and syphilis (4% versus 1%), met their sexual partners more often through internet (11% versus 1%), and were less often of Surinamese/Antillean ethnicity (3% versus 28%). Forty-three patients (5%) had more than one episode during the study period (recidivists). Recidivists were mostly MSM (72%), 28% was HIV-seropositive and 81% had isolates in different clusters at subsequent visits, suggesting new infections. In 152 patients (84% MSM, 16% women) multiple infections at one clinic visit were observed, of whom 41% had isolates in different clusters suggesting infections with multiple strains. In this subgroup of patients, 17% was HIV-seropositive.

Conclusion(s): Molecular epidemiology of NG-isolates revealed different clusters among MSM and heterosexuals, indicating separate transmission networks. Simultaneously, core-groups, such as recidivists and NG-patients with multiple infections at one visit, were identified.

WO-003 USING STRAIN STRUCTURE TO IDENTIFY AND TREAT LOCAL TRANSMISSION NETWORKS – A MODEL EVALUATION

AC Ghani¹, C. Risley², B Choudhury², C Bishop², K Fenton³, H Ward², B Spratt², CA Ison⁴

¹ LSHTM, London, United Kingdom

² Imperial College London, London, United Kingdom

³ Center for Disease Control, Atlanta, United States of America

⁴ Health Protection Agency, London, United Kingdom

Objectives: Identification of areas of the sexual network in which infection persists is important in the control of STIs. However the epidemiological data required for this task is frequently difficult to obtain. In a study in London we tested the feasibility of using molecular typing methods to identify clusters of related isolates. Here we use a network model of gonorrhoea transmission to investigate the effectiveness of using molecular techniques to target local transmission networks.

Methods: A network model for gonorrhoea transmission was adapted to incorporate sequence types (ST) defined by their allelic profile at two loci. All ST were assumed to be equally fit with new ST arising through recombination. The impact of ST-cluster focussed interventions was assessed by comparing the prevalence at 2 years in simulations in which those with the major ST were treated in the epidemic (100 days) and endemic (300 days) phase to those with no intervention. 2,500 simulations were run in a network of 10,000 individuals.

Results: Infection persisted in 1,152 simulations with prevalence at 2 years ranging from 0.001 to 0.5. A full range of ST diversity was observed with greater diversity and a greater number of STs correlated with less assortative mixing ($r=0.19$ and 0.12), greater mean sexual network component size ($r=0.29$ and 0.32) and a smaller number of sexual network components ($r=0.32$ and 0.32). In the early and late interventions prevalence was reduced in 77% and 78% of the simulations respectively and eliminated in 55% and 60% of the simulations.

Conclusions: In the absence of fitness differences, diversity in STs reflects the underlying structure of the sexual network. Interventions focussed on identifying large ST clusters may be effective at reducing the prevalence of infection.

WO-004 GONOCOCCAL REINFECTION IN AN URBAN POPULATION

R. Kerani¹, W.L.H. Whittington², K.K. Holmes²

¹ Public Health - Seattle&King Co. STD, Seattle, WA, United States of America

² University of Washington, Seattle, United States of America

Objective: To describe the proportion of reported gonococcal infections due to reinfection and characteristics associated with reinfection.

Methods: Gonorrhoea case reports were used to identify persons with 2 or more infections. Sex, age, race, and source of care were assessed in proportional hazards regression to identify predictors of reinfection.

Results: From 1991-2001 13,326 gonococcal infections were reported among 11,165 individuals and 1,567 (14%) persons with 2 or more infections accounted for 3,728 (28%) infections. Median time to first reinfection was 405 days. In univariate analysis, reinfection was associated with being black compared to white (HR=1.5, 95%

CI:1.3-1.6), first diagnosis in STD clinics versus elsewhere (HR=1.1, 95% CI:1.03-1.3), and first diagnosis at age less than 18 years (HR=1.8, 95% CI:1.6-2.0). Gender was not associated with reinfection in univariate analyses. (HR for women: 1.0, 95% CI:0.9-1.1). However, in age-stratified multivariate analysis, among persons less than 18 years of age, blacks (HR=2.2, 95% CI:1.7-2.9) and females (HR=1.6, 95% CI:1.2-2.1) were at increased risk. Among persons 18 years of age or older, blacks (HR=1.3, 95% CI:1.1-1.4) were at increased risk and men were less likely than women to be reinfected within a year of first infection (HR=0.82, 95% CI:0.69-0.99), but the relative hazard for reinfection for men increased 21% with each subsequent year (HR=1.21, 95% CI:1.12-1.30). Median times to reinfection for women and men greater than or equal to 18 years of age were 278 and 462 days, respectively.

Conclusions: Fourteen percent of persons with gonorrhoea accounted for 28% of reported cases. Interventions to reach blacks and female adolescents at first diagnosis would address those at greatest future risk of gonococcal reinfection.

WO-005 INVESTIGATION OF STEADY AND EPIDEMIC INCREASES IN GONORRHEA IN CALIFORNIA, 1999-2004

M.C. Samuel¹, J. Chase¹, M. Lundberg², S. Cody³, T. Livermore⁴, D. Gilson¹, K O'Brien¹, G Bolan¹

¹ California Department of Health Services, Oakland, United States of America

² Butte County Health Department, Oroville, United States of America

³ Santa Clara County Health Dpt., San Jose, United States of America

⁴ Merced County Health Depart., Merced, United States of America

Objectives: In California, gonorrhoea (GC) case rates increased 7% per year from 1999 to 2003 – cases increased in all demographic groups. Further, cases increased 590% in Butte County between 2002 and 2003, and by >75% in 6 contiguous central California counties between Jan-June 2003 and 2004. Investigations were initiated to understand these increases.

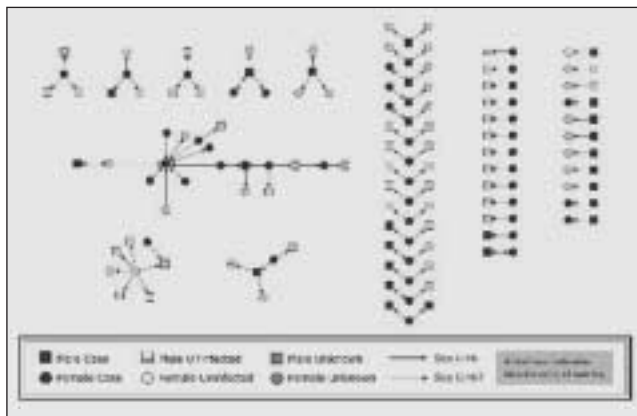
Methods: Three GC investigations collecting risk and clinical data were conducted: A) Enhanced gonorrhoea surveillance: interviews with ~1400 GC cases from 7 large counties in 2004; B) Butte County outbreak investigation: case-series interviews and sexual network analysis in 2003; C) 6-County outbreak investigation: case-series interviews in 6 counties in 2004.

Results: Enhanced gonorrhoea surveillance found 13% (1% to 31% across the 7 sites) of cases were men who have sex with men (MSM); the 6-County outbreak investigation found 12% MSM. In the Butte County investigation no MSM cases were reported. In enhanced surveillance, the Butte outbreak, and the 6-county outbreak, methamphetamine use was common (12%, 19%, 29% respectively) and did not vary by gender. Incarceration history for heterosexual males (33%, 46%, 34%) and partner incarceration for females (36%, 46%, 41%) was common. Many female cases reported being pregnant (18%, 24%, 30%). Exchange of sex for drugs/money was uncommon (<7%, each investigation).

In the outbreaks, no common venues for meeting partners were found. Network analysis in Butte revealed one key sexual network (see Figure) that was diverse with respect to race/ethnicity, age, and gender.

In enhanced surveillance, fluoroquinolones, no longer recommended in California, were used for 12% of cases.

Conclusions: Gonorrhoea has increased steadily and, in some areas, rapidly in California. A range of factors have been identified that are being incorporated into targeted prevention efforts.



Sexual network diagram - Butte County outbreak '03

WO-006 RAPID DETECTION OF QUINOLONE RESISTANT *N. GONORRHOEAE* IN REMNANT CLINICAL SPECIMENS PROCESSED BY NUCLEIC ACID AMPLIFICATION TESTING

JG Giles¹, A.J.H. Hardick¹, T. Smith¹, K. Reich², J. Yuenger¹, L. Rauch³, C. Kent³, C. Gaydos¹, J. Zenilman¹

¹ Johns Hopkins University, Laurel, United States of America

² IFI, Chicago, United States of America

³ SFO Dpt. of Public Health, San Francisco, United States of America

Background/Objective: Fluoroquinolone resistance in *N. gonorrhoeae* (GC) is attributed to stepwise point mutations in two quinolone resistance determining regions (QRDRs) within the *gyrA* and *parC* genes. Susceptibility is associated with wild type genotype. Nucleic acid amplification tests (NAATs) frequently are used to diagnose GC. Because viable organisms cannot be obtained, phenotypic resistance cannot be evaluated using NAAT samples. Using previously designed molecular probes for detecting QRDR mutations in GC, our field evaluation utilizes remnant NAAT samples, collected from a population with known fluoroquinolone resistance, to detect genotypic resistance determinants in GC without culture.

Methods: 54 GC positive (GC+) and 6 GC negative (GC-) NAAT samples were evaluated in this study. Urine samples were collected from May-July 2003 in San Francisco, CA, tested for GC using NAATs, and frozen. QRDRs were amplified by PCR, and melt curves analyzed with QRDR specific fluorogenic probes and the Roche LightCycler. QRDR sequences were compared to melt curve results.

Results: No melt curves were detected for any GC-samples. Melt curves were inconclusive for 5 GC+ samples, and a retest by the same NAAT assay was negative, indicating probable DNA degradation. 31/49 (63%) GC+ samples had wild type QRDRs, and 18 (37%) had mutations in one or both QRDRs. Melt curves identified 14 samples with mutations in both *gyrA* and *parC*, 2 with mutations in *gyrA* alone, and 1 with mutations in *parC* alone. QRDRs were sequenced for 28 samples (18 wild type by melt); melt curves correctly classified 54/56 (96%) QRDRs. No unprecedented or synonymous mutations were identified.

Conclusions: QRDR mutations can be detected in urine samples and detection from remnant clinical samples is feasible. This method can

potentially facilitate rapid retrospective and prospective resistance tracking and surveillance in the NAAT testing era.

SESSION: O-017 - CONTROL STRATEGIES AND TREATMENT OF STI

WO-101 THE PREVALENCE OF PROLINE IMINOPEPTIDASE NEGATIVE *N. GONORRHOEAE* THROUGHOUT ENGLAND AND WALES

S.M. Alexander, I. Martin, C. Murphy, H. Patel, M. Perault, K. Fenton, C. Ison
Health Protection Agency, London, United Kingdom

Objectives: Proline iminopeptidase negative (pip-) *N. gonorrhoeae* isolates have been shown to generate false negative identifications using biochemical kits; this study aimed to determine the frequency of these isolates throughout England and Wales.

Methods: Isolates collected from consecutive patients attending 26 centres throughout England and Wales over a three month period during 2004 were submitted to the sexually transmitted bacteria reference laboratory for testing. Upon receipt purity was confirmed and the identity of all isolates was established using *N. gonorrhoeae* specific monoclonal antibodies. The pip status of a total of 2056 isolates was determined using the Gonocheck II kit.

Results: The detection of pip activity is used in clinical microbiology as a marker for gonococci. This study examined 2056 isolates and determined the overall prevalence of pip- *N. gonorrhoeae* to be 4.52%. Significant geographical variation was observed in the frequency of pip- *N. gonorrhoeae* isolates submitted from centres outside of London ($p = <0.0001$: Table one). Prevalence variation was also observed within London, between the nine different clinics submitting isolates, to a lesser but still significant degree ($p = 0.02$).

Conclusions: This study has highlighted that 4.52% of *N. gonorrhoeae* strains isolated throughout England and Wales lack the pip enzyme. This is a very serious cause for concern as currently all commercially available biochemical test kits require the presence of this enzyme for an unambiguous identification of this pathogen. Raising awareness of the current prevalence of pip- *N. gonorrhoeae* isolates is critical for the successful control of gonorrhoea.

Region (no. of isolates tested)	pip (%)
Birmingham (107)	2.80
Brighton (56)	17.86
Bristol (129)	10.08
Cambridge (14)	21.43
Cardiff (72)	0
Gloucester (19)	0
Leeds (88)	4.65
Liverpool (103)	2.91
London (977)	4.61
Luton (33)	0
Manchester (112)	5.36
Newcastle (35)	0
Newport (25)	0
Northampton (19)	0
Nottingham (101)	2.97
Reading (37)	0
Sheffield (102)	2.94
Wolverhampton (29)	0

Table 1: The prevalence of proline iminopeptidase negative *N. gonorrhoeae* in Eighteen Cities throughout England and Wales

WO-102 THE COST-EFFECTIVENESS OF PATIENT DELIVERED PARTNER TREATMENT (PDPT) FOR FEMALE PARTNERS OF MEN WITH URETHRITIS COMPARED TO TWO ALTERNATIVES: NEW ORLEANS, 2001-2004

T.L. Gift¹, T.A. Farley², J.S. Leichter¹, P. Kissinger²

¹ Centers for Disease Control, Atlanta, United States of America

² Tulane University, New Orleans, United States of America

Objectives: To determine the cost-effectiveness of PDPT compared to booklet-enhanced partner referral (BEPR) or standard partner referral (PR) for partners of men with urethritis identified in an STD clinic.

Methods: Men with urethritis and lab-confirmed chlamydia or gonorrhea were randomized to one of three interventions. Men randomized to PR were instructed to tell their partners to seek examination and treatment. Men randomized to BEPR were given cards for their partners noting STD exposure, recommended treatments, and a recommendation to seek treatment. Men randomized to PDPT were given partner packs for up to four partners containing medication and instructions. Staff cost for each intervention was measured directly and combined with literature estimates of sequelae costs and cost of care for re-infected male patients and their female partners to determine the total program cost associated with each intervention. We conducted cost-effectiveness analyses from program and health care system perspectives using the number of female partners treated as the outcome. Analyses were restricted to men who reported four or fewer partners.

Results: On average, patients reported 2 female partners (median 2). The program cost of PDPT per index patient (\$63) was lower than the equivalent cost for PR (\$78) or BEPR (\$76). PDPT resulted in treating more partners per index patient (1.4) than BEPR (0.9) or PR (0.8). The cost per partner treated for PDPT (\$45) was less than PR (\$93) or BEPR (\$85). This was primarily due to fewer health care visits by partners in the PDPT intervention. PDPT was also less costly than PR or BEPR when averted sequelae costs were considered. **Conclusions:** PDPT had lower overall cost and was more cost-effective than the other two interventions.

WO-103 CAN THE INTERNET BE USED TO FACILITATE SCREENING FOR CHLAMYDIA TRACHOMATIS BY REACHING NON-CLINIC POPULATIONS?

A. Gaydos¹, M. Barnes¹, K. Dwyer², P. Rizzo-Price¹, B.J. Wood¹, T. Flemming³, T. Hogan¹

¹ Johns Hopkins University, Baltimore, United States of America

² Thomas Jefferson University, Philadelphia, United States of America

³ Baltimore City Health Department, Baltimore, United States of America

Objectives: To encourage women to learn about chlamydia and use a home-sampling kit via the Internet. Testing for CT, using self-administered vaginal swabs (SAS) by nucleic acid amplification tests (NAATs) is acceptable and accurate. **Methods:** An educational CT website www.iwanthekit.org was designed using information from focus groups. Kits consisted of instructions, swab, contact information, questionnaire, consent form, and postage-paid return mailer. Questionnaires could also be taken on the Internet. Users mailed the packaged dry SAS to the laboratory. Swabs were tested by 3 different NAATs (2 positive tests required for confirmation).

Respondents called for results in 1-2 weeks with their kit number and password. Infected women selected a clinic, to which results were faxed, for treatment. Results: A total of 1,254 kits were placed in the community for pick-up. Additionally, 1,168 kits were requested (97.2% by website email, 2.7% by phone) and mailed to households. Of submitters (N=400): 87.5% requested kits by email, 7.8% by phone, and 3.4% were community-obtained. Of swabs returned by mail, 41/400 (10.25%) were CT positive, of whom 39 (95.1%) were treated. The median age of SAS users was 23 yr (range 14-63 yr). Of participants, 65.5% were Black (prevalence 13.7%); 26% White (prevalence 2.9%); 3.3% 'Other-Race' (prevalence 15.4%); 5.3% Asian, multi-race, Native American, or not reported (prevalence 0%). By questionnaire from submitters, 75.8% preferred to collect her own sample. For method: 54.3% preferred SAS, 8.8% preferred urine, 12.8% preferred either SAS or urine, 12.8% preferred pelvic exam. 87.8% thought SAS was safe; 90.5% rated collection easy/very easy; and 86.3% would use the Internet again. **Conclusions:** Women will use the Internet and email to request and use free home sampling kits for CT testing. High CT prevalence was observed. The Internet may facilitate testing at-risk women who do not attend clinics.

WO-104 COMPARISON OF SOCIAL NETWORK CHARACTERISTICS BETWEEN INCIDENT SYPHILIS AND GONORRHEA CASES

A.M. Rompalo¹, C Wylie¹, J. Scott¹, L Borkovic¹, C Latkin²

¹ Johns Hopkins School of Medicine, Baltimore, MD, United States of America

² Bloomberg School of Public Health, Baltimore, MD, United States of America

Objective: This study examined difference in social network characteristics between syphilis and gonorrhea (GC) cases who were interviewed in the Baltimore City Health Department STD clinics.

Methods: 139 index primary, secondary and early latent syphilis cases and 111 index GC cases were administered a social network and risk survey. 11 cases had both syphilis and GC and were excluded from the analyses. The social network inventories delineated their social support and drug and sexual risk networks. Syphilis was diagnosed by positive darkfield microscopic examinations and/or reactive serologic tests for syphilis. GC was diagnosed by either positive culture or nucleic acid amplification testing.

Results: In the bivariate analyses there was a strong statistical association between size of drug network (as defined as individuals in the networks who injected cocaine, crack, or heroin) and syphilis. Even after adjusting for individuals' own use of crack cocaine and heroin, gender, age, and number of sex partners in the prior 90 days, there was a strong association between having drug users in one's network and being a syphilis case. For each additional drug user in the network, individuals were more than twice as likely to be infected with syphilis as compared to GC (OR= 2.03, p<.01).

Conclusions: The results of this study suggest that syphilis is associated with individuals who are in drug using networks. Consequently, to eradicate syphilis in this urban US population, it is critical to target the social linkages within drug use and disease transmission networks

WO-105 ASSESSMENT OF THE ROUTINE SCREENING PROGRAM FOR STI IN OCCUPATIONAL GROUPS IN MOSCOW, RUSSIA: COST-EFFECTIVENESS ANALYSIS

E. Kourbatova¹, V. Akovbyan², H. Chesson³, I. Lytkina⁴, G. Dmitriev⁵, L. Tikhonova⁶, A. Koubanova⁷, J. Lewis⁸, A. Shakarishvil³, The STI Screening Project Team⁶

¹ Emory University School of Medicine, Atlanta, United States of America

² Gamaleya Research Inst. of Epidemiology, Moscow, Russian Federation

³ Centers for Disease Control, Atlanta, United States of America

⁴ Center Sanitary & Epi Surveill, Moscow, Russian Federation

⁵ Institute of Epidemiology & Microbiology, Moscow, Russian Federation

⁶ Central Institute Skin and Ven. Diseases, Moscow, Russian Federation

⁷ Central Institute Skin and Ven Diseases, Moscow, Russian Federation

⁸ McKing Consulting Corporation, Atlanta, United States of America

Objectives. In Russia large sectors of the population regularly undergo mandatory occupational screening for STIs. Objectives of our study in Moscow were to determine the prevalence of syphilis and Neisseria gonorrhoeae infections among the screened occupational groups, and to conduct cost-effectiveness evaluation of the occupational screening program.

Methods. Serum samples from four main occupational groups (food industry workers; market salespersons; education and health care providers; hotel and other public utility workers) were tested for syphilis using Rapid Plasma Reagin (Becton Dickinson, Franklin Lakes, NJ, USA) and Treponema pallidum Particle Agglutination Assay (Fujirebio Diagnostics, Malvern, PA, USA). We tested urine samples using ProbTech ET DNA (Becton Dickinson) for N. gonorrhoeae detection. We conducted cost-effectiveness analysis of the ongoing STI screening program using decision analysis models.

Results. In the total sample of 1,000 participants, overall prevalence for syphilis and N. gonorrhoeae was 1.2% and 0.3%, respectively. Over 3.0% of men and 0.5% of women had syphilis. No men and 0.4% of women had N. gonorrhoeae infection. Based on the overall prevalence rates, the base case analysis indicated that screening of a hypothetical cohort of 10,000 employees would lead to the detection and treatment of additional 44 syphilis cases, 6 cases of N. gonorrhoeae in men, and 13 cases of N. gonorrhoeae in women, compared to the no-screening option. Net programme costs of simultaneous screening for syphilis and N. gonorrhoeae were 662,000 rubles [1 Russian rouble = 0.03 US dollars] in men and 643,000 rubles in women with the cost per STI case detected and treated of 13,240 rubles in men and 11,280 rubles in women.

Conclusion. Occupation-based STI screening is not a cost-effective use of resources for STI prevention in Moscow. Recommendations are made to change STI screening practices and redirect efforts towards high risk populations and other more cost-effective interventions.

WO-106 THE COMPETENCE OF PHARMACY STAFF IN MANAGING STDS OF SELF-MEDICATING PATIENTS IN NAIROBI

*A. Kwena, A. Sharma, C Muga, N Wamae, E Bukusi
Kenya Medical Research Institute, Nairobi, Kenya*

Objectives: Slum-dwellers often first seek allopathic care from pharmacy staff with symptoms of sexually transmitted infections (STIs). We assessed the competency of pharmacy staff in the Kibera slum of Nairobi in syndromically managing two common STIs among men.

Methodology: Two participant-observers posed as mystery patients with classic symptoms of either gonorrhoea or genital ulcer disease (GUD) at 50

pharmacies randomly chosen from the total of 150 identified in Kibera. They recorded their observations and recommended treatment after leaving the pharmacy on a prepared record sheet. Data were analyzed using descriptive statistics.

Results: In most of the pharmacies (97%), the staff asked questions; 25% of the questions were on the onset of the disease and the health of the sexual partner. Approximately 60% correctly diagnosed the case presented for gonorrhoea but only three (6%) gave the government recommended treatment in the correct dosage. More pharmacy staff (81%) correctly diagnosed the presentation of ulcers as either syphilis and/or chancroid but did not categorize these conditions as GUD. Only one pharmacy (2%) gave the recommended first line treatment but diagnosed it as 'gonorrhoea'. One other pharmacy labeled the condition 'chancroid' and offered the recommended alternative for patients allergic to penicillin. For both conditions, 89% of pharmacy staff agreed to sell either half the suggested doses of all medicines or sell one medicine at full dose with the balance to be sold when the patient could afford.

Conclusion: With between 60-80% of the pharmacy staff correctly diagnosing two common STIs and only about 10% suggesting correct treatment without the insistence of complete dosage administration, slum dwellers seeking care from pharmacy staff are at an increased risk of STI related morbidity and transmission due to inappropriate or inadequate treatment.

WO-107 EXPEDITED PARTNER THERAPY: DEVELOPMENT OF NATIONAL GUIDANCE FOR THE UNITED STATES

H.H. Handsfield¹, M. Hogben², W.J. Newhall²

¹ University of Washington, Seattle, United States of America

² CDC, Atlanta, GA, United States of America

Objectives: To describe the development of guidance by the Centers for Disease Control and Prevention (CDC) for use of expedited partner therapy (EPT) in the United States and summarize the elements of CDC guidance.

Methods: Literature review and expert consultation.

Results: In most settings, public health assistance is not available for partner management of persons with gonorrhoea (GC) or chlamydial infection (CT), and many partners are not treated. EPT is treatment of partners of persons with STD without an intervening clinical evaluation, typically through delivery of medication or a prescription by the index patient. EPT is used occasionally by many health care providers and frequently by a few. Barriers to EPT include legal restrictions in some states, the possibility of other STD in partners, and several structural and attitudinal impediments. With consultants from the public and private sectors, CDC reviewed two published randomized controlled trials (RCTs) of EPT, two unpublished RCTs, and other data to assess the strength of evidence to support EPT for GC, CT and other STDs, and to address barriers and potential solutions. The consensus of the consultation was that: 1) Among heterosexual men and women with GC or CT, EPT is an effective strategy to facilitate partner treatment, prevent index case reinfection, and reduce behaviors that foster reinfection. It should be used with caution in MSM and in women with trichomoniasis. 2) EPT should be accompanied by advice that partners (especially women) seek care, especially if symptomatic. 3) Most barriers to EPT must be addressed locally, a process that will be aided by national guidance.

Conclusions: EPT is a useful additional partner management strategy that may be employed for GC and CT where barriers do not preclude its use. EPT does not replace any other partner management strategy.

SESSION: WS-001 - ADVANCES IN THE BIOLOGY OF GENOTYPING OF NEISSERIA GONORRHOEAE**MW-001 CELL DIVISION PROTEINS OF NEISSERIA GONORRHOEAE AND THE COMPLEX BACTERIAL CYTOSKELETON**

J.A.R. Dillon

University of Saskatchewan, Saskatchewan, Canada

A combination of genomic, mutagenesis and fluorescence imaging strategies have elucidated genes implicated in cell division in *Neisseria gonorrhoeae*, and, in some instances, their complex functions. The key FtsZ protein, a tubulin homologue, is part of the highly conserved division cell wall island and the first cytoskeletal element identified in bacteria. Gonococcal FtsZ localizes to the midcell in both *E. coli* and *N. gonorrhoeae* and defines the cell division plane in the gonococcus. The placement of FtsZ at the midcell is, in part, specified by the Min (minicell) proteins MinC, MinD and MinE. All three proteins oscillate from one end of the cell to the other and, in the case of cells which divide in alternating perpendicular planes, as does *N. gonorrhoeae*, the oscillation plane also changes. The Min proteins are important for normal gonococcal cell division. MinC depolymerises FtsZ, thereby inhibiting cell division. MinC binds to the ATPase MinD, which reversibly associates with the membrane. This membrane association is regulated by MinE, which induces the release of MinC as well as stimulating the ATPase activity of MinD, causing the latter to dissociate from the membrane. The time averaged concentration of oscillating MinD and MinC is lowest at midcell, thereby allowing FtsZ to form a cytokinetic ring and initiate the cascade of cell division proteins. Interestingly, the gonococcal Min proteins form a helical array in both round and rod-shaped *E. coli* cells, indicating that they contribute to the bacterial cytoskeleton. Thus, these cell division proteins have important roles in dynamic localization as well as contributing to subcellular architecture.

MW-002 POPULATION GENETICS OF N. GONORRHOEAE IN AN URBAN COMMUNITY WITH ENDEMIC GONOCOCCAL INFECTION

R.P. Viscidi

Johns Hopkins Univ. School of Medicine, Baltimore, United States of America

Population genetics is important for understanding evolutionary history and can have applications in epidemiology and public health. Gonococcal populations can be viewed globally or at a smaller scale. Within a community, the genotype of circulating strains can fluctuate over time due to partially protective immunity, introduction of new strains, exposure to antibiotics, and random genetic drift. We studied gonococcal population genetics in Baltimore, MD, an urban community with a high prevalence of gonorrhoea, by analyzing the outer membrane porB gene and 13 housekeeping genes from 204 isolates collected in 1991, 1996, and 2001 from male and female clients of two public STD clinics. We estimated several population parameters including sequence polymorphism, genetic diversity (q), recombination (C), growth (g), population structure, and adaptive selection. The housekeeping genes exhibited lower levels of polymorphisms, genetic diversity and recombination than the porB gene. Recombination played a relatively greater role than mutation in evolution of housekeeping genes, while mutation played a greater role than recombination in the evolution of the porB gene. Adaptive selection appeared to be operating in porB sequences, consistent

with the known selective pressure exerted by the immune system and antibiotic treatment. However, we also found many loci in the housekeeping genes under adaptive selection. Amino acid mutations at residues 120 and 121 of the porB gene (mutations to Asp and/or Lys), shown to confer resistance to penicillin and tetracycline, were found in 68 (40.5%) of homology group B porB sequences. The antibiotic resistance genotype was found significantly more often in isolates from women (64%) compared to men (37%) ($P=0.022$). Although MLST and porB sequences showed no phylogenetic structure based on year of collection, analyses of allele frequencies showed significant population differences among years. Furthermore, positive growth (g) levels for MLST and porB sequences indicated that the *N. gonorrhoeae* population has been growing from 1991 to 2001. This growth may reflect a number of demographic changes that have occurred in Baltimore from 1990-2000.

MW-003 CELL SIGNALING IN NG

M. Koomey

Geen Abstract

MW-004 A UNIFIED NEISSERIA MULTILOCUS SEQUENCE TYPING SCHEME: INSIGHTS INTO NEISSERIA GONORRHOEAE BIOLOGY

M.C.J. Maiden, J.S. Bennett

University of Oxford, Oxford, United Kingdom

Objectives: To adapt the *Neisseria* multilocus sequence typing (MLST) scheme, originally developed for *Neisseria meningitidis*, to enable the routine characterisation of *N. gonorrhoeae* isolates. Further, to validate the MLST scheme with a bank of diverse gonococcal isolates, and to examine the genetic diversity within gonococcal populations. Finally to use these data investigate the relationships among various *Neisseria* species.

Methods: A total of 149 gonococcal isolates were obtained, comprising: 58 from Liverpool, England, collected between 1981-1989; 38 from Liverpool (2000-2001); 41 collected worldwide; and 12 AHU negative isolates. All isolates were sequence typed using the same gene fragments described in the MLST schemes for *N. meningitidis* and *N. lactamica* and currently being used to sequence type other *Neisseria* species.

Results: MLST data indicated very low diversity within *N. gonorrhoeae*. Although 66 sequence types (STs) could be defined, low numbers of polymorphisms were detected, ranging from one segregating site in the aroE gene fragment to seven in the fumC fragment. The high number of STs observed were a result of high levels of recombination among gonococci. All the AHU negative auxotypes analysed were a single ST, ST-1595 with the exception of a single isolate, with a single polymorphism in the gdh fragment. **Conclusions:** MLST provides useful in discrimination among *N. gonorrhoeae* isolates. Further all of the AHU negative strains examined belonged to a distinct clone. The data obtained have also provided insights into the evolutionary relationships among the *neisseria* species, indicating that the gonococcus probably originated as a single clone arising from ancestral population common to *Neisseria meningitidis* and *Neisseria lactamica*. Strains were kindly provided by our collaborators: C.A. Hart, N.J. Saunders, P.F. Sparling.

SESSION: WS-002 - STI PREVENTION: THE LIFE-COURSE PERSPECTIVE**MW-101 THE EVIDENCE BASE: DOES IT IMPROVE WITH AGE?***S. Berman¹, S. Ara²*¹ CDC, Atlanta, GA, United States of America² Division of STD Prevention, Atlanta, GA, United States of America

Objective: Division of STD/CDC in the US supports programs targeting three STDs, syphilis, gonorrhea, and chlamydia. These programs differ in longevity. However, duration may not correlate with strength of the evidence base informing the program.

Method: Review of published guidelines/literature

Results: The Venereal Disease Division was created in 1918 by Congress when syphilis became a recognized problem; the National Venereal Disease Control Act, passed in 1938, targeted syphilis with the model that basically remains in use. National gonorrhea control was initiated in 1972, and the national chlamydia prevention program in 1994.

Treatment: 1993 review of syphilis treatment cited limited evidence about treatment efficacy. 5 subsequent randomized clinical trials were identified, but only 1 enrolled >100 subjects; during that time (post-1993), over 15 RCTs addressing gonorrhea were published, with >35 published in the previous decades. Over 20 RCTs addressing chlamydia were published in the past 20 years.

Diagnostics: Similar trends were identified in terms of evaluations of diagnostic tests; in the last decade, almost 50 published papers evaluated diagnostic tests for syphilis, with a similar number addressing gonorrhea, while over 170 addressed chlamydia.

Screening: The US Preventive Task Force indicates that all pregnant women should be screened for syphilis, along with those at 'high risk' (e.g., men who have sex with men, commercial sex workers, adults in correctional facilities); although gonorrhea screening is recommended for women (including those pregnant) at high or increased risk for gonorrhea, additional specificity is lacking; routine chlamydia screening is recommended for all sexually active women (including those pregnant) <= 25 years.

Conclusions: The evidence base informing prevention programs does not appear to correlate with longevity; as programs age, and the disease entity comes under control, decreasing additional scientific guidance may be available.

MW-102 RESOURCE ALLOCATION AND PROGRAM EVALUATION CONSIDERATIONS: SAFE ROADS OR SAFE SEX*M. Over¹, M. Lundberg¹, S. Bautista², S. Bertozzi², D. De Walque¹*¹ World Bank, Washington, DC, United States of America² Natl. Inst. of Public Health, Cuernavaca, Mexico

Traffic accidents and sexually transmitted diseases have several things in common. Both are the result of risk-taking in pursuit of rewards. Like driving or riding in a car, sexual activity can be its own reward, but is often done in order to achieve other objectives, which might be economic or social. The fact that driving is both risky and rewarding leads society to be quite permissive in its attitude to risky driving, legalizing speed limits far in excess of the accident minimizing value (which might be 25 mph). But societies strike different balances between safety and the rewards from higher speed. The same is true of sexual activity, with some societies

willing to tolerate (if only by turning a blind eye to) a greater degree of risk than others. Interventions like freely available condoms or STI treatment are comparable to guard-rails, or separated restricted-access highways: At substantial social expense, they allow us to have our sex or speed without increasing our risk. Furthermore, these interventions redistribute the cost of risk away from the high risk takers who are unlucky to the average taxpayer. Yet, despite this similarity, in many societies there seems to be much more willingness to spend taxpayer money on safer highways than on safer sex, leaving the latter to the pocket of the individual risk taker and his or her partner. This presentation will examine the costs and benefits of social investments in safer sex and suggest that societies behave irrationally when they restrict subsidies to safer sex.

MW-103 FROM EFFICACY TO EFFECTIVENESS*C. Rietmeijer**Denver Public Health Department, Denver, United States of America*

Objectives: The efficacy of an intervention is usually determined by evaluation in controlled, often academic settings. Effectiveness can be defined as the performance of the intervention in the 'real world'. We describe the process by which model interventions and best practices are adopted by providers of STD/HIV prevention services. **Methods:** Illustrated by case studies, steps in the adoption process are identified and critically appraised. Drawing from field experience and effectiveness literature, we suggest changes that may lead to improvements in this process.

Results: The following steps in the adoption process are identified: 1) Identification of efficacious interventions (evaluated under optimal conditions in controlled trials); 2) Replication and Demonstration projects (testing of the intervention in less controlled circumstances); 3) Dissemination/Scale-Up and Translation (through publications, presentations, marketing, funding contingencies, training, capacity building); 4) Adaptation and Tailoring (involving providers and target audience in the implementation of the practice, while maintaining a necessary level of fidelity to the intervention); 5) Evaluation (assessing outcomes at the provider level); 6) Maintenance (identification of resources, incorporation in standard of care, clinic protocols). Currently, the adoption process often follows these steps in a linear fashion. This has several drawbacks. By not involving the end-users in the early phases of academic development, many interventions end up being too costly and impractical for wide dissemination. In current practice, the adoption process is often lengthy and interventions may be outdated by the time they reach providers.

Conclusion: The relevance of prevention interventions is determined by their adoption in prevention practice. Involvement of providers and target audiences in the academic development of interventions closes the loop with academia as well as upper echelons in the public health system, leading to a new 'effectiveness' rather than 'efficacy' research paradigm

MW-104 POLICY CHALLENGES

A.M. Johnson

Royal Free & University Coll Med School, London, United Kingdom

Objectives: To discuss the inter-relationships between the evidence-base for effective interventions and the factors that influence whether and how, evidence is translated into policy.

Content: This overview paper will draw on a range of examples from the sexual health field including behavioural interventions, condom programmes, Chlamydia screening, introduction of HAART:

- (Cost)-effective interventions that are not implemented
- Public health interventions that are implemented without evidence of effectiveness (but which may be effective)
- Interventions implemented with evidence of non-effectiveness
- Effective interventions that are implemented (but not necessarily in a timely manner)

These policy outcomes are influenced by a range of factors in which the science-base is only a piece. Political and economic factors, infrastructure, health inequalities, timeliness, political lobbying, individual and group leadership, power relationships, and commercial interests are major influences as to whether research is either conducted or used to public health gain. Trade-offs between interventions are also evident within the field such as the unexpected impacts of interventions on other public health outcomes. This paper will consider the factors associated with achieving policy change with demonstrable public health gain.

SESSION: WS-003 - LGV OUTBREAK IN EUROPE**MW-201 LGV OUTBREAKS IN EUROPE**M.J.W. van de Laar¹, M. Herida², N. MacDonald³, H.J. de Vries⁴, B. de Barbeyrac⁵, C. Ison³¹ Nat. Inst. for Public Health & the Env., Bilthoven, Netherlands² Inst. Nat. de Veille Sanitaire, Paris, France³ Health Protection Agency, London, United Kingdom⁴ Municipal Health Service, Amsterdam, Netherlands⁵ Nat. Ref. Centre for Chlamydia, Bordeaux, France

Objectives: In January 2004 health authorities in The Netherlands launched a European alert concerning a LGV-outbreak among men who have sex with men (MSM). LGV is caused by Chlamydia trachomatis serovars L1 to L3. In the Netherlands enhanced surveillance was started soon after the early reports. France began enhanced surveillance in March 2004 and the UK in October 2004.

Methods. Reported clusters of LGV are studied in addition to an analysis of cases from France, Netherlands and United Kingdom. Epidemiological data is used from reported LGV cases of GUM clinics and laboratory reports (UK), STI clinics (FR, NL), municipal health services (NL) and retrospective evaluation of cases (FR, NL).

Results: In the Netherlands 144 confirmed cases of LGV have been reported. During 2002/2003, 65 cases were confirmed retrospectively. In 2004, 71 cases were reported, 8 by March 2005, the majority from Amsterdam. In France 142 confirmed cases of LGV were identified: 21 cases were identified retrospectively in 2002/2003, 104 cases were reported in 2004, 17 by March 2005, mainly in Paris and Bordeaux. In the UK, 34 confirmed cases had been reported by March 2005 (8 retrospective), the majority from London. Only small clusters of cases were reported from other European countries. Most patients

presented with rectal pain, proctitis, anal discharge, tenesmus or constipation. Seroconversion for HIV and HCV was demonstrated in The Netherlands. The majority of LGV-cases were HIV positive, with prior STD, all reported a variety of sexual risk behaviours and numerous anonymous partners.

Conclusion: LGV-outbreaks were notified in high risk groups in MSM. The reported number is undoubtedly a minimum estimate of disease occurrence. LGV has occurred in a network of MSM throughout the world. Consequences for HIV transmission are yet unclear. Health authorities in Europe and the US should be aware of the problem.

MW-202 IMPLEMENTING NATIONAL LGV SURVEILLANCE

S. Berman, C. McLean, H. Lindstrom, H. Weinstock

CDC, Atlanta, GA, United States of America

Background: Outbreaks of lymphogranuloma venereum (LGV) causing proctocolitis among men having sex with men (MSM) have been identified in industrialized countries. In the US, national surveillance for occurrence of LGV is needed.

Methods: Review of approaches/challenges to implementing LGV surveillance.

Results: Disease surveillance is primarily the responsibility of state and local health departments who, in turn, provide case reports to the CDC. While still reportable in 24 states, LGV has not been a nationally reportable condition since 1997 and the case definition in use reflects classical LGV presentations (i.e., genital ulceration, buboes, etc), but doesn't describe sufficiently the syndrome occurring among MSM. Furthermore, the case definition used locally requires diagnostic tests (e.g. serologic) that aren't available in many areas in the US and which haven't been validated for current clinical contexts (i.e., MSM with proctocolitis). Diagnostic approaches, which provide genotyping on rectal specimens identified by nucleic acid amplification tests (NAAT) as positive for chlamydia, are not performed by public health laboratories used by state health departments. Major obstacles to LGV surveillance include: a) Clinicians are unaware that proctocolitis can be caused by LGV; b) Specific tests for LGV are not widely available; c) NAAT testing for chlamydia is not approved for use on rectal specimens; d) In the 24 states where LGV reporting is required, case reports are based on definitions which are less relevant for current LGV presentations among MSM and do not reflect state of the art testing now available; e) making state-of-the-art diagnostic technology available requires capacity and expertise that is not currently available at the local level.

Conclusion: National surveillance is being implemented in the US despite the challenges. Developing local LGV and rectal CT diagnostic capacity is critical.

MW-203 CLINICAL EPIDEMIOLOGY; CASE MANAGEMENT

H.J.C. de Vries¹, J.S.A. Fennema¹, J. Spaargaren¹, A. van der Bijl¹, S.A. Morr e², R.A. Coutinho³

¹ Municipal Health Service, Amsterdam, Netherlands

² Immunogenetics Laboratory VUmc, Amsterdam, Netherlands

³ Nat. Inst. for Health & the Environment, Bilthoven, Netherlands

Objectives: Recently, outbreaks of lymphogranuloma venereum (LGV) among MSM have been reported in western countries. We started a prospective, case-controlled study among MSM who visit the STI outpatient clinic in Amsterdam, NL and evaluated risk factors for LGV.

Methods: MSM with clinical signs of proctocolitis, genital ulcers or buboes were included. Apart from routine STI screening, proctoscopic swabs, genital ulcers and buboes were screened for *T. pallidum*, HSV, and *C. trachomatis* with PCR tests. If *C. trachomatis* was detected, sequencing was performed for serovar typing. LGV patients (cases) were compared with non-chlamydia proctitis patients (controls). Upon inclusion, questionnaires on risk behaviour were filled out. Significance was evaluated using Fishers' Exact test.

Results: 26 patients were included; 11 with LGV (7 anorectal and 4 inguinal, all serovar L2b) and 15 controls. Of the cases 6/11 were HIV+, 2/11 HIV-, and 3/11 HIV status is yet unknown. 11/15 controls were HIV+ and 6/15 HIV-. All reported sex with males; 3/11 cases and 1/15 controls also had sex with females. 6/11 cases vs 2/15 controls used enemas ($p=0.03$). Fisting and anal use of toys was not significantly different between cases and controls (resp. 2/11 vs 5/15 and 6/15 vs 4/11). Moreover, frequenting sites for anonymous sex like clubs/darkrooms, outdoor venues, sex parties, and internet dating did not differ statistically significant between cases and controls, nor did having sex (with someone from) abroad.

Conclusions: These preliminary results based on small numbers show that 1) in the recent LGV outbreak a substantial number of cases (4/11) present with inguinal LGV. Therefore, both MSM presenting with genital ulcerations and/or signs of proctocolitis should be evaluated for LGV. 2) 3/11 LGV cases had sex with both men and women which makes transmission outside the MSM community possible. 3) Enema use seems associated with LGV. It is speculated that breakdown of the mucosal barrier facilitates the transmission of LGV. 4) Fisting and anal use of toys seems not associated with LGV. 5) HIV is associated with proctitis irrespective of LGV infection.

MW-204 THE LABORATORY DIAGNOSIS OF LYMPHOGRANULOMA VENEREUM (LGV)

R.C. Ballard

Centers for Disease Control & Prevention, Atlanta, Georgia, United States of America

The establishment of a definitive diagnosis in cases of LGV has, historically, been based either on the isolation of the causative organism (*Chlamydia trachomatis* serovars L1, L2 and L3) from infected sites or serologically using the chlamydial complement fixation test (CFT) or the microimmunofluorescence (micro-IF) test. Unfortunately, these approaches have limitations owing to a lack of both sensitivity and specificity of culture and a lack of specificity

of serological techniques. In classical cases of LGV seen in developing countries, nucleic acid amplification tests (NAATs) have not proved to be significantly more sensitive than culture for the diagnosis of the disease and cases of genital ulcer disease often present with uncomplicated chlamydial urethritis as a co-infection. However, failure to detect high titers of broadly cross-reacting antibody in patients' sera has proved to be a useful tool for the specific exclusion of LGV in cases of classic LGV in men with inguinal and/or femoral lymphadenopathy. The diagnosis of LGV proctitis / proctocolitis among MSM is even more problematic since commercial NAAT testing is not licensed for detection of *C. trachomatis* from rectal sites and *C. trachomatis* organisms of the trachoma biovar (serovars A-K) and the LGV biovar (serovars L1-L3) can both cause rectal disease. However, differentiation of LGV infections from those caused by non-LGV strains may be achieved in NAAT-positive specimens either by sequencing the *momp* gene (which is laborious), or as a result of detection of a 36bp deletion or 6bp addition in the *pmpH* gene, both of which occur in L-serovars only. The value of serology in the diagnosis of LGV proctitis has still to be determined since non-LGV infections of the rectum may produce a significantly enhanced antibody response when compared to that measured in cases of uncomplicated chlamydial urethritis.

MW-205 LGV: THE PUBLIC HEALTH RESPONSE

H. Ward

Health Protection Agency Cntr for Infec., London, United Kingdom

The report of LGV in the Netherlands in 2003 has led to an epidemic of similar reports from across Europe and more recently North America. From the first case report in 2003 there are now over 200 cases reported. Barely a month goes by without another country or city adding to the list. What is the public health response?

The first task is to determine whether or not there is an outbreak. The first report was from astute clinicians in the Netherlands who recognised a new clinical presentation of the disease, and that report has led to enhanced case finding and further reports. The problem is that we do not know how many cases there were before. Earlier cases may well have been missed, particularly given the limited diagnostic options for rectal chlamydia, regardless of subtype. A few centres are carrying out retrospective analysis of stored samples. Evidence in favour of this being a true outbreak includes the shared clinical picture of many cases, the existence of linked cases and geographical clustering. The next step is further case finding based on an agreed case definition, linked to local surveillance of cases identified. For LGV, case finding has required a wide alerting of clinicians, since patients may present in a range of clinical settings including primary care, HIV and sexual health services clinics or gastroenterology and surgical services.

In the UK a national incident team has been established to bring together the key players including clinicians, epidemiologists, microbiologists, patient groups and local public health specialists. This team meets regularly to discuss what is known, what further action should be taken, and to review capacity and response to control LGV. Control depends on communication, with health professionals, patients, patient groups, the public and the press.

SESSION: WS-004 - NEW NETWORK THEORY AND ITS IMPLICATIONS FOR THE PREVENTION OF STDs
MW-301 NEW NETWORK THEORY AND ITS IMPLICATIONS FOR THE PREVENTION OF STDs

M. Kretzschmar

RIVM, Bilthoven, Netherlands

Aim: Recently, there has been a lot of discussion about the application of the theory of scalefree networks to sexual networks. One of the hypotheses that was debated was whether the scalefree property applied to sexual networks or not. If this is the case, an important consequence would be that there is no threshold phenomenon for sexually transmitted infections. This would imply that elimination or eradication of a sexually transmitted disease is not possible and that for vaccine preventable STIs there is no critical vaccination coverage. In this workshop the assumptions of the scalefree network paradigm should be discussed in the light of what we know about sexual networks. Furthermore, implications for prevention will be discussed

MW-302 TRANSMISSION OF HIV AND STDs: AN HYPOTHESIS FOR THE INTERACTION OF RISK, NETWORK CONFIGURATION, AND GEOGRAPHY

R. Rothenberg

Emory University School of Medicine, Atlanta, GA, United States of America

The dynamics of HIV and STD transmission are daunting in their complexity and it is unlikely that a single model—or a model derived from a single discipline—will account for all circumstances. For endemic transmission in the inner city environments in the United States, I propose a conceptual model for transmission that has some prior empirical confirmation, and may provide a substrate for further refinement. If, as suggested by Morris, local choices generate a global network structure, then a crucial element in this model is that local choices in the inner cities involve compound risk—multiple exposures through multiple pathways with multiple partners. The network structure that is generated by such risk-taking is characterized by large or giant components, a right-skewed degree distribution (possibly scale-free), and small world properties. The third element that characterizes an inner city environment is a restricted geographic range of its inhabitants, leading to small intra-dyad and inter-cluster distances. The net result, from the point of view of the individual, is that his or her behavior has a substantial probability of generating multiple exposures with new persons who are already part of the same network. The combined risk, network, and geographic configuration thus provides pressure to maintain or increase prevalence within the group at risk. The empirical evidence for these elements (risk, networks, geography) are derived from disparate studies. A correlative examination of such factors in inner city environments is required to generate the evidence that can support this hypothesis.

MW-303 BEHAVIOR, NETWORKS, TRANSMISSION AND PREVALENCE: SMALL CHANGES MAKE BIG DIFFERENCES

M. Morris

University of Washington, Seattle, United States of America

A striking feature of the prevalence of HIV and other STI is the persistent prevalence differentials observed across different groups within countries, and different countries around the world. Within the US, racial differentials in the main STIs range from 5:1 to 40:1. Around the world, the country differentials in HIV are even higher. The basis for such large differentials is not well known, though the size would seem to suggest multiple factors may be at work. This talk will examine the impact that small behavioral changes can have on the STI transmission network. The findings suggest both a surprisingly large role for small changes to explaining large prevalence differentials, and the potentially large impact these small changes can have on prevention.

MW-304 SCALE-FREE NETWORKS AND SEXUALLY TRANSMITTED DISEASES

Z. Asghar

Imperial College, Fac. of Medicine, London, United Kingdom

Sexually transmitted infections spread through a network of contacts created by the formation of sexual partnerships. Methods developed in physics can characterise a wide range of networks through a description of the distribution of numbers of sex partnerships. It has been suggested that in the Swedish population this 'degree' distribution follows a power law and therefore indicates a 'scale-free' network. Our objectives were to test statistically whether distributions of numbers of sexual partners reported by different populations and over different time periods are well described by power laws and to estimate their exponent and its implications. Maximum likelihood estimates of the exponent of a scale free network fitted to reported distributions of numbers of partners are compared with the fit for an exponential null model. Data are taken from 4 population based surveys, three from Britain and one from rural Zimbabwe. We find that the networks can be described by a power law over a number of orders of magnitude. In addition, exponents differ significantly and meaningfully, with an 'accelerating network' formed between men who have sex with men (MSM). Networks with an exponent indicating the lack of a 'critical spread rate' are also found for the other populations except for women in Britain. Thus statistical analyses demonstrate that a scale-free network approach provides a reasonable description of distributions of reported numbers of sexual partners. Further, if these networks are formed over a short time only a very small transmission probability will be sufficient to lead to persistence of infection.

MW-305 SOCIAL AND SEXUAL NETWORK ANALYSIS OF A SYPHILIS OUTBREAK; VANCOUVER, CANADA

A. Jolly, D. Taylor, G. Ogilvie, L. Knowles, H. Jones, J. Tigchelaar, L. James, C. Brunt, E. Wong, M. Rekart

Cntr. for Infec. Disease Prev. & Contr., Ottawa, Canada

In August of 1997, the number of cases of syphilis in British Columbia exceeded the mean and two standard deviations, based on the monthly number of cases since 1986. Initial investigations revealed two basic types of networks; one in sex trade workers who frequently trade drugs for sex, and another in gay men, based in bath houses. Contact tracing strategies were enhanced; the street nursing program sent staff to be trained in enhanced interview techniques, specifically using cues which maximise the number of contacts revealed. Forms and a corresponding database were developed to capture social and sexual network data on clients; sex partners, and acquaintances, including data such as social venues and aliases. Data were converted into a file compatible with social network programs, and produced network diagrams each week. Eight hundred and three cases generated a network of 1,928 indi-

viduals, with a 884 components (a group of people linked directly or indirectly by sexual intercourse or other social relationship.) Sixty-four percent of cases and contacts were male, the mean age was 35.6; and 45% were of European descent. Components contained as few as one person, and one contained 214 people. Nine components of size greater than 10 contained 445 people, representing 23% of individuals in the database, and 581 (30%) reported no sexual or social links (30%). Four hundred fifty-four men reported having sex with other men; 290 were reported as sex trade workers; 238 as street involved, and 478 had no main risk factor recorded. The association of network measures with risk of infection will be discussed.

MW-306 TITLE TO BE ANNOUNCED

Speaker to be announced

PANEL DISCUSSION: WHAT ARE THE IMPLICATIONS OF NETWORK THEORY FOR STD PREVENTION?

SESSION: WS-005 - HORMONAL CONTRACEPTION, HIV AND OTHER STD'S**TW-001 WELCOME AND INTRODUCTION BY W. CATES****TW-002 THE HORMONAL CONTRACEPTION AND RISK OF HIV-1 ACQUISITION (HC-HIV) STUDY: BACKGROUND, RESULTS AND DISCUSSION**

C.S. Morrison¹, B.A. Richardson², D.D. Celentano³, T. Chipato⁴, F. Mmiro⁵, N.S. Padian⁶, S. Ruggao⁷, P.G.A. Cornelisse⁸, R.A. Salata⁹

¹ Family Health International, Durham, United States of America

² SCHARP & Univ. of Washington, Seattle, United States of America

³ Johns Hopkins University, Baltimore, United States of America

⁴ Univ. of Zimbabwe, Harare, Zimbabwe

⁵ Makerere University, Kampala, Uganda

⁶ Univ. of California at SF, San Francisco, United States of America

⁷ RIHES, Chiang Mai, Thailand

⁸ SCHARP, Seattle, United States of America

⁹ Case Western Reserve Univ, Cleveland, United States of America

Objectives: Hormonal contraception (HC) is used by over 100 million women worldwide. Approximately ten prospective studies have examined whether HC, including combined oral contraceptives (COC) and the injectable progestin DMPA alters the risk of HIV-1 acquisition. While several studies have found increased risks, the results have been inconsistent. However, most studies had important methodologic shortcomings. The HC-HIV study was designed to compare HIV-1 incidence among women using COCs, DMPA and those not using hormonal (NH) contraception.

Methods: We enrolled 6,109 HIV-uninfected women, ages 18-35 years, into a prospective cohort study at family planning clinics in Uganda, Zimbabwe and Thailand. Participants completed a behavioral and contraceptive history questionnaire and were tested for HIV and STI quarterly for 15-24 months. Excluding data from Thailand (few HIV cases), we compared the risk of HIV acquisition among COC users, DMPA users, and the NH group.

Results: Women with prevalent HIV infection (Uganda 16.4%, Zimbabwe 38.1%, Thailand 2.1%) were screened out. During follow-up, 217 participants became HIV-infected (incidence rate: Uganda 1.5, Zimbabwe 4.1, Thailand 0.1 per 100wy). Of 4,439 enrolled African participants, baseline contraceptive groups were similar in age and education. More HC users lived with their partners and had frequent sex while NH users reported higher levels of sexual risk behaviors (e.g. multiple/new sex partners) and condom use. The 24-month retention rate was 92%. During follow-up, one-third of women switched contraceptive methods. Both risky sexual behaviors and condom use remained higher among NH than HC users during follow-up. The effect of HC use on HIV acquisition will be presented.

Conclusions: We designed and implemented a prospective study with high power to detect an association between HC use and HIV-1 acquisition. The results of the study should have an important impact on the provision of family planning services in countries with high HIV prevalence.

TW-003 HC-HIV STUDY METHODS AND RESULTS

B.A. Richardson¹, C.S. Morrison², D.D. Celentano³, T. Chipato⁴, F. Mmiro⁵, N.S. Padian⁶, S. Ruggao⁷, P.G.A. Cornelisse⁸, R.A. Salata⁹

¹ University of Washington, Seattle, WA, United States of America

² Family Health International, Research Triangle Park, NC, United States of America

³ Johns Hopkins University, Baltimore, United States of America

⁴ University of Zimbabwe, Harare, Zimbabwe

⁵ Makerere University, Kampala, Uganda

⁶ Univ. of CA at San Francisco, San Francisco, CA, United States of America

⁷ RIHES, Chiang Mai, Thailand

⁸ SCHARP, FHCRC, Seattle, WA, United States of America

⁹ Case Western Reserve Univ, Cleveland, United States of America

Objectives: Several studies suggest increased risk for HIV-1 infection among women using hormonal contraception (HC). The HC-HIV study was designed to compare HIV-1 incidence among women using injectable progestins (DMPA), low-dose combined oral contraceptives (COC), and those using non-hormonal (NH) methods in Uganda, Zimbabwe, and Thailand.

Methods: Eligible HIV-negative women enrolled into this longitudinal cohort study, underwent pelvic examination, sexually transmitted infections (STI) testing, and completed behavioral and contraceptive history questionnaires. Similar procedures occurred at quarterly follow-up visits, including HIV-1 testing, for 15-24 months. Proportional hazards models were used to assess the relationship between HC exposure and incident HIV-1 infection, controlling for confounding factors and testing for effect modification by STIs.

Results: From 11/1999 to 9/2002, we screened 10,082 women for HIV-1. The prevalence of HIV-1 was 24.1%. Enrollment was 2,235 in Uganda, 2,296 in Zimbabwe, and 1,578 in Thailand. Data from Thailand were excluded from analysis due to few HIV cases. Among the 4,531 African women, 92 were excluded from analysis, 80 with no follow-up, and 12 who used non-study contraceptive methods. In the remaining 4,439 women, 1,542 were using COCs at baseline, 1,517 using DMPA, and 1,380 using NH methods.

Conclusions: While a randomized controlled trial would provide the most rigorous design to test our hypothesis, we chose a design where women could select their contraceptive method. This reduced adherence issues, and eliminated potential ethical issues resulting from randomizing women to a method that might increase risk. We minimized biases by enrolling nearly equal groups of women in each country who use DMPA, COC, and NH methods, and by collecting detailed information on potential confounding factors. The main study results, presented in a companion presentation, provide important information regarding the relationship between HC and HIV-1 acquisition.

TW-004 HC-HIV STUDY RESULTS AND DISCUSSION

C. Morrison

Family Health International, Durham, United States of America

TW-005 HERPES SIMPLEX VIRUS TYPE 2 AND HIV AMONG WOMEN PARTICIPATING IN THE HORMONAL CONTRACEPTION AND RISK OF HIV ACQUISITION (HC-HIV) STUDY

J.M. Brown¹, A. Wald², T. Chipato³, K. Rungruengthanakit⁴, J. Moncada¹, H. Bakka⁵, C.S. Morrison⁶, D.D. Celentano⁷, R.A. Salata⁸, B.A. Richardson², N. Padian¹

¹ University of California, San Francisco, San Francisco, CA, United States of America

² University of Washington, Seattle, United States of America

³ University of Zimbabwe, Harare, Zimbabwe

⁴ Research Inst. Health Sciences, Chiang Mai, Thailand

⁵ Makerere University, Kampala, Uganda

⁶ Family Health International, Durham, United States of America

⁷ Johns Hopkins University, Baltimore, United States of America

⁸ Case Western Reserve Univ., Cleveland, OH, United States of America

Objective: Herpes simplex virus type 2 (HSV-2) is the major cause of genital ulcerative disease worldwide and is considered a risk factor for HIV acquisition. Although numerous epidemiologic investigations have demonstrated an association between HSV-2 and HIV infection, few prospective studies have evaluated this relationship among women. The objective of this analysis was to examine the relationship between prevalent and incident HSV-2 infection on the risk of HIV acquisition among women in the HC-HIV study cohort.

Methods: This analysis includes the 6,109 HIV-negative women aged 18-35 years enrolled in the HC-HIV study from Thailand, Uganda, and Zimbabwe. Participants' sera were screened for HSV-2 antibodies using an HSV-2 specific ELISA to identify prevalent infection at enrollment and incident infection during follow-up (15-24 months follow-up). Cox Proportional Hazards analysis was used to estimate the effect of prevalent and time-dependent HSV-2 infection on HIV acquisition, controlling for confounders.

Results: HSV-2 prevalence at enrollment was high (49.8%) and varied by study site; 38.5%, 65.8%, and 53.5% in Thailand, Uganda, and Zimbabwe, respectively. HSV-2 incidence also varied by study site; 4.0, 11.0, and 8.2 per 100 woman-years (wys) in Thailand, Uganda, and Zimbabwe, respectively. The overall HIV incidence was 2.07 per 100 wys. The adjusted hazard ratio (HR) for acquiring HIV among women with prevalent HSV-2 at enrollment was 2.75 (95% CI=2.0, 3.79). The adjusted HR for acquiring HIV among women with incident HSV-2 during follow-up was 7.68 (95% CI=4.26, 13.85). These are preliminary results; additional results utilizing marginal structural models to control for time-dependent confounding will also be presented.

Conclusion: Preliminary results suggest that prevalent and incident HSV-2 are significant predictors of HIV acquisition among women. These results have important implications for future HIV prevention strategies.

TW-006 CONTRACEPTIVE AND VAGINAL PRACTICES, BACTERIAL VAGINOSIS AND HIV ACQUISITION IN ZIMBABWEAN, UGANDAN AND THAI WOMEN

J.H.H.M. van de Wijgert¹, P.G.A. Cornelisse², J. Moncada³, M. Munjoma⁴, R. Keawvichit⁵, P. Awio⁶, R.A. Salata⁷, D.D. Celentano⁸, N.S. Padian³, C.S. Morrison⁹

¹ IATEC, Amsterdam, Netherlands

² Fred Hutchinson Cancer RC, Seattle, United States of America

³ UCSF, San Francisco, United States of America

⁴ University of Zimbabwe, Harare, Zimbabwe

⁵ Research Institute Health Sciences, Chiang Mai, Thailand

⁶ Joint Clinical Research Center, Kampala, Uganda

⁷ Case Western University, Cleveland, United States of America

⁸ Johns Hopkins University, Baltimore, United States of America

⁹ Family Health International, Durham, United States of America

Objectives: To examine whether vaginal practices (i.e. cleansing, drying etc.) and hormonal contraception (HC) are associated with bacterial vaginosis (BV), and if BV is associated with HIV acquisition. **Methods:** As part of a cohort study on HC use and HIV acquisition in Zimbabwe (ZM), Uganda (UG) and Thailand (TH), women were evaluated for BV and HIV, and interviewed about HC use and vaginal practices, at baseline and every 3 months for 15-24 months. BV was diagnosed by Amsel and Nugent criteria.

Results: At baseline, 66% of women in ZM (N=2,296), 69% in UG (N=2,235), and 13% in TH (N=1,578) engaged in vaginal practices. BV prevalence was higher by Nugent than Amsel throughout the study (at baseline, 28/23% in ZM, 21/8% in UG, and 24/4% in TH). Nugent scores were used for subsequent analyses. BV incidence per 100 woman-years was 50 (ZM), 46 (UG) and 39 (TH). After controlling for sexual behavior, smoking and alcohol use, vaginal practices were not associated (OR= 1.06; 95% CI=0.99-1.14; p=0.080), oral contraceptive use was positively associated (OR=1.12; 1.01-1.24; p<0.027) and DMPA use (OR=0.80; 0.73-0.89; p<0.001) and white blood cells (WBC; 0.77-0.86; OR=0.81; p<0.001) were negatively associated with BV prevalence over time. BV was associated with HIV incidence (HR=1.81; 1.26-2.61; p=0.002), but vaginal practices and WBC were not, after controlling for HC, sexual behavior, smoking, and alcohol use.

Conclusions: Vaginal practices and BV were common, particularly at the African sites. Vaginal practices were not strongly associated with BV or HIV but some increased risk for BV may exist (needs further exploration when Nugent scores are complete). HC use was associated with BV and BV was associated with increased HIV incidence; this relationship does not appear to be mediated by genital inflammation.

TW-007 INTERACTIONS OF HIV-1 AND SEXUALLY TRANSMITTED INFECTIONS AMONG WOMEN IN THAILAND, UGANDA, AND ZIMBABWE PARTICIPATING IN THE HORMONAL CONTRACEPTION AND RISK OF HIV ACQUISITION STUDY

R.A.S. Salata¹, P.G.A. Cornelisse², B.A. Richardson³, T. Chipato⁴, F. Mmiro⁵, N. Padian⁶, S. Rugpao⁷, J. van der Wijger⁸, C.S. Morrison⁹, D.D. Celentano¹⁰

¹ Case Western Reserve University, Cleveland, OH, United States of America

² Fred Hutchison Cancer Research, Seattle, WA, United States of America

³ University of Washington, Seattle, WA, United States of America

⁴ University of Zimbabwe, Harare, Zimbabwe

⁵ Makerere, Kampala, Uganda

⁶ University of California, San Francisco, CA, United States of America

⁷ Res Inst for Health Sciences, Chang Mai, Thailand

⁸ IATEC Academic Medical Center, Amsterdam, Netherlands

⁹ Family Health International, Triangle Park, North Carolina, United States of America

¹⁰ Johns Hopkins University, Baltimore, MD, United States of America

Objectives: To determine the interactions and predictive factors of incident HIV-1 infection and sexually transmitted infections (STIs) in women participating in the Hormonal Contraception and Risk of HIV-1 Acquisition (HC-HIV) Study.

Methods: We conducted a longitudinal cohort study of HIV-uninfected women in Thailand (Th), Uganda (Ug) and Zimbabwe (Zm) to determine HIV-1 incidence in women using hormonal contraception (HC). Women were followed every 3 months for 15-24 months and at each visit underwent pelvic exams, testing for HIV and STIs, and completed a sexual behavior and contraceptive history interview. **Results:** 6,109 women were enrolled and followed for 10,650 women-years. The incidence rates of HIV-1 infection and STIs varied significantly by country (Table 1). The risk of HIV acquisition, controlling for study site, was strongly associated with incident STI including CT (RR 6.83 95% CI: 4.04- 11.56); GC (RR 10.08, 6.35-16.02); TV (RR 2.59, 1.28- 5.25); and BV (RR 2.04, 1.38-3.01) ($p < 0.001$). Also, acquisition of these STIs was significantly increased by incident HIV-1 ($p < 0.001$). Bivariate predictors of incident GC and CT, controlling for study site, included younger age, lower age at coital debut, fewer years in school, not living with sexual partner, engaging in commercial sex, any condom use, and tobacco and alcohol use ($p < 0.001$). Younger age, lower age at coital debut, fewer years in school, engaging in commercial sex and alcohol use also predicted TV acquisition ($p < 0.001$).

Conclusions: The epidemiology of HIV-1 infection and STIs are intimately linked but incidence rates vary considerably in countries with mature HIV epidemics. An understanding of the relationships between HIV-1 infection and other STIs may provide clues to strategies to prevent and control these infections. Further analysis is needed to understand the relative timing of incident STI and HIV infections.

HIV-1 and STI Incidence rates per 100 women-years					
Site	HIV-1	Chlamydia (CT)	Gonorrhoea (GC)	Trichomoniasis (TV)	Bacterial Vaginosis BV (Amsel)
Uganda	1.57	4.13	5.22	6.22	17.07
Zimbabwe	4.05	3.63	3.66	5.76	43.42
Thailand	0.15	6.82	1.55	0.62	10.88

Table 1: HIV-1 and STI incidence rates per 100 women-years

SESSION: WS-007 - THE EFFICACY AND VIABILITY OF INTEGRATED BEHAVIOURAL AND STD MANAGEMENT INTERVENTIONS TO CONTROL THE SPREAD OF HIV INFECTION: FINDINGS FROM IN-DEPTH STUDIES IN MANICALAND, ZIMBABWE

TW-201 DETERMINANTS OF A MAJOR RURAL HIV EPIDEMIC IN EASTERN ZIMBABWE

G. Garnett, J. Lewis, C. Nyamukapa, P. Mason, S. Chandiwana, S. Gregson
Imperial College LondOn, LondOn, United Kingdom

Objectives: HIV has spread widely in both urban and rural Zimbabwe, with an estimate by UNAIDS of 1.4 to 1.9 million adults aged 15 to 49 infected at the end of 2003. Detailed data on patterns of risk behaviour and their social, demographic and economic context are required to help understand this devastating epidemic and to design appropriate interventions and interpret their impact.

Methods: To provide a baseline for a community randomised controlled trial of HIV interventions a stratified population-based survey was carried out in Manicaland, Zimbabwe between July 1998 and January 2000. In a survey of all households from 12 distinct communities 4331 men aged 17 to 54 years and 5149 women aged 15 to 44 were interviewed and tested for HIV.

Results: HIV prevalence was 19% amongst men and 26% amongst women with the lowest prevalences in the least developed communities. The best behaviour predictor of HIV infection was lifetime number of sex partners. Attendance at beer halls was found to be a significant risk factor for HIV and beer halls were associated with commercial sex. Separation and divorce were significant risk factors (adjusted O.R. men 2.3 and women 1.8). Condom use was more common with non-regular sex partners but was still infrequent. Men reported rapidly seeking treatment for symptoms of sexually transmitted infections (52% sought care in < 1 week), more so than women (24% sought care in < 1 week).

Conclusions: High numbers of sexual partners associated with marital breakdown and commercial sex are risk factors for HIV in this rural area of Zimbabwe. This baseline survey suggested a scope for increasing condom use and promotion of STD treatment with a focus on commercial sex.

TW-202 INTEGRATED COMMUNITY- AND CLINIC-BASED HIV PREVENTION IN EASTERN ZIMBABWE: RATIONALE AND DESCRIPTION

S. Papaya, S. Adamson, G. Foster, J. Mundondo, T. Chimbadzwa, S. Gregson
Family AIDS Caring Trust, Mutare, Zimbabwe

Background: HIV prevalence had reached 23% in adults living in rural areas of Manicaland, eastern Zimbabwe, by early 1998. HIV infection levels were particularly high in formerly married women, men who visited beer halls, and persons with a history of other STDs and/or greater numbers of sexual partners.

Intervention design: Integrated behavioural (workplace and beer hall-based peer education, condom distribution, and promotion of STD treatment-seeking) and biomedical (syndromic management of STDs, counselling for STD patients, and community HIV/AIDS awareness and service promotion) intervention conducted in one small town, one forestry plantation, one tea/coffee estate, one roadside trading settlement, and two subsistence farming areas.

Programme activities included interventions targeted at core groups (i.e. CSWs), bridge populations (male clients of CSWs), and the general community. Implementation was done by two local NGOs (Family AIDS Caring Trust and Biomedical Research and Training Institute) with support from the Ministry of Health and Child Welfare in a phased manner between October 1998 and March 2003. Implementation of the community-based activities followed social mapping of each area and recruitment and training of peer educators – principally, formerly married women engaged in commercial sex work and men with high numbers of sexual partners. Intervention outputs: 63,261 peer education meetings were held including ‘one-to-ones’ with friends and colleagues and activities held at workplaces, bars and beer halls that included educational dramas, songs and discussions. 1.1m males and 1.4m females (including repeats) were recorded as having attended these meetings and a total of 6.8m condoms were distributed. 123 and 116 nursing staff attended formal training courses in syndromic management of STDs and systemic counselling, respectively. 552 on-site supervisory and training visits were made to health centres in intervention areas and a total of 16 STD clinic open days and AIDS awareness days were held during the period of the intervention trial. Two interim process evaluations were conducted (one by an independent consultant appointed by the donor) during the period of the intervention. Whilst concluding that the quality of intervention activities was generally good, these evaluations identified some of the shortcomings considered in the final presentation in this session). Conclusion: The programme achieved substantial outputs during the period 1998-2003 and almost certainly increased HIV prevention activity over this period in the areas in which it was applied.

TW-203 COMMUNITY-RANDOMISED CONTROLLED TRIAL OF AN HIV INTERVENTION: COMMUNITY-LEVEL FAILURE DESPITE TARGET GROUP SUCCESS?

S. Gregson, S. Adamson, S. Papaya, T. Chimbadzwa, J. Mundondo, C. Nyamukapa, P. Mason, G. Garnett, S. Chandiwana, G. Foster, R. Anderson
Imperial College London, London, United Kingdom

Background: HIV control in sub-Saharan Africa requires cost-effective and sustainable programmes that promote behaviour change and reduce cofactor sexually transmitted diseases (STDs) at the population level. We measured the impact of integrated community- and clinic-based interventions on incidence of HIV. Methods: One community within each of 6 pairs of communities in east Zimbabwe, matched by socio-economic characteristics, was randomly assigned to receive community-based peer education, free condom distribution, and income-generating projects, and clinic-based STD treatment and counselling services. The remaining communities received standard Government and NGO services. HIV-1 incidence measured over 3 years was taken as the primary outcome. Secondary outcomes were self-reported genital ulcers and urethral or vaginal discharge in the past year and indicators of sexual and health-seeking behaviour change and STD treatment effectiveness. Analysis of primary outcomes was on an intention-to-treat basis. Sub-group analysis explored attendance at programme meetings.

Results: The incidence rate ratio of HIV-1 in the intervention communities was 1.27 (0.92-1.75) compared to the control communities. No evidence was found for reduced incidence of STD symptoms or accelerated behaviour change in intervention communities. Males who attended programme meetings had lower HIV-1 incidence (incidence rate ratio, 0.48, 0.24-0.98) and fewer reported unprotected sex with casual partners (odds ratio, 0.45, 0.28-0.75). More male STD patients in intervention communities reported cessation of symptoms (odds ratio, 2.49, 1.21-5.12).

Conclusion: Integrated peer education, condom distribution and syndromic STD management did not reduce population-level HIV-1 incidence in a maturing epidemic, despite reducing HIV-1 incidence in the immediate male target group. Our results emphasise the need to assess the community-level impact of interventions that are effective amongst targeted population sub-groups.

TW-204 HIV DECLINE ASSOCIATED WITH BEHAVIOUR CHANGE IN ZIMBABWE: A NATIONAL SUCCESS FOLLOWING CATASTROPHE?

B. Lopman, S. Gregson, G. Garnett, C. Nyamukapa, J. Lewis, T. Hallett, P. Mason, S. Chandiwana, R. Anderson
Imperial College London, London, United Kingdom

Background: HIV prevalence in Zimbabwe is amongst the highest in the world but recent national surveillance data suggest the beginnings of a possible decline. We examined detailed data on mortality, HIV incidence, and sex behaviour change from Manicaland to evaluate the contemporary dynamics of the epidemic.

Methods: Analysis of quantitative data collected in the first two rounds of an open population cohort of approximately 10,000 adults between 1998-2000 and 2001-2003. The cohort was recruited in three districts in Manicaland, eastern Zimbabwe, and was stratified by socio-economic location and included small towns, forestry plantations, tea/coffee estates, roadside trading settlements and subsistence farming areas.

Results: Overall, HIV prevalence declined from 23.0% to 20.5% [adjusted odds ratio, 0.87, 95% CI, 0.80-0.95]. Declines were seen in men and women and in all four socio-economic strata and occurred evenly over the average three-year inter-survey interval. Declines in HIV prevalence were most pronounced in young age-groups. Mortality was 6.87 and 0.61 per 100 person-years in HIV-infected and uninfected men and 5.16 and 0.54 per 100 person-years in HIV-infected and uninfected women, respectively. HIV incidence was 1.87 and 1.67 per 100 person-years in men aged 17-54 years at baseline and women aged 15-44 years at baseline, respectively. HIV incidence was greater in persons reporting multiple sexual partnerships in the inter-survey period. Reports of early age sexual activity, multiple sexual partnerships and unprotected casual partnerships were less common at follow-up than at baseline.

Conclusion: Sexual behaviour change appears to have contributed to recent stabilisation and reduction in HIV prevalence in eastern Zimbabwe. Similarities in trends in local and national ANC surveillance data suggest that a similar pattern of change could be occurring nationally. Data from further rounds of HIV and behavioural surveillance are needed to establish the long-term veracity and significance of these changes.

TW-205 INTERPRETATION OF INTERVENTION TRIAL RESULTS: FINDINGS FROM QUALITATIVE AND MATHEMATICAL MODELLING INVESTIGATIONS

C. Nyamukapa, Z. Mupambireyi, S. Dube, C. Campbell, S. Gregson, T. Hallett

Imperial College London, London, United Kingdom

Background: The intervention trial results show no reduction in HIV incidence or accelerated behaviour change associated with the intervention at the community level despite evidence for an intensification of HIV prevention activity and a reduction in HIV incidence in men attending programme activities. These findings were obtained against a background of falling HIV prevalence and reducing risk behaviour. They could be explained by implementation of more effective strategies in the control communities, low or inappropriate programme coverage, and/or incorrect assumptions about the pace of diffusion of programme effects from core groups and bridge populations to the general community in a maturing epidemic.

Methods: Mathematical models were used to simulate the potential impact of changes in behaviour promoted in the intervention. Focus group discussions and key informant interviews were conducted with peer educators, other commercial sex workers and clients, local leaders, members of the general community and representatives of other organisations engaged in HIV prevention in the intervention and control communities.

Results: Initial model simulations, based on local behaviour patterns assessed from prior qualitative studies, indicated that reductions in HIV incidence could be obtained within the timeframe of the study, given seemingly plausible behavioural responses to programme activities. However, structural factors constrained the complete and successful implementation of the programme design. These factors included the prevailing socio-economic and cultural context (e.g. endemic fuel and drug shortages and fears of Satanism), the multiplicity of local healthcare providers (i.e. Government, local council, Missions and private sector), AIDS morbidity and mortality among key programme personnel, and the conflicting priorities, short-term horizons, and limited management capacity of partner and donor agencies. As a consequence, the viability, spatial coverage and consistency of some intervention activities were restricted. Some peer educators failed to adopt safe behaviours and thereby provided negative rather than positive role models for behaviour change within the wider community. The free condoms distributed by the programme came to be poorly valued compared to those available through local social marketing outlets. Similar intervention activities were initiated by an NGO in one of the control communities during the trial period.

Conclusion: The coverage, intensity and (probably) the quality of programme activities implemented in the intervention communities compared favourably with those being implemented in the control areas. However, they were insufficient to bring about the necessary acceleration in behaviour change needed to show a lower incidence of HIV infection within the three-year period of the intervention trial.

SESSION: WS-006 - IMMUNOGENETICS OF CHLAMYDIA TRACHOMATIS INFECTION

TW-101 GENETICS OF SUSCEPTIBILITY TO CHLAMYDIA TRACHOMATIS: LESSONS FROM THE EYE

D. Mabey

London School of Hygiene & Tropical Med., London, United Kingdom

The risk to develop severe complications of human ocular Chlamydia trachomatis Infection is determined by environmental factors, bacterial factors and host genetic factors. Both factors defining the organotropism, correlating with inactivating mutations in the pathogen's tryptophan synthase (*trpBA*) genes, and the bacterial load are important in disease pathogenesis including eradication efficiency and the establishment of persistent infection. Genes involved in regulating antimicrobial immunity and inflammation may modulate the risk of tissue scarring and fibrosis in chlamydial diseases such as trachoma. We have studied genetic variation within amongst others the IL10 and IFN- γ loci, the gene promoter region of the major inducible I κ B component (I- κ B- α), HLA types, IL4, tumor necrosis factor- α and the gene coding for the mannose-binding protein. The results of these host genetic studies in the eye and the potential relevance and translatability to urogenital Chlamydia trachomatis infections are discussed.

TW-102 HOST IMMUNE RESPONSE TO CHLAMYDIA TRACHOMATIS IN TUBAL FACTOR INFERTILITY

J. Paavonen

University of Helsinki, Helsinki, Finland

A strong association exists between Chlamydia trachomatis infection and tubal factor infertility (TFI) or ectopic pregnancy in women with or without a history of PID. *C. trachomatis*-associated TFI involves enhanced humoral and cell-mediated immune response to chlamydial proteins with a major role for the 60 kDa heat shock protein (CHSP60). We investigated the role of CHSP60-induced immune response in TFI by studying lymphocyte proliferation and cytokine (interferon(IFN)- γ , interleukin (IL)-12 and IL-10) secretion in response to *C. trachomatis* elementary body and CHSP60 antigens in women with TFI and in women with other causes of infertility. We found prominent IL-10 secretion in response to CHSP60 in the TFI group suggesting that the CHSP60 may have a specific role in regulating the immune reactions during chlamydial infection and consequently contributing to the immunopathogenesis of TFI. In addition, the relationship between *C. trachomatis* TFI and the host's immunoregulatory genes was studied revealing an association of a cellular immune response to CHSP60, HLA class II alleles and IL-10 promoter genotypes in patients with chlamydial TFI. Based on our own studies and published work, host immune responses to *C. trachomatis* and the influence of host genetic variation in immunomodulating genes in will be discussed to provide insight into the biological mechanism resulting TFI in women.

TW-103 AN INTEGRATED APPROACH TO THE STUDY OF HOST IMMUNOGENETIC FACTORS THAT CONTRIBUTE TO THE PATHOGENESIS OF *CHLAMYDIA TRACHOMATIS* FEMALE GENITAL TRACT INFECTION

J.M. Lyons¹, S. Ouburg², J. Land³, A.S. Peña², J.I. Ito¹, S.A. Morr e²

¹ City of Hope National Medical Center, Duarte, United States of America

² VU University Medical Centre, Amsterdam, Netherlands

³ Academic Hospital Maastricht, Maastricht, Netherlands

Objectives: To identify immunogenetic traits of the host that influence the susceptibility and course of infection and the immunity that develops in response to female genital tract infection with *C. trachomatis* using: 1) gene deficient knockout (KO) mice; and 2) a candidate gene approach in women with known tubal pathology and *C. trachomatis* serological status.

Methods: Interferon- gamma (IFN-gamma), interleukin-12 (IL-12), and Toll-like receptor9 (TLR9) KO mice and genetically intact control mice were infected and reinfected with *C. trachomatis* (serovar D) and a number of different infection parameters were evaluated. The frequencies of functional single nucleotide polymorphism (SNP) were determined in healthy Dutch Caucasian controls and in subfertile women with and without tubal pathology and with and without serological responses to *C. trachomatis*.

Results: When compared to controls, all three KO strains of mice were had one or more altered responses to infection, with the most profound being the inability of IFN-gamma KO mice to control or eradicate infection. The SNPs tested for IFN-gamma and IL-12 did not strongly associate with the susceptibility or severity of infection when analyzed alone. However, carrier trait analysis showed clear trends, most notably: 1) in seropositive subfertility patients the frequency of both genes affected was clearly lower as compared to seronegative patients; and 2) none of the *C. trachomatis* seropositive patients without tubal pathology had SNPs in IFN-g and IL-12. Differences in TLR9 genotypes associated with tubal pathology and seropositivity were borderline significant. However, clear differences existed among haplotypes when comparing the risk of having developed tubal pathology for women with serological responses to *C. trachomatis*.

Conclusion: Using an integrated approach, we showed a potential relevant role for IFN-gamma, IL-12 and TLR9 in mediating *C. trachomatis* infection especially in relation to tubal pathology.

TW-104 IL-1RN GENE POLYMORPHISMS IN RELATION WITH THE SUSCEPTIBILITY OF UROGENITAL *CHLAMYDIA TRACHOMATIS* INFECTIONS IN YOUNG WOMEN

J. Spaargaren¹, S. Ouburg², J.S.A. Fennema¹, J. Pleijster², A.S. Pe a²,

R.A. Coutinho³, S.A. Morr e²

¹ Municipal Health Service, Amsterdam, Netherlands

² VU University Medical Centre, Amsterdam, Netherlands

³ Nat. Inst. for Health & the Environment, Bilthoven, Netherlands

Objectives: The course of Chlamydia trachomatis (CT) infection is influenced by host and bacterial factors. Infection. Functional genetic variability in the IL1 gene cluster, including IL-1b, a proinflammatory cytokine, and its natural inhibitor IL-1ra were recently shown not to be associated with the severity of *C. trachomatis* infections. Its role in the susceptibility to infection has not been established yet.

To investigate the role of the IL1RN variability in the susceptibility to *C. trachomatis* infection in Dutch Caucasian women attending a STD clinic.

Methods: The different IL1RN+2018 T>C genotypes were assessed by TaqMan analysis in 748 CT-DNA positive women and in 465 CT-DNA negative women. The following variables were used in the analysis: the presence of microorganisms (*Candida albicans*, *Neisseria gonorrhoea*, *Trichomonas vaginalis*, *Herpes simplex 1/2*), and the CT serovars and serogroup were assessed by PCR-based RFLP analysis. Also a healthy control group was included (n=147). **Results:** The overall prevalence of IL-1RN genotypes in the CT-DNA positive group of women was 61%, 32 and 7% for the genotypes 1.1, 1.2 and 2.2. This distribution was identical to the control group (60%, 33%, 8%). However in the CT negative women these percentages were 50%, 43% and 6% respectively (p=0.0005, OR 1.5 [1.2-1.9]). Correction for microorganism and serovar did not change these findings.

Conclusions: The IL1RN carriership of the 2 allele (genotypes 1.2 and 2.2) was significantly higher in CT-DNA negative women influencing the susceptibility to CT infection. Our findings were not confounded by coinfection in general or infecting serovar in CT-DNA positive women.

TW-105 SYSTEMIC AND MUCOSAL IMMUNE RESPONSES TO *CHLAMYDIA TRACHOMATIS* INFECTION

C.R. Cohen

University of California, San Francisco, United States of America

Prevention of *C. trachomatis* infection remains a top public health priority because infections may be recurrent or persistent and cause adverse reproductive consequences. Vaccine development is critical for chlamydia control but depends in part on having a sound understanding of the immunogenetic correlates for protection. Numerous studies in animal model systems have demonstrated the particularly important role of T-cell-mediated immune responses and specific major histocompatibility complex (MHC) alleles in host defense against infection. Recently, in clinical studies we have identified *C. trachomatis* specific antigen responses in both PMBC and endometrial monocytic cells, and associated the former with an altered risk of incident *C. trachomatis* infection. Furthermore, we have associated two DRB alleles with a reduced odds of *C. trachomatis*-associated tubal infertility. In conclusion, the mounting evidence supports a direct role for *C. trachomatis* acquired immune responses, perhaps mediated through specific HLA class II alleles in altering the risk of infection and sequelae.

SESSION: WS-008 - CURRENT CONTROVERSIES IN CHLAMYDIA SCREENING: WHAT WORKS- AND AT WHAT COST

TW-301 INTRODUCTION BY N. LOW

TW-302 DIAGNOSIS: THE PROMISE AND THE PITFALLS OF CHLAMYDIA SCREENING WITH NUCLEIC ACID AMPLIFICATION TESTS

W.C. Miller

University of North Carolina, Chapel Hill, United States of America

Researchers and practitioners in the field of sexually transmitted infections generally believe that nucleic acid amplification tests for diagnosing *Chlamydia trachomatis* have excellent performance characteristics. Screening activities for chlamydia have expanded rapidly, because nucleic acid amplification tests can be used on non-invasively collected specimens such as urine and vulval swabs and a range of tests is now widely available. But how good are these tests really, and are they good enough for large population screening programs? Evaluating the performance of nucleic acid amplification tests is challenging. Previously existing diagnostic tests have low sensitivity: imperfections in the available reference tests led to biased estimates of the performance of nucleic acid amplification tests. The commonly used procedure to overcome this bias (discrepant analysis) was, however, also biased and problematic. Screening for chlamydia differs from screening for most illnesses in that screening and diagnosis are combined – without additional testing to confirm the screening test results. Diagnosing chlamydia in asymptomatic people with low suspicion of infection may have serious emotional, and sometimes physical, consequences. Will nucleic acid amplification tests perform as well in screening in the general population as in the clinics where they were originally evaluated? Unlike sensitivity and specificity, the positive predictive value (PPV) varies with prevalence, decreasing with lower prevalence. For example, assuming the sensitivity and specificity of a nucleic acid amplification test for chlamydia are 92% and 99.5%, respectively, in a population with a prevalence of 2%, the PPV is only 79%. In other words, 21% of positive results would be false positives! With a prevalence of 5%, about 10% of results would be false positives. Assuming a specificity of 99% reduces the PPV to 65% at 2% prevalence and 83% at 5% prevalence. Nucleic acid amplification tests undoubtedly represent great steps forward for chlamydia diagnosis, but they are not perfect. As we move forward with the development and implementation of screening programs, we must recognize the limitations of these tests, and use them appropriately.

PANEL DISCUSSION - HOW BEST TO USE NAATs FOR CHLAMYDIA SCREENING?

TW-304 EFFECTIVENESS: THE FALL AND RISE OF CHLAMYDIA IN SWEDEN: THE ROLE OF OPPORTUNISTIC SCREENING

B. Hermann

University Hospital, Uppsala, Sweden

Background: Sweden's national chlamydia screening programme has been the envy of the world for the past 20 years. Initial decreases in rates of chlamydia and its complications were widely attributed to screening. But chlamydia rates in Sweden over the past decade have mirrored increases in European countries with no organised screening. What has failed in the Swedish strategy?

Methods: We examined national chlamydia rates from 1985 to 2004 (Swedish Institute for Infectious Disease Control) and chlamydia screening uptake and reproductive tract complications in the Uppsala Women's Cohort Study. This study linked population records of 52,580 female residents aged 15 to 24 years between 01/01/1985 and 31/12/1989 with records of chlamydia tests and hospital admissions, and followed them up until 31/12/1999.

Results: In Sweden (population 9 million) chlamydia testing peaked in 1990 with 561 000 tests, of which 28 700 (5.1%) were positive. Detection rates fell to around 4% from 1992 to 1996. Since then, the prevalence has doubled to 8.1% in 2004. Since 1992 men comprised at most 26% of those examined, but 43% of detected cases. In the Uppsala Women's Cohort Study, an estimated 71% of women were screened by the age of 35 years: but 48% were only tested once. During the study period 3,169 women experienced pelvic inflammatory disease, ectopic pregnancy, or infertility. Of these 32% had never been screened, 57% had only negative tests, and 11% had a positive chlamydia test.

Discussion: Despite great efforts in testing, treatment, counselling and contact tracing in Sweden, opportunistic screening has not controlled chlamydia transmission. Our results from Uppsala suggest that this might be due to low coverage and screening frequency. Most women with complications of chlamydia did not benefit from early detection and treatment. We will discuss the problems of achieving and sustaining high screening coverage, including men, and organising and monitoring screening programmes.

PANEL DISCUSSION - HOW WILL WE KNOW WHAT WORKS FOR CHLAMYDIA SCREENING?

TW-306 NATURAL HISTORY: HAVE WE OVERESTIMATED THE INCIDENCE OF CHLAMYDIAL COMPLICATIONS?

N. Low

University of Bern, Bern, Switzerland

Background: *Chlamydia trachomatis* is known to be an important cause of pelvic inflammatory disease, ectopic pregnancy and tubal infertility. The rates of progression are, however, not clear. It is commonly believed that about 30% of women with chlamydia develop pelvic inflammatory disease within a few weeks of infection, but is this realistic?

Methods: The Uppsala Women's Cohort Study is a retrospective record-linkage cohort including all women resident in Uppsala and aged 15 to 24 years between 01/01/1985 and 31/12/1989, whom we followed up until 31/12/1999. We linked the results of laboratory tests for chlamydia, hospital diagnoses, and socio-demographic data. We then estimated the cumulative incidence of hospital-diagnosed pelvic inflammatory disease, ectopic pregnancy, and infertility.

Results: There were 52,580 women aged 15 to 24 years at enrolment, with 719,717 woman years of follow up. The cumulative incidence of pelvic inflammatory disease by age 35 years was: 5.6% (95% CI 4.7–6.7%) in women who ever tested positive for chlamydia, 4.0% (3.7–4.4%) in those with negative tests, and 2.9% (2.7–3.2%) in those who were never screened. The corresponding figures were: for ectopic pregnancy, 2.7% (2.1–3.5%), 2.0% (1.8–2.3%), and 1.9% (1.7–2.1%); and for infertility, 6.7% (5.7–7.9%), 4.7% (4.4–5.1%), and 3.1% (2.8–3.3%).

Discussion: Our study suggests that the incidence of complications of chlamydia is substantially lower than believed. Other population-based studies support these findings. Accurate information about the prognosis of chlamydia is essential so that patients can be properly informed, and the impact of preventive interventions can be determined. We need to discuss how best to study the natural history of chlamydia.

PANEL DISCUSSION - WHAT CAN WE DO BETTER TO DEFINE THE PROGNOSIS OF CHLAMYDIA?

TW-308 EVALUATION: STATIC OR DYNAMIC? DOES IT MATTER HOW WE MODEL THE COST-EFFECTIVENESS OF CHLAMYDIA SCREENING?

T. Roberts

University of Birmingham, Birmingham, United Kingdom

The appropriateness of different modelling approaches to use in economic evaluations infectious diseases such as chlamydia is becoming increasingly controversial. In a recent systematic review we found that the vast majority of economic studies on screening for chlamydia used decision trees or Markov models. These models are referred to as 'static' because they assume a constant force of infection. Very few studies had used a transmission 'dynamic' model, which incorporates the effects on screening outcomes of ongoing transmission of infection in the population. On the one hand, some experts argue that static models give biased results of the impact of screening and that only a transmission dynamic model will do. On the other, others believe that a simple static approach is adequate, and avoids the complexities of dynamic modelling.

One way of solving this dilemma is to compare the results of economic evaluations using identical data in both dynamic and static models. The Chlamydia Screening Studies (ClaSS) project in the UK investigated active population screening using home-collected specimens and generated empirical data about the coverage and uptake of screening, population chlamydia prevalence, the effectiveness of partner notification, and the costs of screening. We evaluated the cost-effectiveness of this screening approach using discrete event simulation: a dynamic model: In a parallel evaluation we are now conducting a static decision analysis, which uses identical data as far as possible. The full extent of the differences, if any, in the results of the two approaches will be presented and discussed in July 2005.

PANEL DISCUSSION - IS CHLAMYDIA SCREENING REALLY COST-EFFECTIVE?

**CLOSING REMARKS BY DR. J. VAN BERGEN,
STI AIDS NETHERLANDS**

**SESSION: WS-009 - INTERACTIONS OF STD
PATHOGENS WITH THEIR HOSTS**
**WW-001 THE ROLES OF HGBA, DSRA AND DLTA OUTER
MEMBRANE PROTEINS IN THE INTERACTION OF HAEMO-
PHILUS DUCREYI WITH ITS HUMAN HOST**

C. Elkins

University of North Carolina, Chapel Hill, United States of America

Haemophilus ducreyi, the etiologic agent of chancroid, is an important co-factor for the transmission of HIV. In the last decade great progress has been made understanding its interaction with its only natural host, humans. Much of this progress has been aided by the ability to genetically manipulate *H. ducreyi* and to construct isogenic mutants. A better understanding of outer membrane protein function has resulted from these studies. Furthermore, the ability to examine the virulence of isogenic mutants in experimental models of chancroid infection has led to the identification of a number of virulence factors and potential vaccine candidates.

H. ducreyi interaction with skin components. An initial first step in the pathogenesis of chancroid is attachment to host components. *H. ducreyi* binds to a number of relevant skin cells and/or extracellular matrix components (ECMs) and a number of putative adhesins have been identified. One outer membrane protein (OMP) studied in my lab is DsrA, serum resistance protein A (DsrA). *In vitro*, DsrA mediates binding to keratinocytes and several ECMs, including fibronectin, vitronectin and laminin. DsrA, along with the collagen binding protein NcaA, are members of the Oligomeric Coiled Adhesin family. After initial binding to skin components, *H. ducreyi* penetrates, in a poorly understood fashion, the epithelial layer, across the basement membrane and into the dermis to form first a papule. Within about 2 days a pustule is formed, which eventually erodes into the characteristic chancroid lesion recognized clinically as an ulcer. Within the dermis of experimentally infected human skin, *H. ducreyi* is found associated with collagen and phagocytes. NcaA probably mediates its interaction with collagen. *ncaA* mutants are also attenuated in virulence.

H. ducreyi interaction with Serum Components. A hallmark of *H. ducreyi* is its inability to synthesize heme. During infection *H. ducreyi* uses the TonB-dependent hemoglobin receptor termed HgbA. HgbA was the first OMP studied at the molecular level, is conserved functionally and structurally and is expressed by all virulent strains of *H. ducreyi*. An *hgbA* isogenic mutant was highly attenuated in the human model of chancroid implicating hemoglobin as the most important source of heme for *H. ducreyi* *in vivo*. Clinically, it is well known that ulcers bleed readily providing a source of hemoglobin from erythrocytes. During heme acquisition from blood, *H. ducreyi* is exposed to the bactericidal activity of serum antibody and complement. Not surprisingly, *H. ducreyi* has evolved mechanisms to resist serum killing. We have identified two outer membrane proteins, DsrA and DltA (DsrA lectin A) that are required for expression of serum resistance. DsrA mutants are exquisitely sensitive to normal human serum and are killed as a result of IgM initiation of the Classical pathway of complement. A *dsrA* mutant was highly attenuated in the human model of chancroid and we are presently testing a *dltA* mutant. Two possible mechanisms for the attenuated virulence of the *dsrA* mutant are either its serum susceptible phenotype or of its inability to bind to keratinocytes and ECMs. Studies are under-

way to determine the function domains of the *dsrA* protein to better understand the mechanism of attenuation.

**WW-002 MULTIPLE ENTRY RECEPTORS FOR HERPES SIMPLEX
VIRUS AND THE CELL TYPES TARGETED IN DISEASE**

P. Spear

Northwestern University, Chicago, IL, United States of America

Herpes simplex virus (HSV) can cause mucocutaneous lesions at genital and other sites. The virus establishes latent infections in neurons of the peripheral nervous system. Reactivation of this latent virus can lead to recurrent lesions on skin or mucosa or, rarely, to central nervous system disease. The characteristic features of HSV pathology result from viral replication in epithelial cells and from ability of the virus to establish reactivatable latent infections in neurons. Binding of HSV to cells can be mediated by interactions of viral envelope glycoproteins with cell surface heparan sulfate. Entry requires the interaction of HSV glycoprotein D (gD) with any one of three different classes of cell surface receptors: HVEM, a member of the TNF receptor family; nectin-1 or nectin-2, cell adhesion molecules belonging to the immunoglobulin superfamily; or specific sites in heparan sulfate generated by certain isoforms of 3-O-sulfotransferase. To identify the receptors that actually mediate the entry of HSV into epithelial cells, neurons and cells of the immune system, two approaches have been taken. Mutations have been introduced into gD to eliminate functional interactions with one or more receptors while preserving activity with at least one receptor. HSV mutants expressing these altered forms of gD have been used to demonstrate that entry of virus into cultured cells of epithelial or neuronal origin is not mediated by HVEM but probably requires nectin-1 or nectin-2, whereas entry into cells of lymphoid origin can be mediated by the nectins or HVEM. Mutant mice deficient in nectin-1 (provided by Y. Takai, Osaka Univ.) or HVEM (provided by C. Ware, La Jolla Inst. for Allergy and Immunol., and K. Pfeffer, Heinrich-Heine-Univ., Düsseldorf) have been challenged with HSV by the intravaginal route. HVEM deficiency had little, if any, effect on clinical signs of disease after primary infection or on infection of the vaginal epithelium and spread of virus to sensory ganglia. In contrast, nectin-1 deficiency, while permitting infection of the vaginal epithelium, nevertheless altered the spread of virus from the portal of entry and altered the course of disease. These results highlight the importance of nectin-1 in influencing pathology resulting from primary genital disease caused by HSV, at least in mice.

**WW-003 ATTACHEMENT OF TREPONEMA PALLIDIUM,
THE SYPHILIS SPIROCHETE, TO THE EXTRACELLULAR MATRIX
COMPONENT LAMININ**

C.E. Cameron

University of Washington, SEATTLE, United States of America

Syphilis, caused by the spirochete bacterium *Treponema pallidum* subsp. *pallidum*, is a chronic bacterial infection that remains a public health concern worldwide. Interaction of the bacterium with host cells and tissues is crucial to the infection process, yet little is currently known about the pathogenic mechanisms used by this pathogen to initiate and establish infection. *Treponema pallidum* is

a highly invasive pathogen; following attachment to host cells, the organism invades the tissue barrier and enters the circulatory system, resulting in widespread bacterial dissemination. In previous studies, we identified a *T. pallidum* adhesin, designated Tp0751, that exhibits specific attachment to the extracellular matrix (ECM) component laminin. The capacity to attach to laminin is a common feature found among disseminating pathogens. In further studies, we have delineated the laminin-binding epitope(s) contained within Tp0751, and we have expressed this adhesin in non-adherent bacteria and measured a gain of adherence phenotype. The long-term objective of these studies is to further our current knowledge of *T. pallidum* pathogenesis by providing an in depth and detailed study of one of the key molecules involved in pathogenesis of this bacterium.

WW-004 PROTEINS SECRETED BY CHLAMYDIA INTO THE HOST CELL DURING INTRACELLULAR DEVELOPMENT

A. Subtil

Institute Pasteur, Paris, France

Chlamydiae are strict intracellular parasites that grow inside an intracellular compartment called an inclusion. They possess a type III secretion (TTS) apparatus, which is also found in other pathogenic gram negative bacteria, and allows for the translocation of specific proteins across the bacteria double membrane and a cellular membrane. Chlamydiae use this system to translocate proteins in the host cell, both at the entry step, across the plasma membrane, and during intracellular development, across the inclusion membrane. We will discuss recent findings concerning two proteins that are translocated across the inclusion membrane. Chlamydiae possess a unique family of proteins, called the Inc proteins, which are secreted by a TTS mechanism and get inserted in the inclusion membrane. All Inc proteins possess a large bilobed hydrophobic domain, and putative proteins of the family can be identified from genomic data based on this feature. The function of these proteins is mostly unknown, and from their localisation at the frontier between the host and the pathogens, they are attracting candidates to play a role in a variety of functions. IncA is the only member of the Inc family for which a function has been proposed, namely a role in the homotypic fusion of *C. trachomatis* inclusions. We will discuss recent data that led us to propose that IncA proteins may have co-evolved with the SNARE machinery, a conserved complex involved in membrane fusion in eukaryotic cells, for a role in membrane fusion during infection.

Other than Inc proteins, TTS substrates were mostly unknown. Using a secretion assay based on the recognition of TTS signals in *Shigella flexneri*, we have searched for TTS signals in the proteins of unknown function, conserved between three different chlamydial species, *C. pneumoniae*, *C. trachomatis* and *C. caviae*. We have identified 24 new candidate proteins which did not belong to the Inc family. Four of these proteins were also secreted as full-length proteins by a TTS mechanism in *S. flexneri*, indicating that their translocation does not require other chlamydial proteins. One of these proteins was detected in the cytosol of infected cells using specific antibodies, directly demonstrating that it is translocated in the host cell during bacterial proliferation.

SESSION: WS-010 - HIV/STI PREVENTION FOR MEN WHO HAVE SEX WITH MEN IN THE ERA OF HAART

WW-101 WHAT ARE THE REAL CONTEXTS FOR RISK AND HIV/STI MORBIDITY AMONG MSM TODAY?

P. Keogh

University of Portsmouth, London, United Kingdom

The ways in which we understand the risk practices of homosexually active men has changed dramatically over the last decade. The individualistic and largely predictive mode of research which has dominated this field has been enriched by a greater diversity of theoretical and methodological approaches. This presentation will give an overview of the broad range of factors uncovered by this research. These factors will be presented under the following headings:

Structural: Risk practices and HIV/STI morbidity are not evenly distributed amongst populations of homosexually active men. Men from certain ethnic minorities, certain educational and class backgrounds and men who are migrants engage in risks of a different type and scale to the general population of homosexually active men and this is reflected in differences in levels of HIV/STI morbidity. Recent research has attempted to move beyond traditional understandings of a priori 'at risk' demographic groups (young Gay men, Black and ethnic minority Gay men etc) to attempting to describe the social processes that give rise to differences in risk and HIV/STI morbidity.

Interpersonal: Research is increasingly demonstrating that interpersonal contexts and beliefs are crucial to understanding the way in which risk is managed and negotiated. Believed or actual HIV status of self or partner, types of intimate relations (whether sex takes place within a relationship or is casual) and the context of the sex (whether it takes place in the bedroom or the backroom) are all highly relevant to understanding sexual risk. Moreover, beliefs and knowledge about risk reduction strategies (such as negotiated safety, strategic positioning etc) cannot be ignored.

Sub-cultural: Sub-cultural factors undoubtedly have a role to play in influencing men's understandings of risk and HIV. For example, cultures of sexual adventurousness/transgression, certain drug and party cultures and HIV positive sub cultures are all contexts within which sexual risk is differently organised.

Individual/psychological: A range of factors remain important in influencing a man's capacity to manage sexual risk. Such factors include mental health issues such as depression, self esteem, drug and alcohol use etc.

The presentation will conclude with a call for a more inclusive approach to understanding sexual risk for this population and greater integration of diverse research methodologies and theoretical positions.

WW-102 RISING STIS AMONG MSM: EPIDEMIOLOGY AND RISK FACTORS

K.A. Fenton

Centers for Disease Control, Atlanta, United States of America

Substantial declines in rates of diagnosed bacterial sexually transmitted diseases (STDs) in many western industrialized states followed the emergence of the HIV pandemic. However, STDs are

again on the increase, particularly so among men who have sex with men (MSM) – a finding seemingly consistent across geographic settings, age-groups, ethnicities and HIV status.

The reasons for the increases are multi-faceted. There have been substantial demographic changes in MSM populations in developed countries with expansions in the proportion of men reporting homosexual experience, increasing risk behavior among MSM, and expansions in the prevalent pool of HIV positive MSM. Biological factors including epidemiological synergy between HIV and other STDs, and the transmission of drug resistant STDs may be contributory. Expansions and evolutions in the sexual marketplace - social and sexual networks which facilitate sex partner acquisition – have occurred in the past decade, with the Internet, circuit parties providing adding to, or replacing, more traditional venues such as bathhouses and cruising grounds. Each provides particular opportunities for STD transmission, but more importantly, opportunities for STD prevention among MSM at greatest risk for STD/HIV transmission. Although a better understanding of the role of mental health, recreational drug use, childhood sexual abuse, socio-economic deprivation, discrimination and homophobia, to high-risk sexual behavior is emerging, further work is required.

The increasingly global interconnectedness of social trends and health concerns, suggest the need for more robust collaboration between healthcare professionals and MSM communities, within and across geographic boundaries.

WW-103 CHANGING HIGH RISK SEXUAL BEHAVIOURS AMONG MSM – WHY?

J.B.F. de Wit, P.C.G. Adam

Utrecht University, Utrecht, Netherlands

Objectives: Increases in risk-taking among MSM are well documented, but underlying processes are understood less. Several explanations have been advanced that offer descriptions of important phenomena, including bare-backing and the increased use of internet, but do not provide an understanding of underlying psychosocial processes. The present study sought to assess these mechanisms and establish the extent to which risk-taking is intentional or a reflection of opportunities that men encounter. The main premise is that most risk-taking among MSM is not premeditated, but reflects willingness to take risks in certain situations. Willingness may be increased by certain processes and factors, including hiv-prevention fatigue, high sex drive, and social tolerance of unprotected sex.

Methods: French (N=2798) and Dutch (N=1698) homosexual men filled out measures of sexual risk-taking, intention to engage in condom use, intention to have unprotected anal intercourse (UAI), and willingness to have unprotected sex in 12 motivationally distinct situations, combined in a reliable willingness scale.

Results: Few men intended to engage in unprotected sex, or did not intend to have protected sex with casual partners (France 9%, Netherlands 16%). Willingness to take risks was substantially higher, notably when in love, when condoms are unavailable, with an attractive partner, and when highly sexually aroused. Willingness was higher in HIV-positive than HIV-negative men, was independently related to HIV-prevention fatigue, complacent norms, acceptability of UAI, treatment optimism, depression, sex drive, age and

serostatus. Furthermore, willingness independently predicted sexual risk-taking over and above intentions.

Conclusion: Most gay men do not plan to take risks, but many encounter opportunities to have UAIC. The notion of willingness to take risks and an appreciation of its determinants increases understanding of the processes conducive to engaging in UAIC. Willingness not only needs to be studied in behavioural research, but also addressed in prevention.

WW-104 SEXUAL HEALTH AND HIV POSITIVE MSM: WHAT ARE THE CURRENT ISSUES?

J. Imrie

University College London, London, United Kingdom

The increasingly important role played by HIV-positive men who have sex with men's (MSM) in the rapidly changing epidemiology of sexually transmitted infections (STI) among MSM in industrialised countries is widely recognised. Research studies and enhanced surveillance consistently show HIV positive MSM to be disproportionately represented in all STI diagnoses data. While more visible evidence of HIV-positive MSM's deteriorating sexual health comes from the resurgence of infectious syphilis and localised lymphogranuloma venereum (LGV) outbreaks in Europe and North America.

Largely reactive attempts to address these issues including community-based outbreak control measures and apparently 'hard-hitting' targeted health education have so far borne little fruit. On the other hand, providing designated sexual health services, has increased screening and treatment opportunities, but may be 'too far down stream' to realistically impact on STI incidence. From an essentially European perspective, this presentation will provide an overview of the current issues in respect to the sexual health of HIV-positive MSM and attempt to disentangle some of the social, behavioural and epidemiological factors driving the deterioration in HIV-positive MSM's sexual health. Highlighting issues uniquely affecting HIV-positive MSM (e.g. disclosure, behavioural disinhibition) will help in part to illustrate why sexual health promotion providers and their messages are struggling.

WW-105 INTERVENTION MAPPING FOR EVIDENCE-BASED INTERVENTIONS WITH MSM:— WHAT CAN WE DO BETTER?

G. Kok

Maastricht University, Maastricht, Netherlands

Intervention Mapping is presented as a tool for the planning and development of (HIV/std) prevention programs. It serves as a way to map the path of intervention development from recognition of a need or problem to the identification and testing of potential solutions. The steps and tasks included in Intervention Mapping provide a framework for making and documenting decisions about how to influence change in behavior and conditions to promote health and to prevent or improve a health problem. This documentation provides a means to communicate to everyone involved in the process a logical and conceptual basis for how the intervention is intended to work to make change possible. The level of specificity included in each of the products of Intervention Mapping enhances the possibility that a planned program will be effective in accomplishing its goals and objectives. In addition, by making explicit the path-

ways and means by which change is expected to occur and by examining the assumptions and decisions made in each step and task of the Intervention Mapping process, program planners, users, and participants can better explain why a program succeeds or fails. Intervention Mapping will contribute to more effective health promotion programs and better explication of these programs and will result in an enhanced knowledge base for research and practice. In this presentation, the Intervention Mapping process will be demonstrated with examples on 1) primary prevention of HIV/std with MSM through the Internet, and with HIV-positive MSM, 2) HIV-testing for MSM, 3) reduction of HIV-related stigma and 4) promotion of HIV-therapy adherence.

SESSION: WS-011 - DISEASE CONTROL PREVENTION PRIORITIES FOR STIS AND HIV IN DEVELOPING COUNTRIES

WW-201 SEXUALLY TRANSMITTED DISEASE PREVENTION IN DEVELOPING COUNTRIES: WHAT WORKS?

S.O. Aral

Centers for Disease Control and Prevention, Atlanta, Georgia, United States of America

In developing countries, high levels of prevalence and incidence of STI and high rates of complications and sequelae, to a large extent, result from inadequacies in health service provision and health care seeking. Establishment of quality STD services is considerably more difficult in resource poor settings. Variables that affect duration of infectiousness include adequacy of training for health workers, attitudes of health workers toward marginalized groups such as sex workers, volume of patient load at health centers, availability of supportive supervisions, adequacy of health information recording, and availability of drugs and clinic supplies. Improvement of all these factors would decrease the prevalence and incidence of STIs. In many countries in the developing world, worsened economic conditions and increasing burden of AIDS have a negative impact on these factors.

The epidemiology of STD pathogens, local infrastructure, cultural and sociopolitical context vary considerably within and across developing countries. STD service delivery varies by type of institution, location and sector. Despite such variation bacterial STI incidence and prevalence have declined markedly in most developing countries over the past two decades. These declines may be attributable to the widespread implementation of syndromic management, changes in sexual behavior in response to the AIDS epidemic, increases in AIDS-related deaths and condom use, and implementation of preventive interventions that target core groups. Syndromic management is inexpensive, can be standardized and can be used by both physicians and paramedical personnel. However, inadequate local evaluation of treatment algorithms due to scarcity of local data, inconsistencies in implementation and inadequate monitoring may prove problematic. In addition syndromic management tends to undermine STI surveillance. The strategy of targeting interventions to core groups has been somewhat controversial. The relative importance of core groups is influenced by the characteristics of the pathogen, the phase of the epidemic and sexual partnership profiles.

WW-202 ISSUES IN ESTIMATING THE COST-EFFECTIVENESS OF EFFECTIVE STI INTERVENTIONS

M. Over¹, S. Bertozzi²

¹ World Bank, Washington, DC, United States of America

² Natl. Inst. of Public Health, Cuernavaca, Mexico

STIs can be effectively treated and prevented with well known technologies. But the cost-effectiveness of these interventions depends more on peoples' behavior than on the medical technologies in question. This paper applies the tools of the economist to show how a simple intervention like STI treatment can vary in cost-effectiveness by a factor of 25 depending on the location of the treatment site, the willingness of prospective patients to seek treatment, the sexual activity levels of those patients, the incentives to the health care providers, and the choice of syndromic or diagnosis-based treatment protocols. Examples are drawn from the literature on the cost-effectiveness of STI treatment and prevention.

WW-203 THE EFFECTIVENESS AND COST-EFFECTIVENESS OF HIV/AIDS PREVENTION INTERVENTIONS IN DEVELOPING COUNTRIES: RECOMMENDATIONS BY EPIDEMIOLOGICAL PROFILE

S.M. Bertozzi¹, N.S. Padian², J. Wegbreit², L.M. DeMaria¹

¹ Inst. Nacional de Salud Pública, Cuernavaca, Mexico

² University of California, San Francisco, CA, United States of America

Prevention studies and national experiences over the past 20 years strongly suggest that HIV interventions are likely to be most effective when they are carefully tailored to the nature and stage of the epidemic in a specific country or community. Both the effectiveness and cost effectiveness of specific interventions will vary depending on the stage and nature of the epidemic. UNAIDS has developed epidemiological categories (low, concentrated and generalized) for the characterization of individual epidemics, based on the prevalence of infection in particular subpopulations and in the general population.

Data on cost-effectiveness of different prevention interventions by epidemic profile will be presented as cost per disability-adjusted life year (DALY). The data suggest that prevention strategies broadly focused on the population at large should increasingly be adopted as a national epidemic becomes more generalized, while more targeted interventions aimed at modifying the behavior of those at greatest risk of acquiring and transmitting HIV are more appropriate in concentrated epidemics. That said, targeted interventions are likely to still be highly cost-effective, even in high-level, generalized epidemics.

The picture the assembled data paint will be striking in its sparseness. We will argue that the greatest obstacle today to reversing the tide of daily new HIV infections is lack of sufficient information on how effective are different prevention approaches at scale in different settings in developing countries. Such information would not only guide program design, it would make it easier to obtain both political commitment and funds for implementation. Unfortunately, despite its urgent need, such operational and effec-

tiveness research is both less innovative scientifically and less experimental than research to develop new interventions and has been largely ignored by both research funders and the academic community.

WW-204 UNDERSTANDING POPULATION LEVEL PATTERNS OF HIV AND STI INCIDENCE AND PREVALENCE AND THEIR RELATIONSHIP TO RISK BEHAVIOURS AND INTERVENTIONS THROUGH MODELING.

G.P. Garnett, P.J. White, T.B. Hallett

Imperial College London, London, United Kingdom

Background: The diverse local course of the HIV pandemic and the natural history of the evolving HIV epidemics complicate the relationship between interventions, changes in risk behaviours and changes in the incidence of infections. Furthermore, how other STDs are distributed with respect to the same risk behaviours is unclear.

Objectives: To explore the relationship between changes in patterns of risk behaviour and treatment brought about by behaviour change and health care interventions and HIV/STI incidence in a range of epidemiological contexts.

Methods: Deterministic compartmental mathematical models of the transmission dynamics of HIV and STIs have been developed and analysed.

Results: On the basis of reported risk behaviours and observed the prevalence of infection, it is possible to model the expected incidence with and without behaviour change. Comparison of trends in prevalence with these predictions allows us to determine whether there is evidence for substantive behaviour change. Once changes in risk behaviours have had an effect; understanding whether these changes resulted from specific behaviour change interventions requires detailed data on the efficacy and coverage of the intervention. Early on, when a pathogen first invade a population, there is a critical threshold where the system is sensitive to small changes in parameter values, which makes it difficult to predict if and when an epidemic will occur, and therefore whether interventions changing risk behaviour have contributed to preventing epidemics. Additionally, because changes in risk are most influential around this critical threshold, combining interventions, each of which moves the system towards the threshold, can provide better than additive effects.

Conclusions: The impact of interventions that can change risk behaviours in both the individual and the population can be estimated from mathematical models.

WW-205 REPRODUCTIVE HEALTH AND STI/HIV PREVENTION STRATEGIES: THE OVERLAP

W. Cates, Jr.

Family Health International, Durham, NC, United States of America

Preventing the consequences of unprotected sexual activity – unintended pregnancies and sexually transmitted infections (STIs) – is a crucial global priority. Worldwide among women aged 15-44, unintended pregnancy takes a greater public health toll than STIs, including HIV. Four general areas overlap occur in these two fields:

1) The effect of contraception on acquisition of STIs and HIV. Unfortunately, those contraceptives with the best record of preventing unintended pregnancy are not effective in preventing STIs. Strategies to promote dual protection have been explored, but the evidence is weak on which approach, is optimal.

2) Reducing HIV sequelae by providing contraception for HIV-infected women. Preventing unintended pregnancy in HIV-infected women has a major impact on reducing levels of maternal-to-child HIV transmission and/or orphans. Current use of contraception prevents 173,000 infants from becoming HIV-infected; this could be doubled by addressing unmet need for family planning.

3) Integrating services for reproductive health clients – integrating the evolving reproductive health and STI health services needs to have a stronger evidence base. Both level 1 randomized trials and level 2 observational comparisons will be necessary to address the key etiologic and contextual questions involving sexual health services.

4) Effect of unintended pregnancy on STI/HIV prevention research – Many new STI/HIV prevention studies (microbicides, chemoprophylaxis) enroll uninfected reproductive age women as participants. Because of the potential impact of new products on the fetus, most study designs suspend the use of the product if the woman becomes pregnant. If pregnancy rates are high, the validity of the study may be diluted. Thus, enrolling only those who do not intend to become pregnant AND providing them with contraception improves the science in prevention trials.

The more we learn about the needs of reproductive age women, the more we need overlapping RH and STI/HIV strategies.

TO-305 IMPLEMENTATION OF A COMPREHENSIVE PROGRAM FOR STI PREVENTION AND CONTROL FOR FEMALE SEX WORKERS IN KARNATAKA, INDIA

R.G. Washington., M. Shetye, C.T Anitha, S.R. Srikrishna, B. S. Manjunath, N. Shenvi, J.F. Blanchard, M. Alary, S. Moses

Background: It is widely accepted that "conventional" sexually transmitted infections (STIs) enhance the transmission of HIV, and that STI control can decrease HIV transmission. Effective STI case management, especially among vulnerable populations such as sex workers and their clients, is critical in this respect. Current STI treatment algorithms are based on syndromic case management (SCM) principles, but the implementation and delivery of STI services among marginalized population groups in an acceptable fashion is critical for optimum impact. We describe a service delivery strategy that has been developed and implemented in the state of Karnataka in southern India, with a population of approximately 55 million, distributed among 27 districts.

Methods: A system for mapping and training high-volume STI care providers in the private and public sectors in 27 districts was established in 2003. Since 2004, under the project Sankalp "program clinics", "referral doctor" services and "outreach clinics" to serve sex worker populations have been set up in all urban locations where more than 250 sex workers have been identified. The modality of service delivery is adapted to the predominant patterns of sex work in different parts of the state. Standard clinical operating guidelines and procedures have been defined and are being implemented in all service settings. Drugs for SCM of STIs are packaged in different colour coded packs and treatment is provided free of charge. Systems are in place to ensure no stock-out position in the clinics. Ongoing capacity building and monitoring processes have been put into place to ensure that the team of care providers delivers quality care in a non-judgmental fashion. Services provided include routine monthly check-ups, presumptive treatment of asymptomatic infections at first and later visits, prompt SCM while symptomatic, and regular follow-up. Peer-outreach and education approaches are used to encourage women to participate in health services. Condoms are procured from government sources and distributed through outreach workers and peer educators, and are also made visible and available at strategic "hotspot" locations. Outreach workers use locally designed penis models to demonstrate correct condom use and peer educators are involved in helping build condom negotiation skills. A comprehensive computerized monitoring information system tracks registration, outreach and services.

Results: At total of 3,355 physicians in the private and public sectors have been trained on the SCM approach state-wide. Twenty-five program clinics have been established in the 16 districts currently covered by the Sankalp project, and 85 referral doctors have been trained and supported. Of 25,202 sex workers registered under the project to date, 8,746 (34.7%) received STI care during the first year of the project. More than 1,000,000 condoms are being directly distributed to sex workers every month.

Discussion: Expansion of the quantity and quality of STI-focused health services to vulnerable, marginalized populations requires locally adaptable, community friendly, flexible and innovative approaches. Addressing the treatment practices of health care providers and the health seeking behaviour of sex workers and clients represents a continuous challenge.

WP-029 THE SUSCEPTIBILITY OF GONOCOCCAL ISOLATES TO AZITHROMYCIN, CEFUROXIME, AND CEFOTAXIME IN ISTANBUL-TURKEY, 1992-1996

G. Aktaş, Ö. Anö

Istanbul University, Medical Faculty, Istanbul, Turkey

Introduction: Antibiotic resistant strains of *Neisseria gonorrhoeae* have spread with remarkable rapidity in the world. So, surveillance for antimicrobial-resistant *N.gonorrhoeae* is increasingly important. The aim of the study was to survey the azithromycin, cefuroxime and cefotaxime susceptibilities of 105 *N.gonorrhoeae* strains.

Material and Method: 105 *N.gonorrhoeae* strains have been isolated from urethral discharges of patients attended to Istanbul Medical Faculty between 1992-1994. Identification procedures have included colony morphology, oxidase reaction and Gram stain morphology. As a consequence of these findings, the culture confirmation of *N.gonorrhoeae* has been done by coagglutination method using the Meritec-GC test (Meridian Diagnostics, Inc., Ohio). The strains have been investigated for susceptibility to azithromycin, cefuroxime, and cefotaxime by using agar dilution method of The National Committee for Clinical Laboratory Standards (NCCLS). The medium used was GC agar (Difco Laboratories, Detroit, Mich.) supplemented with 1% of Kellogg's defined supplement plus 5% defibrinated sheep blood and incubated for 18 to 24 h at 35°C in 3-5% CO₂. The reference strain was *Staphylococcus aureus* ATCC 29213 was tested in each run. Stock solutions prepared according to the manufacturer's instructions and were diluted according to The NCCLS.

Results: Depending on the known erythromycin MIC results, 34 (%32) of 105 strains have minimal inhibitory concentration (MIC) of $\geq 2\mu\text{g/ml}$ and MIC₉₀: $4\mu\text{g/ml}$ (MIC range $\leq 0.032\text{--}32\mu\text{g/ml}$). Antimicrobial susceptibility testing of 37(35%) isolates of *N.gonorrhoeae* revealed a MIC of $\geq 2\mu\text{g/ml}$ against azithromycin, and 3(2.9%) strains of $\geq 4\mu\text{g/ml}$ against cefuroxime. Non of the strains were resistant against cefotaxime. The MIC₉₀s were: $2\mu\text{g/ml}$ (MIC range $\leq 0.125\text{--}4\mu\text{g/ml}$) for azithromycin, $2\mu\text{g/ml}$ (MIC range $0.063\text{--}8\mu\text{g/ml}$) for cefuroxime and $0.250\mu\text{g/ml}$ (MIC range $0.016\text{--}0.5\mu\text{g/ml}$) for cefotaxime.

Conclusions: The most effected antibiotic has been found as cefotaxim, then cefuroxim. Although azithromycin has been found more active than erythromycin, erythromycin-resistant strains are also resistant to azithromycin.

SESSION: MP - A1 BASIC SCIENCE- HIV/AIDS

MP-001 HIGH RISK BEHAVIOUR AND VARIOUS PRACTICES OF TRUCK DRIVERS REGARDING HIV/AIDS AND STD

S. Bhalla¹, S. Khetarpa², S.K. Rasania¹, S. Singh¹, C. Somasundaram³

¹ Vardhman Mahavir Medical College, New Delhi, India

² ESI hospital Basaidarapur, New Delhi, India

³ MP Shah Medical College, Jamnagar, India

Objective: Truck driving profession requires prolonged absence from home and families. The study was conducted to know various risk behaviours among drivers regarding Hiv/Aids and Stds

Methods: It was conducted in Jamnagar, Gujrat, India. Period of data collection was from Nov 2000 To October 2001 (365 days). 260 days were taken as working days and per day an average 6 drivers were interviewed individually. The truck drivers were contacted at Four places which are the places of entry at this city. On basis of this sample size is calculated as $=260 \times 6 = 1560$ Total 1600 were studied. Further one year was taken for analysis.

Results: Majority (46.8%) were in 15-25 years. 26.3% were illiterate. 41.6% had monthly income between 1001-200 rupees. Except 16.6% drivers all others were long distance drivers. 72% were married. 58% out of total had history of visiting CSWS (commercial sex workers). Visiting tendency was more among married (62.5%) compared to 46.4% unmarried. 70.5% of married drivers visited upto 10 times to CSWS. 40.5% drivers used to drive 11 to 15 hours daily. 27.4% of drivers remained away from their families for more than one month at a time. As duration of staying away from family increased h/o visiting CSWS also increased. 56.9% of total drivers never used condoms during sex with CSWS. 38% of unmarried drivers gave history of STD as compared to 26.6% married. But equal proportion of them had taken treatment for it. 75.3% drivers who gave history of STD were less than 35 years. Out of 1600, 52.8% had not heard about HIV/AIDS. 23.7% considered themselves also as high risk group.

Conclusions: It appears that in transport industry accepted norms of life are totally different from general population. Habits, addictions and visit to prostitutes are routinely carried out but its consequences are not thought of. So, it becomes necessary, how information regarding HIV/AIDS and STD be disseminated among them.

MP-002 HIV EPIDEMIOLOGICAL INVESTIGATION AMONG STD CLINIC ATTENDANTS IN JIANGXI PROVINCE

Q. Liao, G. Li, J. Liu

Jiangxi Provincial CDC, Nanchang, China

Objective: To estimate the HIV infection rate of STD clinic attendants in Jiangxi province.

Methods: Specific study have been conducted among STD clinic attendants in Jiangxi in 2003. A total of 1825 STD clinic attendants in 5 cities of Jiangxi province were investigated. The questionnaire included general conditions, non-marital sexual intercourses in the past three months, condom using, health-seeking behavior etc. The survey was done anonymously. At the same time HIV antibodies, syphilitic antibodies and other related STD check-up were tested.

Results: The proportion of non-marital sexual intercourses was 53.86% (983/1825). 514 persons (28.16%) never used condoms, 451 persons (24.71%) casually used condoms, and 60 persons (3.29%) used condoms every time when had sex intercourse with their

non-marital sex partners within the past one month. Only 234 persons (12.82%) said they used a condom in the last commercial sex with their non-marital sex partner. 168 persons (9.21%) would go to private clinic to seek health service when they have STD symptoms, 67 persons (3.67%) would treat by themselves, 1115 persons (61.10%) would go to STD hospitals, and 460 persons (25.21%) would go to big hospitals. 1412 STD clinic attendants (77.37%) were diagnosed with STD. Three STD clinic attendants were infected with HIV.

Conclusions: Most of STD clinic attendants or their sex partners were promiscuous sex population or have high-risk sex behavior. Their self-protect skill and knowledge were poor. Unprotected sex is still common among this group. In Jiangxi Province, HIV are spreading from promiscuous sex population to high-risk population and normal population (couples). Effective health education to high-risk population to change their high-risk behavior or take safety sex behavior is the most important opportunity to control HIV/AIDS spread.

MP-003 A PROGRAM TO IMPROVE ACCESS TO HEALTH CARE AMONG FEMALE SEX WORKERS WORKING IN ENTERTAINMENT ESTABLISHMENTS

S. Zhu¹, Q. Qihua²

¹ Bureau of Health of Jiangxi Province, Nanchang, China

² Jiangxi Provincial CDC, Nanchang, China

Objective: To improve access to health care among female sex workers who are working in entertainment establishments, we hold a training workshop targeting the bosses of the entertainment establishments in three CHS respectively.

Description: Three regional CDC held three training workshop-targeting the bosses of the entertainment establishments in the community. The medical staffs explained the knowledge of STI, introduced the services of the CHS and hand out many cards with which woman would be provided STD check up free. Woman would be checked up candidosis, trichomoniasis and bacterial vaginosis using microscope. The medical staffs requested the bosses hand out the leaflets and cards to the sex workers who can be contacted with. 74 bosses in three community participated the training workshop held by CDC. Each boss who participated the workshop in Hongdu community got a quilt cover free of charge.

Results: Seventy sex-workers went to Hongdu CHS for STD check-up. Two sex-workers went to DunZitang CHS for checkup. None of sex-workers visit HuFang CHS. The boss in Hongdu community got benefits from the medical staffs and moved by medical staffs. Instigated by the bosses, female sex-workers in Hongdu community went to CHS and got benefits indeed and believe that the medical staffs in Hongdu CHS helped them without pecuniary purpose. So more and more sex-workers visited Hongdu CHS. In other two CHS, the medical staffs in CHS didn't got the confidence and the results are negative.

Recommendations: Female sex-workers change their workplace frequently. It is difficult for medical staff to get sex-workers' confidence just through outreach services within a short time. The bosses of the entertainment establishments will be good peer educators of female sex-workers. This project will be helpful to establish a new model of STI/AIDS combination service in CHS.

MP-004 GENOTYPIC DRUG-RESISTANCE PATTERNS IN HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 (HIV-1) INFECTED PATIENTS FAILING HIGHLY ACTIVE ANTIRETROVIRAL THERAPY (HAART)A.P.H. Pascual¹, F.F.C. Fernández-Cuenca², E.P.P. Perea²¹ Facultad de Medicina, Sevilla, Spain² Hosp. Univ. Virgen Macarena, Sevilla, Spain

Objectives: to analyse the prevalence of drug-resistance mutations and genotypic resistance profiles in HIV-1 infected patients failing HAART in a University Hospital of Seville. **Methods:** One hundred and ten plasma samples from patients attended in the University Hospital Virgen Macarena of Seville (Spain) during 2003-2004 were studied. 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 PR inhibitors was detected in 56.4% of the PR sequences, whereas mutations associated with resistance to nucleoside reverse transcriptase inhibitors (NRTIs) and non-nucleoside reverse transcriptase inhibitors (NNRTIs) were detected in 22.7% and 47.3% of the RT sequences, respectively. The mutations more frequently observed in the PR gene (polymorphisms are not analysed) were the L90M (27.3%; 9.1% L90M and 18.2% L90M + 1 to 6 PR mutations) and M46I/L (22.7%; 1% M46I/L and 21.7% M46I/L + 1 to 6 PR mutations). The main mutations observed among the RT sequences were the M184V (49.1%; 15.4% M184V and 25.4% M184V + 1 to 5 thymidine analogue mutations or TAMs), the TAM T215Y/F (40.0%) and the NNRTI-associated mutation K103N (38.2%; 22.7% K103N and 10.9% K103N + L100I, Y181C, Y188L or G190A/S). The K65R mutation was observed in 4.5% of the RT sequences. The Q151M was the unique multiresistance mutation observed (5.5%). **Conclusions:** although there is a high prevalence of mutations associated with drug resistance among the HIV infected subjects of this study, in a significant number of patients no mutations in either the RT gene or the PR gene were detected. Therapeutic failure in these patients could be due to lack of adherence.

MP-005 PHENOTYPIC CHARACTERIZATION AND CORECEPTOR USAGE OF HIV-1 SUBTYPE CRF01_AE (E) ISOLATES IN THAI RAPID PROGRESSORST. Chuenchitra¹, C.W. Was², S.L. Louisirojchanakul², M.Z. de Souza¹, S.N. Nitayaphan¹, R.S. Sutthent², A.B. Brown³, D.B. Birx³, V.P. Polonis³¹ AFRIMS, Bangkok, Thailand² Siriraj Hospital, Bangkok, Thailand³ WRAIR, Rockville, United States of America

Objectives: To characterize phenotype and coreceptor usage of HIV-1 subtype CRF01_AE isolates in rapid progressors (RPs) and determine the relationship with viral load and CD4+ cell counts. **Methods:** Fourteen virus isolates were isolated from cryopreserved peripheral blood mononuclear cells in 8 HIV-1 subtype CRF01_AE Thai RPs. The phenotype and ability of primary isolates to use coreceptors was determined by MT-2 phenotype and RANTES competition assay using Flow cytometry endpoint, respectively. In 8 RPs, 6 RPs were followed up (median = 2.7 years) and 2 RPs had only 1 visit.

Results: HIV isolates of 3 of 8 RPs switched from NSI to SI. These 3 NSI viruses used the CCR5 and 2 of 3 NSI virus switched to use CXCR4 and the other switched to use both CCR5 and CXCR4. The remaining of 5 RPs (8 virus isolates), they were all SI using CXCR4. In addition, we found that SI virus isolates were isolated from patients with CD4+ cell counts ranged from 27 to 643 cells/mm³ (median = 133 cells/mm³) and viral load ranged from 4,387 to >500,000 copies/ml (median = 53,458 copies/ml) whereas, NSI virus isolates were isolated from patients with CD4+ cell counts ranged from 213 to 860 cells/mm³ (median = 628 cells/mm³) and viral load ranged from 1,258 to 34,728 copies/ml (median = 7,212 copies/ml). Significant difference in CD4+ cell counts of patients with NSI and SI viruses was demonstrated (p = 0.024, Mann-whitney U test). However, there are no significant difference between level of viral load of patients with NSI and SI viruses.

Conclusions: This study indicated that HIV-1 subtype CRF01_AE infected RPs carried SI virus had lower CD4+ cell counts regardless level of viral load. The appearance of R5X4 and X4 variants signalled accelerated CD4+ T cell loss and disease progression.

Patients	Visit	CD4+ cell count (cells/mm ³)	Viral load (copies/ml)	Phenotypic	
				SI/NSI	Coreceptor usage
NI 1043	Dec 96	643	27,867	SI	X4
	Sep 98	97	82,484	SI	X4
NI 1046	Aug 96	860	34,728	NSI	R5
	May 99	121	>500,000	SI	X4
NI 1051	Mar 94	695	5,561	NSI	R5
NI 1052	Mar 94	562	1,258	NSI	R5
	Oct 99	27	53,218	SI	X4
NP 1067	Jan 96	151	53,697	SI	X4
	Aug 98	101	4,649	SI	X4
NP 1068	May 97	529	26,435	SI	X4
NP 1443	Jan 96	213	8,864	NSI	R5
	Mar 99	50	4,387	SI	R5X4
NP 1449	Apr 98	472	34,3424	SI	X4
	Jan 99	145	>500,000	SI	X4

Table 1: Phenotype and Coreceptor Usage of Primary HIV-1 Isolates

MP-006 HIV/AIDS CHALLENGE AND RESPONSE IN CHINA

J. Shen, X. Wang

National Centre for AIDS/STD, China

Issues: The epidemic of STI and HIV is an increasingly serious threat to public health in China. The incidence rate of STI in China more than doubled between 1995 and 2000 and it is estimated there may be up to 0.84 million cases of HIV in China by 2005. In fact, the cumulative reported HIV infections: 89,067 and reported AIDS cases: 20,786, by the end of 2004.

Description: The epidemic of AIDS in China is characterized by a wide disparity between high and low prevalence regions. Injecting drug use is the main HIV transmission route, the number of AIDS-related deaths is increasing and the spreading is from high risk groups to the general population. The number of AIDS-related deaths is increasing. So government start the 'Four frees and one care' project in 127 counties of 28 provinces in China. This's the first major national initiative to directly address the needs of families and communities affected by HIV

Lessons learned: The policy and project from the government means that 'Free ARV drugs to AIDS patients who are rural residents or people with financial difficulties living in urban areas; Free Voluntary Counseling and Testing (VCT); Free drugs to HIV infected

pregnant women to prevent mother-to-child transmission, and HIV testing of newborn babies; Free schooling for children orphaned by AIDS; Care and economic assistance to the households of people living with HIV/AIDS.' This accessed about 10,368 into ARV treatment. Slogans and posters were put up on the wall in the China CARES sites, in order to cultivate a favorable community environment for HIV/AIDS prevention and control. A qualified professional team for grassroots AIDS prevention and control has been building up through tiered training for China CARES.

Recommendation: Establishing care and treatment protocol by government so that targeted HIV prevention efforts can be implemented, and share some experiences with other regions. This will be effective for China to face the challenge of HIV/AIDS threat.

SESSION: MP - B1 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- HIV/AIDS

MP-007 PREVALENCE OF HIV-1 INFECTION AMONG STREET-RECRUITED COMMERCIAL SEX WORKERS IN BARCELONA

M. Vall Mayans¹, M. Villa², M. Saravanya¹, M. Meroño³, T. Tórtola², E. Loureiro¹, B. Sanz¹, P. Saladié¹, E. Arellano¹, M.G. Codina²

¹ Catalan Health Institute, Barcelona, Spain

² Hospital Vall d'Hebron, ICS, Barcelona, Spain

³ Àmbit Prevenció, Barcelona, Spain

Objective: To determine prevalence of HIV-1 infection in street-recruited commercial sex workers in Barcelona.

Methods: After being informed about the project by an outreach organization with a service for female street prostitutes (Àmbit Dona) and giving their consent, sex workers were invited to answer a structured questionnaire and to submit a urine specimen. IgG antiHIV-1 antibodies were detected with the Calypte HIV-1 urine EIA test (Calypte Biomedical Corp) and confirmed by Western blot (Bioblot HIV-1). Specimens were collected consecutively from participants between February and June 2002 and again in 2003. The HIV-1 results from this population were used only for epidemiological purposes.

Results: 28 homosexual men and 301 women were studied, 93% of them immigrants. Overall there were 30 (9%) EIA reactive tests that required confirmation by Western blot. After that, 11 results (3 women and 8 men) were considered positive, HIV-1 prevalence being 3.3% (CI 95%: 1.7-5.9), 26.7% in men and 1.0% in women (P<0.001). Three results (all women) were indeterminate. Five of the patients with HIV-1 positive tests, 3 men and 2 women (and one with an indeterminate result too) knew they were HIV positive.

Conclusions: In Barcelona, like in other European cities, HIV infection rates are low in female sex workers who do not use intravenous drugs, even among foreign-born women. However, HIV rates are much higher in male prostitutes, as suggested in this study too, although in this case men were not the target study population and selection bias could not be ruled out. Interventions facilitating the diagnosis and treatment of STI and those to prevent the spread of STI among street-recruited foreign prostitutes extended to men clearly need to be implemented and maintained.

MP-008 INHIBITION OF NUCLEIC ACID AMPLIFICATION TESTS BY RESIDUAL AMOUNTS OF THE MICROBICIDAL 6% CELLULOSE SULFATE VAGINAL GEL

T. Crucitti¹, V. Jespers¹, L. van Damme², E. van Dyck¹, A. Buvé¹

¹ Institute of Tropical Medicine, Antwerp, Belgium

² CONRAD, Arlington, United States of America

Objectives: Nucleic Acid Amplification Tests (NAATs) are performed to detect *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG) infection during screening, enrollment and follow-up visits of phase III microbicide trials. In vitro testing with microbicide gels demonstrated various degrees of inhibition of NAATs. In preparation for the phase III 6% Cellulose Sulfate (CS) trial we assessed the product's in vivo effect on NAATs.

Methods: Ten women applied the gel once on day 0; twenty women applied the gel once daily for 4 days. Self-administered vaginal specimens were collected at day 0 (before gel), day 1 (after 24 hours), and day 4 (96 hours) by the first 10 women and at day 0 (before gel), day 1, day 2, day 3, and day 4 by the next 20 women. The inhibitory activity of the microbicide on NAATs for CT and NG infection was assessed. The evaluated NAATs were: the Strand Displacement Amplification assay (SDA); the Amplicor; and in-house PCRs targeting β 2-microglobulin, GC cppB, and CT MOMP gene.

Results: The specimens collected by the first 10 women were analyzed and no inhibition of the SDA or β 2-microglobulin gene PCR occurred. For the Amplicor 50% and 20% inhibition was present on day 1 and day 4, respectively.

The analysis of the self-collected specimens of the next 20 participants showed again no inhibition of the SDA. Inhibition of the Amplicor and β 2-microglobulin PCR of specimens collected on days 1, 2, 3 and 4 was detected and ranged between 40-65% in one or both of these techniques.

Conclusion: The SDA assay is the only NAAT, which was not inhibited by the residual CS gel present in the vaginal specimens. We do not recommend the use of the Amplicor or in-house PCR in CS phase III clinical trials.

MP-009 AETIOLOGICAL AGENTS OF VAGINITIS IN NIGERIA WOMEN

N.M. Otuonye¹, N.N. Odunukwe¹, E.O. Idigbe¹, O.D. Imosemi², S.I. Smith¹, R.C. Chigbo¹, C.T. Oparaugo¹

¹ Nigerian Institute of Medical Research, Lagos, Nigeria

² Lagos University Teaching Hospital, Lagos, Nigeria

Objective: The study focused on identifying a profile of microbial agents that cause vaginitis among women in Lagos and to establish which therapeutic agents to be used in its clinical management.

Methods: Subjects for the study were drawn from patients who presented with lower abdominal pain, abdominal vaginal discharge and itching at the Gynaecology Clinic, Lagos University Teaching Hospital and Nigerian Institute of Medical Research, Lagos between January 2001 and July 2002. Two hundred and fifty of these patients who gave informed consent to participate in the study were enrolled. The patients had pre and post-test counseling for HIV tests. A questionnaire was completed for each patient to generate information on bio-data, past clinical history and socio-economic background. Cervical Swabs and High Vaginal Swabs

were obtained from each of the enrolled patients. The swab samples were examined for the pH levels, under light microscopy by Gram's stain. 10% potassium hydroxide and wet preps. Subsequently samples were cultured on appropriate media. Optimal conditions and drug sensitivity profile of all isolates were determined by standard methods. The blood samples were screened and confirmed for HIV antibodies.

Results: Bacterial, fungal and parasitic pathogens were identified or isolated from samples of 241 (96.4%) of the women. Bacterial agents (*Neisseria*, *Streptococcus* and *Staphylococcus* species) were more predominantly identified/isolated from [128(51.2%)] followed by fungal isolates (Yeast) [108 (43.2%)] and parasitic agents (*Trichomonas*) [5(2.0%)]. Forty percent (40%) of *Staphylococcus* species and 90% of the *Neisseria* isolates were sensitive to ciprofloxacin. Twenty-five (10%) of the 250 women had positive serology for HIV. Twenty, 20(80%) of these positive patients had microbial infections while 5(20%) had no microbial infections.

Conclusion: Overall data established the broad spectrum of microbial agents responsible for vaginitis in Lagos and their drug sensitive profile. 10% HIV seropositivity was established in the patients.

MP-010 RAPID HIV TESTING IN THE STI CLINIC OF THE MUNICIPAL HEALTH SERVICE, AMSTERDAM, THE NETHERLANDS

*E.J.M. van Leent, K. de Jong, J.S.A. Fennema
GGD Amsterdam, Amsterdam, The Netherlands*

Introduction: Due to a reticent HIV test policy in the Netherlands in the past, a low percentage of people at risk are aware of their HIV sero status. The percentage of patients of our clinic tested for HIV rose from 8% in 1997 up to 42% in 2003. Apart from a pro active HIV-test policy we introduced rapid 1 hour HIV testing. In this study we evaluated rapid HIV testing in a high risk group, based on a risk evaluation during history taking.

Method: The Abbott Determine HIV 1/2 test was used between October 25 and December 31, 2004 for patients upon their first visit to our STI-clinic. As control, regular HIV-testing using Elisa and Western-blott tests.

Results: 1301 patients who opted for HIV testing, were offered a rapid HIV-test. 550 patients (42.3%) preferred a rapid HIV test while 751 declined and preferred the regular test. Of the 550 rapid HIV test 540 were negative, 10 were positive (1.8%). All 550 test results have been confirmed with regular tests (Elisa, Western blott). 1483 patients were not selected for the rapid HIV-test because of their low-risk profile. 1.144 (77%) of these were HIV tested: 1.139 were HIV negative and 5 were HIV positive (0.4%).

Discussion: because of the possibility of a false-positive result when using a rapid HIV-test, it was decided to offer this test only to higher risk groups. The incidence of the higher risk group is 1.8%, and in the low risk group the incidence was 0.4%. The percentage of patients tested for HIV is increased from 42% to 57.5%. As a result, rapid HIV testing have been introduced as the standard HIV-test for high risk groups in our STI clinic.

MP-011 AN EVALUATION OF HIV KITS USING DRIED BLOOD SPOTS (DBS)

*M.C. le Roux, SA Mathole, AA Hoosen
University of Limpopo, Medunsa Campus, Tshwane, South Africa*

Objectives: To evaluate and compare the performance of three commercial HIV kits (FDA and non-FDA approved) for testing DBS. **Methods:** Ninety DBS were obtained from females volunteering for participating in a microbicide study at the Set?haba Research Centre in Soshanguve, Pretoria. These women were tested for antibodies to HIV using the OraQuick Advance Rapid HIV1/2 Antibody test from OraSure Technologies and Abbott Laboratories' Determine HIV1/2 assay. Dried blood spots were prepared from each blood specimen. Each DBS specimen was eluted, and tested with the Genetic systems rLAV EIA from BioRad (FDA approved), Vironostika HIV-1 plus O Microelisa system from BioMerieux (FDA approved) and the Elecsys HIV combi test from Roche (non-FDA approved).

Results: Of the 90 DBS tested, 82 (91%) had the same result for all methods used (including the rapid tests used at the Research Centre). Of these 82, 15 (18,3%) were positive for HIV. Discrepant results were obtained for 8 specimens. Four of these (4,4%) were positive with the Roche and Vironostika kits, and in agreement with the OraQuick and Determine tests. Four specimens (4,4%) were positive only with the Roche kit, and were also positive with the rapid tests.

Conclusions: Of the assays used for testing DBS for HIV, the Elecsys HIV combi performed the best (100% correlation with rapid tests used at the Research Centre). The rLAV EIA from BioRad had a 91% correlation and the Vironostika, 96% correlation with the rapid tests.

MP-012 PERFORMANCE OF AN HIV DIAGNOSTIC ALGORITHM ON IDENTIFICATION OF INCIDENT INFECTION

B. Van Der Pol¹, R.A. Salata², T. Chipato³, F. Mmoro⁴, R. Mugerwa⁴, N.S. Padian⁵, B. Richardson⁶, C.S. Morrison⁷

¹ *Indiana University, Indianapolis, United States of America*

² *Case Western Reserve Univ, Cleveland, OH, United States of America*

³ *University of Zimbabwe, Harare, Zimbabwe*

⁴ *Makerere University, Kampala, Uganda*

⁵ *Univ California San Francisco, San Francisco, CA, United States of America*

⁶ *University of Washington, Seattle, WA, United States of America*

⁷ *Family Health International, Durham, United States of America*

Objectives: To evaluate the algorithm for diagnosing HIV infections in a longitudinal study in sub-Saharan Africa.

Methods: Seronegative women were enrolled at family planning clinics in Uganda and Zimbabwe and followed up to 30 months. HIV diagnosis was done using EIA and up to 2 rapid assays. If EIA and both rapid tests were negative, the participant was classified as uninfected. All other samples were confirmed by western blot (WB) and/or PCR.

Results: 4,451 women contributed 31,637 follow-up visits. There were 63 seroconverters in Uganda and 155 in Zimbabwe. In Uganda, 182 women had 356 positive EIA results. 293 were not seroconversion visits and 119 of these participants never seroconverted (positive predictive value [PPV] 34.6%). Use of a single rapid result increased

PPV to 85.5%, and the sensitivity was 84.1%. Addition of the second rapid result increased sensitivity to 95.2% and PPV to 98.4%. Similar improvement of the diagnostic precision was seen in Zimbabwe where 306 women had 356 positive EIA results. 202 EIA positives were not seroconversion visits and 151 of these participants never seroconverted (PPV 50.7%). Addition of the both rapids increased the PPV to 91.3 and 98.7%, respectively and the sensitivity to 94.2 and 98.1%, respectively. In Uganda, 43 women had multiple positive EIA results; only 6 (13.9%) were eventually classified as infected. In Zimbabwe, only 24 women had multiple EIA positive results and 9 (37.5%) were infected. The difference in specificity between the sites suggests a population-specific serologic factor.

Conclusions: Antibody tests for detection of HIV infection have been primarily evaluated in screening populations to identify prevalent disease. For studies with incident HIV infection as the outcome, it is important to assess the precision of the diagnostic algorithm.

MP-013 RAPID HIV TEST: A PILOT STUDY WITH INTEGRATION IN THE STANDARD PRACTICE OF MUNICIPAL HEALTH SERVICE ROTTERDAM

*I.K. Veldhuijzen, H.M. Götz, B. Nuradini, K. van den Hoek, O. de Zwart
Municipal Health Service Rotterdam area, Rotterdam, The Netherlands*

Objectives: The Municipal Health Service of Rotterdam offered the rapid HIV test to clients consulting for an HIV test and studied how clients valued the test and if implementation in the Municipal Health Service would be feasible. In a rapid HIV test procedure counseling, blood withdrawal and the test result all take place within one hour.

Methods: From december 2003 through june 2004 rapid HIV-test clients were asked to complete a questionnaire in the waiting time. For comparison questionnaire data from 40 clients of the regular test were collected. The public health nurses were interviewed.

Results: During the pilot 201 clients were seen for a HIV rapid test of whom 185 (92%) participated. All rapid tests in the period of the pilot were negative. Clients gave the rapid test a mark of 9,3 (out of 10). Of participants who had not been tested for HIV previously (55%, 101/185), 48% indicated that the week waiting time for the test result and fear for the result (for 56%) were reasons not to get tested. Of reasons for choosing the rapid test, not wanting to wait a week for the test result is subscribed by 96% of the clients. Clients of the rapid test did not differ from clients of the regular test by ethnicity, sexual orientation and number of partners. The public health nurses were able to carry out the rapid HIV test well after a period of practising and appreciated working with the test.

Conclusions: The rapid HIV-test lowers the threshold for HIV-testing but did not draw clients with a higher risk or from high risk groups. In view of the positive evaluation of the rapid test by clients and the feasibility in practise, the Municipal Health Service Rotterdam decided to make the rapid HIV test standard practice.

MP-014 QUANTITATIVE STABILITY OF HIV RNA AND HSV DNA IN CERVICOVAGINAL LAVAGE FLUID SAMPLES AFTER PROLONGED STORAGE AT DIFFERENT TEMPERATURE CONDITIONS

J. Legoff¹, C.T. Tanton², P.T. Tisserand¹, A. Si-Mohamed¹, H. Weiss², L. Belec³

¹ *Hopital Europeen Georges Pompidou, Paris, France*

² *LSHTM, London, United Kingdom*

³ *INSERM U743, Paris, France*

Objectives: The ability to assess viral burden in genital secretions is essential in understanding the mechanisms of heterosexual transmissions of herpes simplex virus (HSV) and human immunodeficiency virus (HIV) infections, and in predicting the effect of antiviral therapy at the level of the genital compartment. In order to prevent viral nucleic acid degradation, specimen handling procedures prior to viral quantifications include rapid freezing after sampling. However, this can be problematic in studies set in non-urban areas of tropical countries, where rapid transport of samples from the clinic to the central laboratory may not be feasible. The aim of the study was to determine the HIV-1 RNA and HSV-2 DNA stability in genital fluid over time at different storage temperature. Methods: Acellular fractions of cervicovaginal lavage from HIV and HSV-2 seronegative women spiked with known amount of HIV-1 RNA and HSV-2 DNA were stored at 4°C, 20°C and 30°C respectively for 6 days and were tested for HIV-1 RNA and HSV-2 DNA quantifications by real time PCR at several timepoints (3h, 6h, 24h, 48h, 72h, 96h, day 5, day 6).

Results: Viral load determinations showed that HIV RNA and HSV DNA are very stable over time at any storage temperature with no variation of viral load above 0.3 log between all samples for at least 96h. Interestingly, storage at tropical temperature did not decrease the amount of both DNA and RNA viral genomes. After a 96h incubation period, a slow decrease in HSV DNA levels was observed for CVS stored at room temperature and 30°C while no difference was detected for HIV RNA for 6 days.

Conclusion: These results suggest that cell free supernatant of cervicovaginal lavage tested for HIV RNA and HSV DNA quantifications do not require immediate freezing. Further investigations on the field are needed to confirm these data.

MP-015 IMPACT OF HAART ON HIV-1 AND HSV-2 GENITAL SHEDDING AMONG WOMEN IN BURKINA FASO

N Nagot¹, A. Ouedraogo¹, L. Vergne¹, I. Konate¹, P. Mayaud², R. Vallo¹,

J.B. Andonaba¹, V. Foulongne³, M. Segondy³, P. Vande Perre³

¹ *Centre Muraz, Bobo-dioulasso, Burkina-Faso*

² *LSH&TM, London, United Kingdom*

³ *CHU Montpellier, Montpellier, Burkina-Faso*

Objective: HAART is becoming increasingly accessible in Africa. The objective of the study was to assess its impact on HIV-1 transmission and associated cofactors (eg HSV-2).

Methods: HIV-1 and HSV-2 co-infected women from an ongoing cohort of high-risk women in Burkina Faso were initiated on HAART. Measurements at cohort entry and 4 months later (at enrolment into an HSV treatment trial) included: HIV-1 plasma viral load, CD4 count, HIV-1 and HSV-2 genital viral loads in cervico-vaginal lavages (CVLs) using real-time PCR.

Results: At trial enrolment, 34 women had been on HAART for a mean time of 4.4 months and all had undetectable HIV-1 plasma loads. Among women with available paired CVLs, there was a significant decrease in the frequency and quantity of HIV-1 genital shedding after initiation of HAART: 12/29 (41%) women shed HIV-1 before HAART vs 5/29 (17%) after (Mac Nemar test $p=0.05$); HIV-1 genital load was 3.2 log copies/ml before and 1.3 log copies/ml after HAART ($p<0.001$). CD4 count increased by a mean of 132/ μ l. HSV-2 genital viral load was significantly lower after HAART: 1.5 vs 2.6 log/ml ($p=0.03$).

Conclusions: Our data suggest a marked impact of HAART on HIV-1 genital shedding, but the persistence of HIV-1 in genital fluids despite systemic control supports the hypothesis of a genital compartmentalisation of HIV-1 replication. Our data also support the role played by the lack of HIV-1 immunological and/or virological control on HSV-2 genital shedding. Longitudinal studies will assess the pattern of HIV-1 and HSV-2 shedding in this population.

MP-016 DETECTION OF HIV-1 ANTIBODIES IN MALE URINE BY CALYPTE HIV-1 URINE EIA, FC: PERFORMANCE OF GACPAT HIV 1+2 AS AN ALTERNATIVE TO WESTERN BLOT CONFIRMATION FOR FIELD STUDIES

M. Alary¹, A.C. Labbe², D. Fortin¹, H. Meda³, R. Bitera³

¹ Hôpital du St-Sacrement du CHA, Québec, Canada

² Hopital Maisonneuve-Rosemont, Montreal, Canada

³ Projet Sida-3, Cotonou, Benin, Dahomey

Objectives: 1) To evaluate the performance of Calypte HIV-1 urine EIA Fc (Calypte Biomedical) and of anti-HIV 1/2 antibody capture particle adherence assay (GACPAT HIV 1+2); 2) To evaluate the utility of GACPAT as a supplementary assay to confirm Calypte EIA positive results.

Methods: Urine samples were collected from male clients of prostitutes in Benin (Nov 2001-Feb 2002). Samples were tested with Calypte EIA and, when repeatedly positive, with Calypte HIV-1 Urine Western Blot (WB). Initially positive samples with the Calypte EIA (and 50% of randomly selected negative samples) were re-tested with GACPAT. Samples with discordant results were re-tested with HIV 1+2 GACELISA. A subject was considered infected if the WB or both GACPAT and GACELISA were positive.

Results: The prevalence of HIV infection was 7.6% (68/898). Calypte EIA was initially positive for 134 samples (14.9%) and repeatedly positive for 106 samples. Calypte EIA was negative for 2/68 infected subjects. The sensitivity, specificity, positive predictive (PPV) and negative predictive (NPV) values for the initial Calypte EIA alone were 97.1%, 91.8%, 49.3% and 99.7%. After repeat testing, the specificity and PPV of Calypte EIA increased to 95.2% and 62.3%, respectively. With GACPAT, 75/546 samples were positive and 5 were equivocal. Performance values were respectively 96.9%, 97.5%, 84.0% and 99.6%. The WB correctly confirmed Calypte EIA positive results for 65/66 (98.5%) subjects (1 indeterminate) while GACPAT correctly confirmed 61/66 (92.4%) positive results (2 negative and 3 equivocal). GACPAT was also positive for 4/40 subjects whose samples were negative by WB.

Conclusions: Calypte EIA necessitates WB confirmation, which is very expensive. GACPAT is more specific than Calypte EIA and, when used as a supplementary assay, has acceptable performance for epidemiologic studies but may lack sensitivity for clinical diagnosis.

MP-017 COMPARISON OF FOUR METHODS USED TO COLLECT GENITAL SECRETIONS FOR THE DETECTION AND QUANTIFICATION OF HIV-1 RNA AND HSV-2 DNA IN A SOUTH AFRICAN FEMALE POPULATION

S. Delany¹, W. Le Roux², G. Napier², R. Rosas³, W. Stevens², H. A. Weiss⁴, P. Mayaud⁴

¹ Reproductive Health & HIV Research Unit, Johannesburg, South Africa

² Wits University, Johannesburg, South Africa

³ U. of Minnesota Medical School, Minnesota, United States of America

⁴ LSHTM, London, United Kingdom

Background: Currently there is limited data on the frequency of genital HIV and HSV-2 shedding in African populations. To date, there has been no direct comparison of the performance of all the different methods of specimen to determine the optimal method for detection and quantification of both HIV RNA and HSV-2 DNA in the genital fluids of African women.

Objectives: We compared the performance of four methods (cervico-vaginal lavage, 'enriched' CVL, cervical swab and vaginal tampons) used for the collection of genital secretions, taking into account the order of specimen collection.

Methods: Genital fluid specimens were collected from 20 HIV and HSV-2 seropositive women using three different procedures (CVL, eCVL and swab) at weekly intervals over a period of four clinic visits. Participants were give vaginal tampons for home-sampling at three of the four visits. The order of specimen collection was different at each of the four visits. HIV RNA and HSV-2 DNA levels were detected and quantified using published methods.

Results: Results were available for 19 women. 18/19 (95 %) and 11/19 (58 %) shed HIV and HSV-2 respectively at least once into the genital tract over the four visits. 271 specimens were tested. HIV RNA was detected 27% of all specimens respectively, with HIV RNA detected in 1% of cervical swabs, 23% vaginal tampons, 32% CVL and 41% eCVL. HSV2 DNA was detected in 11% of specimens. Conclusions: HIV RNA is more frequently detected than HSV-2 DNA in genital fluid specimens, and most HIV infected women shed HIV in the genital tract. eCVL and CVL appear to be better methods for detection of both viruses. Vaginal tampon may also provide a useful method for home collection of specimens.

SESSION: MP - C1 EPIDEMIOLOGY- HIV/AIDS

MP-018 BEHAVIORAL RISKS AND ULCERATIVE AND NON-ULCERATIVE STI PREDICT HIV SEROCONVERSION AMONG PUBLIC STD CLINIC PATIENTS

S.D. Mehta¹, K.G. Ghanem², A.M. Rompalo², E.J. Erbelding²

¹ Boston University School of Medicine, Brookline, United States of America

² The Johns Hopkins University, Baltimore, United States of America

Objectives: Identifying persons at risk for HIV-seroconversion (HIV-SC) can inform targeted testing and prevention interventions. We calculated the incidence rate and defined risks for HIV-SC among patients attending two public STD clinics in Baltimore, Maryland.

Methods: We conducted a retrospective cohort study from January 1993-October 2002 of clinic attendees age>12 years. A negative baseline ELISA for HIV was required for inclusion. Observation time was 30 days minimum censored at 3 years. The primary outcome was HIV-SC (ELISA and Western Blot positive). Behavioral

risks, STD diagnoses, and clinical signs at initial HIV test were assessed in multivariate Poisson regression. Relative rates (RR) with 95% confidence limits (C.I.) are reported.

Results: 125 HIV-SCs occurred among 10,535 individuals and 13,693 person-years of observation for an overall incidence of 0.91 HIV-SCs per 100 person-years (95% C.I. 0.76-1.09). Median time to HIV-SC was 1.54 yrs (95% C.I. 1.11-1.73). In multivariate regression, HIV-SC was associated with older age, injection drug use (IDU) (RR=1.91; 95% C.I. 1.02-3.55), cocaine use (RR=1.83; 95% C.I. 1.15-2.91), > 2 sex partners in the past month (RR=1.87; 95% C.I. 1.22-2.84), contact to a sex partner with syphilis (RR=3.05; 95% C.I. 1.62-5.75) or HIV (RR=2.56; 95% C.I. 1.07-6.12), 'ever' having sex with an HIV-positive partner (RR=2.61; 95% C.I. 1.21-5.62), genital ulcer disease (RR=2.16; 95% C.I. 0.99-4.73) and gonococcal infection (RR=1.67; 95% C.I. 0.99-2.80). HIV-SC incidence per 100 person-years was: 4.86 for contact to a sex partner with HIV, 3.06 for patient IDU, and 2.40 for genital ulcer. In gender-stratified analyses, gender-specific behavioral and STI risks differed.

Conclusions: We found a high incidence of HIV-SC among public STD clinic clients with specific risks. Developing and testing algorithms with HIV viral load testing targeted to patients at highest risk for seroconversion will optimize prevention and resource utilization.

MP-019 HIV AMONG ORPHANS AND VULNERABLE CHILDREN IN RURAL ZIMBABWE: DATA FROM THE REGAI DZIVE SHIRI PROJECT ADOLESCENT REPRODUCTIVE HEALTH TRIAL IN RURAL ZIMBABWE

S.J.S. Pascoe¹, L.F. Langhaug², J. Durawo³, S. Jaffar⁴, R. Hayes⁴, F.M. Cowan²
¹ London School of Hygiene & Tropical Med, Johannesburg, South Africa
² University College London, Mutare, Zimbabwe
³ University of Zimbabwe, Mutare, Zimbabwe
⁴ LSHTM, London, United Kingdom

The Regai Dzive Shiri project is a community randomised trial of an adolescent reproductive health intervention in rural Zimbabwe. The primary objective is to measure the effectiveness of the intervention on the incidence of HIV-1 among a cohort of secondary school students. A cohort of 6791 students (3270 girls) from 82 schools, in 30 communities, was enrolled in 2003. Dried blood spot samples were tested for HIV-1 antibodies using Labsystems and Vironostika Uniform 2+0 ELISA. Age ranged from 12-21 years (mean age: boys 15.5, sd=1.21; girls 14.9, sd=0.97). The overall HIV-1 prevalence was 0.75% (95% CI: 0.56-0.99). HIV-1 prevalence among girls was 0.95% and among boys 0.57% (age-adjusted OR=1.7; 95% CI: 1.0-3.0; p=0.07). Girls were significantly less likely to know about preventing pregnancy, HIV or STIs than boys (p<0.05 in each case); were more likely to have been forced to have sex (p<0.001); and were less likely to find it easy to access condoms or influence condom usage (p<0.001). 35% (95% CI: 33.9-36.2) of the cohort were orphans (9.5% had lost both parents). Orphans were significantly more likely to be HIV-1 infected than non-orphans (age-adjusted OR=3.4; 95% CI: 1.9-6.1). Children who lived with only one parent or only extended family were 4.7 times as likely to be HIV-1 infected than those living with both parents (age-sex adjusted; 95% CI: 1.9-11.5). Children who lived alone also appeared at greater risk of HIV but the number of these children was small (n=205; age-sex adjusted OR=3.0; 95% CI: 0.6-15.1). These data

show an increased risk of HIV-1 among orphans and children living without their parents. These groups can be hard to reach and so extra efforts must be made to target, support and involve these individuals in HIV prevention interventions.

MP-020 COMPARING HIV-1 PREVALENCE DERIVED FROM THE PROGRAMME FOR THE PREVENTION OF MOTHER-TO-CHILD-TRANSMISSION WITH THAT DERIVED FROM ANONYMOUS HIV-1 SURVEILLANCE IN NORTH UGANDA

M. Fabiani¹, B. Nattabi², E.O. Ayella², M. Ogwang², S. Declich¹
¹ Istituto Superiore di Sanità, Rome, Italy
² St. Mary's Hospital Lacor, Gulu, Uganda

Objectives: To validate the use of data from a programme for the prevention of mother-to-child transmission (PMTCT) in estimating HIV-1 prevalence in North Uganda.

Methods: The study was conducted at St. Mary's Hospital Lacor. We compared the estimated prevalence for 3,580 attendees of the antenatal clinic who were selected for anonymous surveillance to that for 6,785 pregnant women who agreed to undergo voluntary counselling and testing (VCT) for enrolment in the PMTCT programme. Log-binomial regression models were used to identify the factors associated with both VCT uptake and HIV-1 infection, which could bias the prevalence estimates based on PMTCT data.

Results: In 2001-2003, the age-standardised prevalence was similar (11.1% in the anonymous surveillance group and 10.9% in the VCT group). The estimates were also similar when compared for each year tested, with the highest relative difference observed in 2003 (10.6% in the surveillance group and 9.9% in the VCT group). Analogously, no important differences were observed in age-specific prevalence, with the highest relative difference observed for women younger than 20 years (6.7% in the VCT group and 5.7% in the anonymous surveillance group). Of the factors associated with HIV-1 infection, only time of residence at current address [prevalence proportion ratio (PPR)=1.05, 95% confidence interval (CI): 1.00-1.10], marital status (PPR=1.05, 95% CI: 1.01-1.10) and partner's occupation (PPR=1.05, 95% CI: 1.01-1.10) were associated with VCT uptake, yet the associations were weak.

Conclusions: The prevalence estimated based on the VCT data collected as part of the PMTCT programme could be used for HIV-1 surveillance in North Uganda. At the national level, however, it needs to be evaluated whether PMTCT data could replace, or instead be combined with, the data from sentinel surveillance, especially in settings where VCT uptake among pregnant women is low and the potential risk of participation bias is high.

Age group	HIV-1 prevalence (number of women tested)							
	2001		2002		2003		Overall	
	AS	VCT	AS	VCT	AS	VCT	AS	VCT
< 20 years	6.1 (293)	7.8 (367)	5.5 (271)	6.7 (436)	5.6 (430)	5.6 (479)	5.7 (994)	6.7 (1482)
20-24 years	11.3 (301)	11.0 (708)	11.2 (339)	11.3 (779)	8.6 (487)	8.0 (865)	10.1 (1127)	10.0 (2352)
25-29 years	18.1 (144)	15.7 (940)	15.6 (192)	14.3 (523)	15.4 (241)	15.5 (370)	16.1 (577)	14.5 (1635)
≥ 30 years	9.9 (243)	12.1 (387)	14.3 (259)	13.9 (346)	12.9 (380)	12.6 (385)	12.5 (882)	12.8 (1318)
Overall*	11.4 (981)	11.5 (2202)	11.7 (1061)	11.5 (3084)	10.6 (1538)	9.9 (2499)	11.1 (3580)	10.9 (6785)

Table 1: AS, anonymous surveillance; *standardised by age

MP-021 USING DIFFERENCES IN FERTILITY BY HIV SEROSTATUS TO ADJUST HIV PREVALENCE DATA FROM AN ANTENATAL CLINIC IN NORTHERN UGANDA

M. Fabiani¹, B. Nattabi², E.O. Ayella², M. Ogwang², S. Declich¹

¹ Istituto Superiore di Sanità, Rome, Italy

² St. Mary's Hospital Lacor, Gulu, Uganda

Objectives: To estimate differences in fertility by HIV serostatus and to validate an adjustment method for estimating the HIV prevalence in the general female population (GFP).

Methods: Cox regression models were used to retrospectively estimate the age-specific relative fertility (RF) of HIV-positive women compared with HIV-negative women among 3,314 antenatal clinic (ANC) attendees in northern Uganda. These RFs were used to extrapolate the ANC-based HIV prevalence to the GFP. This procedure was indirectly validated by comparing the adjusted estimate with those based on standard adjustment factors derived from GFPs in sub-Saharan Africa.

Results: HIV-positive women reported a lower fertility than HIV-negative women [age-adjusted RF=0.83, 95% confidence interval (CI): 0.75-0.93]. A reduced fertility was observed in all age groups (20-24 years: RF=0.83, 95% CI: 0.67-1.01; 25-29 years: RF=0.79, 95% CI: 0.62-1.00; 30-49 years: RF=0.79, 95% CI: 0.65-0.96), with the exception of women aged 15-19 years (RF=0.96, 95% CI: 0.74-1.24). Adjusting the ANC-based HIV prevalence (11.6%) for these differences yields an increased estimate (13.8%) that is lower than those based on standard adjustment factors derived from GFPs (from 14.6% to 17.7%).

Conclusions: The age-specific pattern of fertility derived from ANC data is consistent with findings from population-based studies conducted in Africa. However, these differences underestimate those in the GFP, thus yielding inaccurate estimates when used to extrapolate the HIV prevalence from pregnant women to the GFP.

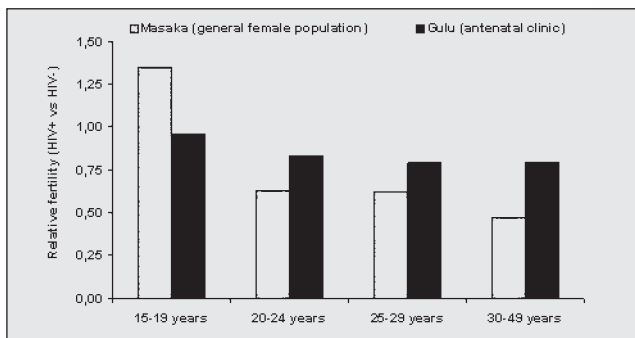


Figure 1: AS, anonymous surveillance; *standardised by age

MP-022 EVIDENCE OF A DECLINE IN INCIDENCE OF HIV INFECTION AMONG YOUNG PEOPLE IN RURAL ZIMBABWE

F.M. Cowan¹, S.J.S. Pascoe², L. Langhaug¹, S. Jaffar², J. Hargrove³, R. Hayes²

¹ University College London, Harare, Zimbabwe

² LSHTM, Johannesburg, South Africa

³ Chitambo, Harare, Zimbabwe

Background: Reports indicate that incidence of HIV infection may be declining particularly among young people in Zimbabwe. In 2000 and 2003, two cross-sectional surveys were undertaken in Form 2 pupils in rural Zimbabwe. Data from these surveys are compared

to see if they support this reported decline in HIV incidence.

Methods: In 2000, 3 schools (from one Province) that met defined criteria were selected, and 532 urine samples were tested for HIV-1 antibodies using GACPAT with confirmation of positives using GACELISA. In 2003 a larger survey was conducted in 3 provinces (including the province surveyed in 2000); 82 schools were selected using similar selection criteria as the 2000 survey. 6791 dried blood spot samples were tested using Labsystems and Vironostika 2+0 with western blot used for discordant results.

Results: The mean age of each population was 15.2 years (sd2000=1.17; sd2003=1.14), the mean age of boys in each survey was 8-10 months older than that of girls. Overall HIV prevalence in 2000 was 3.9% (95% CI: 2.3-5.6); boys were 3.3 times more likely to be infected than girls (age-adjusted OR; 95% CI: 1.2-9.2). In 2003 HIV prevalence was 0.8% (95% CI: 0.5-1.0) but girls now appeared at higher risk of infection than boys (age-adjusted OR=1.5; 95% CI: 0.9-2.7). The decline in overall HIV prevalence between the surveys conducted in 2000 and 2003 was significant (p<0.001) as was the decline in HIV prevalence in boys and girls (p<0.001 and p=0.02 respectively). See results in Table 1.

Conclusions: These cross-sectional data suggest that HIV incidence in young people in rural Zimbabwe in the last few years may have fallen, particularly amongst boys. Further data are needed to confirm this decline and research to investigate factors leading to this decline.

Age (yrs)	Boys				Girls			
	n	% HIV (95% CI)	n	% HIV (95% CI)	n	% HIV (95% CI)	n	% HIV (95% CI)
14 or under	47	14.9 (4.3-25.5)	680	0.6 (0.0-1.2)	92	5.4 (0.7-10.2)	1104	0.9 (0.3-1.5)
15 years	103	1.9 (0.0-4.7)	1167	0.7 (0.2-1.2)	84	0.0	1373	1.1 (0.5-1.6)
16 years	88	4.6 (0.1-9.0)	1062	0.7 (0.2-1.1)	47	2.1 (0.0-6.4)	628	0.8 (0.1-1.5)
17 or older	60	3.3 (0.0-8.0)	612	0.2 (0.0-0.5)	8	0.0	165	0.6 (0.0-1.8)
Total	299	5.0 (2.5-7.5)	3521	0.6 (0.3-0.8)	233	2.6 (0.5-4.6)	3270	0.9 (0.6-1.3)

Figure 1: HIV-1 prevalence by sex in 2000 and 2003

MP-023 ASSOCIATION BETWEEN HIV AND POOR GENITAL HYGIENE IN UNCIRCUMCISED MEN IN DURBAN, SOUTH AFRICA

N. O'Farrell¹, L. Morison², P. Moodley³, K. Pillay³, T. Vanmal², P. Bhol³,

M. Quigley², R. Hayes², A.W. Sturm³

¹ Ealing Hospital, London, United Kingdom

² London School of Hygiene & Tropical Med, London, United Kingdom

³ University of Kwazulu, Natal, South Africa

Objectives: To investigate the association between male genital hygiene and HIV.

Methods: 650 consecutive men attending the main Durban STI clinic for new problems were enrolled and asked to return 14 days later. Standard STI syndromic management was given. Relevant STI tests were done. Genital hygiene was determined at day 14 by

assessing the degree of wetness of the prepuce (dry, wet, very wet) by visual observation. Good hygiene was defined as having a dry prepuce and poor hygiene as either a wet or very wet prepuce. Subjects who still had STI signs at day 14 (urethral discharge, genital ulceration) were excluded from further analysis. A generalised linear model with a log link was used to obtain risk ratios rather than odds ratios.

Results: After excluding those that still had STI symptoms and signs at day 14, and 36 men that were circumcised, 386 subjects were included in the final analysis. Of these, 216 (60%) were HIV positive, 196 (50.8%) had a dry prepuce and 190 (49.2%) a wet prepuce. The prevalence of HIV was greater in those with a wet prepuce 126/190 (66.3%) compared with 90/196 (45.9%) with a dry prepuce, crude RR 1.44, (95% CI 1.19-1.74), RR 1.47 (95% CI 1.25-1.72) adjusted for sociodemographic variables and sexual behaviour and RR 1.42 (1.23-1.63) after adjusting for HSV-2 antibodies ($p < 0.001$). In 62 cases examined by two doctors, there was high level of agreement (87%) in assessment of penile wetness.

Conclusions: A significant proportion of the risk of heterosexual HIV attributed to lack of circumcision in men may be due to poor genital hygiene. Advice about improving genital hygiene should be given to uncircumcised men in areas where HIV is a significant problem. Designers of anti HIV-microbicide preparations should ensure that these products result in minimal penile wetness.

MP-024 SEXUAL RISK BEHAVIOUR AMONG SURINAMESE AND ANTILLEAN MIGRANTS TRAVELLING TO THEIR COUNTRIES OF ORIGIN

M.A. Kramer¹, A. van den Hoek¹, R.A. Coutinho², M. Prins¹

¹ GG&GD Amsterdam, Amsterdam, Netherlands

² Nat. Inst. for Health & the Environment, Bilthoven, Netherlands

Objectives: To examine travel-related sexual risk behaviour among migrants living in Amsterdam.

Methods: Persons originating from Surinam (N=798) and the Netherlands Antilles (N=227) were recruited in order to study the heterosexual spread of HIV within ethnic groups. Log binomial regression was used to study determinants for homeland travel over the past 5 years; logistic regression was used to study determinants of unprotected sex on these visits.

Results: Of the migrants, 38% of men and 42% of women visited their homeland. Visits were most likely among men who lived >6 years in The Netherlands, were employed, had a high educational level and were/had been married. For women, visiting was associated with older age and living in The Netherlands for >7 years. Of migrants visiting their homeland, 47% of men and 11% of women acquired a local sexual partner. For male travellers, Surinamese origin (adjusted OR 10.66; 95% CI 1.72-104.48) and a history of 1 or more sexually transmitted infections (STIs) (adjusted OR 12.51; 95% CI 3.75-46.95) were associated with having unprotected sex with local partners. For women, having >1 partner in the past 5 years (OR 13.57; 95% CI 2.57-250.28) was associated with unprotected sex with local partners.

Conclusion: Migrants are at substantial risk for HIV and STIs while visiting their homeland. It is important to reach migrants, that are likely to engage in unprotected sex during visits, for pre-travel health education. Additional research on risk behaviour in the homeland and The Netherlands is needed to identify migrants with high risk behaviour.

MP-025 HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION IN FEMALE SEX WORKERS (FSWS) IN TASHKENT, UZBEKISTAN

C.S. Todd¹, M. Khakimov², G. Alibaeva², M. Abdulaeva², M.D. Saad³, B. Botros³, J.L. Sanchez⁴, J.K. Carr⁴, K.C. Earhart³

¹ University of California, San Diego, La Jolla, CA, United States of America

² Ministry of Public Health, Tashkent, Uzbekistan

³ NAMRU-3, Cairo, Egypt

⁴ Henry M. Jackson Foundation, Rockville, MD, United States of America

Objective: To assess prevalence and correlates of human immunodeficiency virus (HIV) infection in female sex workers (FSWs) from Tashkent, Uzbekistan.

Methods: In this cross-sectional study, subjects provided demographic and behavioral data and were tested for HIV antibody with serum-based enzyme-linked immunosorbent assay (ELISA) and Western Blot confirmation.

Results: For the 448 FSWS surveyed, HIV prevalence was 10.04% (45/448). Factors significantly associated with HIV were: any drug use ($p < .001$, OR 6.86, 95% CI: 3.59-13.11), injection drug use ($p < .001$, O.R. 25.95, 95% CI: 12.12-55.54), early initiation of sex work (20 years or less) ($p = .007$, O.R. 2.35, 95% CI: 1.27-4.46), street-based sex work ($p < .001$, O.R. 3.41, 95% CI: 1.71-6.79), and duration of sex work ($p = .012$, OR 1.44, 95% CI: 1.13-1.83). In multivariate regression analysis, significant relationships persisted for injection drug use ($p < .001$, AOR 35.83, 95% CI: 6.86-187.0), early sex work initiation ($p = .035$, AOR=2.31, 95% CI: 1.06-5.03), and street-based sex work ($p < .001$, AOR=4.80, 95% CI: 2.01-11.46). Within the sub-group with history of any drug use ($n = 93$), 27.96% were HIV-positive and, for risky behaviors specific to this group, only trading drugs for sex was significantly associated with HIV ($p = .03$, OR 4.88, 95% CI: 1.16-20.45), persisting in multivariate analysis. Though condom non-use was not associated with HIV, only 30.36% reported always using condoms with clients and 14.09% reported using condoms with regular partners.

Conclusions: The strong association of injection drug use with HIV in FSWS reflects the primary mode of HIV transmission in Central Asia. However, the relation of early initiation and duration of sex work as well as street-based sex work to HIV suggests sexual transmission not related to drug use among the FSW population. Low reported condom use indicates the urgent need for HIV prevention programming in this population.

MP-026 ANTIRETROVIRAL TREATMENT GUIDELINES, INFECTIVITY, AND SEXUAL RISK IN KENYAN WOMEN: IMPLICATIONS FOR THE POTENTIAL IMPACT OF ANTIRETROVIRALS ON HIV TRANSMISSION

R.S. McClelland¹, J.M. Baeten¹, B.A. Richardson¹, L. Lavreys¹, S. Emery², K.N. Mandaliya³, J.O. Ndinya-Achola⁴, J. Overbaugh²

¹ University of Washington, Seattle, WA, United States of America

² Fred Hutchinson CRC, Seattle, United States of America

³ Coast General Hospital, Mombasa, Kenya

⁴ University of Nairobi, Nairobi, United States of America

Objectives: The effect of expanding access to antiretroviral therapy on the global spread of HIV-1 could be influenced by the selection criteria that determine who starts treatment. The objective of this study was to evaluate genital HIV-1 shedding (a surrogate marker for infectivity) and sexual risk behavior (recent intercourse and condom use) among HIV-1 seropositive women stratified by WHO criteria for initiating antiretroviral therapy.

Methods: We evaluated genital HIV-1 shedding and risk behavior among 650 antiretroviral-naïve Kenyan women. Participants with plasma HIV-1 RNA levels <2,200 copies/mL (consistent with very low infectivity in other studies) were used as a reference group.

Results: Cervical and vaginal HIV-1 RNA concentrations increased significantly in a step-wise fashion with declining CD4 counts (>350, 200-350, <200 cells/μL) and presence of symptomatic disease (Figure 1). All strata had genital HIV-1 RNA levels that were >~1 log₁₀ copies/swab higher than the reference group, and were >5 times as likely to have genital HIV-1 DNA detected. Recent intercourse was significantly less frequent among women with advanced disease (Figure 2).

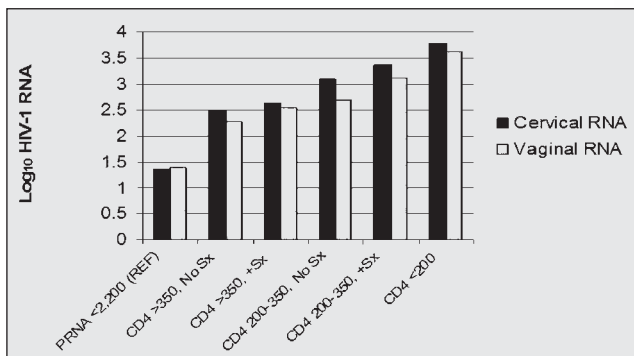


Figure 1: Genital HIV-1 shedding among women stratified by WHO criteria for initiation of antiretroviral therapy based on CD4 and Symptoms

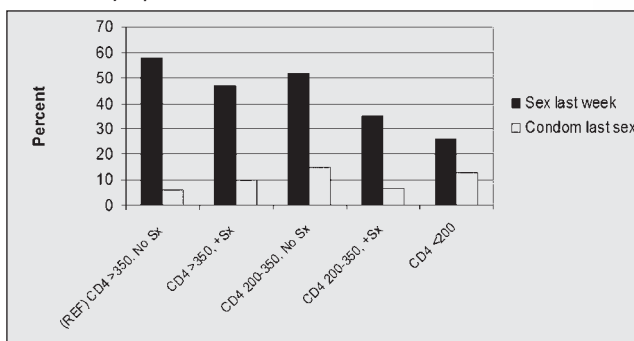


Figure 2: Sexual risk behavior among women stratified by WHO criteria for initiation of antiretroviral therapy based on CD4 and Symptoms

Conclusions: Guidelines that focus on treating individuals with the most advanced immunosuppression will target those who have the highest genital mucosal HIV-1 concentrations. However, individuals with more advanced immunosuppression may be less sexually active. Furthermore, even those with less severe immunosuppression may have high genital HIV-1 concentrations. While the most important factor in deciding when to initiate antiretroviral therapy is the potential risk versus benefit to the individual patient, consideration of the public health implications of treatment guidelines is important because it may help to maximize the benefit for communities in which antiretrovirals are being introduced. The effect of increased antiretroviral availability on the spread of HIV-1 might be enhanced by extending treatment to people with less severe immunosuppression.

MP-027 THE DYNAMIC IMPACT OF CURABLE STDs ON THE HETEROGENEITY OF HIV EPIDEMICS IN SUB-SAHARAN AFRICA – SIMULATION RESULTS

K.K. Orroth¹, E.E. Freeman¹, R.G. White¹, R. Bakker², A. Buve³, J.R. Glynn¹, R.J. Hayes¹

¹ London School of Hygiene & Tropical Med, London, United Kingdom

² Erasmus University Rotterdam, Rotterdam, The Netherlands

³ Institute of Tropical Medicine, Antwerp, Belgium

Background: Differences in STD epidemiology in the Multicentre Study on the Heterogeneity of HIV epidemics in Africa may in part explain the higher prevalence of HIV in East compared to West Africa. **Methods:** The STDSIM transmission model was fitted to the Multicentre Study data for Cotonou, Benin, Yaounde, Cameroon (low HIV prevalence) Kisumu, Kenya, and Ndola, Zambia (high HIV prevalence). Behavioural model parameters varied but biological parameters pertaining to STD transmission and natural history were held constant across the model scenarios for each city. STDs were assumed to increase the per-act probability of HIV transmission. The assumed cofactors for gonorrhoea, chlamydia, syphilis, chancroid, and HSV-2 were 3, 3, 7.5, 25 and 25. Lack of male circumcision doubled male susceptibility to HIV, syphilis and chancroid and the proportions circumcised in the default scenarios were 100% in Cotonou and Yaounde, 25% in Kisumu and 10% in Ndola. HIV cofactor effects for curable STD (excluding HSV-2) were removed individually and all together to determine the impact on HIV spread.

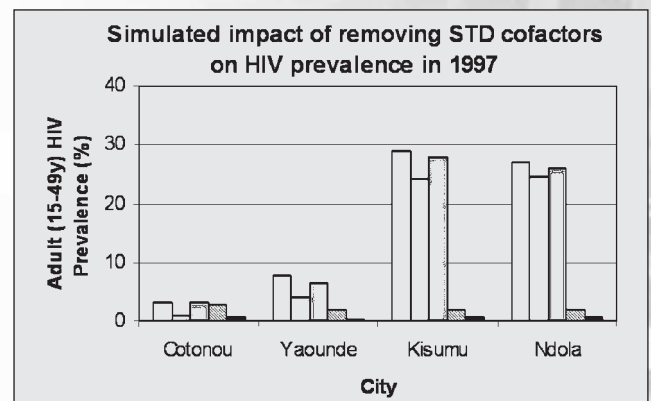


Figure 1:

Results: In the simulations, chancroid was the most important curable STD for HIV spread in Yaounde, Kisumu and Ndola and the non-ulcerative STDs were most important in Cotonou (figure). Simulated adult HIV prevalences in 1997 for the default scenarios were 3.1%, 7.8%, 28.9% and 27.1% in Cotonou, Yaounde, Kisumu and Ndola, respectively but after removing the cofactor effect of chancroid, HIV prevalences in 1997 decreased to 2.9%, 2.0%, 1.8% and 1.9%. Conclusions: In all sites, model projections suggest the resulting epidemics would have been smaller in the absence of curable STIs. Due to the lack of empirical data on chancroid, the findings should be interpreted with caution. In populations where chancroid is prevalent, interventions to reduce this infection are an urgent priority.

MP-028 THE PROTECTIVE EFFECT OF MALE CIRCUMCISION ON ULCERATIVE STDs MAY CONTRIBUTE TO THE HETEROGENEITY OF HIV SPREAD IN SUB-SAHARAN AFRICA – SIMULATION RESULTS

K.K. Orroth

London School of Hygiene & Tropical Med, London, United Kingdom

Background: The Multicentre Study on the Heterogeneity of HIV epidemics in Africa highlighted male circumcision as one of the factors that may explain the much higher prevalence of HIV in East Africa relative to West Africa.

Methods: The STDSIM transmission model was fitted to the Multicentre data so it replicated the sexual behaviour and HIV/STD epidemiology for Ndola, Zambia (high HIV prevalence) and Yaounde, Cameroon (low HIV prevalence). STDs were assumed to increase the per-act probability of HIV transmission. In the model, lack of circumcision doubled male susceptibility to HIV, syphilis and chancroid. In the default model scenarios, the proportions circumcised in Yaounde and Ndola were 100% and 10%. The proportion of males circumcised was varied in the model to determine its impact on HIV. In addition, for the Ndola scenario, the circumcision cofactors for HIV, syphilis and chancroid were removed to assess the contribution of each to simulated HIV spread.

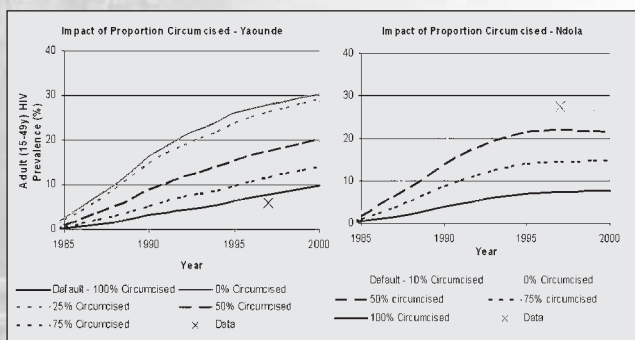


Figure 1:

Results: Increasing the proportion circumcised in the Ndola scenario from 10% to 100% reduced HIV prevalence in 1997 from 27% to 7%. If the proportion circumcised in Yaounde was 0%, HIV prevalence was projected to be 28% (figure). In the model, the impact of circumcision on HIV in Ndola was mediated largely through its effect on chancroid prevalence. Removing the circumcision cofactor effects for HIV, syphilis and chancroid resulted in HIV prevalences of 25.9%, 24.8% and 6.4%, respectively.

Conclusions: Lack of male circumcision in East Africa helps explain the large variation in HIV prevalences observed in sub-Saharan Africa. Model projections suggest that this is largely an indirect effect resulting from higher chancroid prevalence in uncircumcised populations, although some caution is required given the lack of empirical data on chancroid.

MP-029 PREVALENCE OF HIV IN CASES OF SEXUALLY TRANSMITTED DISEASES IN THE STATE OF SAO PAULO

M.V. Tancredi¹, A. Tayra¹, W. Alencar¹, E.C. Ruiz¹, A.N. Tancredi², M.C. Giana¹, A.O. Kalichman¹

¹ Referral Centers for STD/AIDS, Sao Paulo, Brazil

² Heart Institute FMUSP, Sao Paulo, Brazil

Objectives: AIDS case surveillance provides major, but late information for detecting HIV transmission modes in the population, given the long incubation period of the disease. Thus, it is fundamental to seek other sources of information. STD reporting began in 1998 in State of São Paulo and allow for the identification of the profile of HIV positive individuals.

Methods: In order to assess factors associated to seropositivity for HIV in STD cases reported in State of São Paulo from August 1998 to December 2003, the following characteristics were described: age, gender, schooling, exposure category, previous STD, lifelong sexual partnership. Odds ratio (OR), with 95% confidence intervals were calculated. Data were analyzed using EPI-INFO 6.4d and STATA 6.0. Results: Of the 19,282 cases of STD, 9,283 (48.1%) tested for HIV. Of the latter, 15.9% were anti-HIV positive. The factors associated to seropositivity for HIV were age with a peak for the 30-39 year-old group (OR=7.90; IC 95% 5.70 – 10.97), exposure category with a peak among men who have sex with men (MSM) (OR=3.48; IC 95% 3.00 – 4.03), previous STD (OR=3.65, IC 95% 3.21 – 4.16) and fixed lifetime sexual partnership (OR=2.24; IC 95% 1.98 – 2.52).

Frequency of seropositivity for HIV and characteristics of STD cases reported in the State of Sao Paulo, 1998 a 2003				
Characteristics of patients	TOTAL	ANTI-HIV POSITIVE		
		N	%	OR IC 95%
AGE GROUP				
< 20	1035	43	2.9	1.00 -
20 - 29	4021	511	34.6	3.36 2.44 - 4.63
30 - 39	2524	644	43.6	7.9 5.70 - 10.97
> 39	1555	279	18.9	5.04 3.59 - 7.08
GENDER				
MALE				
	5019	832	56.3	1.00 -
FEMALE				
	4116	645	43.7	0.93 0.83 - 1.05
SCHOOLARITY				
< = 4 years				
	2371	410	28.5	1.00 -
5 - 8 years				
	3470	589	41	0.97 0.85 - 1.12
> 8 years				
	3164	439	30.5	0.77 0.66 - 0.89
EXPOSURE CATEGORY				
Heterosexual				
	7286	922	64.5	1.00 -
Homosexual				
	1059	355	24.8	3.48 3.00 - 4.03
Bisexual				
	495	153	10.7	3.08 2.52 - 3.79
PREVIOUS STD				
NO				
	5781	543	45.3	1.00 -
YES				
	2387	656	54.7	3.65 3.21 - 4.16
FIXED LIFETIME SEXUAL PARTNERSHIP				
YES				
	6353	804	57.3	1.00 -
NO				
	2451	600	42.7	2.24 1.98 - 2.52
USE OF CONDOMS				
NO				
	4228	514	37.7	1.00 -
YES				
	4541	851	62.3	0.6 0.53 - 0.67

Figure 1:

Conclusions: The association between STD and HIV infection was corroborated. The peak in the 30-39 year-old group strengthens the assumption that the epidemic is moving toward older age groups. Despite the relative fall of confirmed Aids cases among MSM in State of SP, this exposure category still has a higher risk when compared to others. The association for individuals with fixed partnership is a strong argument for returning the attention of prevention programs to this group. Other disease surveillance systems, especially those that monitor socio-behavioral factors, enable the implementation of more effective prevention measures, in addition to identifying HIV infections early.

MP-030 TRENDS IN HIV-1 INCIDENCE OVER TIME: IS THE TIMING OF HIV-1 INFECTION IMPORTANT?

P.G.A. Cornelisse¹, B.A. Richardson², T. Chipato³, F. Mmimo⁴, R. Mugerwa⁴, D.D. Celentano⁵, R.A. Salata⁶, N.S. Padian⁷, C.S. Morrison⁸

¹ Fred Hutchinson Cancer Research Center, SEATTLE, WA, United States of America

² University of Washington, Seattle, WA, United States of America

³ University of Zimbabwe, Harare, Zimbabwe

⁴ Makerere University, Kampala, Uganda

⁵ Johns Hopkins University, Baltimore, United States of America

⁶ Case Western Reserve University, Cleveland, OH, United States of America

⁷ University of California, San Francisco, United States of America

⁸ Family Health International, Research Triangle Park, NC, United States of America

Objectives: Many prospective studies have reported a cohort effect (declining HIV-1 incidence the longer participants are enrolled), and differences in HIV-1 incidence between participants adherent and non-adherent (NA) to study follow-up. Our objectives were to describe trends in HIV-1 incidence over time in the Hormonal Contraception and Risk of HIV Acquisition (HC-HIV) study and to investigate the effects of the timing of HIV-1 infection and adherence (defined as attending all expected study visits) on these trends.

Group	Timing of HIV-1 Infection					
	Last negative		Midpoint		First positive	
	slope	p-value	slope	p-value	slope	p-value
All women	-0.59	0.012	-0.22	0.177	0.06	0.473
Adherent women	-0.64	0.012	-0.31	0.082	-0.08	0.538
Non-adherent women	-0.42	0.022	0.05	0.780	0.47	<0.001
Adherence by time interaction	-	0.338	-	0.143	-	0.001

Figure 1: Trends in HIV-1 incidence by timing and adherence

Methods: Data are from African women in HC-HIV, a prospective cohort study of HIV-negative women followed quarterly for 15-24 months. HIV-1 incidence was calculated quarterly since enrollment

using person-time methods, estimating the date of seroconversion as the midpoint (MP) of the interval in which HIV-1 seroconversion occurred. Sensitivity analyses using: 1) date of last negative HIV-1 specimen (LN) and, 2) date of first positive HIV-1 specimen (FP) were conducted. Linear regression was used to compare changes in HIV-1 incidence over time overall and by adherence status.

Results: There were 199 HIV-1 seroconversions among 4,415 eligible women. Defining time of HIV-1 infection as MP, no cohort effect was seen overall or among adherent and NA women (table). Defining time of seroconversion as LN, a cohort effect was seen overall and in both adherent and NA women. Defining time of seroconversion as FP, no cohort effect was seen overall, but NA women differed from adherent women, exhibiting an increase in HIV-1 incidence over time. **Conclusions:** Lack of precision in the timing of HIV-1 seroconversion in this longitudinal study lead to different conclusions regarding the presence of a cohort effect. Additionally, conclusions differed when incidence data were examined with respect to adherence, suggesting that frequent visits and good adherence are necessary to accurately assess the presence of a cohort effect.

MP-031 MICROBICIDE TRIAL FEASIBILITY STUDY, TANZANIA. CHARACTERISTICS OF THE MWANZA OCCUPATIONAL COHORT AT BASELINE AND FACTORS ASSOCIATED WITH RE-ATTENDANCE AT THREE MONTHS

A. Valley¹, S. Kasindi¹, L. Knight², I. Hambleton², D. Watson-Jones¹, J. Chagalucha², D. Everett², A. Gavyole¹, D. Ross³, R. Hayes³

¹ AMREF, Mwanza, Tanzania

² NIMR, Mwanza, Tanzania

³ LSHTM, London, United Kingdom

Objectives: To determine baseline prevalence of HIV, sexually transmitted infections (STIs), pregnancy, sociodemographic and behavioural characteristics among a high-risk occupational cohort in Mwanza City, Tanzania in preparation for a clinical trial of a vaginal microbicide for HIV prevention.

Methods: 1573 women aged 16-54y working as mamalishe (in makeshift eating places), or in bars, restaurants, hotels and guest-houses from ten wards in Mwanza City were interviewed using structured questionnaires at community-based reproductive health clinics. Participants underwent gynaecological examination and provided laboratory specimens for HIV/STIs.

Results: HIV seroprevalence was 25.4% (range: 22% in mamalishe; 32% among bar workers). Herpes simplex virus type-2 (HSV-2) antibodies were found in 74.5% and evidence of active syphilis (TPPA+/RPR+) in 9.9%. The prevalence of bacterial vaginosis was 41.2%; gonorrhoea 5.7%; chlamydia 6.3%. 10% of women at baseline had a positive urine pregnancy test. HIV infection at baseline was associated with age > 25y, divorced or widowed marital status, > 20 lifetime sexual partners, genital ulcerative disease, positive HSV-2 serology, and bacterial vaginosis. 74% of women re-attended after 3 months. Women were more likely to return if they were older, married, less mobile and working as mamalishe. Women who received a negative HIV test result by VCT at baseline were more likely to re-attend than women who received a positive result. Preliminary data suggest risk factors for HIV acquisition such as risky reported sexual behaviour characteristics were higher among women who failed to re-attend.

Conclusion: There were marked losses to follow-up between the first and second clinic visit. Women who fail to re-attend may be at greater risk of HIV and STIs. A screening round, locally-appropriate informed consent procedures, and effective community tracing are essential elements of study design in such settings.

MP-032 EPIDEMIOLOGY OF HIV AMONG BLACK AND MINORITY ETHNIC MEN WHO HAVE SEX WITH MEN IN ENGLAND & WALES

S. Dougan¹, J. Elford², B. Rice¹, A.E. Brown¹, K. Sinka¹, B.G. Evans¹, O.N. Gill¹, K.A. Fenton¹

¹ Health Protection Agency, London, United Kingdom

² City University, London, United Kingdom

Objective: To examine the epidemiology of HIV among black and minority ethnic (BME) men who have sex with men (MSM) in England & Wales.

Methods

Ethnicity data from two national HIV/AIDS surveillance systems were reviewed (1997-2003 inclusive), providing information on new HIV diagnoses and those accessing NHS HIV treatment and care services. In addition undiagnosed HIV prevalence among MSM attending 14 genito-urinary medicine (GUM) clinics participating in the Unlinked Anonymous Prevalence Monitoring Programme and having routine syphilis serology was examined by world region of birth.

Results: Between 1997 and 2003, 1,329 BME MSM were newly diagnosed with HIV in England & Wales representing 13% (1,329/10,601) of all new diagnoses reported among MSM. Of the 1329 BME MSM, 26% (346) were black Caribbean, 13% (174) black African, 9% (126) black other, 7% (98) IPB, and 44% (585) other/mixed. Where reported (n=546), 58% (314/546) of BME MSM were probably infected in the UK. An estimated 7.4% (approx. 95%CI: 4.4%-12.5%) of BME MSM aged 16-44 in England & Wales were living with diagnosed HIV in 2002 compared with 3.2% (approx. 95%CI: 2.6%-3.9%) of white MSM (p<0.001). Of Caribbean-born MSM attending GUM clinics between 1997 and 2003, the proportion with undiagnosed HIV infection was 14.8% (95%CI: 11.0%-19.3%), while among MSM born in other regions it remained below 6.5%.

Conclusion: Between 1997-2003, BME MSM accounted for just over one-in-ten new HIV diagnoses among MSM in England & Wales; more than half probably acquired their infection in the UK. In 2002, the proportion of BME MSM living with diagnosed HIV in England & Wales was significantly higher than for white MSM. Undiagnosed HIV prevalence in Caribbean-born MSM was high. Our data confirm the need to remain alert to the sexual health needs and evolving epidemiology of HIV among BME MSM in England & Wales.

MP-033 SEROPREVALENCE OF AND RISK FACTORS FOR HIV-1 INFECTION AMONG INJECTING DRUG USERS IN TASHKENT, UZBEKISTAN, 2003-04

K.C. Earhart¹, C.S. Todd¹, C.T. Bautista², B.A. Botros¹, M. Khakimov³, S.K. Yakubov³, M. Abdulaeva¹, M.D. Saad¹, J.K. Carr², J.L. Sanchez²

¹ US Naval Medical Research Unit No. 3, Cairo, Egypt

² US Military HIV Research Program, Rockville, United States of America

³ National AIDS Center, Tashkent, Uzbekistan

Objectives: To examine the relative role that high-risk drug-using and sexual behaviors had on the HIV prevalence among injecting drug users (IDU) in Uzbekistan.

Methods: During the period of April 2003 to March 2004, a sero-epidemiologic survey was conducted among IDU in the capital city of Tashkent. Volunteers were recruited in city venues and streets by outreach workers, who administered an anonymous risk behavior questionnaire and a saliva-based rapid HIV-1 test. Among initially positive individuals, HIV-1 infection was subsequently detected in a blood sample by enzyme-linked immunosorbent assay (ELISA) screening followed by Western blot (WB) confirmation. Adjusted odds ratios (AOR) by age and gender were estimated by multiple logistic regression analysis.

Results: A total of 701 consenting IDU were enrolled. Of them, 663 (94.6%) were men. A high prevalence of HIV-1 was found (29.8%, 95% CI=26.5-33.4%). Predictors of HIV infection included heroin as first drug of abuse (AOR=2.21, 95% CI=1.33-3.69), unemployment status (AOR=1.47, 95% CI=1.05-2.04), and a prior history of hepatitis (AOR=1.39, 95% CI=0.97-1.99). These predictors remained associated to HIV infection in a forward stepwise multivariate logistic regression analysis. Drug-related risk behaviors such as needle sharing, frequency of injection drug use, exchanging sex-for-drugs, and duration of IDU were not found to be significant risk factors in this population. Surprisingly, ever (versus never) use of condoms was found to be associated with a highly significant protective effect (AOR=0.61, 95% CI=0.43-0.86).

Conclusions: Initiation of drug use with heroin and unemployment appear to be the independent risk factors associated with an increased HIV prevalence among IDU in Tashkent. The protective effect of condom use indicates that high-risk sexual behaviors may account for some transmission in this population. Unless effective harm-reduction strategies are adopted, this epidemic may expand into other populations in this region.

SESSION: MP - CIA EPIDEMIOLOGY - HIV/AIDS

MP-034 IS FEMALE GENITAL CUTTING A RISK FACTOR FOR HIV: A STUDY OF GENITO-URINARY CLINIC ATTENDERS IN THE GAMBIA

L.A. Morison¹, S. Meakins², A.A. Awasana³, R. Sarge-Njie³, T Corrah³, H.C. Whittle³, M.E. Schim can der Loeff⁴

¹ London School of Hyg & Tropical Medicine, London, United Kingdom

² HPA and LSHTM, London, United Kingdom

³ Medical Research Council, Fajara, Gambia

⁴ MRC Gambia and LSHTM, Fajara, Gambia

Objective: One of the arguments used by campaigners against female genital cutting (FGC) - also known as female circumcision - is that it is a serious risk factor for HIV. While there are possible

mechanisms for such an increased risk, data on this subject are extremely rare. This study examined the association between the type of FGC practiced in The Gambia (the partial or complete removal of the clitoris and labia minora) and HIV-1 and HIV-2 using data collected in a genitourinary (GU) clinic in Fajara, The Gambia. Methods: Socio-demographic, sexual behaviour and FGC data were collected by administering a questionnaire to women visiting the GU clinic who gave a blood sample for HIV testing. Logistic regression was used to examine associations between FGC and HIV-1 and HIV-2 adjusting for socio-demographic and sexual behaviour characteristics.

Results: The prevalence of FGC among the 3706 women who participated in the study was 75.2%. The prevalence of HIV-1 among cut women was 13.8% compared with 14.0% in those not cut, giving a crude Odds Ratio (OR) of 0.98 (95%CI 0.79-1.22). The adjusted OR was 1.02 (95%CI 0.64-1.49). The prevalence of HIV-2 among cut women was 5.3% compared to 4.7% among those not cut giving a crude OR of 0.87 (95%CI 0.62-1.22). The adjusted OR was 1.00 (95%CI 0.70-1.44).

Conclusion: There was no association between the type of FGC practiced in The Gambia and either HIV-1 or HIV-2 among this high risk population. Studies among such groups have limitations in terms of how representative the results are, but have previously been useful in identifying associations between male circumcision and HIV. Any association between FGC and increased risk of HIV is likely to be stronger in communities in the horn of Africa where a more severe form of FGC is practiced.

MP-035 FERTILITY INTENTIONS OF HIV POSITIVE WOMEN OF REPRODUCTIVE AGE IN BRITISH COLUMBIA

G.S. Ogilvie¹, E. Maan², A. Palepu³, V.P. Remple¹, K. Heath⁴, G. MacDonald², J. Christilaw², J. Berkowitz⁵, W.A. Fisher⁶, D.R. Burdge²

¹ BC Centre for Disease Control, Vancouver, BC, Canada

² Oak Tree Clinic, Vancouver, Canada

³ Providence Health Care, Vancouver, Canada

⁴ EpiLogic Consulting, Vancouver, Canada

⁵ Dept of Family Practice, UBC, Vancouver, Canada

⁶ University of Western Ontario, London, Canada

Objective: To review the fertility intentions of HIV positive women of reproductive age.

Methods: A 53 item self-administered survey instrument was developed from two previously validated instruments and was offered to HIV positive women in British Columbia. Women were recruited from 22 sites, including community HIV groups and clinics, between 12/2003 and 09/2004. Women and sites were offered honoraria for participation. Categorical variables were compared using chi-square test and continuous variables using Student's t-test.

Results: Of the 230 women who completed the survey, 182 were of reproductive age (<45). In women of reproductive age, 123 had been sexual active with a male partner in the past 6 months. Sixty three percent (115/182) currently have menstrual cycles, and 47 (25.8%) expect to give birth in the future. Women who expect to give birth were younger ($p<0.01$) and had had fewer mean births ($p<0.01$), were married/common-law ($p=0.05$) and were more likely to have had intercourse with male partners ($p<0.05$) than women who did

not expect to give birth. There was no difference in mean CD4 count or last HIV viral load, education level, presence of menstrual cycle, cultural background, frequency of drug use, and Hepatitis C co-infection between groups in univariate analysis. Both groups identified STI protection as their main reason for BC method. Results from multivariable modeling will be reported.

Conclusions: Twenty five percent of HIV positive women of reproductive age expect to become pregnant in the future. In univariate analysis, HIV positive women who had not had children, were in relationships and who were younger were more likely to report that they expected to have children. Practitioners need to be prepared to discuss fertility issues and pregnancy planning with their HIV positive female patients.

MP-036 CONTRACEPTIVE DECISIONS OF HIV POSITIVE WOMEN OF REPRODUCTIVE AGE IN BRITISH COLUMBIA

G.S. Ogilvie¹, E. Maan², A. Palepu³, V.P. Remple¹, K. Heath⁴, G. MacDonald², J. Christilaw², J. Berkowitz⁵, W.A. Fisher⁶, D.R. Burdge²

¹ BC Centre for Disease Control, Vancouver, BC, Canada

² Oak Tree Clinic, Vancouver, Canada

³ Providence Health Care, Vancouver, Canada

⁴ EpiLogic Consulting, Vancouver, Canada

⁵ Dept of Family Practice, UBC, Vancouver, Canada

⁶ University of Western Ontario, London, Canada

Objective: To review the contraceptive choices of HIV positive women of reproductive age.

Methods: A 53 item self-administered survey instrument was developed from two previously validated instruments and was offered to HIV positive women in British Columbia. Women were recruited from 22 sites, including community HIV groups and clinics, between 12/2003 and 09/2004. Women and sites were offered honoraria for participation. Chi square tests were used to compare factors expected to impact on the use of oral contraceptive pills (OCP).

Results: Of the 230 women who completed the survey, 182 were of reproductive age (<45). In women of reproductive age, 65.9% were taking antiretroviral therapies (ART) and 123/182 (67.6%) had been sexual active with a male partner in the past 6 months. Thirty seven percent were aboriginal women, and 60.2% were co-infected with Hepatitis C. 65.3% currently have menstrual cycles and 32.8% use condoms for birth control (BC). Prior to HIV diagnosis, 35.7% reported use of OCP, while 6.7% (12) used OCP currently ($p<0.01$). Twenty percent of the 182 women report no use of any type of contraception and 14 (7.7%) use a hormonal method of BC and ART concurrently. Primary reason for BC choice was STD/HIV protection. Only 3.0% reported pregnancy protection as their main reason for current method of BC. Education, ethnicity, current living status, presence of menstrual cycles, number of pregnancies, co-infection with Hepatitis C, current recreational drug use and HIV viral load were not significantly associated with use of OCP ($p>0.05$) in univariate analysis. Multivariable analysis was not attempted due to limited number of events.

Conclusions: The majority of HIV positive women of reproductive age are currently sexually active. Few choose contraception methods primarily for pregnancy protection. Eight percent of HIV positive women use ART and hormonal contraception concurrently.

MP-037 SMALL PROPORTION OF HIV TRANSMISSION EXPLAINED BY UNSAFE INJECTIONS IN RURAL SOUTH WEST UGANDA

R.G. White¹, A. Kedhar¹, B. Cooper², K.K. Orroth¹, S. Biraro³, R.F. Baggaaley⁴, E.L. Korenromp⁵, A Ghani¹, M-C. Boily⁴, R.J. Hayes¹

¹ LSHTM, London, United Kingdom

² Health Protection Agency, London, United Kingdom

³ MRC Programme on AIDS, UVRI, Entebbe, Uganda

⁴ Imperial College, London, United Kingdom

⁵ World Health Organization, Geneva, Switzerland

Objectives: In light of the continuing controversy regarding the importance of unsafe injections in the transmission of HIV in Sub-Saharan Africa, we estimated the proportion of all-age HIV incidence explained by unsafe injections, blood transfusions and mother-to-child transmission (MTCT) in rural South West Uganda. **Methods:** Observed HIV incidence, prevalence and injection rates were calculated from a general population cohort in Masaka District (1989-2000). Transfusion rates, injection and blood transfusion safety were estimated from observational surveys within Uganda. HIV transmission probabilities were estimated from systematic literature review. The proportion of HIV incidence via each route was estimated from age-specific HIV incidence data using Bayesian methods.

Results: For all ages combined, an estimated 3.3% to 10.7% of HIV incidence was explained by unsafe injections, 0.4% by unsafe transfusions, and 23.3% to 24.8% by MTCT. Between 64.8% and 72.3% was left unexplained by these three routes of transmission, entirely among 13+ year olds (Figure)

Conclusion: This study does not support the hypothesis that unsafe injections played a major role in HIV transmission in this population during the study period. The safety of both injections and transfusions should be improved still further, but specific efforts to reduce HIV transmission should be made by prevention of MTCT in children, and among adults by reducing the large 'unexplained' incidence, presumably primarily due to sexual transmission

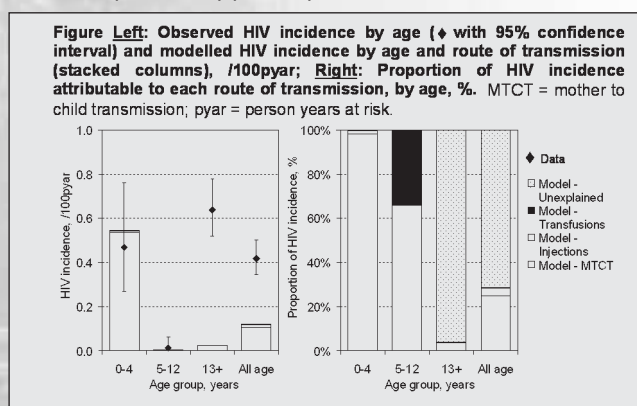


Figure 1: Trends in HIV-1 incidence by timing and adherence

MP-038 HIV PREVALENCE AND PREVENTIVE AND BRIDGING BEHAVIOUR AMONG MSM IN LOW AND MIDDLE-INCOME COUNTRIES

F. Caceres¹, K.A. Konda¹, M. Pecheny², A. Chatterjee³, P. Ghys³, R. Lyerla³

¹ Universidad Cayetano Heredia, Lima, Peru

² University of Buenos Aires, Buenos Aires, Argentina

³ UNAIDS, Geneva, Switzerland

Objectives: To systematically collect published and unpublished surveillance and research data on the prevalence of HIV, consistent condom use, and lifetime heterosexual sex, among men having sex with men (MSM) in low and middle income countries.

Methods: Searches were conducted (pubmed, databases [US Census Bureau, World Bank, conferences]) and regional informants helped. Reference reports were used to assess the methodology and quality of information. The best data available per region were identified and confidence intervals for indicator estimates were used to propose regional estimate ranges.

Results: 561 studies were located, with very diverse numbers per region and virtual unavailability in Sub-Saharan Africa, Middle-East/North Africa, and the English-speaking Caribbean. Data on HIV prevalence among MSM were the most widely available. The data suggest figures of 2% or less in the MENA region, 10-20% in Latin America, and 1-4% in China. There is diversity in South Asia (with India showing the highest figures, 5-15%), South East Asia (10-15% in Cambodia, Thailand and Myanmar, and 4-9% in Vietnam), and Eastern Europe (early epidemics in the OECD countries, and 6-10% in Poland and Czech Republic). 33%-50% of MSM use condoms consistently, although this piece of data is problematic given varied periods of reference, and lack of clarity about the denominators (i.e. appropriate exclusion of non-penetrative sex). Finally, 30-50% of these men had sex with women at least once in all regions with data available except East Asia, where figures are 60-70%.

Conclusions: Data available on the HIV prevalence and behaviours among MSM across regions are scarce (and non-existent in some areas), with validity and comparability problems. HIV prevalence is over 5-15% in parts of Latin America, South/South East Asia and Eastern Europe, with consistent condom use below 50%. Sex with women is frequent in MSM, particularly in East Asia.

MP-039 DOES THE RECENT INCREASE IN NEW HIV DIAGNOSES AMONG MEN WHO HAVE SEX WITH MEN IN THE UNITED KINGDOM REFLECT A RISE IN HIV INCIDENCE?

S. Dougan¹, J. Elford², T.R. Chadborn¹, A.E. Brown¹, K. Roy³, K. Sinka¹,

G. Murphy¹, N. Macdonald¹, B.G. Evans¹, K.A. Fenton¹

¹ Health Protection Agency, London, United Kingdom

² City University, London, United Kingdom

³ Health Protection Scotland, Glasgow, United Kingdom

Objectives: To examine whether the recent increase in new HIV diagnoses among men who have sex with men (MSM) in the UK reflects a rise in HIV incidence.

Methods: Data from UK HIV surveillance systems for 1997-2003 were examined. Comparisons were made between MSM in London and elsewhere in England, Wales & Northern Ireland (E,W&NI) by age (<35, ≥35 years); and in Scotland (all ages).

Results: In 1997 there were 1,409 new HIV diagnoses among MSM

in the UK rising to 1,803 in 2003, an increase of 28% ([1803-1409]/1409). Among MSM <35 years in London, the number of new diagnoses fell over time (526, 472, [-10%]), but in all other groups it increased: ?35 years in London (+33%); <35 years elsewhere in E,W&NI (+48%); ?35 years elsewhere in E,W&NI (+92%); Scotland (+29%). Acceptance of HIV testing increased significantly among MSM attending 28 GUM clinics in the UK over time ($p < 0.0001$): London <35 years (+62%), ?35 years (+56%); elsewhere in E,W&NI <35 years (+7%), ?35 years (+10%); Scotland (+40%). The proportion of MSM diagnosed with a CD4 cell count of ?700 cells/mm³ (a proxy measure of incidence) decreased by 7% among MSM <35 years in London, increased in all other groups in E,W&NI but remained constant in Scotland. There were, however, no statistically significant changes in annual HIV incidence among MSM attending 16 GUM clinics in E,W&NI as estimated by STARHS.

Conclusions: There was no evidence to suggest an increase in HIV incidence among younger MSM in London between 1997-2003, among whom the number of new HIV diagnoses has actually fallen over time. In Scotland, there was also no evidence for an increase in HIV incidence. Among older MSM in London and those living elsewhere in E,W&NI (all ages), there was some evidence of a rise in HIV incidence.

MP-040 SIMULATIONS OF THE HIV EPIDEMIC IN SUB-SAHARAN AFRICA: SEXUAL TRANSMISSION VS. TRANSMISSION THROUGH UNSAFE MEDICAL INJECTIONS

K.M. French¹, S. Riley², G.P. Garnett¹

¹ Imperial College, London, London, United Kingdom

² University of Hong Kong, Hong Kong, Hongkong (China)

Objectives: Since the late 1980s heterosexual transmission has been considered the predominant route of transmission of HIV-1 in sub-Saharan Africa. However, some have argued that unsafe medical injections account for the majority of transmission in this region. We explored the expected HIV-1 epidemic associated with each transmission route.

Methods; An age-structured deterministic compartmental model of HIV-1 transmission was developed to compare the epidemic generated by the two transmission routes. Simulations of iatrogenic transmission examine a range of transmission probabilities per injection between 0.01-0.5 and an average number of unsafe needles received per year from 1-5. Simulations of sexual transmission explore a range of transmission probabilities per unprotected sex act from 0.002-0.03 and average annual partner change rates from 1.5-4. Results: The adult (aged 15-49) prevalence 22 years after introduction of HIV-1 is examined and compared with prevalence in sub-Saharan Africa in 2003 (7.5%). A transmission probability of between 0.019-0.069 on receipt of an infected needle has been suggested. With the highest of these transmission probabilities the average number of unsafe needles received per person per year would need to be much greater than 5. In contrast, a prevalence of 7.5% is observed in simulations of sexually transmitted HIV-1 using transmission probabilities and average partner change rates that are within plausible bounds. With the assumed greater heterogeneity in sexual behaviour this route of transmission generates faster less widespread epidemics than the iatrogenic route.

Conclusions: Our results show that the transmission probabilities and number of unsafe injections required to generate the observed epidemics in sub-Saharan Africa through iatrogenic transmission are unfeasibly high. Conversely, for heterosexual transmission to have generated the observed epidemics, the transmission parameters fall well within previously published ranges. Therefore, heterosexual transmission is a much more likely route of HIV-1 transmission in the region than unsafe medical injections.

MP-041 PREVALENCE OF HIV AND SEXUAL RISK BEHAVIOUR AMONG MIGRANTS IN THE NETHERLANDS

M.G. van Veen¹, E.L.M. Op de Coul¹, M. Prins², W. Al Taqatqa², J. Walter², O. de Zwart², M.J.W. van de Laar¹

¹ RIVM, Bilthoven, Netherlands

² Municipal Health Service, Amsterdam, Netherlands

Objectives: Migrants are a risk group for HIV infection and STI. Unsafe sexual behaviour among migrants may lead to further spread of HIV and STI to the general population. In the Netherlands, HIV surveys among migrants originated from HIV endemic countries were conducted to assess the potential for HIV transmission.

Methods: In 2003/2004, cross sectional surveys were conducted in Rotterdam and Amsterdam among migrants from Surinam, the Netherlands Antilles, Cape Verde (Rotterdam) and Ghana (Amsterdam). Participants were recruited in social venues and meeting places. A questionnaire was designed to determine demographics and (sexual) risk behaviour. A saliva sample was collected for HIV antibody testing.

Results: In total, 1410 migrants were recruited (n=611 Rotterdam, n=799 Amsterdam). HIV prevalence among Cape Verde migrants was 1.0% (95% CI 0.1-3.8%), 0.4% (95% CI 0.1-1.5%) among Surinamese, 0.6% (95% CI 0.0-3.1%) among Ghanaian and 0.0% (95% CI 0.0-1.0%) among Antillean migrants. Substantial sexual risk behaviour was reported, especially among males: high number of sexual partners, concurrent partnerships (range per ethnic group: 22-29%) and inconsistent condom use with steady and casual partners (66-90% and 37-58%, respectively). Sexual contacts during visits in countries of origin were reported by 17-32% of the respondents. Mixing between different ethnic groups occurred more frequently in casual partnerships than in steady partnerships. 18-22% has had an STI check up in the previous 12 months. In 21-44% of these check-ups, an STI was diagnosed.

Conclusion: Unsafe sex practices, concurrent partnerships, multiple partners and mixing between ethnic groups are common among migrant groups. Therefore, there is a potential for HIV and STI transmission within and between ethnic groups in the Netherlands.

MP-042 MATHEMATICS IN ETHICS: USING PROJECTIONS OF THE IMPACT OF ANTIRETROVIRAL TREATMENT STRATEGIES AS SCENARIOS IN DEBATING RESOURCE ALLOCATION

R.F. Baggaley, G.P. Garnett, R.E. Ashcroft, N.M. Ferguson
Imperial College London, London, United Kingdom

Objectives: The considerations over how best to introduce anti-retroviral treatment (ART) to developing countries raise many practical and ethical issues. Where resources are insufficient to treat all those in need prioritisation of some kind must take place.

The predicted impacts of different strategies from mathematical models can quantify the consequences of the choices made.

Methods: We constructed a deterministic compartmental model representing treatment uptake and cessation, with ART-resistance evolution and transmission and incorporation of stages of HIV infection. The epidemiological impact of preferentially treating AIDS patients versus pre-AIDS individuals when ART is rationed was investigated.

Results: The number of life years gained per person year of treatment does not vary by treatment strategy because ART does not affect HIV transmission in a mature epidemic. Because AIDS patients have a poorer prognosis with ART, turnaround of patients is quicker and therefore more individuals can receive therapy, albeit with less benefit than for each treated pre-AIDS patient. The effectiveness of ART among pre-AIDS patients is jeopardised by drug resistance and its possible spread, which may have implications for future HIV-infected patients in the community.

Conclusion: Our results illustrate the epidemiological impact of treatment priorities. However, they should be interpreted in the light of ethical principles. One stance would be to prioritise the worst off i.e. those with AIDS. This is counter to a utilitarian maximisation of quality life years, which would favour those prior to AIDS. A fair chance approach would fall between these. It is likely that current treatment use is unfair, favouring those with resources. However, if this is to improve explicit decisions about who to treat need to be made.

MP-044 THE EFFECT OF MEASUREMENT FREQUENCY ON COMPARISONS BETWEEN HIV TREATMENTS USING OBSERVATIONAL COHORTS

J.T.A. Griffin¹, C. Fraser¹, L. Gras², F. de Wolf², A.C. Ghani¹

¹ Imperial College London, London, United Kingdom

² HIV Monitoring Foundation, Amsterdam, Netherlands

Objectives: The effectiveness of HIV therapies is often evaluated by the time until viral load becomes undetectable. Although in observational data the date of this event is only known to be between two clinic visits, the time of the first undetectable measurement is often used in analyses. We explore the effect of this assumption using data on measurement frequency from the Athena national cohort (The Netherlands).

Methods: A within-host model of HIV was used to simulate datasets comprising two groups of patients receiving equally effective treatments but with differing measurement frequencies. Each dataset was analysed using survival analysis models comparing the time taken for viral load to fall below 50 copies/ml in the two groups. Measurement times were taken from patterns observed in patients in the Athena cohort.

Results: Figure 1 shows the estimated hazard ratios (HR) as the balance of visit frequencies changes from 0.5 (equal visit frequency) to 1 (one treatment group visits twice as often as the other). Using the first undetectable measurement as the event time results in an HR of up to 1.33 when the true value is 1. This bias is reduced using methods for interval-censored data. Patients in the Athena cohort initiating an NNRTI-containing regimen had a mean of 56.3 days to their first viral load measurement compared with 37.5 days for a boosted PI. Standard analyses using proportional hazards models

would therefore suggest a boosted PI as being significantly better than an NNRTI 70% of the time when in fact they were equally effective (Figure 2). Similarly efavirenz would appear more effective than nevirapine.

Conclusion: Differences in measurement frequency between treatment groups can produce spurious results because less frequent measurements make an endpoint appear to happen later. Analyses which account for interval-censoring reduce this bias.

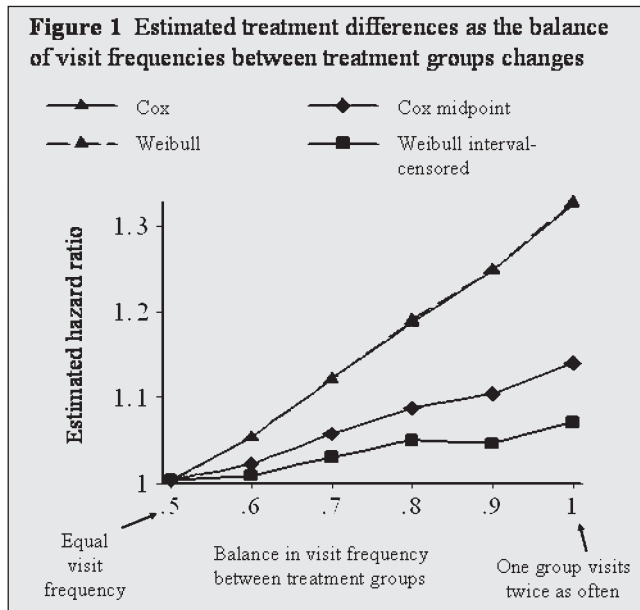


Figure 1:

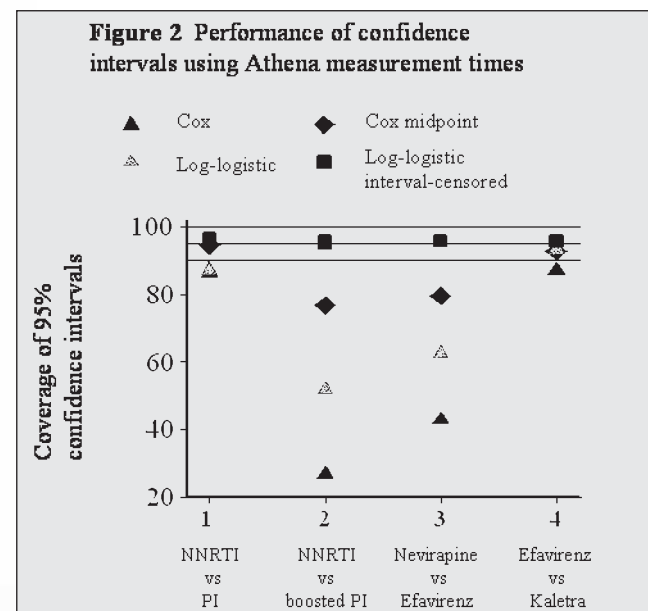


Figure 2:

MP-045 POST-EXPOSURE PROPHYLAXIS AND FOLLOW-UP AFTER POSSIBLE SEXUAL EXPOSURE TO HIV IN AMSTERDAM, 2000-2003

G.J.B. Sonder¹, R.M. Regez², K. Brinkman², J.M. Prins³, J.W. Mulder⁴, R.A. Coutinho⁵, J.A.R. van den Hoek¹

¹ Municipal Health Service, Amsterdam, Netherlands

² OLVG, Amsterdam, Netherlands

³ Academic Medical Center, Amsterdam, Netherlands

⁴ Slotervaart Ziekenhuis, Amsterdam, Netherlands

⁵ Nat. Inst. for Health & the Environment, Bilthoven, Netherlands

Objectives: As of January 2000, a new protocol was introduced, in which three Amsterdam hospitals and the Municipal Health Service (MHS) collaborate in treatment and follow-up of sexual related exposures to HIV. Both MHS and hospitals can establish an indication for HIV-PEP and prescribe accordingly. All exposures reported to hospitals, after being given a 'starter' set of PEP, are referred to the MHS for further treatment and follow-up. We evaluated four years of HIV-PEP with special interest in trends in PEP requests over time, time between exposure and PEP, compliance, and outcome after 6 months.

Methods: All patients are entered in a MHS database. PEP included nevirapine 200 mg s.d followed by a 28 day course of Combivir 300/150 mg twice per day and nelfinavir 1250 mg twice per day, started as soon as possible and within 72 hours after exposure. HIV antibody testing took place at 0, 3 and 6 months.

Results: 172 persons reported (possible) sexual exposure to HIV, of whom 115 received PEP (2000: 22/28; 2001: 25/44; 2002: 35/50; 2003: 33/50): of these, 54% were exposed by receptive anal contact, 17% by insertive anal contact, and 12% by receptive vaginal contact. In 24 PEP-cases the partner was HIV positive. In 76% the first dose of PEP was taken within 24 hours. 81% finished all four weeks PEP. All tested HIV negative except for one who tested HIV negative at 3 months but HIV positive at 6 months. Unsafe contacts after PEP was finished were admitted.

Conclusion: The protocol is effective; HIV-PEP is started soon after exposure, most people comply with treatment and follow-up. Providing treatment and follow-up in one place (MHS) enables good settlement including counseling and registration of all reported exposures in Amsterdam, which allows for swift identification of emerging epidemiological.

MP-046 FROM AFFECTED TO INFECTED? UNDERSTANDING THE SEXUAL HEALTH RISKS TO ADOLESCENT GIRLS AFFECTED BY AIDS IN URBAN ZIMBABWE

I.J. Birdthistle¹, J.R. Glynn¹, A. Machingura², P. Matambo³, S. Floyd¹, S. Gregson⁴

¹ London School of Hygiene & Tropical Med, London, United Kingdom

² Biomedical Research & Training, Harare, Zimbabwe

³ Child Protection Society, Harare, Zimbabwe

⁴ Imperial College of Science, London, United Kingdom

Objectives: An estimated 15 million children have lost one or both of their parents to AIDS. More than half of these orphans are adolescents. A study was conducted to determine whether and through what mechanisms adolescent girls orphaned and affected by AIDS may be at increased risk of HIV, HSV-2 and pregnancy.

Methods: A community-based survey was conducted in Highfield – a high-density suburb of Harare – in 2004. All 15-19 year old females within randomly selected enumeration areas were invited to a central location to participate in the study. 863 (67% of those invited) were interviewed and had a health screening visit with a nurse, and 839 (97% of the sample) agreed to provide a blood or saliva specimen.

Results: Half of the participants in the study had lost one or both of their parents: 26% were paternal orphans, 9% maternal orphans, and 15% double orphans. Relationships between orphanhood and sexual health outcomes varied by marital status. Among the 743 unmarried participants, 15% of maternal orphans and 9% of paternal orphans were HSV2-positive compared to 3% of non-orphans ($p<.00$); and 10% of maternal and double orphans were HIV-positive compared to 4% of non-orphans ($p<.00$). Associations with orphanhood remained significant after adjusting for age, with the strongest association among maternal and double orphans (HSV-2 OR=3.9, $p<.00$; HIV OR=2.5, $p=0.02$). Married adolescents experienced higher rates of HSV-2 (42% positive) and HIV (18% positive; $p<.00$), however, associations with orphanhood were not significant among married participants.

Conclusions: These initial results suggest orphanhood may be a risk factor for STIs particularly among girls who are not married. A hierarchical analysis will explore the mechanisms of this association and any mitigating factors. Opportunities for intervention will be sought as the numbers of orphans, particularly maternal and double orphans, continue to rise.

MP-047 RISK FACTORS FOR HIV SEROCONVERSION AMONGST GAY AND BISEXUAL MEN AT THE START OF THE 21ST CENTURY – PRELIMINARY FINDINGS FROM THE INSIGHT STUDY

N.D. Macdonald¹, G. Elam¹, K.A. Fenton¹, B.G. Evans¹, V. Gilbert¹, F. Hickson², J. Imrie³, C.A. McGarrigle¹, R. Power³, H. Ward¹

¹ Health Protection Agency, London, United Kingdom

² Sigma Research, London, United Kingdom

³ Royal Free & Univ Med School, London, United Kingdom

Objectives: As part of a national research project investigating why gay and bisexual men continue to acquire HIV infection, a case control study was conducted to detect and quantify risk factors amongst gay and bisexual men seeking HIV tests at STD clinics.

Methods: Between October 2002 and September 2004, 75 cases and 157 controls were recruited from 7 clinics in London, Manchester and Brighton. Cases tested HIV positive with an HIV negative within the past 2 years. Controls remained HIV negative. Subjects completed a computer assisted self interview at their testing clinic within three months of their test result. On completion men were asked to participate in a qualitative interview study.

Results: Cases were similar to controls in age (average=34), ethnicity (96% white), education (49% degree) and the interval between tests (average 10.5 months). Between tests all cases and 96% of controls reported anal intercourse (AI). Unprotected receptive AI was reported by 83% of cases and 52% of controls (OR=4.36, 2.13-9.09). Significant odds ratios were identified for: being fisted (3.04), gonorrhoea (3.59), use of poppers (2.90), ecstasy (2.55), cocaine (1.86), ketamine (2.43) and LSD (2.83). Controls were more likely to

report that safer sex was important to them (0.27). 89% of cases and controls reported they were happy about what they knew about HIV.

Conclusions: Although gay men's lives appear markedly different from those of previous decades, our findings are similar to those of earlier studies. Unprotected AI remains the predominant mode of HIV acquisition, but fisting also appears important. No significant risk was detected with increasing numbers of sexual partners, use of the internet, saunas or backrooms. Decisions to engage in risky sex may be influenced by a number of factors, including certain recreational drugs. Further multivariate analyses, incorporating findings from the qualitative interview study are underway.

MP-048 AIDS IN THE HAART ERA: THE EXTENT AND CHARACTERISTICS OF LATE HIV TESTERS

S.S. Schwarcz, L.H. Hsu

San Francisco Department of Public Health, San Francisco, CA, United States of America

Objectives: HAART can delay progression of HIV infection to AIDS. Despite availability of HAART in the USA, people continue to develop AIDS. HIV testing late in the course of HIV infection may explain why some persons develop AIDS. We examined HIV testing histories of persons reported with AIDS in San Francisco between 2001 and 2004 to determine the extent and sociodemographic and risk characteristics of late testing.

Methods: San Francisco residents with AIDS between 2001 and 2004 were included. Late testers were defined as those whose diagnosis of HIV occurred 12 months or less than their AIDS diagnosis as determined by a documented HIV positive antibody test, self report of a positive antibody test, documented CD4 or detectable HIV viral load test, or date of first using treatment with antiretrovirals. Chi square tests and multiple logistic regression were used for analysis.

Results: Of the 1,669 persons reported with AIDS between 2001 and 2004, 668 (40%) were late testers. Testing late was significantly more likely among persons aged 13-19 years (59%), among Blacks (43%), Hispanics (46%), and other non-whites (52%) among those without a reported risk (78%), persons without health insurance (47%), with unknown insurance status (44%), persons born outside of the USA (57%), and those whose initial AIDS diagnosis was an opportunistic infection (59%).

Conclusions: The characteristics of late testers suggests reasons for not testing early. These are those who may be unaware of their risk, such as those in the younger and the older age groups, persons of color, and those without reported risk, and persons who may not have easy access to testing or care including those without health insurance or from other countries. Rapid HIV tests and expanding testing services may increase early testing and treatment, thereby delaying HIV progression.

MP-049 DRUG USE AND UNPROTECTED ANAL INTERCOURSE AMONG MEN WHO HAVE SEX WITH MEN WHO WERE RECENTLY INFECTED WITH HIV

N. Drumright¹, P.M. Gorbach², E.S. Daar², S.J. Little¹

¹ University of California, San Diego, San Diego, United States of America

² University of California, Los Angeles, United States of America

Objectives: We examined associations between drug use and unprotected anal intercourse (UAI) among men who have sex with men (MSM) who were recently infected with HIV to assess possible transmission and acquisition risks.

Methods: 169 MSM who were recently infected with HIV completed a computerized self-interview covering drug use and sexual behavior with their last three partners. Generalized estimating equations (GEE) were used to examine associations between UAI and drug use across all three partners. 103 of the 169 MSM reported variation in UAI between their last three sexual partners (UAI with some and not others); conditional logistic regression (CLR) was used to determine associations between UAI and drug use using these cases as their own controls.

Results: Of the 169 MSM, 59% reported using drugs with at least one of their last three partners; and 30% used methamphetamine, 31% nitrates; and 25% marijuana. Use of more than one type of drug was common (25%). In separate GEE models, after controlling for age, ethnicity, time acquainted before sex, partner type and partner's HIV status, methamphetamine (OR=3.5), nitrates (OR=2.5), marijuana (OR=2.9) or any drug (OR=2.1) use was significantly associated with UAI ($p<0.01$). Among the 103 MSM who reported UAI with some, but not all, of their last three partners, methamphetamine (OR=5.4), nitrates (OR=2.7), marijuana (OR=5.7) and any drug (OR=3.2) use were significantly associated with UAI ($P<0.05$) after adjusting for the same factors controlled for in GEE.

Conclusions: Our results demonstrate that for MSM who were recently infected with HIV and may be highly infectious, use of drugs, especially methamphetamines, may be an independent risk factor for UAI. Additionally, drug use may undermine the practice of condom use with sexual partners, suggesting that prevention efforts that focus on drug use could impact HIV transmission.

SESSION: MP - D1 PREVENTION STRATEGIES- HIV/AIDS

MP-050 ADULT AND PEDIATRIC EMERGENCY DEPARTMENT STD AND HIV SCREENING PROGRAMS: OUTCOMES AND BEHAVIORAL RISKS

S.D. Mehta¹, J. Hall¹, S. Lyss², P.R. Skolnik¹, P.G. Braslins¹, S. Kharasch¹

¹ Boston University School of Medicine, Brookline, United States of America

² Centers for Disease Control, ATLANTA, United States of America

Objectives: Emergency Departments (ED) can be high-yield venues for gonorrhea, chlamydia, and HIV screening. We compared gonorrhea, chlamydia, and HIV prevalences between adult and pediatric patients screened in an urban ED and assessed treatment outcomes and the association of behavioral risks with infection.

Methods: We offered free, voluntary testing for gonorrhea and chlamydia (by transcription-mediated amplification of urine) and HIV (by EIA/Western blot of oral mucosal transudate) to ED patients seeking care for any reason. We surveyed behavioral risks. Pediatric (15-21 years) and adult (22-29 years) patients were eligible

for gonorrhea, chlamydia, and HIV testing; patients 30-54 years were eligible for HIV testing.

Results: From 11/03–5/04, gonorrhea &/or chlamydial infections were identified in 43/385 pediatric (11.2%; 95% CI: 8.1%-14.4%) and 11/235 (4.7%; 95% CI: 2.0%-7.4%) adult patients. Among 54 infected patients, 14 (26%) were treated empirically by ED providers; through study efforts, 33 (83%) of the remaining 40 patients were treated (87% overall treatment). Eight HIV infections were diagnosed: 7/971 (0.7%) in adult and 1/460 (0.2%) in pediatric patients; 5 (63%) HIV+ patients received test results, and 3 had ≥ 1 visit to an HIV clinic. Overall, multiple sex partners and history of STD were more common in pediatric than adult patients (77% vs. 45% & 20% vs. 7.0%, respectively; $p < 0.001$ both comparisons). By multivariate logistic regression, gonorrhea or chlamydia infection in pediatric patients was associated with multiple sex partners, same sex intercourse, and suspicion of STD as noted by the ED clinician.

Conclusion: The high prevalence of behavioral risks and gonorrhea or chlamydia infection in our pediatric ED patients supports consideration of more frequent screening or empiric treatment. Given the low-moderate rates of HIV and receipt of test results, we would like to assess targeted HIV testing with rapid tests rather than routine screening with EIA in our ED.

MP-051 INVESTIGATING SOCIO-DEMOGRAPHIC FACTORS ASSOCIATED WITH UPTAKE OF HIV-1 VOLUNTARY COUNSELLING AND TESTING AMONG PREGNANT WOMEN LIVING IN NORTHERN UGANDA

M. Fabiani¹, A. Cawthorne², B. Nattabi³, E.O. Ayella³, M. Ogwang³, S. Declich¹

¹ Istituto Superiore di Sanità, Rome, Italy

² EPIET, Rome, Italy

³ St. Mary's Hospital Lacor, Gulu, Uganda

Objectives: In 2004, 640,000 children under 15 were newly infected with HIV, mainly as a result of mother to child transmission (MTCT). The majority were born to mothers in sub-Saharan Africa, where, in 2004, 13.3 million women of childbearing age were HIV-positive. The availability of effective and sustainable short-course drug regimens has allowed many sub-Saharan countries to implement (MTCT prevention programmes. The aim of our study was to identify socio-economic factors associated with uptake of HIV voluntary counselling and testing (VCT), which is the first filter to accede to MTCT programmes.

Methods: We measured VCT uptake among 12,252 first time antenatal clinic (ANC) attendees at St. Mary's Hospital Lacor (Gulu district, North Uganda) between 2001-2003. Socio-demographic factors associated with VCT uptake were evaluated using log binomial regression models. Prevalence proportions ratios (PPR) and 95% confidence intervals (CI) were used to describe the strength of associations.

Results: Of the 12,252 women who were offered VCT, 55.6% accepted. VCT uptake increased from 51.0% in 2001 to 58.6% in 2002 and 57.7% in 2003. Having a primary education or lower [adjusted PPR=1.06, 95% CI: 1.01-1.12], being unmarried (cohabiting, PPR=1.07, 95% CI: 1.03-1.11; single/widowed/divorced, PPR=1.10, 95% CI: 1.03-1.19), previous use of contraceptives (traditional methods, PPR=1.04, 95% CI: 1.00-1.09; modern methods, PPR=1.15, 95% CI: 1.00-1.31)

and a modern occupation of partner (PPR=1.04, 95% CI: 1.00-1.08) were weakly associated with VCT uptake.

Conclusions: VCT uptake is still low in this district of northern Uganda. Some socio-demographic factors are associated with VCT uptake but the strength of these associations indicates that they have little impact on women's decision to accept VCT. Further investigations, focusing on issues such as clinic accessibility, relationships with clinic staff and partner and attitude towards testing, are needed to identify factors that have a considerable impact on VCT uptake.

	VCT acceptance rate (95% CI)	Adjusted PPR (95% CI)	P-value
Age group		1	
< 20 years	56.1 (54.2-58.0)		
20-24 years	55.8 (54.3-57.3)	1.02 (0.97-1.08)	0.415
25-29 years	54.9 (53.1-56.7)	0.99 (0.93-1.05)	0.710
≥ 30 years	56.0 (54.0-58.0)	1.03 (0.96-1.10)	0.427
Residence		1	
Rural	54.4 (53.2-55.6)		
Urban	56.9 (55.7-58.2)	1.02 (0.98-1.07)	0.247
Time of residence		1	
> 2 years	57.1 (57.7-62.1)		
≤ 2 years	59.9 (56.0-58.1)	1.04 (1.00-1.09)	0.071
Level of education		1	
Secondary or higher (> 7 years)	55.4 (53.2-57.6)		
Primary or lower (≤ 7 years)	55.6 (54.7-56.6)	1.06 (1.01-1.12)	0.020
Occupation^a		1	
Traditional	55.5 (54.6-56.5)		
Modern	56.2 (55.6-58.7)	0.99 (0.94-1.05)	0.853
Marital status		1	
Married	55.4 (54.1-56.7)		
Cohabiting	59.4 (57.9-60.8)	1.07 (1.03-1.11)	< 0.001
Single/Divorced/Widowed	61.3 (57.2-65.2)	1.10 (1.03-1.19)	0.006
Age difference with partner		1	
< 2 years	55.5 (53.1-57.9)		
2-3 years	58.5 (56.6-60.4)	1.04 (0.99-1.10)	0.127
4-5 years	57.9 (55.8-60.0)	1.03 (0.97-1.09)	0.302
> 5 years	57.6 (56.0-59.1)	1.02 (0.97-1.07)	0.530
Occupation of partner^a		1	
Traditional	54.1 (52.9-55.4)		
Modern	57.0 (55.8-58.2)	1.04 (1.00-1.08)	0.043
Parity		1	
Primipara	55.9 (54.1-57.8)		
Multipara	55.5 (54.5-56.5)	1.01 (0.96-1.07)	0.632
Use of contraceptives^b		1	
None	57.0 (55.9-58.0)		
Traditional methods	59.6 (57.4-61.7)	1.04 (1.00-1.09)	0.033
Modern methods	66.1 (56.8-74.6)	1.15 (1.00-1.31)	0.047

Figure 1: PPR, prevalence proportion ratio

MP-052 VIRTUAL SEX: USING INTERACTIVE VIDEO TO CHANGE RISKY BEHAVIOR

R. Appleby, L.C. Miller, S.J. Read, C.G. Godoy, J. Christensen, M.B. Briano, M.L. Ovalle, M. Nwosu, R. Knowles

University of Southern California, Los Angeles, United States of America

Objectives: New approaches are necessary to recapture the attention of young MSM who have tuned out traditional HIV prevention messages and campaigns. Our team endeavored to create three interactive HIV prevention videos (IAVs) to engage young MSM.

Methods: In prior research (Read, et al., 2005), our team developed an IAV which was effective in reducing HIV risk behavior in a sample of Caucasian MSM. The video's development was guided by Bandura's cognitive social learning theory and related approaches. For the current project, we produced three IAVs for MSM 18-30 years: one for Caucasian MSM, one for African-American MSM, and one for Latino MSM. To inform the content of the videos, 58 mixed-method pilot interviews were conducted among the three groups. Additionally, three community advisory board (CAB) meetings were conducted to validate preliminary scripting ideas and provide supplementary feedback.

Results: The videos have been produced and testing has begun. The IAVs take the participant on an interactive date where he can make choices about taking alcohol or drugs, negotiating safer sex, and sexual behavior. Guide characters provide reinforcement for safe choices and information about the risks involved with unsafe behaviors such as taking methamphetamine or choosing unprotected anal sex. An experimental study is being conducted to assess the IAV's efficacy in reducing risky sexual behavior compared to other interventions (i.e., counseling, non-interactive video, or control). The IAVs will be presented at the conference.

Conclusion: Interactive technology has shown promise as an educational tool that enhances transfer of learning over non-interactive media as suggested by our previous work and that of others in multiple health domains. IAV is a technological and media driven approach that is expected to engage young MSM and reduce sexual risk taking to a greater extent than traditional methods.

MP-053 BARRIERS TO HIV PREVENTION STRATEGIES FOR HIV-POSITIVE MSM

J.T. Galea¹, B. Brown¹, B. Amani¹, A. Shin¹, M.R. Golden², P.M. Gorbach¹

¹ University of California, Los Angeles, Los Angeles, United States of America

² University of Washington, Seattle, United States of America

Objectives: To identify barriers to men who have sex with men (MSM)'s participation in 'Prevention With Positives' strategies.

Methods: 54 HIV-Positive MSM attending sexually transmitted disease (STD) clinics in Los Angeles (LA) (32) and Seattle (22) with recent STD or unprotected anal intercourse with a serostatus negative or unknown partner were interviewed about HIV prevention strategies. Interviews were open-ended, tape-recorded, transcribed verbatim, coded and content analyzed. Themes were developed from verbatim quotations using Ethnograph software.

Results: Over half of the MSM interviewed objected to some of the proposed prevention strategies. Compared to the 'Supporters,' these 'Objectors' were HIV-infected for fewer years; less likely to be taking anti-HIV medications or receiving HIV medical care; and more likely to be from LA. Objectors and Supporters did not differ by age, race or education. Concerns reported by Objectors by prevention strategy were: Disclosing HIV status: denial, fear of rejection, shared responsibility with HIV-Negative MSM; HIV-Positive events: fear of being labeled, don't identify with Positive MSM; Providing STD and HIV Re-infection information: information is useless, defensive of sexual behaviors, complicated information adds another barrier to gay sexual expression, government scare tactic, faith in new medications, there will never be a cure for AIDS; Alcohol and Drug interventions: people must 'do it on their own', unrelated to HIV, denial of problem use; Computerized Partner Notification: makes the situation worse, fear of government, should be done in person, confidentiality concerns, waste of time, privacy invasion.

Conclusions: As HIV prevention efforts shift to 'Prevention With Positives,' barriers to such efforts must be addressed. Strategies involving STD clinics that continue to provide unique prevention opportunities for HIV-Positive MSM without regular medical care and structural interventions not requiring active participation should be considered to reach those unwilling to voluntarily participate.

MP-054 A MULTIDISCIPLINARY PHASE 3 CLINICAL TRIAL OF CARRAGUARD™ FOR THE PREVENTION OF HIV SEROCONVERSION IN WOMEN IN SOSHANGUVE, PRETORIA, SOUTH AFRICA

K. Ahmed

University of Limpopo, Medunsa Campus, Medunsa, South Africa

Objective: To determine the efficacy and safety of a vaginal microbicide Carraguard™ in preventing HIV seroconversion in women.

Methods: A total of 6639 women across three sites, are to be enrolled over 18 months with the trial lasting 3 years. Informed consent is obtained following educating participants of the study steps, risks and benefits. Enrolled participants are followed-up quarterly for pelvic examinations, pregnancy, counselling and HIV testing, screening and treatment for STIs. Participants are randomized to two arms, Carraguard gel plus condoms or the placebo gel plus condoms. They are educated to empty one applicator of gel into the vagina prior to each act of intercourse. Participants are instructed to return all applicators and adherence to determine applicator use is done by a novel method. Data is faxed to Population Council, New York. SAEs are reported to the PC safety desk. The Data Safety Monitoring Board will conduct 2 interim analyses on the safety of the product.

Results: The study commenced in March 2004. By March 2005, 1264 participants were enrolled at Medunsa. The HIV prevalence rate of the screened participants was 23.8% and other STIs ranged between 3.2% and 14.5%. The average enrolment rate is 65.8% with 6.5% loss to follow up. All participants who are HIV positive at screening are referred to referral networks within the community. Curable STIs are treated according to set guidelines. A total of 8 SAEs occurred at our site. None were related to the study product. Conclusion: Enrolment is continuing. If the outcome of the study indicates that Carraguard prevents HIV infection, it will be a major breakthrough in HIV prevention.

MP-055 THE CHALLENGES IN RECRUITING IN THE PHASE 3 CLINICAL TRIAL OF THE MICROBICIDE CARRAGUARD™ IN A HIGH HIV PREVALENCE AREA IN SOSHANGUVE, PRETORIA, SOUTH AFRICA

M.M. Williams, K. Ahmed

University of Limpopo, Medunsa Campus, Medunsa, South Africa

Background: A phase 3 clinical trial is currently underway to evaluate the efficacy of the microbicide Carraguard™ against HIV infection.

Objectives: To recruit and enrol participants according to protocol requirements and retaining these participants in the study for a minimum of 12 months whilst ensuring compliance with the use of the study product.

Methods: At the Setshaba Research Centre in Soshanguve, Pretoria, South Africa, we estimated that we would need to screen approximately 4000 participants to enrol 2213. The screening process is to take place over 18 months and enrolled participants are to be followed-up for a minimum of 12 months. A team of recruiting officers actively recruits participants from previously established recruitment sites in the Soshanguve area. The assumptions (to screen 4000 women) were made based on local HIV prevalence rate, cervical cancer prevalence, pregnancy prevalence, site physical

space, staff capacity and the time allocated per participant. Participant's locator information is collected/updated at each visit for follow-up of participants. On-going education by study personnel which includes use of educational material in the form of booklets and video assists, with participant retention and compliance on the use of the study product.

Results: A total of 1806 participants have been screened by January 2005 and the current enrolment rate at this site is 60%. The recruitment team follows-up on missed appointments either by telephone or by doing home visits and addresses any misconceptions in relation to the study product. Participants are given the option to withdraw from the study at any time.

Conclusion: Recruitment is ongoing at this stage. Despite numerous and ongoing challenges the site is continuing to recruit at an optimal rate. Recruitment strategies will have to be revised as the need arises.

MP-056 EXPERIENCES AND CHALLENGES FACING NURSE CLINICIANS IN THE PHASE 3 CARRAGUARD™ VAGINAL MICROBICIDE CLINICAL TRIAL IN SOSHANGUVE, PRETORIA, SOUTH AFRICA

L. Khunou, C. Monedi, A. Mothle, K. Ahmed

University of Limpopo, Medunsa Campus, Medunsa, South Africa

Background: Setshaba Research Center is one of the three sites in South Africa conducting a phase 3 clinical trial to test long term safety and efficacy of Carraguard™.

Objective: To identify and deal with challenges experienced by the nurse clinicians

Method: Trained nurse clinicians obtain medical, concomitant medication history and report on relevant adverse events. Participants don't remember the diagnosis, date of onset, names, indications and dosages of drugs. This lack of recall is due to low literacy levels, lack of information, and large number of generic medication. The physical examination is conducted to detect pre-existing condition(s). A pelvic examination including speculum is done to screen for sexually transmitted infections (STIs) and detect any disruption of epithelia. A percentage (10%) of participants display anxiety during speculum examination and do not understand the need of repeated speculum examinations. All participants with curable STIs are treated according to study guidelines. Participants come back with recurrent STIs despite treatment and partner referrals. At each visit the previous data is reviewed and updated.

Results: Taking medical history is a long process but is an important aspect of study. Participants are encouraged to involve family members to capture this data. They are advised to bring along any medication and to ask for a diagnosis from the caregivers. Education by study staff, in addition to viewing of a video on the need for repeated speculum examination is done to allay the fears of repeated speculum examination. The need for partner treatment of STIs and use of condoms is emphasised.

Conclusion: A great concern of repeated recurrent STIs is a major challenge. There is a need for ongoing education on aspects of health. As research is a relatively new concept, awareness needs to be conducted continually

MP-057 EXPERIENCES OF SPECULUM EXAMINATION IN WOMEN PARTICIPATING IN THE PHASE 3 TRIAL OF CARRAGUARD™, A VAGINAL MICROBICIDE IN SOSHANGUVE, PRETORIA, SOUTH AFRICA

M.C. Monedi, L. Khunou, A. Mothle, K. Ahmed

University of Limpopo, Medunsa Campus, Medunsa, South Africa

Background: The phase 3 clinical trial to determine efficacy and safety of the vaginal microbicide Carraguard™ requires speculum examination of enrolled participants at all visits. The purpose is to screen for STIs, exclude cervical malignancy and assess product safety by viewing epithelia.

Objective: To determine factors that would minimize discomfort and anxiety associated with the speculum examination.

Methods: At recruitment an educational video is shown to demonstrate the pelvic examination procedure including the speculum examination. Nurse-clinicians conduct the physical examination of participants. Privacy and confidentiality is maintained. Sterilized Cusco speculums are used during the pelvic examination and the participants are informed again of the procedure. Prior to insertion of the speculum, participants are asked questions regarding previous speculum examination, birth history and sexual trauma. A pap smear and swabs for screening for STIs are taken. The appearance of the vaginal and cervical mucosa is noted for any abnormalities.

Results: A total number of 5101 participants underwent speculum examination of which approximately 10% displayed anxiety at the procedure. These participants were usually under the age of 21, nulliparous and those with no previous gynaecological examination. Thus far only two participants totally refused the examination and had to be excluded. One participant initially had a speculum examination but on a subsequent visit refused speculum examination following a recent history of sexual abuse.

Conclusion: Although speculum examination is considered by some to be an invasive procedure, a professional approach by well-trained staff can minimize anxiety and discomfort to the participants. The majority of the participants (approximately 90%) did not feel uncomfortable with the procedure. Use of visual aids i.e. the video, assists in allaying anxiety. Sexual abuse may have a negative impact on such procedure that involves extensive examination of the genital area.

MP-058 QUALITY CONTROL (QC) OF CLINICAL RECORD FORMS (CRF'S) IN A LARGE PHASE 3 TRIAL OF CARRAGUARD™, A VAGINAL MICROBICIDE, CONDUCTED IN SOSHANGUVE, PRETORIA, SOUTH AFRICA

M.L. Moropeng¹, J. Skhosana¹, B.L. Mohale¹, K. Ahmed¹, A.A. Hoosen¹, M. Gehret²

¹ University of Limpopo, Medunsa Campus, Medunsa, South Africa

² Population Council, New York, United States of America

Background: The phase 3 Carraguard™ trial is being conducted at three sites in South Africa including Soshanguve, Pretoria. A large sample size must be recruited requiring accurate capture of a substantial amount of data for evaluation. Quality control of data must be effective and ongoing to minimize errors and omissions.

Objectives: To optimize the quality, accuracy and validity of data collected in the phase 3 Carraguard™ trial.

Methods: Approximately 4000 participants must be screened at the Soshanguve site to enroll a total of 2213 women, who will attend quarterly visits for a minimum of 12 months. Trained personnel complete CRF's at each visit according to GCP/GLP/ICH guidelines. The QC team ensures that all data is accurately entered, complete, legible, dated and signed prior to faxing CRF's via Data Fax to Population Council in New York. In NY, data managers check for inconsistencies and query the site's QC team. The QC team responds after consultation with relevant staff.

Results: From March to June 2004, a total of 4141 CRF's were captured compared to a total of 38 381 from July 2004 to February 2005, a four fold increase per month. For the initial period, the QC query rate was 8/100 CRF. Despite the increase in the volume of CRF's generated per month, the QC query rate in the subsequent period dropped to 6/100 CRF. This decrease is associated with an increased legibility, and a decreased rate of omissions and inconsistencies. The QC team and study staff address most queries on the day received.

Conclusion: The QC team has markedly improved the data quality and decreased the number of queries. Capturing accurate, quality data requires ongoing training, compliance to GCP/GLP/ICH guidelines and is a critical aspect in conducting a large-scale clinical trial.

MP-059 SEXUAL RISK TAKING SCRIPTS AMONG A MULTI-ETHNIC SAMPLE OF YOUNG MSM

C.G.G. Godoy, P.R. Appleby, L.C. Miller, S.J. Read

University of Southern California, West Hollywood, United States of America

Objective: Sexual risk taking scripts need to be studied in order to realistically portray the experiences of young MSM. From these scripts HIV interventions can be developed to reach those who no longer respond to traditional HIV prevention messages and campaigns. We investigated differences in how young-MSM identify, initiate, and negotiate sexual activity in different venues and amongst potential partners.

Methods: 58-one hour mixed-method interviews were conducted among three ethnic groups (22-Latinos-14-African-Americans-23-Caucasians). Interviews were audio-taped and content coded. Participants were asked to identify which features, behaviors, or personality characteristics were most salient in their partner selection criteria in different venues. Verbal and non-verbal sexual initiation cues were also examined.

Results: The mean age was 24 with a range of 18-30. Of all venues that subjects would meet a sexual partner in: 48%-listed bars/clubs, 39%-listed the Internet. A median split of level of UAI was conducted to separate high/low risk takers. The highest number of sex acts for high risk takers occurred for those meeting over the Internet. No differences in approach-seeking behavior were found between high/low risk takers at bar venues. Interestingly, approach seeking behavior at bars was associated with some online behaviors, such as calling a partner, initiating sex right away, showing affection before sex, and negotiating safer sex while online. Safer sex negotiation was most likely to occur if the venue was the Internet, however risk taking often occurred once sexual activity began.

Conclusion: Although individual scripts vary by risk taking behavior group and venue, themes are identified which are particularly useful

in the development of tailored HIV Prevention interventions. The paradox of negotiated behavior without follow-through is a significant development that may be the result of impersonal negotiation strategies-(i.e., online)

MP-060 HIV PREVENTION WHILE THE BULLDOZERS ROLL: A QUALITATIVE STUDY EXPLORING THE EFFECT OF AN EVICTION ORDER ON HIV RISK IN SEX WORKERS RESIDING IN THE RED-LIGHT AREA OF GOA

M. Shahmanesh¹, S. Waya², G. Andrews³, F.M. Cowan¹, V. Patel⁴, D. Mabey⁴

¹ University College London, London, United Kingdom

² Positive People, Panjim, India

³ Sangath, Porvorim, India

⁴ LSHTM, London, United Kingdom

Objective: During a study to develop a HIV prevention intervention for sex workers (SWs) in Goa, an eviction order led to the demolition of the red-light area. We describe the effect of these events on the SWs' vulnerability to HIV.

Methods: Key informants were people involved in sex-trade; non-governmental-organisations (NGOs); health-care-workers; and SWs. Qualitative methods utilised were in-depth and serial interviews; group-discussions; and participatory observation.

Results: Baina was a red-light area since the 1960s. NGO activities and sexually transmitted infections (STIs) clinics had increased HIV awareness and condom use. The police cordon leading up to the demolition had a range of adverse effects. Women were harassed by the police and lost income from restrictions on customers entering the area. To adapt they visited lodgings outside Baina and other red-light areas. They were at increased vulnerability to HIV through dramatic declines in condom distribution and their isolation in lodgings making them vulnerable to police raids and unsolicited clients. Concerns about income and security made HIV prevention a low priority. SWs were reluctant to utilise government health services whilst no longer affording private health care. The SWs were living in a state of constant anxiety and their decline in mental health was reflected in self-harm, suicidal attempts, and increased alcohol consumption. Without disposable income they lost the support of their non-paying-partner. Research workers became involved in advocacy for the SWs rights. **Conclusion:** Events leading to the demolition made the women vulnerable to HIV, STIs and poor mental health, due to mobility, multiple partners, increased alcohol use, and reduced negotiating power from loss of income and self-esteem. The situation has deteriorated further in the aftermath of the eviction making it critical to describe the changed conditions of SW and develop a peer-driven HIV prevention intervention.

SESSION: MP - D1A PREVENTION STRATEGIES - HIV/AIDS**MP-016^A ROUTINE ANTE-NATAL HIV TESTING – WHAT HAPPENS OVER TIME?**

L. Sherr¹, M. Lipton¹, P. Whyte², U. Harrison³, S. Conaty¹, P. Jones⁴,
C&I Ante-natal Steering Group⁵

¹ UCL, London, United Kingdom

² Whittington Hospital, London, United Kingdom

³ Royal Free Hospital, London, United Kingdom

⁴ UCL Hospital, London, United Kingdom

⁵ Camden and Islington, London, United Kingdom

Objectives: HIV testing offer to pregnant women has been recommended as routine. HIV-test uptake rates were studied in 2002 and 2004 to understand procedural demands, reasons for refusal, change over time and test uptake.

Methods: Midwives completed questionnaires after ante-natal booking. Information gathered included demographic information, obstetric history, HIV risk factors, length of time spent discussing HIV testing, previous HIV testing, uptake of HIV test, ratings of the pre-test discussion and uptake of other ante-natal screening tests. Qualitative data was gathered on reasons for declining.

Results: Data was available for 3,560 women (2,710-2002; 850-2004). 85% in 2002 and 748 (88.2%) consented to an HIV test, marking a 3% increase over the 2 year period. In 2002, multivariable analysis parity (OR:1.19, 95% CI 1.10–1.29 per additional child), declining other tests (OR:3.10, 2.44–3.93 per test declined) and previous HIV testing (OR:1.70, 1.30–2.23) were predictors of declining an HIV test. In 2004, significant predictors of declining an HIV test included increased age (OR=1.8, 95%CI =1.02-1.14), a later booking appointment (OR=1.08, 95%CI =1.02-1.13), religious group (OR=2.47, 95%CI =1.15-5.30), risk factor for HIV (OR=3.86, 95%CI =1.52-9.82), declining another screening test (OR=8.46, 95%CI =4.49-15.95) and spending longer discussing HIV (OR=3.80, 95%CI =0.99-14.64). Reasons for declining included previous HIV testing, perceived low risk and monogamy/trust in relationship.

Conclusions: Universal HIV testing in ante-natal under an 'opt out' regime, markedly increases uptake of testing. Uptake was sustained (even improved) but focus became problematic. Time spent on discussion is usually less than 3 minutes. Over time, there was a shift in declining where those with risk factors are more likely to decline. An enhanced strategy to anticipate and provide for this is needed if ante-natal HIV screening is to be maximally effective.

MP-061 DRUG PURCHASE AND USE LOCATIONS AMONG INJECTION DRUG USERS IN PHILADELPHIA: POTENTIAL ROLE IN HIV PREVENTION

J.R.B. Becher, K. Lynch, D. Fiore, D.S. Metzger

University of Pennsylvania, Philadelphia, PA, United States of America

Objectives: Although the importance of spatial context is often recognized, the ability to analyze geographic variables as they relate to risk behaviors has been limited in past studies. As part of an ongoing clinical trial evaluating the impact of a social network intervention among injection drug users (IDUs) in Philadelphia, data on drug-using behaviors, including locations of where drugs were purchased and used, have been collected. These data were used to explore relationships between HIV risk behaviors and geographic measures.

Methods: As part of the screening procedure, all study participants were asked where they currently live, where they typically use drugs, and where they usually buy drugs. Mean distances between these three locations (MLUB) were calculated and used to examine association between distances, sociodemographic characteristics, and risk behaviors.

Results: The mean age of 689 injectors was 43 years; 22% were female; and 26% were white, 63% African-American, and 11% Latino. Frequency of injection was high; 88% of IDUs reported injecting drugs at least 12 times in the past three months. Ninety-four percent of IDUs reported injecting heroin in the past three months (32% cocaine and 36% speedball). More than a quarter of IDUs reported sharing syringes (28%), while more than a third of IDUs reported sharing works (39%). MLUB among African-Americans (1.9 miles) was found to be significantly less than Caucasians (3.0 miles). In preliminary analyses, MLUB was significantly associated with sharing needles ($p < .001$) and sharing works ($p < .05$). Those with MLUB of less than a half mile reported significantly lower rates of sharing needles and sharing works.

Conclusions: Geographic information may aid in our understanding of HIV risk behaviors and help design and target new HIV prevention strategies.

MP-062 PEER REFERRAL TO IDENTIFY NEW CASES OF HIV AMONG MEN WHO HAVE SEX WITH MEN (MSM)

M.R. Golden¹, M. Hogben², T.L. Gift², D.D. Brewer³, M. Fleming³,
J.S. St. Lawrence², H. Thiede³, H.H. Handsfield¹

¹ University of Washington, Seattle, WA, United States of America

² CDC, Atlanta, GA, United States of America

³ PHSKC, Seattle, United States of America

Objective: To describe the case-finding efficacy of a peer referral program designed to identify new cases of HIV/STD among MSM. **Methods:** MSM were identified in an STD clinic, an HIV clinic, via advertising and through community-based organizations, and trained to recruit MSM peers for HIV, hepatitis and STD testing. Efforts were made to recruit minority, non-gay identified, and methamphetamine-using MSM. Peer recruiters were paid \$20 for each person successfully referred. Peers received \$10 for testing and \$10 for receiving test results. Cost data were prospectively collected.

Results: Over 18 months, 167 recruiters referred 317 peers for HIV/STD testing. A total of 242 (76%) peers completed an audio-computer assisted self-interview. One hundred twenty-four (51%) were bisexual or non-gay identified MSM, 120 (39%) were non-white, and 84 (27%) were current methamphetamine users. Twenty-seven peers (9%) had never tested for HIV, and another 81 (26%) had not HIV tested in the preceding year. Peer referral identified 13 new cases of HIV (5% of peers), 63 cases of hepatitis C, 6 cases of chronic active hepatitis B, 3 cases of gonorrhea, 8 cases of chlamydia, and no cases of syphilis. During the same period, 98 new HIV infections were diagnosed among MSM seen at our STD clinic, 20 through a bathhouse testing program, and 46 through other publicly financed testing programs. Peer referral increased overall HIV case-finding 8%, and increased case-finding among non-white MSM by 24%. The program cost \$6500 per HIV case identified, which is somewhat less than the cost per case detected through other testing programs in King County.

Conclusions: Peer referral is a cost-effective means to identify new cases of HIV among difficult to reach, high-risk MSM.

MP-064 A PROFILE OF HIV PREVENTION PROGRAMS FOR SEX WORKERS IN RUSSIA, INDIA, AND SOUTH AFRICA - RESULTS FROM PREVENT AIDS: NETWORK FOR COST-EFFECTIVENESS ANALYSIS (PANCEA)

P.A. Gaist¹, L. Dandona², J. DuPlessis³, B. Hans⁴, J.G. Kahn⁴, E. Marseille⁴, R. Ozerkina⁵, A. Peryshkina⁵, P. Sisodia², N. Stanley³

¹ National Institutes of Health, Bethesda, MD, United States of America

² CPHR-ASCI, Hyderabad, India

³ HIVAN, DURBAN, South Africa

⁴ IHPS - UCSF, San Francisco, United States of America

⁵ AIDS Infoshare, Moscow, Russian Federation

Background: Programs to prevent HIV and other STIs in sex workers (SWs) are critical to epidemic control efforts around the world, due to the central role that SWs play in infection transmission. However, little is known about the cost of delivering such programs and the quantity and type of services provided.

Methods: We studied SW programs as part of a multi-country study of eight HIV prevention strategies, called Prevent AIDS: Network for Cost-Effectiveness Analysis (PANCEA). We studied 39 SW programs in three countries: Russia (10), South Africa (14), India (15). Program costs and services data were collected for at least one year at each program, using standardized data collection instruments and procedures. Contextual data on program history, goals, and implementation were collected in structured interviews. Results: SW programs deliver a highly heterogeneous set of services, including STI treatment, HIV counseling and testing, peer counseling, public meetings, vocational training, condoms, and others. Individual programs deliver a range of services, and there is high inter-program variation in the mix of services. Program costs range widely, both overall and per SW contact. The reliance on SW volunteers also ranges widely. Implementation includes use of various strategies to overcome community concerns. Findings will be presented by country and by SW program model.

Conclusions: SW programs are implemented in a widely heterogeneous fashion, reflecting local conditions and program philosophies with varying costs and efficiencies.

MP-065 CUTTING THROUGH TO THE TRUTH: HARMONIZING PROPOSALS FOR CIRCUMCISION AS AN HIV PREVENTIVE WITH SCIENCE, ETHICS, AND THE LAW

J.S. Svoboda¹, R.S. Van Howe²

¹ Attorneys for the Rights of the Child, Berkeley, CA, United States of America

² Michigan State University College, Marquette, MI, United States of America

Objectives: To investigate methods for harmonizing proposals for circumcision as a preventive for HIV with science, ethics, and the law, including human rights law.

Methods: Review of pertinent medical literature, including meta-analyses. Review of pertinent ethical, legal, and human rights laws and documents.

Results: Pediatric organizations around the world unanimously refuse to endorse routine male circumcision. The practice's legality has been questioned in both the medical and legal literature.

Recent promoters of the surgery are claiming it may be a preventive for HIV/AIDS. This recommendation relies on observational studies that suffer from several serious flaws.

Any responsible recommendation of universal circumcision must grapple with grave issues: 1) The proposed intervention must be compared to other interventions for efficacy, cost effectiveness, and complications. 2) The surgical complications of the procedure are probably much higher in developing nations. 3) The loss of function of the intact penis. 4) The questionable propriety of removing healthy, highly erogenous tissue from non-consenting minors to 'protect' them, based on speculation about their future sexual behavior, from a disease that may not exist when they reach sexual maturity. 5) The likelihood that such a recommendation would be interpreted as thinly veiled colonialism. 6) Recent research throws into question previous assumptions regarding principal mechanisms by which African HIV is spread. No proven biological basis exists for the asserted connection. 7) The demand for male circumcision may translate into an increased demand for female circumcision, since the justifications for both practices are strikingly similar.

Conclusions: Mass circumcision as a preventive for HIV in developing countries is difficult to justify. Medicine must ally itself with scientifically proven practices within the dictates of medical ethics, human rights, and law. Beliefs and fears alone, no matter how understandable, cannot justify the amputation of healthy tissue.

MP-066 HEALTH PROMOTION FOR COMMUNITY MOBILIZATION TO ELIMINATE DISPARITIES IN HIV DISEASE: EVIDENCE OF UNEVEN IMPACT AMONG MINORITY YOUNG ADULTS IN THE UNITED STATES

W.W. Darrow, J.E. Montanea, H. Gladwin

Florida International University, North Miami, Florida,

United States of America

Objectives: Elimination of health disparities among racial and ethnic minority populations by the year 2010 is one of two national goals in the United States. Our project seeks to eliminate disparities in HIV disease in Broward County, Florida, by (1) informing young adults of REACH 2010 coalition activities, (2) increasing awareness of HIV disease, and (3) encouraging participation in local HIV-prevention efforts. Interventions include educational outreach, strategic communications, capacity building, and infrastructure development.

Methods: Annual computer-assisted telephone interview surveys were conducted among 18-39 year-old African-American, Hispanic, Haitian, and other Afro-Caribbean residents of a 12 zip-code area targeted for change.

Results: Awareness of coalition activities increased. Recognition of the high level of HIV disease in Broward County increased and then stabilized, but participation in HIV-prevention efforts increased and then declined (Table).

Table. Community-level changes in awareness, knowledge, and participation.

Population	Have you heard about REACH 2010?			Do you believe AIDS is higher in Broward?			Did you work to solve the AIDS problem?		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
Afro Amer	6.2%	8.0%	10.1%	37.0%	45.5%	45.3%	7.2%	10.2%	9.8%
Hispanic	5.4	5.7	6.6	22.5	29.4	30.1	3.7	4.7	3.0
Haitian	3.8	4.4	8.2	22.7	26.4	29.0	4.8	6.2	5.6
Afro Carib	5.4	7.8	10.3	22.3	33.0	32.8	3.5	8.1	5.5
Total	5.4%	6.7%	8.6%	27.5%	35.3%	35.2%	5.1%	7.5%	6.0%
(N)	(2011)	(2381)	(1986)	(2011)	(2381)	(2002)	(2011)	(2381)	(2002)

Table 1:

Conclusions: Community-mobilization programs designed to eliminate health disparities require effective and sustained interventions over long periods. Initial increases in indicators of intervention impact were not sustained across the board. Results suggest that more attention should be shifted towards promoting greater community participation in HIV-prevention efforts. On-going evaluations will determine if programmatic modifications are effective.

MP-067 GAINING INSIGHT INTO THE DISTRIBUTION OF HIV/AIDS SERVICE PROVIDERS IN PHILADELPHIA.

J.A.F. Furj¹, J.E.M. Murray¹, D.G. Grundy¹, D.M. Metzger¹, G.B. Bell², D.F. Fiore¹

¹ The University of Pennsylvania, Philadelphia, Pennsylvania, United States of America

² BEBASHI, Philadelphia, United States of America

Objectives: The increasing number of individuals in the United States living with HIV and AIDS in Philadelphia and other urban communities can be expected to provide new challenges related to the distribution of HIV prevention and care services.

Methods: The Community Advisory Board of the University of Pennsylvania, Center for AIDS Research has conducted an examination of the distribution of HIV prevention and care services in Philadelphia. This project has thus far examined 151 agencies in the Greater Philadelphia and assembled data consisting of client census, geographic area served, target client populations, and client ethnicity. Provider information and location have been entered into data bases and GIS mapping has been used to explore the relationship between AIDS case density by postal zip code and location of HIV provider agencies

Results: The mapping of HIV/AIDS service provider agencies relative to the geographic distribution of AIDS cases identified areas of high case density with few HIV/AIDS treatment resources. These data also revealed geographic areas with high incidence of new HIV cases while maintaining a relatively low number of prevention services. These finding will be evaluated with the establishment of focus groups to gain insight into cultural barriers to services. HIV/AIDS education and prevention strategies will be used to further edify the specific needs of particular communities that show a disparity in HIV/AIDS treatment resources.

Conclusion: As the HIV epidemic evolves within urban communities, prevention strategies and methods need to evolve as well. The location of HIV prevention and care services needs to continue to be considered in light of both access and acceptability.

MP-068 INCIDENT BACTERIAL AND VIRAL SEXUALLY TRANSMISSIBLE INFECTIONS AND HIV ACQUISITION IN A COHORT OF HOMOSEXUAL MEN

A.E. Grulich¹, F. Jin¹, G. Prestage¹, S. Kippax¹, B. Donovan², J. Taylor³, A. Minde², C. Pell⁴, J. Kaldor¹

¹ University of New South Wales, Darlinghurst, Australia

² University of Sydney, Sydney, Australia

³ Westmead Millenium Institute, Sydney, Australia

⁴ Taylor Square Private Clinic, Sydney, Australia

Objectives: Studies in heterosexual populations have concluded that when rates of sexually transmissible infections (STIs) are high, STI-based interventions can reduce HIV incidence. The potential for STIs to facilitate HIV transmission in homosexual men has been less studied. We aimed to describe the interaction between bacterial and viral STIs and HIV incidence in a community-based cohort of homosexual men.

Methods: The study was based in the Health in Men cohort in Sydney, Australia. Between 2001-04, 1,427 homosexual men were enrolled. The men underwent annual face-to-face interviews and anal swab and urine screening for gonorrhoea and chlamydia (nucleic acid amplification, BD ProbeTec), and serology for syphilis, herpes simplex virus (HSV) types 1 and 2, and HIV (all by enzyme immunoassay). The men also reported specific STIs that were diagnosed between annual assessments ('interval diagnoses'). Results: The incidence of combined at interview and interval diagnoses of STIs ranged from 0.54 per 100 person years (PY) for syphilis, to 8.51/100PY for urethral chlamydia. The seroprevalence of HSV2 was 25% and the incidence of HIV was 1.07/100PY. Neither incident urethral infections, syphilis nor prevalent HSV2 were significantly associated with HIV seroconversion. However anal gonorrhoea and interval diagnosis of anal chlamydia were related to HIV seroconversion, even after adjusting for reporting receptive unprotected anal intercourse with casual partners. This was statistically significant for gonorrhoea (RR 8.29, 95% CI 1.98-34.8) but not significant for chlamydia (RR 3.75, 95% CI 0.80-17.5). Although prevalent HSV2 infection was not related to HIV infection, further analysis is underway to assess the effect of incident HSV2 infection.

Conclusion: Anal bacterial STIs are independent risk factors for HIV acquisition among homosexual men. As STIs are common in homosexual men, STI-based interventions have the potential to reduce HIV incidence, justifying intervention studies.

MP-069 A STUDY TO EXPLORE THE EFFECTS OF HERPES SIMPLEX VIRUS TYPE 2 (HSV-2) ON INTRAPARTUM VERTICAL TRANSMISSION OF HUMAN IMMUNODEFICIENCY VIRUS (HIV)

F.M. Cowan¹, R. Ntozini², J. Hargrove², H. Weiss³, P. Iliff², J. Humphrey²

¹ University College London, London, United Kingdom

² Zvitambo Study, Harare, United Kingdom

³ LSHTM, London, United Kingdom

Objectives: HSV-2 likely facilitates sexual transmission of HIV but its effect on vertical transmission is unknown. This case control study aims to determine whether HSV-2 increases intrapartum HIV vertical transmission using archived sera from the ZVITAMBO trial. Methods: ases: 491 HIV-positive women whose babies were pre-

sumed HIV infected intrapartum (baby HIV PCR-negative at delivery, PCR-positive at 6 weeks). Controls: 994 HIV-positive women whose babies remained PCR-negative at one year. Maternal sera collected within 96 hours of delivery were tested for HSV-2 using Herpe-Select (Focus Technologies). Low-positive samples (index 1.0-3.5) and a random sample of 20 positives and 20 negatives are being retested by Western Blot. Maternal sera collected 6 weeks postpartum were tested for syphilis using RPR and TPHA. TPHA-positive women with RPR >1:8 were presumed to have active/incubating syphilis at delivery.

Results: 165 mothers (11%) tested low positive for HSV-2 and are not included in this analysis but will be available for presentation. Prevalence of HSV-2 and syphilis were 85.8% and 3.8%, respectively. HSV-2 infection tended to increase the risk of HIV vertical transmission (unadjusted OR: 1.28 (95%CI: 0.91, 1.81)). Adjusting for other risk factors for intrapartum transmission (maternal CD4, Hb, arm circumference, birth weight) had little effect (adjusted OR: 1.26 (0.89, 1.79)). Inclusion of the remaining observations when Western Blot data are available may provide more definitive results. There was no evidence that maternal syphilis at delivery was associated with intrapartum transmission (unadjusted OR: 1.14 (95%CI: 0.66, 1.97), adjusted OR: 0.97 (0.54, 1.71)).

Conclusions: HSV-2 co-infection among HIV positive women is very common and may increase intrapartum transmission of HIV. Co-infection with syphilis does not influence intrapartum HIV transmission risk.

MP-070 HOW IMPORTANT IS THE STI EFFICACY OF A MICROBICIDE: MODEL PREDICTIONS FROM TWO AFRICAN SETTINGS WITH DIFFERENT STI PROFILES

P.T. Vickerman¹, P.T. Vickerman¹, C. Watts¹, S. Delany², M. Alary³, H. Rees², L. Heise⁴

¹ LSHTM, London, United Kingdom

² RHRU, Johannesburg, South Africa

³ Laval University, Quebec, Canada

⁴ Path, Washington DC, United States of America

Objectives: To explore how the impact of a microbicide on HIV transmission is affected by the underlying epidemiological situation in two contrasting sub-Saharan African settings: Cotonou, Benin and Hillbrow, Johannesburg, with different patterns of sexual behaviour, and HIV/STI prevalence.

Methods: A dynamic mathematical model was fitted to epidemiological and behavioural data from Cotonou and Hillbrow, and used to estimate the impact of introducing a microbicide with different HIV and STI efficacies. Simulations were compared to gain insights into how the microbicide's impact on HIV transmission is affected by the underlying epidemiological context.

Results: In both settings, widespread microbicide use reduces HIV transmission. However, for a particular level of microbicide use, the reduction in HIV incidence was greater in the lower HIV prevalence setting (Cotonou), whereas it averted more HIV infections per 100,000 population in the higher prevalence setting (Hillbrow). Most infections averted are from commercial sex at lower HIV prevalences and non-commercial sex at high prevalences. In Cotonou, where STI prevalence is lower, the microbicide resulted in a greater relative reduction in STI prevalence, and the majority

of the microbicide's impact on HIV was due to its effect on STI transmission. In Hillbrow where STIs are more prevalent, the microbicide's STI efficacy contributed less to the impact of the microbicide.

Conclusions: Even with the same patterns of use, the impact of a microbicide will vary in different epidemiological settings. Where STI prevalence is low, a microbicide's STI efficacy may be more important than its direct HIV efficacy. These results highlight that microbicide products may have different advantages and limitations in different settings, and that funds should be invested in the development and testing of a broad spectrum of products.

MP-071 PREDICTORS OF DUAL METHOD CONTRACEPTIVE USE AMONG YOUNG SOUTH AFRICAN WOMEN

A.E. Pettifor¹, C. MaPhai², H.R. Rees², S. Pascoe³

¹ University of North Carolina Chapel Hill, Chapel Hill, United States of America

² RHRU/ Univ Witwatersrand, Johannesburg, South Africa

³ LSHTM, Johannesburg, South Africa

Background: The largest public health interventions directed at adolescents are the provision of contraceptive services and condoms for the prevention of HIV and other STIs. Encouraging the use of contraceptive services is important for meeting STI/HIV disease prevention goals as well as pregnancy prevention.

Methods: In 2003 we conducted a nationally representative household survey of 11,904 South African youth aged 15-24 years. Respondents completed a comprehensive behavioural questionnaire and were tested for HIV antibodies. Data are presented here for women who reported being sexually experienced and currently using contraception.

Results: Among sexually experienced women 52% reported currently using contraception. Amongst these women, 26.5% reported using condoms only, 6.8% reported using dual methods (hormonal and barrier) and 66.6% reported using only hormonal contraception. Among women who reported only using hormonal contraception, 32.3% also reported that they used a condom at last sex. These women were included in the analysis as dual method users. Women who were HIV positive were not more likely to use dual methods compared to those who were HIV negative (33% vs. 27%, respectively $p=0.09$). In multivariate analysis women with >1 lifetime partners and who reported having talked to their partner about condom use were significantly more likely to report dual method use after controlling for socio-economic factors. HIV infection was not significantly associated with dual method use.

Conclusions: As has been demonstrated among youth populations in other countries, protection against pregnancy and transmission of STIs is low among these young women. The strongest predictor of dual method use was reporting having discussed condoms with last sexual partner. The data indicates the need to integrate family planning and HIV prevention programmes in health care services and to involve partners in these decisions whenever possible.

MP-072 SEROSORTING AND SEROPOSITIONING AMONG MSM IN SAN FRANCISCOS.Y. Chen¹, K. Knapper², H.M. Truong³, W. McFarland¹¹ San Francisco Dept. of Public Health, San Francisco, United States of America² The Stop AIDS Project, San Francisco, United States of America³ University of California, San Francisco, United States of America

Objectives: To examine the extent in trends that men who have sex with men (MSM) are using serosorting and seropositioning as means of prevention. Serosorting is a prevention strategy that involves selecting partners of the same serostatus to engage in unprotected anal sex. Seropositioning is a strategy that entails being the receptive partner if HIV positive and the insertive partner if HIV negative when engaging in unprotected anal sex.

Methods: Volunteers of The Stop AIDS Project, a community-based organization, have conducted street-intercept interviews of MSM in diverse settings throughout San Francisco since 1994. In 2003 and 2004, we asked subjects whether they knew the serostatus of their insertive and receptive anal sex partners.

Results: Of 4,334 MSM interviewed in 2003 and 2004, 3,129 (72.2%) have previously been tested for HIV. The proportion of HIV positives (n=403) and HIV negatives (n=2,726) reporting serosorting in the past 6 months was 23% and 26% in 2003, respectively; and 33% and 29% in 2004, respectively. This increase in serosorting was statistically significant for HIV positives (p=.03) and HIV negatives (p=.08). Five percent of HIV-positives and <1% of HIV negatives reported seropositioning in the past 6 months in 2003. No changes in seropositioning were reported in 2004.

Conclusion: We found a high and increasing level of serosorting and a low but stable level of seropositioning among MSM in San Francisco. We recognize the limitations of this convenience sample and the periodic changes to the questionnaire. Nevertheless, our findings are consistent with STI and HIV surveillance data and may suggest that serosorting is a contributing factor to the stability of HIV incidence among MSM in San Francisco.

MP-073 PATIENTS' READINESS TO CHANGE HIGH RISK BEHAVIORS: AN ANALYSIS OF STD CLINIC VERSUS HIV PRIMARY CARE CLINICM.W. Jenckes¹, P. Coury-Doniger², M. Urban²,M. Sexsmith², E.J. Erbeling¹¹ Johns Hopkins University, Baltimore, United States of America² University of Rochester, Rochester, United States of America

Objectives: Brief counseling interventions by medical providers in clinic settings can reduce risk behaviors in HIV+ patients. An understanding of patient readiness to change behaviors across clinic sites may inform curriculum development for provider training. Our objective is to assess patient readiness among HIV+ and compare behavior stages between two clinics.

Methods: We performed risk assessments and assessed readiness to change behaviors according to Stage-of-Change (SOC) model among HIV+ patients who sought care at an STD clinic in Rochester, NY, or at an HIV clinic in Baltimore, MD. Behaviors staged included: condom use with all partners for the newly diagnosed and those with previously known HIV (STD clinic) and condom use with main

partner, casual partners, and all partners (HIV clinic). Trained providers applied an algorithm to determine SOC stage in the STD clinic, while a computer algorithm applied to patient data input staged in the HIV treatment setting.

Results: Of 156 patients (72% male) in the STD clinic and 154 (80% male) in the HIV clinic, more STD clinic patients were sexually active in the past 3 months (76 v 60%, p=.001) and more reported a recent STD (17 v 10%; p<.04). Among those who were sexually active, numbers of sex partners were comparable between clinics and approximately 20% of patients seen at both clinics were staged 'precontemplative' for consistent condom use. There were no significant differences in readiness for behavior change between the clinics.

Conclusions: A significant proportion of HIV+ patients seen in both STD clinics and HIV clinics may be at early stages of readiness for 100% condom use. Building counseling skills that address all readiness stages including the 'precontemplative' stage may be broadly applicable in STD and HIV treatment sites.

MP-074 EVALUATION AND OUTCOMES OF INNER CITY URGENT CARE CENTER-BASED RAPID POINT-OF-CARE HIV TESTING

Y-H Hsieh, E. Dunn, N. Codori, J.B. Shahan, J.B. Jackson, G.D. Kelen, R.E. Rothman

Johns Hopkins Univ. School of Medicine, Baltimore, MD, United States of America

Objectives: To advance early detection and linkage to care of inner-city patients with HIV infection by developing and evaluating a routine rapid HIV testing program in Johns Hopkins Hospital (JHH) Urgent Care Center(UCC).

Methods: Free Oraquick rapid HIV testing was offered to patients visiting JHH UCC during June 2004 to February 2005, if ≥18 years, self-reported HIV-negative, and able to provide informed consent. All phases of programs were handled by providers trained in HIV counseling, testing and referral (HIV CTR). Test-positive patients were provided confirmatory tests and assigned a follow-up before leaving UCC. Demographics and risk behaviors were collected using Maryland HIV CTR form. Reasons for non-participation were collected using a screening form. Univariate and multivariate logistic regression analysis were performed by SAS.

Results: Among 10,267 patient visits, 2,558(24.9%) were eligible and approached by providers; 634(24.8%) consented to testing. Of those tested, 89% reported high-risk sexual behaviors or IDU and 50% were without insurance. HIV seropositivity was 2.4%(15/634); all were confirmed as have newly recognized. 100% of these patients were referred for treatment; 58% entered into care. Two-thirds of them were uninsured and 93% did not have primary care physician. MSM, IDU, or report of prior STD increased risk of HIV seropositivity in multivariate analysis [OR(95% CI): MSM:16.3(3.4-77.4);IDU: 4.0(1.1-15.1); STD:19.2(5.0-73.9)]. The primary reason for not offered testing was provider was 'too busy' (2624/7103, 36.9%). Among those offered testing, the primary reason to decline was known HIV-negative status (837/1924, 43.5%).

Conclusions: High yield of detecting unrecognized infection, coupled with high risk behaviors among participants support utility of implementing UCC-based rapid HIV CTR programs. Additional

resources to decrease time for provider-driven testing, together with ongoing provider education regarding the testing benefits, would likely achieve CDC goal of improved recognition and linkage to care among hard-to-reach inner-city patients with undetected HIV.

MP-075 DEVELOPMENT AND IMPLEMENTATION OF A TRAINING ON STRUCTURAL INTERVENTIONS FOR HIV PREVENTION

D.A. Wohlfeiler¹, S. Novey², C. Collins³

¹ CA STD/HIV Prevention Training Center, Oakland, CA, United States of America

² AED, Washington, DC, United States of America

³ CDC, Atlanta, United States of America

Objectives: To describe the development and implementation of a two-day training on structural interventions to reduce HIV transmission.

Methods: The training targets US state and local HIV prevention directors, technical assistance providers and community-based organizations. 'Buying Upstream: Stopping the AIDS Epidemic at the Source,' was piloted three times in different regions. Through interactive exercises, participants learn how structural interventions 1) may be appropriate in late-stage HIV epidemics when communities are more difficult to mobilize around prevention efforts, and 2) support behavioral interventions by addressing the social and physical environments in which behavioral interventions' participants live. Examples from injury and tobacco prevention are used to provide useful parallels for HIV prevention efforts, particularly in examining issues of shared responsibility across multiple sectors, balancing individual rights and public health, and sustainability in the absence of continued public health financial and staff resources. Through concept mapping, participants learn to evaluate feasibility and effectiveness of structural interventions. Special emphasis is placed on sexual networks, their contribution to racial disparities, and how structural interventions may help address sexual networks in venues which facilitate partner mixing. Participants also gain practical skills in key strategies needed to support structural interventions including community organizing, obtaining cooperation from key stakeholders, particularly in the private sector; policy development, and media outreach and advocacy.

Results: More than 25 US states' HIV program senior managers, 40 technical assistance providers and numerous community-based organizations targeting a wide variety of target populations (gay men/ MSM, adolescents, women, injection drug users, migrants) have participated in a two-day training. It continues to be offered.

Conclusion: This training has helped translate complex topics such as epidemic phases and sexual network architecture for practitioners, and is catalyzing further dialogue about structural interventions in a variety of settings.

MP-076 INCORPORATING HIV PREVENTION INTO THE MEDICAL CARE OF PERSONS LIVING WITH HIV - TRAINING U.S. HIV CARE PROVIDERS TO 'ASK, SCREEN, INTERVENE'

C.S. Hall¹, S. Ratelle², M.W. Thrun³, K.K. Corbett³, P. Coury-Doniger⁴, J. Marrazzo⁵, A. Rompalo⁶

¹ California Department of Health Services, Oakland, CA, United States of America

² STD/HIV PTC of New England, Boston, MA, United States of America

³ Denver STD/HIV PTC, Denver, CO, United States of America

⁴ New York State STD/HIV PTC, Rochester, NY, United States of America

⁵ Seattle STD/HIV PTC, Seattle, WA, United States of America

⁶ Region III STD/HIV PTC, Baltimore, MD, United States of America

Objectives: Despite increasing rates of HIV and a resurgence of STDs in persons living with HIV, most providers still do not ask their HIV-infected patients about ongoing risks related to sex and drug use. In 2004, a group of governmental (CDC/HRSA/NIH) and non-governmental (IDSA) agencies in the U.S. developed recommendations for incorporating HIV prevention into the care of HIV-infected persons, and shortly thereafter the National Network of STD/HIV Prevention Training Centers (NNPTC) and the AIDS Education and Training Centers (AETCs) jointly developed a curriculum based on these recommendations. The target audience for the 'Ask, Screen, Intervene' curriculum is medical care providers of persons living with HIV.

Methods: The NNPTC and AETCs, in collaboration with the CDC, organized a group of expert clinicians and educators to: review existing data and curricula related to prevention in care, distill these tools into their core elements, draft a consensus curriculum, and pilot this training in six U.S. cities.

Results: The four-hour, case-based, experiential curriculum is comprised of four modules. In the first, providers are trained to screen for risk behaviors, complete risk assessments ('Ask'), and implement STD screening ('Screen'). Modules 2-3 ('Intervene') encompass relaying universal prevention messages, addressing misconceptions concerning HIV transmission, and delivering tailored interventions to support patient risk reduction efforts. A fourth module demonstrates effective use of referrals and partner management interventions. 68 clinicians and 42 others participated in pilot sessions.

Conclusions: Promotion of consensus recommendations for incorporating prevention into HIV care is a first step in making risk assessment and intervention discussions the standard of care. This curriculum represents the critical next step of promoting clinicians' understanding of the importance of these recommendations and assisting them in developing skills needed to implement effective HIV/STD prevention in their practice settings.

MP-077 THE INFLUENCE OF SOCIAL CONTEXT ON REPORTED UNPROTECTED SEX AMONG LATINA WOMEN WHO WORK IN BARS OR CANTINAS

M.E. Fernandez-Esquer

Univ. of Texas School of Public Health, Houston, United States of America

Latina women who work in lower class bars or cantinas drinking with Latino male customers are called cantineras locally. This presentation will describe the relative influence of beliefs and

norms associated with the social context of cantinas on the sexual risk behaviors of women recently immigrated to the United States. A total of 360 women working in 60 cantinas were interviewed as part of GIRASOL, a community intervention study conducted in a large metropolitan area in Texas. Study participants were interviewed by Spanish-speaking interviewers at their place of work. The administered survey included questions about demographic characteristics, drinking patterns, sexual behaviors and items measuring beliefs about work in a cantina generated from a previous qualitative study. Three scales measuring attitudes towards life in a cantina, perceived work-related risks, and sex behaviors norms were constructed based on these beliefs and were tested for reliability with good results. An index of unprotected sex was also constructed as a weighted score combining total number of sex partners with frequency of condom use.

A hierarchical linear regression was used to estimate the relative influence of the context scales on unprotected sex after controlling for demographic, drinking and sex risk characteristics. Results indicate that the context measures significantly accounted for variance in unprotected sex, and that its strongest predictors included measures of drinking behavior unique to this population, meeting one's sex partners in cantinas and cantina-specific sex behavior norms.

Although the influence of social context on the sex risk behaviors of this population needs to be explored further, these results indicate that it exerts a powerful influence on unprotected sex and that it needs to be considered in the prevention of HIV and other STIs.

SESSION: MP - E1 BEHAVIORAL SCIENCE- HIV/AIDS

MP-078 THE EFFECTS OF AGING ON AWARENESS OF COGNITIVE VITALITY IN HIV-POSITIVE ADULTS

D.E. Vance
 University of Alabama at Birmingham, Birmingham, AL,
 United States of America

Objectives: Little is known about the interaction of HIV infection and normal, non-pathological aging on cognition, physical, and emotional health. This study examined how people with and without HIV perceive their own aging experiences, especially concerning cognitive functioning.

Methods: Fifty HIV-positive and 50 HIV-negative participants were administered a variety of cognitive measures and perception questions concerning their aging. Paper- and-pencil questionnaires and timed cognitive tests were used to assess study-related variables.

Results: The mean age of participants was 43.92 years old (ranging from 30 to 64). A trend was detected indicating that the HIV-negative group perceives they are aging better, $F(1, 97) = 3.25, p = .07$. The HIV-positive group rated more negative changes in their physical, emotional, and cognitive functioning than the HIV-negative group. In the HIV-positive group, poorer ratings of cognitive, physical, and emotional health were significantly associated with negative affect. In the HIV-positive group, participants who attributed more negative changes in their cognitive ability performed significantly worse on measures of Trails A, Trails B, and WAIS Pattern Comparison. Perceptions of cognitive change due to HIV were not detected on any of the cognitive measures. However, participants

who attributed cognitive change due to aging performed significantly worse on Rey-Osterreith Copy, Trails A, and Trails B.

Conclusions: Perceived cognitive changes were highly related to measures that reflect negative attitudes and affect. By addressing these psychosocial variables, perceptions of aging could be modified, thus facilitating successful aging. Concerning cognition, the results indicate that participants' self-awareness of their cognitive ability is valid as substantiated by their cognitive performance scores. Attributing cognitive changes to aging may be a way to deflect HIV-related changes that are occurring.

MP-079 STRUCTURAL EQUATION MODELING OF THE RELATIONSHIP BETWEEN NEIGHBORHOOD CHARACTERISTICS, DEPRESSION, DRUG USE, AND SEXUAL PARTNER CHOICE

A. Latkin, A. Curry
 Johns Hopkins University, Baltimore, United States of America

Objectives: Although there have been descriptive analyses of STI/HIV geographic clustering, few studies have examined dynamics of individuals and neighborhood characteristics that may lead to STI/HIV clustering and perpetuation. The current study used structural equation modeling (SEM) to examine the relationship between neighborhood characteristics, depressive symptoms, drug use, and sexual partner type.

Methods: 341 females and 494 males in impoverished urban areas of Baltimore, Maryland, USA. were administered an interview containing the Environmental Inventory, Centers for Epidemiological Studies Depression Scale, and measures of drug and sexual risk behaviors, including exchanging sex for drug or money, having drug using sexual partners, and number of sexual partners. STI, HIV, and drug testing was also conducted.

Results: Using SEM, we performed a formal test of mediation for the pathway: Perceptions of Neighborhood Disorder—Psychological Distress—Sex Risk, and found evidence of partial mediation. As seen in figures 1 and 2, sexual risk behaviors were directly related to neighborhood characteristics and indirectly associated through depression and drug use.

Conclusions: The results of this study suggest that neighborhood characteristics may influence partner choice directly and indirectly through depression and drug use. These dynamics may help to explain the dynamics of core groups and the spread of STI/HIV in impoverished urban areas.

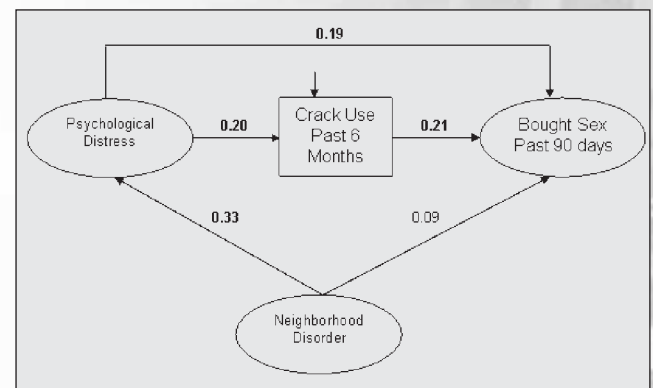


Table 1: Structural Model for Males, Bolded coefficient

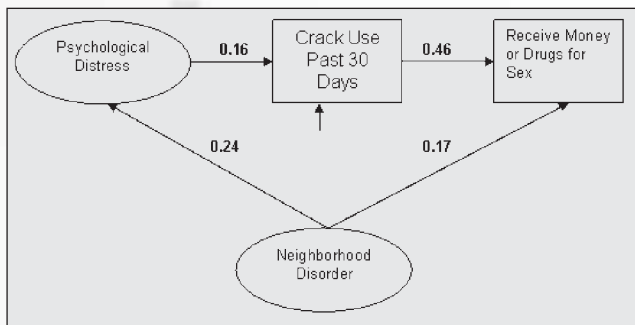


Table 2: Structural Model For Females Crack Use

MP-080 A STUDY ON THE EVALUATION OF THE SHORT-TERM EFFICACY AND FEASIBILITY OF STD COUNSELING APPROACH IN THE STD CLINIC

H. Liu

National AIDS center of China CDC, Beijing, China

Objective To explore the feasibility of counseling service and gather this kind of information for effective counseling within STD clinic. **Methods** The male patients of STD conform to studies object would be divided into counseling group and control group randomly. The counseling group will be given counseling average 20 minutes. The control group will not be given. To compare different two groups. **Results** The counseling striking raise knowledge of STD/AIDS of the patient that difference education level. The rate of partner notification of counseling group is higher (42%) than control group (21%). The counseling has promoted interflow the doctor with the patient and strengthened the information to be transmitted. **Conclusion** The counseling is active meaning for the improvement of service of diagnosis and treatment in ordinary STD clinic.

MP-081 ANALYSIS OF KNOWLEDGE AND UNDERSTANDING OF HIV/AIDS AND STDS AMONG FEMALE STAFF IN ENTERTAINMENT ESTABLISHMENT

Y.M. Cai, F.C.H. Hong, H. Zhou, B. Luo

Shenzhen Chronic Diseases Hospital, Shenzhen, China

Objective: In order to effectively prevent and control the HIV/AIDS and STD epidemic, An outreach team was set up carrying out a HIV/AIDS and STD education in target staffs in entertainment establishment in the communities where EU-China project was conducted in July 2004. **Methods:** Face to face interviews were conducted with questionnaire among 265 female staff from the communities anonymously after information consent. The survey stems includes demology, HIV/AIDS and STD knowledge, safe sex behaviors, medical seeking behaviors, etc. **Results:** Most of the entertainment establishment staffs in Shenzhen were unmarried, senior or technical middle school educated and came from the countryside. Most of them have heard of HIV/AIDS, and had a relatively high level of knowledge concerning gonorrhoea, syphilis and HIV/AIDS; however, they had a low level of knowledge concerning condiloma acuminatum, genital herpes, non-gonococcal urethritis and chancroid. The majority understanding of the three transmission routes of HIV/AIDS, but has misunderstandings on ways that HIV/AIDS didn't transmit during daily activities, most of them knew

that correct condom use can effectively prevent the spread of HIV/AIDS, however, the condom use rate is low, only 6.8% had conducted a HIV test. In the case of appearance of genital problem, 77.4% would seek for medical treatment in Municipal Hospital or nationally designated special treatment center. **Conclusion:** It is a very difficult task to improve the knowledge levels among high-risk groups and carry out behavioral interventions to change their high-risk behaviors. The government has organized and established a high-risk group intervention team, which will carry out educational activities and behavioral interventions and cooperate with all kinds of entertainment establishment to disseminate HIV/AIDS and STD prevention knowledge. In this way we can provide a barrier to the spread of HIV/AIDS from high-risk groups to the general population in Shenzhen .

MP-082 ASSESSMENT OF SEXUAL BEHAVIOUR PATTERNS IN WOMEN SCREENED IN THE PHASE 3 CARRAGUARD™ MICROBICIDE TRIAL, IN SOSHANGUVE, PRETORIA, SOUTH AFRICA

S.A. Ramotshela¹, R.M. Phofedi¹, K. Ahmed¹, M. Gehret²

¹ University of Limpopo, Medunsa Campus, Medunsa, South Africa

² Population Council, New York, United States of America

Background: The multidisciplinary phase 3 clinical Carraguard™ trial to test the efficacy and safety of the vaginal microbicide in preventing HIV Seroconversion is being conducted in South Africa. To be enrolled, women must be sexually active, not pregnant, HIV negative and 16 years or older. Data on sexual behaviour, HIV status and health is captured from participants by staff. Pre and post-test counselling is given for HIV and a physical examination is conducted to screen for Sexually Transmitted Infections (STIs). **Objective:** Assess the use of condoms and sexual practices by women attending the phase 3 clinical trial at Soshanguve, Pretoria **Methods:** Participants are screened and enrolled into the study over 18 months and followed up for a minimum of 12 months. All participants undergo interviews by staff and Case Record Forms (CRFs) are completed. Amongst the questions asked are the frequency of the use of condoms, male circumcision, type of sexual acts, sex for gain, all of which help to identify risk factors for HIV. **Results:** From March 2004 to February 2005 a total of 1846 women were screened. A total of 1174 (65%) women did not use condoms the last time they had sex. Of those that admitted to having more than one partner, 246 (66%) used condoms during their last sexual act. There were a total of 952 (53%) circumcised partners. The majority of women did not practice unprotected oral (89%) or unprotected anal sex (98%). A small number of women admitted to having sex for money or gain (8%). **Conclusion:** Of concern is the lack of condoms use amongst women screened. Most women did not practice non-vaginal sex and very few admitted sex in exchange for monetary gain. Female empowerment in sexual preventative strategies is urgently needed.

MP-083 CHALLENGES OF HIV TESTING AND COUNSELLING IN A PHASE 3 TRIAL OF THE MICROBICIDE CARRAGUARD™, IN SOSHANGUVE, PRETORIA, SOUTH AFRICA.*M.P. Marumo, K. Ahmed**University of Limpopo, Medunsa Campus, Medunsa, South Africa*

Background: A Phase 3 clinical trial, testing efficacy and safety of the vaginal microbicide Carraguard™ in preventing HIV seroconversion is being conducted in South Africa (SA). The cohort includes sexually active, HIV negative, non-pregnant women who are 16 years or older. The screening and follow-up procedures include HIV testing and screening and treatment for STIs regularly. **Objectives:** To identify and overcome the challenges associated with HIV testing and counselling for a phase 3 trial.

Methods: Pre-test counselling for HIV, is done by counsellors using a standardised manual developed for the trial. HIV testing is done using 2 rapid HIV assays. When both rapid test results are positive the participants are considered positive as per SA guidelines. Post-test counselling is offered. Participants who test positive are provided with additional counselling services on-site. All positive participants are referred to clinics, hospitals and various support groups.

Results: As of March 2005 a total of 1920 women were screened, of whom 23.8% were HIV positive. Potential participants are anxious about their HIV status during the pre-test counselling. In spite of further counselling, sensitivity and gentleness by staff, participant's anxiety is only marginally allayed. Women testing HIV negative are relieved, and more receptive to the counsellors and study information. After post-test counselling they are enrolled into the study. Women who are HIV positive react in different ways. Counsellors have to be sensitive to participants' reactions and often have to follow-up participants to provide additional support. Psychologists give ongoing debriefings to counsellors and strategies are revised to deal with reactions encountered.

Conclusion: HIV testing and counselling is associated with many challenges for the staff due to the different reactions displayed by women. Ongoing education, training and debriefing is required to optimise staff efficiency.

MP-084 DISCLOSURE OF HIV SEROSTATUS TO SEX PARTNERS: A NEW APPROACH TO MEASUREMENT*L.M. Niccolai, E. King, D. D'Entremont, E.N. Pritchett**Yale University, New Haven CT, United States of America*

Background. Typical measures of self-disclosure of HIV serostatus to sex partners may oversimplify a complex process and underestimate frequency of non-disclosure. The purpose of this study was to estimate, compare, and determine predictors of full disclosure prior to sex, delayed disclosure after sex, and no disclosure to both current and recent past sex partners.

Methods. A survey was conducted among 63 persons with HIV/AIDS who reported 145 partnerships. For all partners in the last 12 months, questions were asked about disclosure, and whether disclosure occurred prior to sex in the relationship. Our refined definition of disclosure included 3 levels: full (prior to sex), delayed (after sex), or none, and included recent past partners (within the last year) in addition to current partners.

Results. The majority of partnerships were heterosexual (69%). In 54% of partnerships within the last year, disclosure occurred prior to sex, in 22% disclosure occurred after sex, and in 24% there was no disclosure. Delayed or no disclosure among current and recent past partners, our refined definition, was substantially higher than typical estimates of no disclosure among current partners only, 46% (95% CI: 38%-54%) vs. 12% (95% CI: 5%-19%). No disclosure was more common in past partnerships (40%) than current partnerships (12%) ($p < .01$). Predictors of disclosure using this refined measure included having a seropositive partner, and being in a primary, heterosexual relationship.

Conclusions. Estimates of non-disclosure of HIV-positive serostatus to sex partners is substantially higher when including delayed disclosure and a broader definition of sex partnerships (current and recent past). Counseling and interventions that promote disclosure should include offering assistance in notifying past partners and strategies for disclosure in ongoing relationships.

MP-085 ONLINE IN-DEPTH INTERVIEWS USING WEB-CAMERAS INTO THE BARRIERS OF SAFE SEX AMONG DUTCH YOUTH: FEASIBILITY, ACCEPTABILITY AND RESULTS*U.E. Davidovich, H.K. Uhr, P. Kemp, K. Bij de Vaate, M. Haufe**GG&GD Amsterdam, Amsterdam, Netherlands*

Objectives: To examine the feasibility, acceptability and outcome results of interviewing Dutch youth about the barriers to safe sex and HIV&STI-testing by way of qualitative online chat-interviews with web-cameras.

Method: Two female and two male interviewers conducted in-depth semi-structured interviews with 101 males & 98 females aged 14-24 years from across the Netherlands. Participants were actively and passively recruited online and offline. Web-cameras were used to visually ascertain the age and sex of the participants. Flexible content analysis with open coding was used to analyze the data.

Results: The recruitment and interview phases were completed in two months. Over 90% of the participants reacted positively to the research method. The relative anonymity online, being in their own environment, the higher interaction flexibility and the 'typed' character of the interview are just few of the method's advantages named frequently ($n=10-30$, per advantage) by the participants. As disadvantages, participants named distrust in the identity or intention of the interviewer and doubts about confidentiality ($n=4-13$). Faulty trust was one of the prominent barriers for condom use ($n=25$) which was manifested in three dimensions: emotional trust, trust in sexual-risk information and trust created by time spent together with partners. Other condom barriers were: better sensation without condoms, pressure by partners, feelings of immunity and simple curiosity. Among the main barriers for HIV & STI testing was fear ($n=18$) with three fear themes: fear of the test results, of the test procedures (e.g. needles) and of losing anonymity.

Conclusions: Online interviews using web-cameras are feasible. Recruitment and interviewing online proved efficient and rapid. The acceptance of the method among the participants was high, and can be made higher if perceptions of trust and confidentiality online are improved. The acquired data into safe-sex barriers proved valuable and can be used in future prevention interventions.

MP-087 'CLUB' DRUG USE BY YOUNG GAY MEN ASSOCIATED SPECIFICALLY WITH UNPROTECTED ANAL INTERCOURSE WITH CASUAL PARTNERS HAVING UNKNOWN HIV SEROSTATUS

M. Lampinen¹, A.J. Schilder¹, K. Chan¹, M.L. Miller¹, M.T. Schechter², R.S. Hogg²

¹ BC Centre for Excellence in HIV/AIDS, Vancouver, Canada

² University of British Columbia, Vancouver, Canada

Background: During 1997-2002 we observed in a cohort of young men who have sex with men (MSM) in Vancouver significant increases in substance use and unprotected anal intercourse (UAI) with casual partners, the latter a strong risk factor for HIV-1 seroconversion. We therefore related more precisely substance use and UAI having potential for HIV-1 acquisition.

Objective: Measure the association of substance use and UAI specific to encounters with casual partners whose HIV-1 serostatus is unknown.

Methods: Self-administered, cross-sectional survey during 2002-3 within the Vanguard Project, a prospective study of HIV-1 seroincidence and behavioral risk factors among MSM < 35 years old. We excluded men who injected drugs. We used odds ratios (OR) with 95% confidence intervals to associate substance use and UAI during the previous year.

Results: Among 275 HIV-negative men with average age 31 years, 69% were white, 9% Aboriginal; 62% were employed full-time; and 54% completed college. Casual sexual partners [median 5 (interquartile range 2,21)] were reported by 187 (68%) of the men, among whom 139 reported anal intercourse and 65 UAI. UAI was reported by 49/99 men having casual partners of unknown HIV-1 serostatus [median frequency: 2 (1,4) times insertive and 1 (1,2) time receptive]; four drugs used within 2 hours of such encounters were associated with UAI: ketamine (OR 11.0, 1.3-90.7), gamma hydroxybutyric acid (GHB) (OR 6.9, 1.5-33.2), ecstasy (OR 4.6, 1.4-15.2) (all $p < 0.01$); and Viagra (OR 3.3, 1.1-10.0, $p = 0.03$); cocaine, marijuana and methamphetamine were not. These associations were not observed for UAI with HIV-negative casual partners (reported by 27/74 men).

Conclusions: Our results extend those of previous studies, demonstrating a more specific association of club drug use and high-risk UAI. Disinhibiting effects per se are unlikely to explain the associations as they were not observed among seroconcordant partners.

MP-088 CHOICE-BASED CONJOINT: A METHODOLOGICAL APPROACH TO ASSESSING THE ATTRIBUTES MSM CONSIDER WHEN THEY CHOOSE TO ENGAGE IN RISKY SEXUAL BEHAVIOR WITH INTERNET SEX PARTNERS

J.A. Montoya¹, P. Pate², A. Plant¹, J. King¹, P.R. Kerndt¹

¹ Los Angeles County Dep. of Health Serv., Los Angeles, CA, United States of America

² Ctrs. fr. Disease Control & Pre, Atlanta, GA, United States of America

Objectives: The objective of this study is to investigate how men who have sex with men (MSM) make partner-selection and sexual-practice decisions with internet sex partners. Used predominately in market research, a choice-based conjoint design will be used to assess the attributes (e.g., physical characteristics) MSM consider in making these decisions. A better understanding of MSM sexual

decisions with internet partners is important because these men are at higher risk of acquiring HIV. This information is necessary to aid the design of prevention messages that may resonate with this high-risk group of MSM.

Methods: MSM (age 18 or older) will be surveyed online. Respondents will be asked to engage in a trade-off exercise where they will be presented with a series of profiles that differ in partner attributes including demographic and physical characteristics, HIV status, drug use, type of sex being sought, and condom use. Collecting their decisions in a choice-based conjoint design will produce a model of attributes MSM consider in choosing a sex partner and engaging in risky behaviors. Partner-attribute profiles will be developed based on outcomes of three focus-groups of MSM who seek male sex partners at commercial sex venues and via the internet. The focus groups will be completed by April 2005 and the online conjoint survey will be completed by June 2005.

Results: Analyses will examine: 1) attributes MSM consider when choosing a potential sexual partner, 2) the number and types of levels for each of these attributes, 3) priority attributes identified overall, and 4) common and specific attributes of different age, race/ethnicity, education, risk, and HIV-status subgroups of MSM. **Conclusions:** Results from this study will contribute to the design of internet-based interventions and HIV prevention messages targeting MSM who find sex partners on the internet.

SESSION: MP - E1A BEHAVIORAL SCIENCE - HIV/AIDS**MP-089 EXPLORING THE CONTEXT OF SEXUAL BEHAVIOR AMONG RURAL ZIMBABWEAN ADOLESCENTS.**

L.F. Langhaug¹, M. Mutisi², D. Mutanga², B. Manyonga², O. Gore², M. Masiyiwa², R. Power³, F.C. Cowan¹

¹ Univeristy College London, Mutare, Zimbabwe

² University of Zimbabwe, Harare, Zimbabwe

³ University College London, London, United Kingdom

Objectives: The Regai Dzive Shiri Project is a community randomised trial of an adolescent reproductive health intervention in rural Zimbabwe. Study impact will be measured using cumulative incidence of HIV, HSV-2 and unintended pregnancy. Extensive qualitative research explores the social dynamics of sexual behaviour in young people.

Methods: Using a stratified sample, sixty students were randomly selected from the cohort and interviewed. Data was coded and analyzed using principles of grounded theory.

Results: There is little opportunity for young people to learn about reproductive health issues and to safely explore their emerging sexuality. Reproductive health information is often provided too late and relates to physical rather than emotional aspects of growing up. Girls report fear associated with their first menstruation. They receive information only after menstruation occurs and it focuses primarily on maintaining personal hygiene.

Within their sexual relationships, adolescents are primarily concerned with preventing pregnancy rather than minimizing risk for STIs and HIV. For girls, sex is also poorly explained. Adult women urge adolescent girls to pull their labia minora regularly to please their future husband, threatening that lack of compliance might result in divorce.

Girls and boys describe dating as a transactional pursuit and a precursor to marriage. Girls expect tangible goods, which boys struggle to fund. For their efforts, boys expect sexual benefits. Dating without minimal sexual interaction is considered 'immature.' Significantly, once gifts are accepted, girls feel unable to refuse the boy's physical demands.

Conclusion: This qualitative data on Zimbabwean adolescents highlights their risk of acquiring HIV. It reinforces the need for better communication between adults and adolescents and for changes to the context in which early sexual activity takes place. More explicit reproductive health information and challenges to the transactional nature of adolescent sex are urgently needed.

MP-090 SEXUAL RISK TAKING AND HIV/STI SCREENING PREFERENCES IN THE U.S. LONG-DISTANCE TRUCK DRIVER COMMUNITY: A QUALITATIVE STUDY

L.H. Bachmann¹, B. Lichtenstein², D.M. Grimley¹, E.W. Hook¹
¹ University of Alabama at Birmingham, Birmingham, United States of America
² University of Alabama, Tuscaloosa, United States of America

Objectives: Increased risk for HIV and other sexually transmitted infections (STI) has been well-documented in long-distance truck drivers throughout the world, yet little is known regarding risk-taking and HIV/STI prevalence in American truckers. We explored perceptions of sexual risk in the long-distance trucking community and acceptable methods by which to perform behavioral and HIV/STI screening in this population.

Methods: Focus groups were performed with male long-distance truck drivers at several large, nationwide trucking companies based in the southeastern U.S.

Results: Two focus groups of 14 long-haul drivers (9 white, 5 black) have been conducted to date in North Carolina and Alabama. The men reported that sexual risk taking was related to a variety of factors including driver personality, length of time away from home, job and family-related stress, seniority and company rules. Drivers indicated pride in their independent, self-sufficient life style and acknowledged substantial prevalence of opportunities for sexual risk-taking while 'on the road' Drug use, while present, is not as common as in the past due to increased regulation by the trucking industry. Drivers were sensitive about potential stigmatization, but felt that HIV/STI testing embedded within a general health check would be acceptable for STI testing.

Conclusions: U.S. long-distance truck drivers remain potentially at high risk for HIV/STI and are amenable to HIV/STI screening if offered in an acceptable format. Prior to development of interventions, further studies are needed to define sexual risk-taking and HIV/STI prevalence in this group.

MP-091 CAN COITAL DIARIES PROVIDE RELIABLE DATA ON SEXUAL BEHAVIOUR IN MWANZA, TANZANIA?

S. Lees¹, C. Allen², N. Desmond², B. Chiduo³, A. Vallely¹, G. Der², L. Knight¹, R. Hayes¹, D. Ross¹
¹ LSHTM, London, United Kingdom
² MRC, Glasgow, United Kingdom
³ NIMR, Mwanza, Tanzania

Objectives: To assess the: 1. reliability of coital diaries (CDs) compared to recall questionnaires in measuring sexual behaviour. 2. level of support necessary to achieve reliable data on sexual behaviour
 Methods: As part of a feasibility study exploring whether women working in recreational facilities are a suitable population for clinical trials of vaginal microbicides, 150 women of the 1573 cohort were selected for a CD study. Over four weeks, the women were given weekly CDs with pictures depicting different sexual behaviours. Women were asked to record these sexual behaviours daily up to four times. Women were randomly allocated to three groups with different levels of support. All women received a weekly visit, where the completed CD was collected and the next CD was delivered. At these visits women with medium and intensive support could discuss any concerns and were administered a weekly recall questionnaire. Those with intensive support received an extra unscheduled visit each week during which further support was provided. After four weeks all women were administered a four-weekly recall questionnaire.

Results: Significantly higher numbers of vaginal sex acts were reported in CDs than either questionnaire. Less socially acceptable behaviours (male condom use, sex with irregular partners) were reported more in the CDs than at the four-weekly questionnaire. Those with intensive support were more likely to report having sex. For vaginal sex and sex in exchange for money/gifts, the disparity in frequencies between CDs and exit interviews fell as level of support increased.

Conclusion: Based on our a priori assumption that higher reported frequencies of socially stigmatised activities are more accurate we conclude that CDs are more accurate than recall methods for collecting sexual behaviour, particularly when participants are provided with intensive support from researchers. Higher support enhances inter-method consistency and thus reliability.

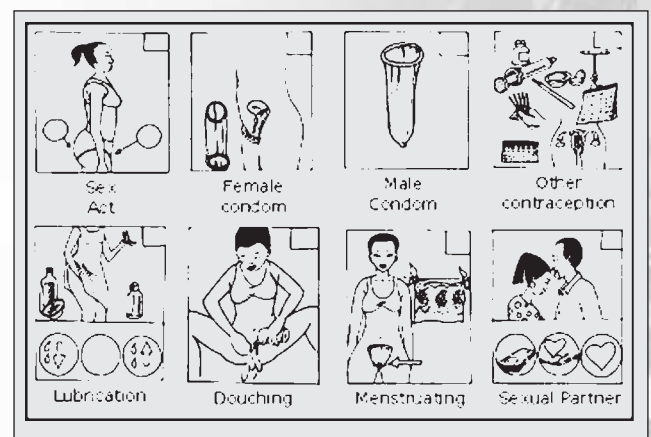


Table 1: Sexual behaviour choices with tick boxes

MP-092 FEMALE SEX WORKERS AND UNSAFE SEX IN NYANZA PROVINCE, KENYA: REGULAR PARTNERS ARE MORE IMPORTANT THAN CLIENTS.

H.A.C.M. Voeten¹, O.B. Egesah², C.M. Varkevisser³, J.D.F. Habbema¹

¹ Erasmus MC, Univ. Med. Center Rotterdam, Rotterdam, The Netherlands

² Moi University, Eldoret, The Netherlands

³ University of Amsterdam, Amsterdam, The Netherlands

Objectives: Interventions for sex workers have focused on urban areas and have stressed the importance of condom use in commercial sex contacts. The main aim of our study was to compare the sexual behaviour of female sex workers living in urban and rural areas in Nyanza province in Kenya, and to compare their unsafe sex with clients and with regular partners.

Methods: In this cross-sectional study, sex workers were asked to keep a sexual diary for 14 days, after they were administered a questionnaire or in-depth interview.

Results: More than half of female sex workers in Nyanza were separated or divorced. The vast majority had one or two regular partners, who were mostly men who were married to someone else. Sex workers in Kisumu town were younger and had started sex work at an earlier age than sex workers in Siaya/Bondo rural districts. Although sex workers in Kisumu had more clients in the past 14 days than women in the rural districts (median 6 versus 1), they both had equal sex contacts with regular partners (median 5). Condom use with clients was fairly high (about 75%), but with regular partners a condom was used in less than 40% of sex acts. The median number of sex acts in which no condom was used was higher for regular partners (2.0 and 2.5 respectively) than for clients (both 0) in urban and rural areas.

Conclusions: Sex workers in urban and rural areas of Nyanza province practice more often unsafe sex with regular partners than with clients. Interventions for sex workers should be expended to rural areas and should also focus on condom use in regular partnerships.

MP-093 FOCUS GROUP DATA FROM GAY-IDENTIFIED PARTNERS OF MEN WHO HAVE SEX WITH MEN BUT DO NOT IDENTIFY AS GAY

P.M. Padgett, M.W. Ross

The Univ. of Texas School of Public Health, Houston, TX, United States of America

Men who have sex with men but who do not identify as 'gay' may well present a significant risk group for HIV/STD infection. This group may also serve as a bridge for HIV/STD transmission between gay and heterosexual populations. The Internet provides the newest environment for identifying sexual contacts, and affords non-gay identifying men who have sex with men (NGI-MSM) a greater opportunity to meet men who will engage in the risky sexual behaviors they may desire. As part of a larger Internet survey study on NGI-MSM, focus groups were conducted in Houston and Dallas, Texas metropolitan areas with 'gay' identified men who have had sex with 'straight' men (NGI-MSM). These qualitative focus group transcripts were analyzed for recurring themes and patterns that dominated the data and described the experiences of gay-

identified men with NGI-MSM and their use of the Internet for facilitating sexual encounters. Results from gay men's discussions of their 'straight' male sexual partners revealed such categories as motivations for 'straight' men having sex with men (shame, stigma, experimentation, prison experience, drugs and alcohol), condom use during encounters, sexual boundaries of NGI-MSM, disclosure of HIV status, and the role of the Internet. These are basic but vital data regarding the risk behaviors of NGI-MSM as seen through the eyes of their high-risk sexual partners. Assessing the high-risk sexual behavior of this highly elusive group may indicate reservoirs of infection and transmission routes that demand our attention. These data are important because understanding parameters of sexual use of the Internet is a necessary first step for the future design of effective education and prevention strategies which target NGI-MSM who use the internet for high-risk, sexual purposes.

MP-094 BAREBACKING IN PERSPECTIVE: HIV POSITIVE GAY MEN IN LONDON

J. Elford¹, G. Bolding¹, M. Davis¹, L. Sherr², G. Hart³

¹ City University London, London, United Kingdom

² Royal Free and UC Medical School, London, United Kingdom

³ MRC Soc & Public Health Sciences, Glasgow, United Kingdom

Objective: To examine the extent to which HIV positive gay men in London intentionally seek unprotected anal intercourse (UAI) and the contribution this makes to total sexual risk among these men

Methods: In 2002-2003, 523 HIV positive gay men were surveyed in a public HIV treatment clinic in London (response rate 72%). All men completed an anonymous self-administered questionnaire in which they were asked about use of the Internet, unprotected anal intercourse (UAI) and barebacking ie whether they had intentionally looked for anal sex without a condom in the previous 12 months. Unsafe sex was defined as UAI with a man of unknown or discordant HIV status; this presents a risk of HIV transmission. Positive-positive sex was defined as UAI with another HIV positive man; this presents a risk of STI and cross infection

Results: Of the 481 men (mean age 38 years) included in the analysis, 59 (12.3%) said they had intentionally looked for UAI in the previous 12 months; 34 men (7.1%) had only looked for positive-positive sex while the remaining 25 men (5.2%) had looked for unsafe sex. Among the 481 men in the sample, 107 (22.2%) actually reported unsafe sex in the previous 3 months. Of these 107 men, 23 (21.5%) had intentionally looked for unsafe sex, 16 (15.0%) for positive-positive sex while the remaining 68 (63.5%) had not intentionally looked for UAI

Conclusion: Just over one-in-ten HIV positive gay men surveyed in a London outpatient clinic reported barebacking ie they had intentionally looked for anal sex without a condom in the previous year. Barebackers who looked for unsafe sex accounted for just under a quarter of all men reporting this behaviour. Two-thirds of HIV positive men reporting unsafe sex were not barebackers.

MP-095 CRYSTAL METH AND HIGH RISK SEXUAL BEHAVIOUR: A STUDY AMONG LONDON MSMG.J. Bolding¹, L. Sherr², G. Hart³, J. Elford¹¹ City University, London, United Kingdom² Royal Free & UC Medical School, London, United Kingdom³ MRC Public Health Science Unit, Glasgow, United Kingdom

Objectives: Reports from the United States have linked crystal methamphetamine with high risk sexual behaviour among men who have sex with men (MSM). The objective of this analysis was to examine use of crystal meth and other recreational drugs, and their association with sexual behaviour, among MSM living in London.

Methods: 749 MSM attending central London gyms in February 2004 completed an anonymous self-administered questionnaire (response rate 60%). Information was collected on use of recreational drugs (eg cocaine, ecstasy, crystal) in the previous 12 months and unprotected anal intercourse (UAI) in the last 3 months.

Results: The average age of the men was 37 years; the majority were white (87%) and employed (86%). Over half (58%) reported using recreational drugs in the previous year. One-in-five of all men (21%; 144/672) had used crystal meth (HIV positive men 25%, HIV negative 23%, never-tested 11%, $p<0.05$). Most men had used it infrequently - just once or twice in the previous year. Only a small minority (1% of all men) said they had used it once a week while a further 6% used it about once a month. Of the 144 crystal meth users, 129 also reported using other recreational drugs including ecstasy ($n=117$) and cocaine ($n=116$). Crystal meth users were more likely than non-users to report high-risk sex (ie UAI with a partner of unknown or different HIV status) (28% v 16%, $p<0.01$). However, the same was true of cocaine and ecstasy users (eg ecstasy users v non-users, 28% v 10%, $p<0.001$).

Conclusion: One-in-five London MSM reported using crystal meth although most used it infrequently. In this cross sectional study, men who used crystal meth were more likely to report high risk sexual behaviour than other men but the causal direction could not be established.

MP-096 UNSAFE SEX AMONG MSM LIVING IN LONDON: STILL INCREASING?J. Elford¹, G. Bolding¹, M. Davis¹, L. Sherr², G. Hart³¹ City University London, London, United Kingdom² Royal Free and UC Medical School, London, United Kingdom³ MRC Soc & Public Health Sciences, Glasgow, United Kingdom

Objective: In the late-1990s, the incidence of sexually transmitted infections and rates of high risk sexual behaviour began to increase among men who have sex with men (MSM) living in a number of cities in Europe, Australia, Canada and the USA. Has this increase persisted to the present day? The objective of this analysis was to examine changes in sexual behaviour among London MSM between 1998-2004.

Methods: Nearly 5000 MSM using gyms in central London were surveyed annually between 1998-2004 (range 498-834 per year, response rate 50-60%). Information was collected on HIV status and unprotected anal intercourse (UAI) in the previous 3 months. High risk sexual behaviour was defined as UAI with a casual partner of unknown or discordant HIV status.

Results: Of the 4934 men, 774 (15.7%) were HIV positive, 3099 (62.8%) were HIV negative, 1061 (21.5%) had never been tested for HIV. Median age was 35 years, 86% were employed and 87% described their ethnicity as white. Between 1998-2001 the overall percentage of men reporting high risk sexual behaviour with a casual partner increased from 6.7% to 15.2% ($p<0.001$). Between 2001-2004, however, the percentage of men reporting high risk sexual behaviour with a casual partner remained stable (annual figures, 15.2%, 15.5%, 16.1%, 14.7%, $p=0.8$). A similar pattern was seen for HIV positive, negative and never-tested men when examined separately (eg HIV positive men, 1998-2001, 15.3% to 38.8% ($p<0.001$); 2001-2004 annual figures, 38.8%, 41.3%, 37.2%, 32.3%, $p=0.5$).

Conclusion: The percentage of London gay men reporting high risk sexual behaviour with a casual partner has remained stable since 2001, although it increased significantly between 1998-2001. Addressing this elevated level of risk will present a challenge for sexual health promotion

MP-097 PERCEIVED HEALTH STATUS AMONG HIV+ RESIDENTS IN RURAL ZIMBABWE: THE ROLE OF ALCOHOL, STDS AND COMMUNITY CONTEXTC.M. Freeman¹, L.A. Cubbins¹, D. Kasprzyk¹, D. Montañó¹, G. Woelk², Preventio group NIMH Collaborative HIV/STD³¹ Battelle-CPHRE, Seattle, United States of America² University of Zimbabwe, Harare, Zimbabwe³ NIMH, Bethesda, United States of America

Objective: To examine the role of alcohol use, co-infection with other STDs and community factors on perceived health status among HIV+ residents in rural Zimbabwe.

Methods: As part of a multi-national cooperative agreement, a national survey of risk behavior and STD/HIV was conducted in 32 rural growth point villages (GP) in Zimbabwe. Biological and survey data were collected from a random sample of individuals in 50 households in each GP. Community contextual data were collected as well. An ACASI instrument was used to assess perceived health status among all GP residents in relation to typical alcohol use, co-infection with other STDs (i.e., based on lab results and self-reported symptoms) and community factors. Logistic regression analyses were used to determine associations.

Results: Data from 401 HIV+ residents were analyzed. Most were female (75%), Shona (71%), married (56%), had completed at least a primary school education (47%), did not drink alcohol (67%), and believed their health status to be 'fair/poor' (57%). Logistic regression analysis showed that being Shona (OR=.20, $p<.001$), not-married (OR=1.82, $p<.05$) and having symptoms of co-infection with another STD (OR=2.96, $p<.001$) were significantly associated with 'fair/poor' perceived health status. In addition, gender-specific analyses showed that community infrastructure factors such as the number of banks (OR=1.25, $p<.05$) and the number of drinking venues (OR=.909, $p<.05$) were significant predictors of perceived health status for females while the number of hotels (OR=.386, $p<.01$) was significant for males. Typical alcohol use or number of STDs were not significant predictors of perceived health status in any of the models.

Conclusions: Both individual and community factors were associated with perceived health status among HIV+ residents, with some associations varying by gender. Consideration of alcohol use in the community might benefit treatment strategies that target STD care among HIV+ residents in Zimbabwe.

MP-098 EMERGING RISKS IN HIV TRANSMISSION IN THE SOUTH: INSIGHTS FROM ACUTE HIV SURVEILLANCE

L.B. Hightow, M.S. Boland, P.D.M. MacDonald, S. McCoy, C.D. Pilcher, T.Q. Nguyen, A.H. Kaplan, P.A. Leone
UNC Chapel Hill, Chapel Hill, NC, United States of America

Objectives: Acute HIV infection is the time of maximum infectious potential and therefore a critical opportunity for both prevention and surveillance programs.

Methods: To understand opportunities to improve recognition of acute HIV infection, we examined clients' and clinicians' perceptions of HIV risk and HIV testing-related behaviors around the time that they were infected with HIV. We conducted interviews with 32 patients (26 men, 6 women) identified in NC as having acute HIV infection from 1/1/2003 to 3/31/2005.

Results: Of the 26 men interviewed, 16 (62%) were black, 8 (31%) were white and 2 (7%) Hispanic. In the year prior to diagnosis the male subjects reported a mean of 18.4 total sex partners (range 1-100, SD 24), 5.0 steady sex partners (range 1-25, SD 6.9) and 13.3 casual sex partners (range 0-75, SD 19.5). Fifty-eight percent had been previously diagnosed with an STD. At the time of diagnosis, 6 (35%) of the men were attending college. In the year prior to diagnosis, greater than half of the men met their sex partners over the Internet and or in bars/clubs, and 15% reported using crystal methamphetamine before or during sex. Thirteen men identified as gay, 7 as bisexual and 6 as straight. All 7 men who identified as bisexual were black and 5 were college students. Two of the 6 men who identified as straight reported having male sex partners.

Conclusions: Acutely infected individuals offer significant insight on populations driving the spread of HIV in concentrated epidemics. In North Carolina, HIV transmission is associated with gay and bisexual men meeting sex partners at bars or clubs, or over the Internet. Crystal methamphetamine use may be emerging as an important risk factor in the spread of HIV infection in the Southeast.

MP-099 CHARACTERISTICS OF NON-DISCLOSERS OF DIAPHRAGM USE AMONG SOUTHERN AFRICAN WOMEN ENROLLED IN A HIV PREVENTION TRIAL

A. van der Straten¹, M. Lee¹, E. Montgomery², K. Blanchard³, G. Ramjee⁴, G. De Bruyn⁵, N. Padian¹

¹ University of California San Francisco, San Francisco, United States of America

² UZ-UCSF, Harare, Zimbabwe

³ Ibis Reproductive Health, Cambridge, United States of America

⁴ Medical Research Council, Durban, South Africa

⁵ University of Wits, Johannesburg, South Africa

Background: We are conducting an effectiveness trial of the diaphragm with lubricant gel to prevent HIV/STI infection in Southern Africa. Discreet use (without partner knowledge) is a theoretically appealing attribute of the diaphragm. Data on preva-

lence of and characteristics associated with non-disclosure will help determine the importance of actual discreet use in our population.

Methods: seronegative women in the trial received a baseline physical examination, sociodemographic, clinical and behavioral interviews, were fitted with and taught how to insert/remove a diaphragm, and received an interview 3 months later.

Results: We analyzed data from the first 716 diaphragm users' 3-month visit (502 Zimbabweans; 214 South Africans). At baseline, mean age was 28 years (range 18-70), 75.2% were married and 30.2% reported having a main partner who was monogamous; 14.4% reported a new partner at follow-up. Overall, 63.5% said it was important that she could use the diaphragm and gel (D&G) discreetly. However, only 63 (8.8%) never told their main partner about D&G use (Zimbabwe:3.4%; South Africa:21.7%, $p < .0001$), and of those, most stated he never knew (42.9%) or she didn't know for sure if he knew (47.6%). The main reasons for never telling her partner was 'he would disapprove' (58.7%) and 'he would insist on not using them' (12.7%). In multivariate logistic regression, adjusting for country and new partnership at follow-up, older women (AOR:1.06; 95%CI:1.02-1.1), and women reporting that their partner had other partners (AOR:2.8; 95%CI:1.1-7.1), or she didn't know whether he had other partners (AOR:3.6; 95%CI:1.5-8.7) were significantly more likely to be non-disclosers compared to women with perceived monogamous partners.

Conclusions: Most diaphragm users in this trial told their main partner about using the diaphragm and gel. However, discreet use was perceived as important and women in higher-risk relationships were more likely to use them discreetly.

MP-100 HIV PREVALENCE AND SEXUAL BEHAVIOUR IN COMMUNITY SAMPLES OF MEN WHO HAVE SEX WITH MEN IN BRIGHTON, MANCHESTER AND LONDON (UK)

J.P. Dodds¹, D.E. Mercey¹, J.V. Parry², A.M. Johnson¹

¹ Royal Free & University College Medical, London, United Kingdom

² Central Public Health Lab, London, United Kingdom

Objective: To examine geographical variations in HIV prevalence, accuracy of self assumed status and sexual behaviour in a community sample of men who have sex with men (MSM) in Brighton, Manchester and London.

Methods: Participants from Brighton, Manchester and London MSM venues self-completed a questionnaire and provided an oral sample, tested anonymously for HIV (and syphilis in Brighton and Manchester).

Results: A total of 2,640 questionnaires (427 in Brighton, 425 in Manchester and 1,788 in London) and 2,311 oral specimens (387 in Brighton, 383 in Manchester and 1,541 in London) were returned from 90 community venues in 2003/4. HIV prevalence was high (13.7% in Brighton, 8.6% in Manchester and 12.3% in London [overall difference of border line significance]), with many infections remaining undiagnosed (of the HIV positive men: 33.3% were undiagnosed in Brighton, 36.7% in Manchester and 44.1% in London [difference not statistically significant]). 5.4% of the sample in Brighton tested positive for syphilis compared to 9.2% in Manchester [OR=1.80, 95% CI 1.01-3.21]. All three cities reported similar levels of unprotected anal intercourse [UAI] in the last year

with casual partners (25.0% in Brighton, 27.3% in Manchester and 23.8% in London) and with partners of an unknown or discordant HIV status to themselves (23.5% in Brighton, 25.4% in Manchester and 21.1% in London).

Conclusion: The large proportion of men in all three cities reporting UAI with partners of an unknown or discordant HIV status and high HIV prevalence highlights the potential for onward HIV transmission. There is a need for further innovative HIV prevention strategies and campaigns in all three cities. HIV testing should be promoted and barriers to testing addressed.

MP-101 MOBILITY AND HIV RISK IN TANZANIAN COUPLES: WHEN THE CAT IS AWAY, THE MICE WILL PLAY

D.C.J. Vissers¹, C Kishamawe², M Urassa², R Isingo², G Mwaluko², H.A.C.M Voeten¹, B Zaba³, J.D.F. Habbema¹, S.J. de Vlas¹

¹ Erasmus MC, Rotterdam, The Netherlands

² NIMR, Mwanza, Tanzania

³ LSHTM, London, United Kingdom

We investigated how mobility is related to risk behaviour and HIV infection, with special reference to couples. HIV-status, sexual behaviour and demographic data were available from a longitudinal study in Kisesa, rural Tanzania. Persons were considered mobile if they slept outside the household for some time, and migrant if not living in the household for some time. In general, migrant men did not report increased risk behaviour, but mobile men reported significantly more sex partners in the last year. However, migrant women reported more often multiple sex partners than mobile/non-mobile women and also showed higher HIV prevalence. In couples, both men and women who were non-mobile and had a migrant partner reported more sexual risk behaviour and also showed higher HIV prevalence than persons with mobile/non-mobile partners. Remarkably, risk behaviour of men increased more when their wives migrated than if they were mobile/migrant themselves. Interventions aiming at reducing risk behaviour due to mobility should not focus only on people moving away but also on their partners staying behind.

MP-102 BEHAVIOURAL PREDICTORS OF INFECTIOUS SYPHILIS AND HEPATITIS C DIAGNOSIS IN A UK SAMPLE OF HIV POSITIVE MEN WHO HAVE SEX WITH MEN (MSM)

A.T. Rider¹, J. Imrie¹, J.M. Turner¹, M.D.M. Davis¹, A.J. Copas¹, G.J. Hart², I.G. Williams¹, O.R. Davidson³, S.G. Edwards³, J.M. Stephenson¹

¹ University College London, London, United Kingdom

² MRC Soc & Public Health Unit, Glasgow, United Kingdom

³ Camden Primary Care Trust, London, United Kingdom

Objectives: In the last five years in the UK, approximately half of all infectious syphilis diagnoses in men who have sex with men (MSM) have been in men with known HIV infection. Similarly there has been a striking increase in the number of reported cases of Hepatitis C infection (HCV) in HIV infected MSM. Surveillance data and limited behavioural research suggests that both infections may be linked with specific high- risk sexual behaviours. We explore associations between self-reported high-risk sexual behaviours and subsequent diagnosis with infectious syphilis or HCV.

Methods: Between July 1999 and August 2000 408 HIV positive MSM attending an outpatient clinic completed a detailed sexual behaviour computer-assisted self-interview questionnaire. Newly diagnosed HCV and cases of infectious syphilis, subsequent to interview, were matched via clinic ID numbers from routine clinic data. 91 patients were excluded due to lack of HCV data or previous HCV infection. Poisson regression was used to calculate incidence rate ratios (IRR).

Results: 20 men were diagnosed with HCV and 24 with infectious syphilis. Fisting, sex toy use, previous STI diagnosis, UAI with a new partner, were significant risk factors for HCV and syphilis diagnoses in univariate analysis, and >30 partners were also associated with syphilis diagnosis. IRR after adjusting for reporting in the last year any STI, UAI with a new partner, and >30 partners are given in the table. Fisting and use of sex toys remained significantly associated with newly diagnosed HCV, and whilst risk of syphilis appears to be higher in these men, this did not remain significant. (image 1)

Conclusions: In this sample of HIV infected MSM newly diagnosed HCV (and infectious syphilis) was associated with fisting and use of sex toys. Clinicians with patients that report these behaviours should consider offering additional testing opportunities and appropriate sexual health promotion.

		HCV diagnosis		Adjusted IRR	95% CI	Syphilis diagnosis		Adjusted IRR	95% CI
		Yes	No			Yes	No		
Fisting	Yes	8	30	4.577	1.672-11.461	8	30	1.688	0.757-4.732
	No	12	267			16	266		
Toys	Yes	8	34	4.691	1.894-11.622	8	32	1.750	0.639-4.787
	No	12	263			16	264		

Table 1: Incidence of HCV & syphilis and risk factors

MP-103 LOVE, SEX AND LATEX: WHY YOUNG HETEROSEXUAL MEN DONOT USE CONDOMS IN INDIA

S. Pati

General Practitioner, Orissa, India

The present study involves a critical analysis of the sexual cultures of young heterosexual men in rural and urban Orissa, India. This research is driven by the need to understand and prevent the heterosexual transmission of HIV/AIDS. It explores heterosexual men's understandings and experiences of condom use and non-use, given that condoms are crucial to preventing the sexual transmission of HIV. In-depth interviews were conducted with forty-eight men to understand their sexual practices and the sociosexual relations. This 'close-focus' qualitative approach was adopted to assess the interplay between men's personal experience and the social relations of sexuality and gender. The research identified some major determinants for the non-use of condoms. Men give more importance to the risk of pregnancy than to the risks of HIV / STI; and they respond to this by relying on their partners' use of contraceptives. Men perceive that wearing condoms is cumbersome, and reduces their erotic sensations. The impulsive passionate ambience of sexual episodes makes it difficult to incorporate condoms and it annihilates the heat of the moment. Moreover, men privilege 'trust' as fundamental to their sexual involvements and believe that they are unlikely to contract HIV because their social circles, the heterosexual community or heterosexual sex are perceived safe and free of HIV/AIDS. The study reveals that heterosexual men's use of condoms is not limited by understandings associated

with masculine sexuality and masculinity. Men do not perceive wearing condoms as less masculine. It is suggested that heterosexual men could be motivated to use condoms through appeals to notions associated with masculinity and masculine sexuality.

MP-104 EXPLORING THE CONTEXT OF VULNERABILITY: ANALYSIS FROM A SUBSET OF THE REGAI DZIVE SHIRI PROJECT

L.F. Langhaug¹, M. Mutisi², O. Mutanga², B. Manyonga², O. Gore², M. Masiyiwa², R. Power³, F.C. Cowan¹

¹ University College London, Mutare, Zimbabwe

² University of Zimbabwe, Harare, Zimbabwe

³ University College London, London, United Kingdom

Objectives: The Project is a community randomised trial of an adolescent reproductive health intervention in rural Zimbabwe. Impact will be measured in a cohort of adolescents using cumulative incidence of HIV, HSV-2 and unintended pregnancy. Baseline data suggests that orphans, who comprise 35% (95%CI: 33.9-36.2%) of the cohort have 3.5 times the rate of HIV than non-orphans. Qualitative research explores the context of their vulnerability.

Methods: Using a stratified sample, sixty cohort members were randomly selected and interviewed. Data was coded and analyzed using principles of grounded theory.

Results: Timing: Adolescents living with extended family prior to their parents' death seem less vulnerable than those who begin living with their extended family afterwards, when numerous examples of neglect (particularly by step mothers) were described including poor food provision, increased chores, and school drop out. Moreover, these adolescents are moved frequently, disrupting their already fragile social support systems. Connectedness: Adolescents living independently but who had adult support seemed more confident than those who could not identify someone. Interviews with unsupported youth (not always orphans) were characterized by anxiety and seemed more prone to risky behaviour. Economic vulnerability is contextual. Irrespective of orphan status, access to cattle improves your economic situation. Here, the double orphan with 5 cattle may be better off than the non-orphan whose household must borrow cattle to plough their fields. Moreover, wealth is illusive: well constructed homes often housed families with no food. Probing revealed these houses were built when the now deceased father was alive and regularly employed. Orphaned girls focused their romantic relationships on finding someone who understood their economic and social implications.

Conclusion: Preliminary results from this qualitative data emphasise understanding the context in which orphan-hood takes place. Mobility, family welfare, and social connectedness should be considered when exploring vulnerability of these young people.

MP-105 'THE CORE WITHIN THE CORE': ULTRA-HIGH RISK SEXUAL BEHAVIOUR AND STI/HIV TRANSMISSION RISK IN A UK SAMPLE OF HIV-POSITIVE MEN WHO HAVE SEX WITH MEN (MSM)

C.H. Mercer¹, J. Imrie¹, M.D.M. Davis¹, J.M. Stephenson¹, G.J. Hart², I.G. Williams¹, O.R. Davidson³, K.A. Fenton⁴

¹ University College London, London, United Kingdom

² MRC Soc & Public Health Unit, Glasgow, United Kingdom

³ Camden Primary Care Trust, London, United Kingdom

⁴ Center for Disease Control, Atlanta, United States of America

Background: Targeted sexual health and prevention interventions tend to view all HIV-positive MSM as a 'core group' in relation to rising numbers of STI and HIV diagnoses.

Objective: To identify HIV-positive MSM who display comparatively higher-risk sexual lifestyles to further refine targeted prevention interventions.

Methods: Cross-sectional study of 408 HIV-positive MSM attending a London outpatient clinic between 1999-2000. Participants completed a computer-assisted-self-interview about their sexual partnerships and behaviour. 'The core', men reporting 30+ partners in the last year, (the upper quartile of the distribution), was compared to men reporting <30 partners. We examined the prevalence of reporting four or more of six specific risk behaviours (risk clustering) as a proxy for 'ultra-high-risk-behaviour'. Men reporting no partners or engaging in commercial sex work were excluded.

Results: Overall, the median number of partners in the last year was 10 (range 1-500). The only significant difference in relation to sociodemographics or HIV health was that MSM in 'the core' had been diagnosed with HIV more recently ($p=0.014$). 34.8% of 'the core' reported STI diagnosis/es in the last year in comparison to 23.3% of other men ($p=0.081$). Men in 'the core' were less likely to report a primary partner ($p=0.014$) but were more likely to report multiple regular partners ($p=0.012$). They also reported sexual episodes involving multiple partners ($p<0.001$), greater use of public sex settings ($p<0.001$), inconsistent condom use with casual partners ($p=0.006$), and multiple recreational drug use during sex ($p=0.026$). MSM in 'the core' were also more likely to report 'ultra-high-risk-behaviour' (23.4% vs. 7.8%, $p=0.001$).

CONCLUSIONS: 'Ultra-high-risk-behaviour' appears to be more common among HIV-positive MSM with the highest numbers of partners, supporting the idea of a 'core within the core'. Prevention interventions need to be more explicit about the link between partner numbers and clustering within other risk behaviours.

MP-106 AN INTEGRATED BEHAVIORAL AND BIOLOGICAL STUDY AMONG FEMALE SEX WORKERS IN MYSORE, INDIA

S.R.P. Reza-Paul¹, S. Moses², B.M. Ramesh¹, S. Hall²,

R. Washington¹, S. Modab³, J.F. Blanchard³

¹ KHPT/University of Manitoba, Bangalore, India

² University of Manitoba, Winnipeg, Canada

³ KarnatkaHealth Promotion Trust, Bangalore, India

Objective: An integrated behavioral and biological surveillance (IBBS) was conducted among female sex workers (FSWs) in Mysore, India with the objectives of understanding their socio-demographic, behavioral characteristics and the prevalence of HIV and STI.

Method: Participatory mapping and enumeration was conducted. 25 FSWs were selected and trained to recruit the participants and assist in the study as 'guides'. 429 FSWs were recruited for IBBS after informed consent. After interview, urine, dry blood spots and venous blood were collected for HIV, NG, CT testing. Each participant received a free health check-up.

Results: Mean age was reported to be 30 (+6.6) years. 85% FSWs solicit in public places. Median age of initiating sex work was 25 and median duration in sex work was 4.5 years. 14% use condoms consistently with clients and 91% never used condoms with regular partners. 26% were tested positive for HIV, 10.5% for Chlamydia 6.3% for Gonorrhoea. HIV was found to be significantly associated with illiteracy ($p=0.03$), solicitation at public places ($p=0.006$), currently suffering from PID ($p=0.04$) taking STI medicines regularly ($p=0.013$) and frequency of condom usage ($p=0.03$). 47% FSWs entertain more than 10 clients weekly (high volume FSW) but contribute an estimated 76% of all commercial sex transactions. HIV was not significantly associated with duration and volume of sex work. NG and CT was not significantly associated with socio-demographic or behavioral variables, though CT prevalence was higher among younger FSWs (24 years).

Conclusion: In this population where preventive programs and services have just been initiated, condom usage is low, HIV and STI prevalence is high. Prevention programs should focus on street-based FSWs with high client volumes. More research is required to better understand the importance of regular partners in STI/HIV transmission dynamics in the context of commercial sex work.



Figure 1: Meeting with Female Sex Workers, Mysore



Figure 1: Participant recruitment at the field by Guides

SESSION: MP - A3 BASIC SCIENCE- HUMAN PAPILOMAVIRUSES

MP-107 CURRENT KNOWLEDGE ABOUT GENITAL HUMAN PAPILOMAVIRUS (HPV) INFECTION AND HPV-RELATED CONDITIONS: RESULTS FROM A NATIONAL SURVEY OF U.S. PROVIDERS

N. Jain¹, K. Irwin¹, R. Barnes¹, Z. Henderson¹, D. Montano², D. Kasprzyk², L. Carlin², C. Freeman²

¹ Centers for Disease Control, Atlanta, United States of America

² Battelle Centers, Seattle, United States of America

Objectives: Information about human papillomavirus (HPV) and HPV-related conditions has evolved over the last decade. Little is known about current HPV-related knowledge, attitudes, and practices of providers in the United States.

Methods: In 2004, the Centers for Disease Control and Prevention mailed surveys to nationally representative selected samples of 6906 physicians and mid-level providers who care for adolescent and adult patients. Providers were asked to agree or disagree to eleven statements regarding genital HPV infection and HPV-related conditions based on information they had seen.

Results: The overall survey completion rate was 81%, ranging from 58% among general internists to 96% among nurse practitioners. The majority of clinicians correctly agreed with current evidence that genital HPV infection is common in sexually active persons (89%), that most patients lack signs or symptoms (95%), that HPV increases risk of cervical dysplasia and cancer (98%), and that treatment of genital warts and cervical dysplasia does not eliminate the infection (91%). However, less than half reported agreeing with recent scientific evidence that most HPV infections clear without medical intervention (35%), that genital HPV types usually associated with external anogenital warts differ from types usually associated with cervical dysplasia and cancer (47%), and that anogenital warts do not increase cancer risk at the same site where the warts are located (38%).

Conclusions: Most U.S. providers reported knowledge of genital HPV infection consistent with current evidence in the literature. However, some were unaware of newer scientific issues, such as clearance of HPV infections without medical intervention and differences between HPV types associated with anogenital warts and cervical dysplasia and cancer. Knowledge gaps may cause inappropriate patient counseling and prevention messages and management of HPV infection. Findings will be used to develop clinical training materials, decision support tools, and patient education materials for providers.

SESSION: MP - B3 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- HUMAN PAPILOMAVIRUSES (HPV)

MP-108 WHEN SHOULD HUMAN PAPILOMAVIRUS (HPV) TESTING BE DONE AFTER CONIZATION?

E.-S. Song¹, E.-S. Song¹, S.-J. Choi¹, S.-Y. Song², Y.-S. Song³, K.-S. Kim⁴, J.-H. Park¹, B.-I. Lee¹, W.-Y. Lee¹

¹ Inha University Hospital, Incheon, South-Korea

² Sungkyunkwan University, Seoul, South-Korea

³ Soonchunhyong University, Seoul, South-Korea

⁴ Chung-Ang University, Seoul, South-Korea

Objectives: To know when human papillomavirus (HPV) testing should be done after conization.

Methods: Between 1997 to 2004, Large Loop Excisions of the Transformation Zone (LLETZ) were done for conization to women with cervical pathology at Inha University Hospital. The Pap and HPV typing were done before LLETZ. After conizations, HPV typing were planned to be done every 3 months at least for 2 years. Every HPV typing was done by HPV oligonucleotide microarray (Biomedlab Co., Seoul, South Korea).

Results: For 8 years, 120 LLETZ were enrolled in this study. There were 8 cases of no neoplasm, 9 cases of CIN 1, 17 cases of CIN 2, 74 cases of CIN 3, 10 cases of microinvasive cervix cancer, and 2 cases of adenocarcinoma in situ. HPV DNA before LLETZ was found about 85.0% and subtype 16 was the most common type among the patients with cervical lesion (40.8%) by HPV oligonucleotide microarray. After LLETZ, 190 HPV typing were done through 1,307 total months (average, 6.9 months/typing). 95 (79.2%) cases had negative results after LLETZ, and 25 (20.8%) cases had positive results. Our data showed that about 80% of negative results of HPV typing came out in 6 months after LLETZ among the group in which the HPV typing results turned out negative ultimately.

Conclusions: Our data suggested HPV DNA testing should be done after 6 months of LLETZ, as about 80% of the group that were destined for negative results were turned out in 6 months.

Pathology	No	Age	Pap	HPV
Total	120	40.0±10.9		
			BCC	7
			ASCUS	26
			LSIL	10
			HSIL	64
			AGUS	1
			Notdone	12
				35
				5
				51
				5
				52
				5
				56
				1
				58
				9
				mixed
				6
				posi
				3
				nega
				18
				(+)%
				85

BCC: benign cellular change
 ASCUS: atypical squamous cells of undetermined significance
 LSIL: low-grade squamous intraepithelial lesion
 HSIL: high-grade squamous intraepithelial lesion
 AGUS: atypical glandular cells of undetermined significance

Table 1:

Table 2. HPV subtype after LLETZ¹

(-) Result ²							
Month	NL ⁴	CIN ⁵ 1	CIN ⁵ 2	CIN ⁵ 3	MIC ⁶	AIS ⁷	Total
1				9	2		11
2	1	1	2	8	1		13
3	1	1	2	21	9	2	36
4	1	1		4			6
5			4	4			8
6		1		6	1		8
7	1		1	9			11
8	1		1				2
9				1			1
10				2			2
11			1				1
12		1		2	1		4
14				1			1
24				1			1
30			1				1
32					1		1
Subtotal	5	5	12	62	9	2	95
(+) Result ⁴							
Month	NL ⁴	CIN ⁵ 1	CIN ⁵ 2	CIN ⁵ 3	MIC ⁶	AIS ⁷	Total
1		1		1			2
2		1		1			2
3			2	2			4
4				9			9
5			1		1		2
6			2				2
7				1			1
8		1		1			2
9				1			1
10	1			1			2
11		1		1			2
12	1						1
15	1						1
Subtotal	3	4	5	12	1	0	25
Total	8	9	17	74	10	2	120

1. Total month: 1,307, total number of typing: 190
2. (-) Result: Negative conversion
3. (+) Result: Positive result
4. NL: No lesion
5. CIN: cervical intraepithelial neoplasia
6. MIC: Microinvasive cancer
7. AIS: adenocarcinoma in situ

Table 2:

Negative Result	
71	Negative conversion after LLETZ
8	No infection at pre- and post LLETZ
6	Negative conversion after infection to different subtype HPV after LLETZ
4	Re-negative conversion after infection to different subtype HPV after negative conversion after LLETZ
2	Negative conversion after new-infection to HPV after LLETZ
1	Reinfection to same subtype after negative conversion
3	Reinfection to different subtype after negative conversion
95	
Positive Result	
12	Different subtype infection
9	Persistent same subtype infection
3	New-infection after LLETZ
1	Conversion to same subtype HPV after new infection of different subtype
25	

Table 3:

Figure 1. The cumulative percentage of negative results among patients who destined to negative results after LLETZ

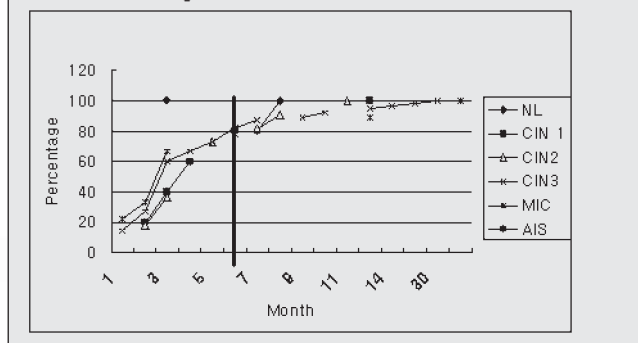


Figure 1:

MP-109 PREVALENCE AND GENOTYPES OF HUMAN PAPILLOMAVIRUS INFECTION AND RELATIONSHIPS TO HIV-1 INFECTION AND CERVICAL DYSPLASIA IN UGANDAN WOMEN

D. Blossom¹, R. Beigi², J. Farrell¹, F. Kambugu³, W. Mackay⁴, S. Rwambuya⁴, C. Walker⁴, C. Whalen⁴, R. Salata¹

¹ University Hospitals of Cleveland, Cleveland, Ohio, United States of America

² Metrohealth Medical Center, Cleveland, Ohio, United States of America

³ Ugandan Nat. STD Ref. Centre, Kampala, Uganda

⁴ Case Western Reserve University, Cleveland, Ohio, United States of America

Objectives: To determine the prevalence and genotypes of HPV infection and the co-prevalence of HIV-1 infection and cervical dysplasia in Ugandan women presenting to an urban STD clinic.

Methods: We conducted a prospective, cross-sectional study at the National STD Referral Centre in Kampala, Uganda between June 4 and July 12, 2002. 135 women consented to participate and underwent complete physical exams including visual inspection of the cervix with acetic acid. HIV-1 status was determined by ELISA and confirmed with rapid HIV-1 testing. Clinician-obtained cervical swabs were evaluated for HPV by PCR. HPV genotype was determined by PCR/ reverse blot strip assay.

Results: Overall, cervical HPV prevalence was 46.2%. HIV-1 prevalence was 36.4%. HPV infection was detected in 40.0% of HIV uninfected and 59.5% of HIV infected women ($p=0.067$). High risk oncogenic genotypes were detected in 93.8% of HPV-infected women. The most commonly detected genotypes were high risk and included 52 (31.3%), 16 (16.7%), and 58 (16.7%). Genotypes 16 and/or 18 were identified in only 18.4% of HPV-infected women. High risk HPV genotypes were detected in all of the women co-infected with HPV and HIV. 16.3% of participants had acetowhite lesions visualized on cervical inspection. HPV-infected women were more likely than women without HPV to have acetowhite lesions ($p=0.040$), and the frequency of acetowhite lesions increased with the presence of high risk genotypes ($p=0.028$), particularly in HIV-infected women ($p=0.037$).

Conclusions: In Uganda, cervical HPV prevalence is high. High risk genotypes other than 16 and 18 cause the majority of HPV infections. Acetowhite lesions on cervical inspection are not only associated with HPV infection but also with high risk HPV genotypes, especially in HIV-infected women.

MP-110 THE CLINICAL UTILITY OF ANAL CYTOLOGY TESTING IN HIV-POSITIVE MEN WHO HAVE SEX WITH MEN (MSM)

R.D. Cranston, S.D. Hart, S.L. Hirschowitz, A.A. Moe
UCLA, Los Angeles, United States of America

Objective: To assess the clinical utility and results of anal cytology sampling in a population of HIV infected MSM.

Methods: HIV-positive MSM presenting for primary care at the UCLA Center for AIDS Research and Education (CARE) Clinic had anal cytology screening performed as standard of care. The cytology specimens were taken using a water-moistened Dacron swab and ThinPrep collection method with the patient in the left lateral position. The Dacron swab was introduced 2 inches beyond the anal margin and then removed with lateral pressure and a spiral motion over 10 seconds. The swab was immediately fixed in ThinPrep solution. Anal cytology samples were read by a cytopathologist and reported using the Bethesda 2001 terminology.

Results: A total of 249 patients had anal cytology screening between 2/02 and 12/04. 75 (30%) patients had normal anal cytology, 162 (65%) had abnormal anal cytology and 12 (5%) samples were unsatisfactory for interpretation. The abnormal cytology was reported as ASCUS in 76 (47%), ASCH in 4 (2.5%), LSIL in 78 (48%) and HSIL in 4 (2.5%).

Conclusion: Anal cytology is a useful clinical intervention in HIV-positive MSM. In this study 95% of the samples were adequate for cytological interpretation. The majority of abnormal cytology samples showed lower grades of dysplasia.

MP-111 ASSESSMENT OF MAGNA PURE LC EXTRACTED DNA IN DETECTION OF HUMAN PAPILLOMAVIRUS DNA BY ROCHE AMPLICOR AND LINEAR ARRAY HPV TESTS

S. Tabrizi, M. Stevens, E. Rudland, S.M. Garland
The Royal Women's Hospital, Carlton, Victoria, Australia

Objective: To evaluate extraction of DNA from samples collected in PreservCyt by the MagNA Pure LC for HPV testing by Roche Amplicor and Linear Array (LA) and compare the results to Hybrid Capture 2 (HC2).

Methods: PreservCyt samples, previously tested by HC, from 150 patients undergoing ablation for histologically confirmed cervical abnormality were extracted by the Qiagen QIAamp MinElute method as per standard Roche protocol. In addition, 200 μ l aliquots of PreservCyt was extracted by MagNA Pure LC using DNAI and Total Nucleic Acid (TNA) kits. Aliquots of 50 μ l of DNA from each extraction were amplified and detected by Amplicor HPV test. Samples extracted by TNA and Qiagen were also tested by LA according to manufacturer recommendations.

Results: Overall, a concordance of 95% (142/150)($k=0.89$) was achieved using Amplicor HPV detection when comparing Qiagen extracted DNA with either DNAI or TNA. Comparing results with HC2 showed 78% ($k=0.56$) and 82% ($k=0.64$) concordance with Amplicor using DNAI and TNA, respectively. Based on better concordance with HC, TNA extracted DNA was further compared with Qiagen extraction by the LA HPV test. Overall HPV type profiles were similar, with 75.3% of samples showing same type profiles and 24.7% showing a different profile ($n = 37$), of which 34 had an extra 1-2 types, 1 an extra 4 and 2 had fewer types by Qiagen extraction, as compared with TNA extraction.

Conclusion: Among samples tested by Amplicor HPV test, there was no significant difference between various extraction methods. Laboratories who have an automated MagNA Pure LC would find the extraction procedure simplified compared with the recommended extraction by the Qiagen method and could substitute such extractions for Amplicor HPV test once validated internally. Difference obtained with HPV types detected using the two methods warrants further investigation.

MP-112 COMPARISON OF THE DIGENE HYBRID CAPTURE 2 AND ROCHE AMPLICOR MWP ASSAY FOR THE DETECTION OF HIGH-RISK HPV DNA FROM LIQUID-BASED CYTOLOGY MEDIA

S. Tabrizi, M. Stevens, E. Rudland, S.M. Garland
The Royal Women's Hospital, Carlton, Victoria, Australia

Objective: The purpose of this study was to compare the analytical sensitivity and specificity of high-risk (HR) HPV detection for the

Hybrid Capture 2 (HC2) and AMPLICOR HPV assays.

Methods: DNA from PreservCyt specimens of 150 patients, undergoing ablative treatment for histologically confirmed cervical abnormality, was extracted using the Qiagen QIAamp MinElute vacuum method and amplified as per standard Roche protocol. HPV detection using the HC2 test was performed according to the manufacturer's specifications. Both the HC2 and AMPLICOR assays are designed to detect 13 HR-HPV types. Samples with discrepant results between the two assays were analysed by the Roche Linear Array (LA) for HPV genotyping to ascertain a consensus result (2 out of 3 HR-HPV DNA test results).

Results: Using the AMPLICOR assay, all samples were tested for beta-globin amplification, as an internal control for adequate specimen collection and integrity, and PCR amplification. Five samples were removed from further analysis after testing negative for both beta globin and HPV by the AMPLICOR assay, and producing a negative HC2 result. Of the remaining 145 samples, 63 samples tested positive for HR-HPV by both assays and 54 HPV negative with both assays. In addition, 17 samples were HC2 (-) / AMPLICOR (+); with LA analysis confirming the presence of HR-HPV in 13/17 samples. Whilst 12 samples were HC2 (+) / AMPLICOR (-); with LA analysis confirming the presence of HR-HPV in 2/12 samples.

Conclusion: The AMPLICOR HPV test exhibited greater analytical sensitivity for the detection of HR-HPV in comparison to the HC2 HPV test (97.4 % vs. 83.3%, respectively). In addition, the AMPLICOR HPV test exhibited greater specificity for the detection of HR-HPV in comparison to the HC2 HPV test (94.1 % vs. 85.3%, respectively). Correlation of HR-HPV results to histology is ongoing.

MP-113 COUNSELING MESSAGES FOR PATIENTS WITH EXTERNAL ANOGENITAL WARTS: RESULTS OF A NATIONAL SURVEY OF U.S. CLINICIANS, 2004

Z.T. Henderson¹, K. Irwin¹, D. Montano², D. Kasprzyk², L. Carlin², C. Freeman², R. Barnes¹, N. Jain¹

¹ U.S. Centers for Disease Control and Pre, Atlanta, GA, United States of America

² Battelle Centers for Public Health, Seattle, United States of America

Objective: Counseling patients with sexually-acquired external anogenital warts (EAW) presents many challenges regarding sex partners and risk reduction. We surveyed U.S. clinicians to understand counseling practices for patients with EAW. Methods: In 2004, we conducted a mail survey of nationally representative samples of clinicians including internal and adolescent medicine, family/general practice, obstetrics/gynecology, urology, dermatology, nurse-midwife, physician assistant, and nurse-practitioner providers. The survey assessed knowledge and counseling practices of respondents who provide care to patients with EAW. We weighted categorical analyses for differences in sampling fraction and non-response by specialty. Results: Overall response rate was 81%. 72% (n=3841) of clinicians surveyed reported ever diagnosing patients with EAW. Most respondents reported telling patients that EAW are a sexually transmitted disease (STD) (96%), caused by a virus (97%), or that their sex partners may have or may acquire warts (96%). Many respondents also reported discussing STD prevention (92%), or assessing STD risk (84%). Many reported addressing ways to prevent HPV transmission (88%), including using condoms (90%), limiting sex partners/ practicing monogamy (78%), or abstinence

(42%). The most commonly reported barriers to counseling included providing answers about how infection was acquired (87%), dealing with patients' psychosocial or relationship issues (76%), and inadequate reimbursement (71%). Only 47% of respondents were aware of the difference between oncogenic and wart-related HPV types, and many reported recommending prompt Pap testing (81%) or more frequent Pap testing (48%) to female patients with EAW. Discussion: Our findings suggest that most surveyed clinicians are appropriately counseling patients about the cause and prevention of EAW. However, many clinicians are unaware of the difference between oncogenic and wart-related HPV types, and may be inappropriately recommending more aggressive cervical cancer screening in female patients with EAW. Survey data are being used to update clinician training materials.

MP-114 CERVICAL CANCER SCREENING PRACTICES IN THE UNITED STATES SINCE THE RELEASE OF NATIONAL GUIDELINES ON GENITAL HPV TESTING: NATIONAL CLINICIAN SURVEY RESULTS, 2004

K. Irwin¹, D. Montano², D. Kasprzyk², L. Carlin², C. Freeman², R. Barnes¹, N. Jain¹

¹ Centers for Disease Control & Prevention, Atlanta, United States of America

² Battelle Memorial Institute, Seattle, United States of America

Objectives: In 2001, several U.S. organizations recommended HPV testing to guide management of patients with borderline (ASC-US) Pap test results, but not of patients with higher-grade cytologic abnormalities. By 2003, two U.S. organizations had endorsed HPV testing as an adjunct to Pap testing for women 30+ years to identify persistently HPV-infected women who warrant frequent follow-up Pap tests. We surveyed U.S. clinicians to assess the influence of new guidelines on screening practices.

Methods: In 2004, we mailed surveys about cancer screening practices to nationally-representative samples of primary care physicians, nurse-midwives, nurse-practitioners, and physician assistants. Adjusted response rate was 81%. We weighted results for disproportionate sampling and non-response.

Results: 2980 clinicians reported providing Pap tests, most using liquid-based cytology (77%). 59% reported ordering HPV tests for patients with borderline or abnormal Pap results, most commonly using 'reflex' or co-collected specimens. Of clinicians reporting HPV testing for such Pap results, most usually/always ordered HPV tests for ASC-US (98%) or higher-grade ASC-H (90%), LSIL (78%), and HSIL (68%) Pap results. 21% reported ordering HPV tests as an adjunct to Pap testing, of whom 12% and 15% usually/always tested women aged 30+ years and <30 years, respectively. A minority reported notifying patients (46%-47%) or seeking consent (27%-31%) when ordering HPV tests for ASCUS management or an adjunct to Pap tests. Clinicians who practiced obstetrics/gynecology and had on-site colposcopy were most likely to report testing for both recommended and non-recommended purposes.

Conclusions: Most Pap test providers reported ordering HPV tests for ASC-US Pap results, but not as an adjunct to Pap testing. However, many reported testing patients with higher-grade Pap results which guidelines do not endorse. A minority seek explicit consent for testing. Survey results will guide clinical training, decision support materials, and patient education materials to promote guideline adherence.

MP-115 ARE PAPER TEST PROVIDERS TELLING PATIENTS ABOUT SEXUALLY TRANSMITTED HUMAN PAPILOMAVIRUS (HPV) INFECTION? RESULTS FROM A NATIONAL SURVEY OF U.S. CLINICIANS, 2004

K. Irwin¹, D. Montano², D. Kasprzyk², L. Carlin², C. Freeman², R. Barnes¹, N. Jain¹

¹ Centers for Disease Control & Prevention, Atlanta, United States of America

² Battelle Memorial Institute, Seattle, United States of America

Objectives: Little is known about what clinicians say to patients seen for cervical cancer screening since widespread dissemination of information showing that sexually transmitted HPV infection causes cervical cancer and recent approval of HPV DNA tests for cervical cancer screening. We therefore surveyed U.S. clinicians about their counseling practices.

Methods: In 2004, we mailed surveys to nationally-representative samples of physicians and mid-level providers. Adjusted response rate was 81%. Analyses were restricted to 2980 clinicians reporting Pap testing and weighted for disproportionate sampling and non-response.

Results: When collecting Pap tests, respondents were more likely to ask about behavior to assess STD risk (68%) or to discuss methods to prevent STDs (67%) than to address HPV infection as a cancer risk factor (43%) or ways to prevent HPV acquisition (43%). When counseling patients with HPV-related Pap results or positive HPV tests, most reported explaining that the abnormalities were caused by a sexually transmitted virus (94%); HPV is common in sexually-active persons (82%); HPV-infected persons may lack symptoms (89%); and using condoms (83%) and practicing monogamy/minimizing sex partner number (78%) can prevent HPV transmission. 40% discussed abstinence as a prevention method. Many reported that discussing HPV with such patients would prompt repeat Pap screening (87%), assure patients they are getting complete information (82%), and raise concerns about partner fidelity (68%).

Conclusions: Most clinicians did not address HPV when collecting Pap tests. However, most addressed HPV when notifying patients with HPV-related Pap abnormalities or positive HPV tests, including information that HPV is a common, often asymptomatic sexually transmitted virus whose transmission can be prevented by modifying sexual practices. Many believed addressing HPV with such patients might promote follow-up. Survey results will guide clinician training, counseling support tools, and patient education materials.

MP-116 SELF-SAMPLING FOR HPV IN MARGINALIZED WOMEN LIVING IN DOWNTOWN VANCOUVER, BRITISH COLUMBIA, CANADA

G.S. Ogilvie¹, J. Maticic², R. Elwood Martin³, C. Sherlock⁴, J. Maginley¹, G. Hislop², M. Kraiden¹, J. Isaac Renton¹, D. Taylor¹, M.L. Rekart¹

¹ BC Centre for Disease Control, Vancouver, BC, Canada

² BC Cancer Agency, Vancouver, Canada

³ Dept. of Family Practice, UBC, Vancouver, Canada

⁴ Providence Health Care, Vancouver, Canada

Objective: To evaluate the impact of self-sampling for HPV on the uptake of cervical cancer screening in street involved women in British Columbia. **Methods:** In order to decrease the incidence of squamous cell carcinoma in the province, innovative screening

approaches for traditionally difficult to screen populations are being evaluated. One hundred and fifty women from Vancouver's downtown eastside (DTES) are being asked to obtain a vaginal self-sample using a Dacron swab. An interviewer-administered survey including personal health information, demographics, and sexual health risk behaviours is also conducted. Samples are analyzed using the Digene hybrid capture (HC-II) assay. All women are advised to obtain regular Pap testing, and colposcopy is conducted on all women who test positive for HPV high risk (HPV-HR). For the first 45 subjects, descriptive analysis was conducted on personal health information, demographics, and sexual health risk behaviours. Prevalence of HR-HPV was also calculated. Results: Forty-six women with a median age of 38; range: 19 – 61 (21 Caucasian; 2 Black; 23 Aboriginal/First Nation) have been enrolled to date. One woman was excluded from self-sampling because she had had a hysterectomy. Among the remaining 45 women, 20 (44%) have traded sex for money or drugs within the past 3 months, 14 (31%) used intravenous drugs and 33 (73%) used inhaled drugs. Thirty-one (67%) had a previous sexually transmitted infection (STI) by self-report. Among the 45 self-samples by swab, 14 (31%) were HPV-HR positive. According to feedback from participants, HPV self-sampling is well accepted in this study group. Conclusion: Self-sampling for HPV is a feasible method for HPV testing in this population of street women who are at high-risk for contracting a sexually transmitted infection. This population appears to have a high prevalence of high risk HPV.

MP-117 A MULTI-CENTRE, RANDOMISED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY OF CRYOTHERAPY VERSUS CRYOTHERAPY AND PODOPHYLLOTOXIN CREAM (WARTEC® / WARTICON®) AS TREATMENT FOR EXTERNAL ANOGENITAL WARTS

R.J.C. Gilson¹, J. Ross², R. Maw³, D. Rowen⁴, C. Sonnex⁵, A.J. Nunn⁶, C.J.N. Lacey⁷

¹ Royal Free & University College Medical, London, United Kingdom

² Whittall Street Clinic, Birmingham, United Kingdom

³ Royal Hospital, Belfast, United Kingdom

⁴ Royal South Hants. Hospital, Southampton, United Kingdom

⁵ Addenbrooke's Hospital, Cambridge, United Kingdom

⁶ MRC Clinical Trials Unit, UCL, London, United Kingdom

⁷ Hull York Medical School, York, United Kingdom

Objective: To compare the efficacy and safety of cryotherapy and podophyllotoxin cream versus cryotherapy alone in the treatment of anogenital warts.

Methods: Multicentre, randomised, double-blind placebo-controlled study. Podophyllotoxin (Group A) or placebo (Group B) cream applied twice daily for 3days/week for up to 4 weeks, with weekly cryotherapy (continued to 12w if required); choice of further treatment (if required) after 12w at the discretion of the clinician, final follow-up at 24w.

Results: 140 patients (70 in each group) were randomised, stratified by sex and previous history of warts (all were HIV-negative); overall 101 had first-episode warts, 91 male; groups were well matched for baseline characteristics. No treatment-related serious adverse events (ICH GCP-defined). Attendance at 12w was 78.6% (81.1% Group A, 76.0% Group B) and 24w was 68.5% (71.6%, 65.3% respec-

tively). Using an intention-to-treat analysis, clearance rates at 4w/12w/24w timepoints were higher in Group A (clearance rate 60.0, 60.0, 68.6% respectively) than Group B (45.7, 45.7, 64.3%) but differences were not statistically significant [adjusted Odds ratios 1.99 (95%CI 0.91, 4.36), 1.94 (0.95, 3.97), 1.18 (0.56, 2.49); $p=0.085$, 0.069, 0.67].

Conclusions: Initial combination therapy with podophyllotoxin/cryotherapy was well tolerated and may have resulted in earlier clearance in some patients, with possible benefits for patient management. Eventual clearance rates at week 24 however were similar. (Study supported by Stiefel International Research and Development and the HPV Special Interest Group of the British Association of Sexual Health and HIV)

MP-118 UNITED STATES PROVIDERS REPORTED USE OF THE HUMAN PAPILLOMAVIRUS (HPV) TEST: RESULTS FROM A NATIONAL SURVEY, 2004

N. Jain¹, K. Irwin¹, R. Barnes¹, D. Montano², D. Kasprzyk², Z. Henderson¹, L. Carlin², C. Freeman²

¹ Centers for Disease Control, Atlanta, United States of America

² Battelle Centers, Seattle, United States of America

Objectives: Human papillomavirus (HPV) causes anogenital warts and anogenital cancer, including cervical cancer. In the U.S., 20 million people have HPV infection and 6.2 million new infections are acquired annually. The Centers for Disease Control and several organizations recommend HPV testing for women with borderline ('ASC-US') Pap results to guide further management and for women aged ≥ 30 years as an adjunct to Pap tests to guide future Pap intervals.

Methods: In 2004, self-administered surveys were mailed to a nationally representative sample of 6906 providers including physicians practicing family, internal, or adolescent medicine, obstetrics/gynecology, urology, or dermatology, nurse practitioners, nurse-midwives, and physician assistants that asked about HPV testing practices. Data were weighted for disproportionate sampling and non-response.

Results: The adjusted response rate was 81%. 17% were unaware of HPV tests; of those aware, 47% reported ever testing patients. Obstetricians/gynecologists (92%) and nurse-midwives (88%) were more likely to report HPV testing than other primary care providers (31-56%) and specialists (5-10%). Some clinicians reported non-recommended HPV testing practices: testing male patients (32%) who request it; testing female (32%) or male (21%) patients with anogenital warts, and testing female (34%) or male (18%) patients with non-HPV sexually transmitted infections. Among Pap test providers ($n=2980$), 98% reported HPV testing of women with 'ASC-US' Pap results, 67%-90% reported testing women with higher-grade Pap abnormalities (non-recommended), and 15% reported usually/always testing women aged <30 years as a pap test adjunct (non-recommended). Obstetrician/gynecologists and nurse-midwives most commonly reported recommended and non-recommended testing practices.

Conclusions: Most surveyed providers do not use HPV tests. Of those who do, many test for recommended and non-recommended reasons. Practices varied by specialty and non-recommended

testing was most common in specialties that most commonly report HPV testing. Survey findings will guide clinician training to encourage recommended HPV testing indications.

MP-119 COMPARISON OF THE MANUAL METHOD AND THE RAPID CAPTURE SYSTEM USING THE DIGENE HYBRID CAPTURE® 2 HR HPV ASSAY FOR DETECTION OF HIGH-RISK HPV

J. Williams¹, J.C. Elkas², D.K. Kmak³, B.E. Batteiger¹, B. Van Der Pol¹

¹ Indiana University School Of Medicine, Indianapolis, Indiana,

United States of America

² Walter Reed Army Medical Ctr, Washington D.C., United States of America

³ Wayne State University, Detroit, MI, United States of America

Objectives: To evaluate the Rapid Capture System (RCS) semi-automated testing system for use with the Digene Hybrid Capture® 2 HR HPV (hc2-HPV) assay.

Methods: Women were enrolled at sites in three US metropolitan areas. Endocervical samples were collected for liquid cytology Pap testing. Following processing for cytology, the remaining sample was tested for high risk HPV types using the FDA approved manual hc2 HPV assay (reference) method and the RCS system. Positive and negative agreements and kappa ($\hat{\kappa}$) were used to evaluate the performance of the RCS. Agreement between the assay methods was compared across cytology findings and across collection sites using the Kruskal-Wallis χ^2 test.

Results: HR HPV was identified in 29.1% (157/540) of the evaluable patient specimens. Agreement between the RCS and the reference manual HPV test methods was high ($\hat{\kappa} = 0.922$ [95% CI: 0.920-0.924]). Positive HPV results were found in 19.6% (86/439) women with normal Pap results, 56.9% (29/51) with ASCUS, 89.5% (34/38) with LSIL and 87.5% (7/8) with HSIL. There was no difference in agreement by cytological finding or by study sample collection site: $\chi^2 = 1.25$ ($p=.940$) and $\chi^2 = 1.165$ ($p=.559$), respectively. Positive and negative result agreements between two test methods were 96.2% ((151/157) and 97.9%, (375/383), respectively.

Conclusions: There was good agreement between the manual hc2 HPV method and semi-automated system for high risk HPV types regardless of cytological findings or collection site (all $\hat{\kappa} > 0.84$ all p -values $< .05$). The RCS is advantageous for high volume laboratories where sample throughput is essential. The RCS improves laboratory workflow while providing results equivalent to the manual method.

MP-126 WHAT DO U.S. PROVIDERS SAY TO PATIENTS ABOUT PREVENTING HUMAN PAPILLOMAVIRUS (HPV) INFECTION? RESULTS FROM A NATIONAL SURVEY, 2004

N. Jain¹, K. Irwin¹, R. Barnes¹, D. Montano², D. Kasprzyk², L. Carlin²,

C. Freeman²

¹ Centers for Disease Control, Atlanta, United States of America

² Battelle Centers, Seattle, United States of America

Objectives: Human papillomavirus (HPV) has infected almost 20 million people in the United States and annually 6.2 million people acquire a new infection. Most persons are asymptomatic, but persistent infection can lead to genital warts, cervical cancer, and other anogenital cancer. Patients often rely on clinicians for information and recommendations for preventing HPV acquisition.

Methods: In 2004, self-administered surveys were mailed to a nationally representative sample of 6906 providers including physicians practicing family, internal, or adolescent medicine, obstetrics/gynecology, urology, or dermatology, nurse practitioners, nurse-midwives, and physician assistants. The survey asked providers their opinions about various methods to prevent acquisition of genital HPV infection or HPV-related conditions for their sexually active adolescent and adult patients. Data were weighted for disproportionate sampling and non-response.

Results: The adjusted survey response rate was 81%. 95% of providers rated monogamy or limiting the number of sex partners as highly effective in preventing acquisition of HPV infection or HPV-related conditions if the partner was uninfected. However, only 79% reported that this method was worthwhile to recommend, an opinion more common among family physicians (85%). 90% rated abstinence as a highly effective prevention method; only 42% overall reported it was worthwhile to recommend to patients, an opinion common most among adolescent medicine physicians (58%). 79% of respondents rated consistent correct condom use as a highly effective prevention method and 89% reported it worthwhile to recommend to patients. This opinion was most common among adolescent medicine physicians (95%). However, no more than 24% of all providers reported they believed their patients would adopt long-term any of these prevention measures.

Conclusions: U.S. providers have similar opinions in what they recommend to their adolescent and adult patients for preventing HPV acquisition. Survey findings should be used to develop specialty-specific materials to aid providers in counseling their patients.

SESSION: MP - C3 EPIDEMIOLOGY- HUMAN PAPILOMAVIRUSES (HPV)

MP-120 THE EFFECT OF CONSISTENT CONDOM USE ON THE RISK OF GENITAL HPV INFECTION AMONG NEWLY SEXUALLY ACTIVE YOUNG WOMEN

R.L. Winer, J.P. Hughes, Q. Feng, S. O'Reilly, N.B. Kiviat, L.A. Koutsky
University of Washington, Seattle, United States of America

Objectives: While previous longitudinal studies have not shown that using male condoms reduces the risk of HPV acquisition in females, more detailed information on condom use and numbers of sex acts may be needed to detect any protective effects.

Methods: We followed 123 female university students who reported their first intercourse with a male partner while on study or within 3 months of enrollment. Every four months, in-clinic cervical and vulvovaginal swab samples were collected for HPV DNA testing by PCR. Every two weeks, women completed electronic diaries designed to capture daily information on sexual behaviors, including numbers of sex acts and condom use. The cumulative incidence of HPV infection was estimated with the Kaplan-Meier method, and Cox proportional hazards methods were used to evaluate risk factors for acquisition.

Results: Women were followed for a median of 28 months, and diaries were 93% complete (data recorded for 47,079 of 50,607 total days on study). The 24-month cumulative incidence of first-time infection from time of first intercourse was 47.5% (95%CI:37.4-58.8). Sexually active women who reported using condoms for all sex

acts during the 2-8 month interval prior to HPV testing were significantly less likely to test positive than women who reported not using condoms for any acts (hazard ratio (HR)=0.30, 95%CI:0.10-0.88), after adjusting for numbers of acts, numbers of new partners, and male partners' numbers of prior partners (based on female subjects' reports). Report of sometimes using condoms was not associated with a significant reduction in risk (HR=0.63, 95%CI:0.31-1.30).

Conclusions: Among newly sexually active women, consistent condom use with male partners appears to reduce the risk of HPV infection. The methods used for capturing and analyzing electronic diary data are applicable to studies of other STDs.

MP-121 SEROPREVALENCE, ANTIBODY TITERS, AND RISK FACTORS FOR HUMAN PAPILOMAVIRUS (HPV) TYPES 6/11/16 AND 18 IN COLLEGE-AGED MEN AND WOMEN

S.C.K. Kelly¹, M.T. Esser¹, S-K. Lee², K.U. Jansen¹, H.L. Sings¹, B. Weaver², E. Barr¹, L.A. Koutsky²

¹ Merck Research Laboratories, Wayne, PA, United States of America

² University of Washington, Seattle, United States of America

Objectives: HPV is a cause of cervical cancer and genital warts. We have shown that an HPV16 virus-like-particle (VLP) vaccine was 100% effective in preventing persistent HPV16 infection. To help guide future HPV prevention programs, we compared seroprevalence, antibody titers, and risk factors for HPV types responsible for 70% of cervical cancers (HPV16/18) and 90% of genital warts (HPV6/11) in college-aged men and women.

Methods: Sera were obtained from 457 men and 493 women living in Seattle, Washington. Anti-HPV responses were measured by use of a VLP-based competitive Luminex immunoassay. Data on potential risk factors were obtained by questionnaire. A Wilcoxon sum rank test was used to compare geometric mean titers (GMT) for each HPV type.

Results: The mean age and range of sexual debut was similar between men and women (17.2, 11-24 vs 17.4, 12-23 years, respectively). 4.3% of men were seropositive for HPV6/11/16 or 18 vs 13% of women (p<0.001). Detection of antibodies to multiple HPV types was more common in women (14/493) than men (2/457). Anti-HPV levels were generally lower among men, but this difference was statistically significant only for HPV6 (p<0.02). In multivariate analysis, there were no factors significantly associated with HPV6/11/16/18 seroprevalence among men. In contrast, factors in the multivariate model significantly associated with HPV6/11/16/18 seroprevalence in women included increasing age and reported history of STDs.

Conclusion: HPV seroprevalence and antibody titers were higher in women than men. With no definitive explanation for these gender differences, there is a need to further study the factors that are related to the spread of HPV and to confirm these results in other populations. Such studies will help guide future prevention programs and provide recommendations for prophylactic vaccination.

MP-122 HUMAN PAPILLOMAVIRUS INFECTION AMONG SEXUALLY ACTIVE WOMEN IN THE UNITED STATES: IMPLICATIONS FOR DEVELOPING A VACCINE STRATEGY

L.E. Manhart, K.K. Holmes, L.A. Koutsky, T.R. Wood, D.L. Kenney, Q. Feng, N.B. Kiviat

University of Washington, Seattle, WA, United States of America

Objectives: Population-level data on the prevalence and distribution of human papillomavirus (HPV) types in the U.S. are necessary to guide optimal vaccination strategies.

Methods: Women ages 18-25 from Wave III of the National Longitudinal Study of Adolescent Health (N=3,466) were tested for HPV (urine specimens) using PCR, followed by dot blot hybridization and typing by line blot assay. Post-stratification sampling weights generated nationally representative estimates.

Results: Overall HPV prevalence was 27.2%, was highest among women age 18-21 years (~30%), and reached 14.4% among women with only one partner ever. Highest prevalences were observed in African and Native American women (~35%), but did not vary by geographic region. High-risk HPV types were detected in 21%; approximately 10% were infected with types included in current candidate vaccines. In adjusted analyses, HPV infection was associated with mixing sex with alcohol (OR 1.8; 95% CI 1.11-3.01), having an African American partner (OR 1.7; 95% CI 1.31-2.30), >3 lifetime sex partners (OR 1.6; 95% CI 1.26-2.07), being single (OR 1.5; 95% CI 1.08-2.00), and illegal drug use (OR 1.4; 95% CI 1.04-1.85). Women with a current sex partner (OR 0.8; 95% CI 0.59-0.97), or having received oral sex (OR 0.7; 95% CI 0.52-0.87) were at decreased risk. Neither condom use, nor having signed an abstinence pledge were associated with decreased HPV prevalence.

Conclusions: HPV prevalence was high throughout the country, even among monogamous women. Although specific risk factors for HPV infection were identified, the data suggest early and wide-spread, rather than targeted immunization of young women.

MP-123 GENITAL WARTS AMONG 18-59 YEAR OLDS IN THE U.S. NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES), 1999-2002

E.F. Dunne¹, S. Thep-Amnuay², S.J. Whitehead², L.E. Markowitz¹

¹ Centers for Disease Control, Atlanta, GA, United States of America

² Thailand MOPH-U.S. CDC (TUC), Nonthaburi, Thailand

Objectives: Genital warts are a commonly diagnosed STD; however, there have been no published nationally representative prevalence estimates of genital warts in the U.S. We evaluated the prevalence of genital warts and associated risk factors in the National Health and Nutrition Examination Survey (NHANES).

Methods: NHANES is conducted by the National Center for Health Statistics, CDC and uses a representative sample of the U.S. non-institutionalized civilian population. Questionnaire data about if a doctor or health provider ever diagnosed genital warts in persons 18 to 59 years of age were analyzed in NHANES conducted from 1999 to 2002. Data were analyzed using SUDAAN software.

Results: Overall 5.7% (95% CI 4.78, 6.69) of 5908 persons surveyed reported ever having genital warts. More women than men reported a history (7.4% vs 3.9%, p<.001). History of warts increased up to age 30-39 years: 1.9% in 18-19 year olds, 4.0% in 20-29 year olds,

8.7% in 30-39 year olds, 5.7% in 40-49 year old and 4.0% in 50-59 year olds. Nonhispanic whites (6.6%) were more likely to report a history of warts than Nonhispanic blacks (3.9%) or Mexican Americans (2.9%), p<.001. History of warts was associated with number of sexual partners, younger age at first sex, cocaine use, and smoking. Among men, ever reporting a male sexual partner was associated with genital warts (p value <.01). **Conclusions:** These data suggest that overall, 5.7% of the US population have a history of diagnosed genital warts. Sex, age, race/ethnicity and behavioral differences in prevalence of self-reported genital wart diagnosis were evident. These data may be useful for evaluation of genital wart prevention strategies, including prophylactic vaccines.

MP-124 PREVALENCE OF HUMAN PAPILLOMAVIRUS (HPV) IN HIGH-RISK WOMEN IN NAIROBI, KENYA

N. Mugo¹, C. Cohen², R. Nguti¹, J. Katampora¹, N. Kiviat³, J.S. Smith⁴

¹ University of Nairobi, Kenya, Nairobi, Kenya

² University of California, San Francisco, United States of America

³ University of Washington, Seattle, Washington, United States of America

⁴ University of North Carolina, Chapel Hill, North Carolina, United States of America

Background: In Kenya, cervical cancer incidence rates (28.7/100,000 women) are among the highest in the world. Little data are available on the prevalence of HPV infection in high-risk women with other co-existing sexually transmitted infections.

Objective: To determine the prevalence and type-distribution of HPV infection in female sex workers.

Methods: A pilot HPV prevalence study among female sex workers was conducted in Kariobangi, Nairobi, Kenya. Consenting participants underwent a pelvic examination and cervical exfoliated cells were collected with a cervical brush and stored in collection media (UCM)(Digene) to determine type-specific HPV DNA using PGM09/11 PCR (Roche). Cervical abnormalities were detected using Thin Prep liquid-based cytology (Cytyc).

Results: A total of 119 women were surveyed, with a mean age of 26 years. Overall HPV prevalence was 69.7%. HPV types most commonly detected in single or multiple infections were HPV52 (5.6%), HPV51 (5.2%), and HPV53 (4.4%). HPV16 and HPV18 were found in 3.6% and 2.8% of women, respectively. Most HPV infections were high-risk HPV types (74.7%) and of multiple types (75%). Abnormal cytology was present in 30% of women; 1 (0.8%) invasive cancer; 2 (1.7%) carcinoma in-situ; 4 (3.4%) HSIL; 19 (16%) LSIL and 10 (8.4%) ASCUS cases. 103 women (87%) were less than 30 years old. Significant risk factors for HPV infection were HIV seropositivity (p=0.002), duration of oral contraceptive use >1 year (p=0.016) and age of sexual debut <15 years (p=0.02).

Conclusions: HPV infection was found in over two-thirds of high-risk, female sex workers in Nairobi. There was a wide variation in the distribution of HPV types ascertained, with most HPV infected women harboring more than one type. The prevalence of cervical abnormalities is remarkably high for this high-risk population of women predominantly under 30 years of age.

**SESSION: MP - D₃ PREVENTION STRATEGIES-
HUMAN PAPILLOMAVIRUSES (HPV)****MP-125 WHAT DO GAY MEN KNOW ABOUT HPV? AUSTRALIAN GAY MEN'S KNOWLEDGE, ATTITUDES AND EXPERIENCE OF ANAL CANCER AND HPV.**M.K. Pitts¹, J. Willis¹, C. Fox¹, J. Anderson²¹ La Trobe University, Melbourne, Australia² Carlton Clinic, Melbourne, Australia

Objectives: to determine current levels of experience, knowledge and attitudes concerning anal dysplasia, anal smear tests and HPV amongst gay and other homosexually active men

Methods: An opportunistic sample of 383 men attending a gay community event in Melbourne was surveyed. Men were approached from a community stall and ask to complete a very short survey presented on a clipboard.

Results: The average age was 37 years (range 17 – 67). 76% were in full or part time employment and 58% had undergraduate or post graduate qualifications. 92% identified as gay, 4.8% as bisexual and 3.2% as heterosexual. 5.8% were HIV positive and a further 3.7% did not know their HIV status. 13.4% of the sample had had an anal pap smear (HIV positive men were more likely to have had an anal smear test (28.6% vs. 14.5% n.s.) On a range of measures it was clear that this well educated sample knew very little about anal cancer and virtually nothing about HPV; on 19 item knowledge scale the mean score was 2.85. 54% had never heard of an anal pap smear and 47.2% had ever heard of HPV; more than half did not know whether it affected either men or women or both. Of the small number who had heard of an anal smear test, the majority, 20.8% had heard of it in a doctor's surgery, 10% from magazines and 2.6% from a television programme.

Conclusions: The test for anal dysplasia is still largely unknown among Australian gay men and they currently have poor sense of personal susceptibility to the disease. Health education strategies are suggested to improve this situation.

MP-127 ACCEPTABILITY OF HYPOTHETICAL VACCINATION AGAINST SEXUALLY TRANSMITTED INFECTION DIFFERS BY INFECTION STATUS AND BY HIGH-RISK SEXUAL BEHAVIORJ.E. Korte¹, R.N. Shain², J.M. Piper¹, A.E.C. Holden¹, J.D. Champion¹¹ Univ. of Texas Health Science Center, San Antonio TX, United States of America² Univ. of Texas Health Science Center, San Antonio TX, United States of America

Objectives: Several vaccines will soon be available for sexually transmitted infections (STI). We sought to understand factors surrounding vaccine acceptance.

Methods: Minority women with active curable STI were recruited into a randomized intervention study. At 12 months follow-up, women were asked about vaccination, including STI vaccines.

Results: 476 women had complete data. Most (89.7%) said they would definitely get a free STI vaccine. Women reinfected during follow-up were more likely to say so (96.1% vs. 88.0%, $p=0.02$), as were women reporting high-risk behaviors during follow-up: non-compliance with treatment protocol at baseline, 95.2% vs. 88.9% ($p=0.12$); douching after sex, 97.1% vs. 88.4% ($p=0.03$); lack of mutual

monogamy, 93.0% vs. 85.2% ($p=0.006$); and risky sex, 94.7% vs. 86.9% ($p=0.007$). Adjusted odds ratios for behavior, controlling for infection during follow-up, were 1.8 (95% CI 0.54, 6.3) for noncompliance, 3.8 (0.90, 16.2) for douching after sex, 2.0 (1.1, 3.7) for lack of mutual monogamy, and 2.3 (1.1, 5.0) for risky sex. We observed a bimodal distribution of the optimum age for vaccinating your child against STI: 47.3% reported 'less than 2 years', whereas 36.6% reported '12 to 15'. Women under age 19 were significantly more likely to report 'less than 2' (54.0% vs. 43.8%, $p=0.03$).

Conclusions: Few women in our cohort would decline to receive a free vaccine against STI. Women practicing high-risk sexual behaviors or experiencing STI are most likely to accept the vaccine. These results offer hope for implementing upcoming STI vaccines.

MP-128 POLITICAL FOOTBALL: HPV, CONDOMS, AND ABSTINENCE EDUCATION IN THE USD.A. McNeal Arrindell¹, C. Ebel¹, M. Keefe²¹ American Social Health Association, Washington, DC, United States of America² Nat'l Family Planning (NFPRHA), Washington, DC, United States of America

Objective: Sexual health is a highly political issue in the United States. Ideology often replaces science in policy developments. In the late 1990's, a handful of members of Congress began to cite the widespread prevalence of human papillomavirus (HPV) among American youth as evidence that public health programs promoting condom use, sex education that includes contraception, and family planning programs, have failed to protect the public's health. Citing the HPV-cervical cancer link, they urged greater government support for abstinence-unless-married education programs and launched campaign to disparage condom effectiveness.

The entrance of HPV into the political arena, was part of a larger abstinence-only campaign of fear-based messages touting the failure rates of condoms, overstating the risk of HPV and declaring safer sex a myth. There are numerous examples of this ideology at work in the U.S. In the international arena, HPV and the anti-condom agenda are included in the global AIDS bill—a provision requires research to assess the impact of condom use on HPV. The public health community has continued education efforts and sought to urge policymakers to develop appropriate science-based public policy.

Methods: STD prevention is funded largely through the federal government and implemented by federal agencies. We will analyze HPV legislative initiatives, congressional requests and mandates related to HPV, federal agency responses, political statements and funding patterns to demonstrate the intersection of HPV and politics in the US.

Results/Conclusions: By June 2006 the federal appropriations process, through which STD prevention is funded, will be underway. Congress will have been in session for 6 months. It will be possible to examine a range of policies, proposals and funding history and to better understand the full impact of the intersection of politics and HPV.

SESSION: MP - E3 BEHAVIORAL SCIENCE- HUMAN PAPILOMAVIRUSES (HPV)**MP-129 DEVELOPING LOW-LITERACY MATERIALS TO PROMOTE HPV AWARENESS AND EDUCATION AMONG MEMBERS OF THE AMERICAN PUBLIC: FINDINGS FROM MESSAGE TESTING RESEARCH***A.L. Friedman, H. Sheppard**Centers for Disease Control & Prevention, Atlanta, GA, United States of America*

Objectives. As part of its initiative to raise public awareness of HPV in the United States, the Centers for Disease Control and Prevention developed and tested messages to: (1) heighten awareness of HPV as a public health issue, including its link to cervical cancer and the importance of Pap tests; (2) avoid/minimize audience confusion, fear, and stigmatization of HPV; and (3) motivate individuals to seek additional information.

Methods. In February 2005, 15 message testing focus groups were conducted across five U.S. cities with White, African American, and Spanish-speaking Hispanic men and women, ages 18-29. Two versions of a general information brochure, four identity images, and three designs/headlines were tested in English and Spanish. Message content was tested for understandability, relevance/appropriateness, and effectiveness in achieving the above-stated objectives. Format and design preferences were assessed.

Results. Commonly reported take-home messages were that HPV: is a common virus that anyone can get, is sexually transmitted, is usually transient and asymptomatic, cannot be cured or prevented with condoms, and can cause cervical cancer. The importance of regular Pap tests for women was also mentioned. Reactions such as 'there is no blame/shame in it' suggested that brochure content did not promote stigma. Audience confusion and anxiety stemmed from messages about HPV risk factors, prevalence, transmission, and lack of practical prevention options; the transient and asymptomatic, yet incurable nature of HPV; HPV detection and lack thereof for men; and its relation to HSV and HIV. Participants preferred Q&A and bulleted formats, and images/designs that were straightforward, eye-catching and serious in tone. The material raised many questions, which motivated intentions to seek additional information. **Conclusions.** Given the many scientific complexities of HPV, qualitative research can clarify key messages for conveying the most critical points about HPV, maximizing audience awareness/empowerment, minimizing undue fear/stigma, and motivating information-seeking.

MP-130 COMMUNICATING ABOUT HPV: WHAT DOES THE AMERICAN PUBLIC WANT TO KNOW?*A.L. Friedman, H. Sheppard**Centers for Disease Control & Prevention, Atlanta, GA, United States of America*

Objectives: The Centers for Disease Control and Prevention (CDC) sought to explore the HPV-related knowledge, attitudes and beliefs of the general public, as well as their communication preferences for receiving HPV information. This exploratory research served as the foundation for the development and testing of concepts and messages for CDC's initiative to raise public awareness of HPV in the United States.

Methods: Thirty-five exploratory focus groups (N=315) were conducted in 2003 in six geographically dispersed U.S. sites. Participants (25-45 years) were segmented by gender, race/ethnicity (African American, Caucasian, Hispanic), and urban/rural location. Focus groups explored participants' (1) awareness and knowledge of HPV, (2) reactions to brief information about HPV, (3) willingness to accept a hypothetical/future HPV vaccine, (4) preferred sources and channels for receiving HPV communications, and (5) ideas/designs for HPV messages.

Results. Across all segments, participants had low awareness and knowledge of HPV. Once informed about the link between HPV and cervical cancer, participants expressed concern that they had not previously heard about HPV, and suspicion about the apparent 'secrecy' of government and public health agencies. They had many questions about HPV and wanted more information about its transmission, prevention, treatment and prevalence, as well as their own personal risk/susceptibility. Their limited awareness of HPV and concerns about stigma served as barriers (among others) to their willingness to accept a hypothetical vaccine. Channel and source preferences differed by race/ethnicity. Across all groups, message ideas reflected STD-related fears and stigma.

Conclusions. The development of clear, effective and empowering communications about HPV is particularly challenging, given the inherent scientific complexities and unknowns of HPV, and the lack of readily actionable steps for prevention, detection and treatment. Further research and audience testing is needed to ensure that HPV messages minimize stigma and inform without instilling suspicion, confusion or undue fear/anxiety.

MP-131 DISCUSSING HR HPV WITH SEXUAL PARTNERS*P.M. Gorbach¹, B. Amani¹, A. Shin¹, R.D. Cranston¹, J. St. Lawrence², P. Kerndt³**¹ University of California, Los Angeles, Los Angeles, CA, United States of America**² Centers for Disease Control, Atlanta, GA, United States of America**³ Los Angeles County STD Program, Los Angeles, CA, United States of America*

Objective: Assess how positive diagnoses of High Risk Human Papillomavirus (HR-HPV) affects women's sexual partnerships and perception of partners. **Methods:** 30 women recruited from three Los Angeles clinics conducting HPV surveillance underwent structured in-depth interviews in English, Spanish, and Korean. Interviews were tape recorded, transcribed verbatim, and coded by two readers. Themes were analyzed in Ethnograph software; quotations representative of themes are presented. **Results:** Overall 64% (20/31) of women interviewed discussed their HR-HPV diagnosis with partners. Themes for discussing HPV included: 'not a big deal', 'partner gave it to me', 'before he finds out', and 'protect partner by letting him know'. Themes for not discussing HPV with partner were 'not in that kind of partnership', 'not sure necessary to let him know', and 'embarrassed or afraid to discuss'. Partners' responses to HR-HPV diagnoses were in the following categories: supportive, not supportive, forced issues in partnership, raised negative feelings about partner, concern for partner. How women discussed HPV with partners reflected the identity they assigned HPV as cancer, a STD or both. Among those who discussed HPV

with their partner there was no effect on 37% (11/30) of the partnerships but 17% (5/30) of the partnerships dissolved. More of those in more established partnerships discussed HR-HPV, and those in monogamous, older, or married partnerships did not terminate. Most of the older Latina women discussed HR-HPV as a STD; almost all Korean women talked about HR-HPV in the context of cancer. Conclusions: In Los Angeles the choice, content, and consequences of discussing a positive HR-HPV diagnosis within heterosexual partnerships varied by women's age, ethnicity and duration of partnerships. Counseling messages around HR-HPV need to address partner communication and transmission concerns to suggest ways of communicating about HR-HPV to avoid blame. Materials specifically for partners are needed.

**SESSION: MP - A7 BASIC SCIENCE-
LYMPHOGRANULOMA VENEREUM (LGV)**

MP-132 OUTBREAK OF LYMPHOGRANULOMA VENEREUM IN THE UK IS NOT DUE TO TRANSMISSION OF A SINGLE STRAIN OF CHLAMYDIA TRACHOMATIS

I.M.C. Martin¹, S.M. Alexander¹, C.A. Ison¹, N. Macdonald¹, K.A. Fenton², H. Ward¹

¹ Health Protection Agency, London, United Kingdom

² Centres for Disease Control, Atlanta, United States of America

Objectives: Enhanced surveillance of lymphogranuloma venereum (LGV) in MSM in the UK was launched in October 2004 by the Health Protection Agency, following outbreaks reported in several European countries. Diagnosis and molecular typing of all samples positive for *C. trachomatis* has been undertaken.

Methods: Samples submitted following the criteria for investigation for diagnosis of LGV (*Chlamydia* serovars L1, L2 or L3) were examined. *C. trachomatis* was confirmed on two separate real-time PCR platforms (Artus RealArt *C. trachomatis* RG PCR Kit, targeting the *omp1* gene and the plasmid; and an in house method targeted to the plasmid), genotyping was performed on all PCR positive specimens by PCR RFLP analysis of the *omp1* gene. DNA sequencing of *omp1* was performed on samples positive for LGV associated serovars.

Results: To date (30/03/05) 189 samples have been referred for LGV investigation. 52 samples were positive for LGV, all of serovar L2. Sequence analysis of the *omp1* gene of these LGV associated serovars has shown minor sequence variants to submitted GenBank L2 sequences. Some isolates had the same sequence as the Amsterdam strain AMSTLGVL2b, which was the predominant LGV L2 strain found circulating in the outbreak in 2003/4.

Conclusion: Rectal LGV, of serovar L2, has been confirmed in 52 MSM. Sequencing of the MOMP gene has revealed that several different L2 strains have been diagnosed in the UK. The samples from patients with the same sequence as AMSTLGVL2b found in Amsterdam, were known to have reported unprotected sexual contact in countries in western Europe where LGV has been detected. LGV thought to be endemically transmitted has shown minor sequence variants; the outbreak in the UK is not due to a single outbreak strain of *C. trachomatis*, suggesting that multiple transmission networks are contributing to the outbreak. Continued surveillance is essential.

**SESSION: MP - B7 CLINICAL SCIENCE,
INCL. DIAGNOSTICS AND TREATMENT-
LYMPHOGRANULOMA VENEREUM (LGV)**

MP-133 A COMPARISON BETWEEN THE MICRO-IMMUNO-FLUORESCENCE TEST AND A BIOVAR SPECIFIC PCR FOR LGV IN PATIENTS WITH GENITAL ULCERS AND/OR SWOLLEN INGUINAL LYMPH NODES

A.W. Sturm¹, P.D.J. Sturm¹, F. Radebe², H. Koornhof², P. Moodley¹

¹ Nelson R. Mandela School of Medicine, Durban, South Africa

² STIRC, Johannesburg, South Africa

Objectives: Micro-immunofluorescence (MIF) is the gold standard for diagnosis of lymphogranuloma venereum (LGV). We compared MIF with PCR followed by RFLP.

Methods: Ulcer specimens and lymph-node aspirates were collected from patients with GUD and/or genital/inguinal swelling presenting at a STD clinic in Durban. Pathogens were detected by PCR. Serology was done at first visit and follow up at 3 weeks. A 4-fold titre rise and/or a reciprocal titre > 256 using LGV antigen was considered positive. Tests for antibodies against oculo-genital *C. trachomatis*, hyperendemic trachoma isolates, *C. psittaci* and *Chlamydia pneumoniae* were also performed.

Results: Of the 276 patients, 222 (80%) had ulcers only, 8 (3%) swollen lymph nodes only and 46 (17%) both. LGV was diagnosed in 55 (20%): 41 by PCR only, 7 by MIF only and 7 by both. PCR and MIF had a sensitivity of 87% and 25% respectively. Of the 7 patients diagnosed with MIF only, 3 had genital herpes and 1 had syphilis as well. Of the 48 diagnosed by PCR, 11 had concomitant genital herpes and 1 syphilis. A high frequency of cross reactivity was observed in the MIF with all antigen pools. All of the 9 patients with a LGV titre of > 256 had the same titre with *C. pneumoniae*, 6 with *C. psittaci* and 2 with oculogenital *C. trachomatis*. Of the 5 patients with a 4-fold or higher rise in titre for LGV 4 had similar increases with all 4 other antigen pools.

Conclusion: Although positive LGV serology was associated with positive LGV PCR results, many patients diagnosed with LGV by PCR did not meet the serological criteria at the time of presentation. The low sensitivity and high cross reactivity with other *Chlamydia* throw doubt on the usefulness of MIF as a diagnostic tool.

MP-134 CLINICAL PRESENTATION AND RESPONSE TO TREATMENT OF 58 CASES WITH LYMPHOGRANULOMA VENEREUM (LGV)

P.D.J. Sturm, P. Moodley, A.W. Sturm

Nelson R. Mandela School of Medicine, Durban, South Africa

Objectives: We recently reported good response to treatment of patients with genital ulcers due to LGV to the South African syndromic treatment of genital ulcer disease. This study aims to establish whether this response is also seen if patients with lymphadenopathy are included.

Methods: Ulcer specimens and lymphnode aspirates were collected from patients with GUD and/or genital/inguinal swelling presenting at a STD clinic in Durban. Pathogens were detected by PCR. Serology for LGV (MIF) was done at first visit and at follow up at 3 weeks. A 4-fold titre rise and/or a reciprocal titre > 256 using LGV antigen was considered positive. Patients that fulfilled these criteria were enrolled in this study. All were treated with 5 days erythromycin

500 mg 4dd and seen weekly for follow up till healing was observed. Patients without response were continued on doxycycline treatment. Results: 58 patients were enrolled: 41 with genital lesions only, 6 with lymphadenopathy only and 11 with both. 51 cases were diagnosed by PCR and 7 by MIF. Of the 52 lesions 77% were chancroid like ulcers with a diameter of 2 cm or more, irregular edges and an exudative base with bleeding tendency. Only 18 (56%) of the 32 with LGV in the lesion only had lymphadenopathy. Bubos were only found in patients with positive PCR on lymphnodes. No groove sign was observed. 34 (59%) of patients came for follow up: 26 (76%) responded to erythromycin and 6 responded to an additional week of doxycycline. Two patients deterioration and these needed 2 weeks of doxycycline. There was no difference in response between those with and without lymphadenopathy. Conclusions: LGV in the ulcerative stage can not be differentiated from other chancroid like lesions. Most patients respond well to 5 days of erythromycin

MP-135 REAL-TIME PCR FOR THE RAPID ONE-STEP DIAGNOSIS OF CHLAMYDIA TRACHOMATIS LGV INFECTION TO HELP MANAGE AND CONTAIN THE CURRENT OUTBREAK IN EUROPE AND THE USA

S.A. Morré¹, J. Spaargaren², J.S.A. Fennema², J. Pleijster¹, H.J.C. de Vries², R.A. Coutinho³, A.S. Peña¹

¹ VU University Medical Center, Amsterdam, The Netherlands

² Municipal Health Services, Amsterdam, The Netherlands

³ Nat. Inst. for Health & the Environment, Bilthoven, The Netherlands

Objective: Management of the current Chlamydia trachomatis lymphogranuloma venereum (LGV) outbreak in the Europe and the USA among men having sex with men (MSM) is severely hampered by complex and time consuming diagnosis of infection. Therefore we developed a rapid (2 hour), easy to perform, real time PCR method (TaqMan and Rotorgene) to specifically identify LGV infection between all C. trachomatis serovars.

Methods: CT Serovars were assessed in a group (n=125) of MSM by PCR based RFLP analysis and by sequencing of the omp1 gene. TaqMan and Rotorgene assays were developed using the pmpH gene as a target. Both sensitivity (serial dilution of a cultured L2, and all 19 Ct serovars) and specificity (broad panel of microorganisms) were assessed and the results compared to the standard PCR-based RFLP and sequencing analyses.

Results: 28 patients were identified by PCR-based RFLP and sequencing analyses as LGV positive. Using serial dilution and a serovar panel we showed that the developed TaqMan and Rotorgene assays were highly sensitive and specific. Indeed, all 28 LGV positive men were identified. Remarkably, we identified two additional LGV infections by both real time assays. These men were initially typed as single strain infections with serovars E and D by both PCR-based RFLP analysis and VS-2 sequencing, most likely due to bacterial load issues which result for the conventional techniques in preferential amplification of one serovar.

Conclusion: We developed a rapid (2 hours), easy to perform, highly sensitive and specific real-time PCR method which could be employed to facilitate LGV diagnosis in STI and medical microbiology settings in order to quickly manage and hopefully confine this still ongoing LGV outbreak.

MP-136 REAL-TIME PCR FOR THE SPECIFIC DETECTION OF CHLAMYDIA TRACHOMATIS (CT) LGV ASSOCIATED SEROVARS (L1-L3) UTILIZING THE ROCHE LIGHTCYCLER

J.P.H. Hardick¹, S.T. Taylor², R.M. Myers², T.C.Q. Quinn³, C.A.G. Gaydos¹

¹ Johns Hopkins University, Baltimore, United States of America

² MD. State Dep. Health/Hygiene, Baltimore, United States of America

³ NIAID, NIH, Bethesda, United States of America

Objective: To develop a real-time PCR (LGV-RT-PCR) specific for the CT L1-L3 serovars. Lymphogranuloma venereum (LGV) is clinical condition marked by infection with an L1, L2, or L3 serovar of CT. Although many commercial amplification assays can detect CT, including the L serovars, these assays are incapable of differentiating the L1-3 serovars from the other CT serovars (A-K).

Methods: Primers and probes specific for the L1-3 serovars were designed around the pmpH gene. This gene has a 36-bp deletion for L1-L3 serovars. The nucleotide sequence for this gene are almost identical among serovars within a disease group (ocular, urogenital, and LGV), but quite different for serovars compared across groups. Isolates representing serovars A-K and L1, L2, and L3 (ATCC), as well as L1, L2, and L3 formalin fixed elementary bodies were extracted by the Roche MagNAPure-LC robot and run in duplicate on the Roche Lightcycler to determine sensitivity for the L1-3 serovars and any possible cross-reactivity with the other CT serovars. Additionally, 18 culture positive clinical samples (N=6 female rectal swabs, N=12 male rectal swabs) were tested. Additionally, the presence of chlamydial DNA was tested by another set of primers and probes that amplify all CT serovars.

Results: While all control L1-3 serovars samples amplified, none of the non-LGV serovars of CT (A-K) amplified when analyzed with the L1-L3 specific primers and probes. Of the 18 clinical samples analyzed, none were identified as being positive for LGV associated L1-3 serovars. All 18 did amplify using primers and probes, that amplify all CT serovars.

Conclusions: The LGV-RT-PCR should prove to be a useful tool in differentiating L1-3 serovars associated with LGV infection from a CT infection caused by a non-L1-3 serovar (serovars A-K).

SESSION: MP - C7 EPIDEMIOLOGY- LYMPHOGRANULOMA VENEREUM (LGV)

MP-137 PREDICTORS FOR ANORECTAL LYMPHOGRANULOMA VENEREUM IN MEN HAVING SEX WITH MEN: DIAGNOSTIC IMPLICATIONS

A.K. van der Bij¹, J. Spaargaren¹, S.A. Morré², H.S.A. Fennema¹, A. Minde³, R.A. Coutinho⁴, H.J.C. de Vries¹

¹ Municipal Health Service Amsterdam, Amsterdam, The Netherlands

² VU University Medical Center, Amsterdam, The Netherlands

³ University of Sydney, Sydney, Australia

⁴ Nat. Inst. for Health & the Environment, Bilthoven, The Netherlands

Objectives: The outbreaks of lymphogranuloma venereum (LGV) seem to be concentrated in HIV-positive men who have sex with men (MSM). However, systematic research on predictors for LGV is not available yet. We conducted a retrospective case-control study to identify clinical signs of, and risk factors for, anorectal LGV

infection in MSM, to determine implications for clinical practice. Methods: All MSM diagnosed at the STI clinic Amsterdam, the Netherlands, with an anorectal *C. trachomatis* infection in 2002 and 2003 were retrospectively typed for their serovar; 87 cases with LGV were identified. All 2817 MSM attending the clinic in the same period, without anorectal chlamydia but reporting receptive anorectal intercourse served as controls. Predictors for LGV were analysed using multivariate logistic regression. Receiver operating characteristic (ROC) curves were composed to determine their clinical relevance.

Results: HIV-positivity was identified as the strongest independent risk factor for anorectal LGV (odds ratio 8.8, 95% confidence interval: 4.1-18.8). Only few of the MSM with anorectal LGV presented with symptoms and relying upon proctitis signs upon proctoscopic examination alone for diagnosis, resulted in underdiagnosing 50% of the LGV infections. When considering LGV in an MSM patient, the highest diagnostic accuracy is achieved by evaluating both proctoscopic findings and white blood cell (WBC) count in Gram-stained anorectal smears. This results in underdiagnosing only 20% of the anorectal LGV infections in MSM.

Conclusions: Physicians in industrialised countries should suspect anorectal LGV in all sexual risk taking MSM, especially when HIV-positive. LGV testing and immediate blind antibiotic treatment, pending test results, is recommended in every MSM with a proctoscopic proctitis and/or more than 10 WBC in Gram-stained anorectal smears. Screening for LGV and prompt treatment is essential, not only for the individual patients, but also for the wider MSM community for expeditious prevention and control.

MP-138 LYMPHOGRANULOMA VENEREUM IN THE UNITED STATES, NOVEMBER 2004 THROUGH MARCH 2005

C. McLean, H. Lindstrom, A. Wendt, J. Papp, K. Workowski, S. Berman, H. Weinstock

U.S. Centers for Disease Control, Atlanta, United States of America

Background: Lymphogranuloma venereum (LGV) is a systemic sexually transmitted disease caused by *Chlamydia trachomatis* (CT), serovars L1-L3; classically presenting as genital ulcers with inguinal lymphadenopathy ('buboes'), LGV has been infrequently diagnosed in industrialized countries. In January 2004, an outbreak of LGV proctocolitis was reported among men who have sex with men (MSM) in The Netherlands, raising concerns about LGV in the U.S. LGV is not nationally notifiable. Specific diagnosis requires genotype identification of CT serovars, a technique available only in specialized research laboratories. In November 2004, CDC began assisting state and local health departments in testing specimens from patients with proctocolitis or buboes.

Methods: Specimens and clinical information were submitted to CDC through state and local health departments. CDC tested all rectal and genital specimens for CT using nucleic acid amplification tests; specimens testing positive for CT were genotyped. Specimens were considered positive for LGV if CT serovars L1-L3 were identified. Results: From November 2004 through March 2005, 53 specimens were submitted to CDC from 15 cities. Overall, 20 (38%) were CT positive; to date, 15 of 20 CT positive specimens have been genotyped. Eleven (73%) of 15 specimens from 4 cities were positive for LGV (all were serovar L2). Four were non-LGV serovar D. All LGV

specimens were from MSM with a median age of 33 years (range: 28-43 years). Ten men presented with proctocolitis, and one had buboes. Nine were HIV positive. Three had >1 concurrent STDs diagnosed. Eight reported unprotected, receptive anal intercourse in the 60 days prior to their LGV diagnosis.

Conclusions: LGV has been identified in MSM across the U.S. Clinicians should consider LGV in patients with proctocolitis, especially in HIV positive MSM. Comprehensive STD evaluation and presumptive treatment should be provided to patients with proctocolitis and to their sex partners.

MP-139 LYMPHOGRANULOMA VENEREUM-(LGV)-OUTBREAK AMONG HIV-POSITIVE HOMOSEXUALS IN BELGIUM

M. Vandenbruaene¹, B. Ostyn¹, T. Crucitti¹, E. van Dyck¹, M. van Esbroeck¹, F. Moerman¹, K. de Schrijver², A. Sasse³, M. Sergeant⁴

¹ Institute of Tropical Medicine, Antwerpen, Belgium

² Health Inspectorate, Antwerpen, Belgium

³ Institute of Public Health, Brussel, Belgium

⁴ Sensoa, Antwerpen, Belgium

Background: For decades LGV was extremely rare in Western-Europe. In January 2004 Dutch health authorities launched a European STI-alert on a LGV-outbreak among HIV+ homosexuals (www.EuroSurveillance.org January 22 2004). Confirmed LGV-cases notified on January 1, 2005: the Netherlands:182; France:123; UK:24; Belgium:8; US:1.

Objectives: 1.To investigate an LGV-outbreak in Belgium. 2.To raise awareness and launch appropriate public health responses.

Methods: Homosexual patients were screened for LGV-antibodies in the HIV-STI-clinic of the Institute of Tropical Medicine, Antwerp. Patients with suspicious signs or symptoms or serological patterns got a LGV-check up.

Case definition: see www.EuroSurveillance.org January 22 2004.

Contacts of LGV-patients were traced. Prevention workers and health authorities took appropriate actions.

Results: 8 confirmed LGV-cases were detected between January and November 2004 (*Chlamydia trachomatis* genotype L2-cases).

We also found 4 probable cases (*Anorectal Chlamydia trachomatis* PCR positive; no samples available for genotyping; *Chlamydia* serology levels $\geq 1/1024$). All patients were homosexual, Caucasian males. 11/12 patients were HIV+. (1/12 HIV-serostatus unknown). 12/12 patients had ano-rectal pathology. 6/12 had another STI in the year preceding the LGV-check up.

Patients reported sexual contacts in Europe, Asia, South- & Central-America. Some patients were epidemiologically linked to confirmed cases in the Netherlands. A targeted prevention effort was organized in the subgroups most at risk. Gay press was informed. Fine tuning occurred with partner organizations in the Netherlands. Public health officers warned medical doctors about the outbreak.

Conclusion: An LGV-outbreak was notified in a high risk group in Belgium. The cases in Belgium were probable part of the outbreak in other EU-countries.

MP-140 LYMPHOGRANULOMA VENEREUM (LGV) IN CANADA

J. Mann, R.Y. Kropp, S. Shields, T. Wong

Public Health Agency of Canada, Ottawa, Canada

Objective: To review the Public Health Agency of Canada's (PHAC) response to the threat of an LGV outbreak and to describe reported cases of LGV in Canada.

Methods: Following reports of international outbreaks of LGV, PHAC working in collaboration with the provincial/territorial (P/T) STI directors and Expert Working Group (EWG) for the Canadian STI Guidelines, produced an interim statement on the diagnosis and treatment of LGV, and initiated an enhanced surveillance (ES) system for LGV. In addition to the ES protocol and national case definition, a sample case guide for healthcare providers to assist in collecting ES information was developed. These items were then distributed by PHAC to the P/T STI Directors and through the P/Ts to physicians, nurses and other healthcare providers and also posted on the PHAC's official website.

Results: Since ES efforts began in January 2005, a total of five unlinked cases have been reported in Canada, with symptom onset in some cases dating back to early 2004. The gender ratio is 4:1 males to females. Four cases are self reported homosexual. Three cases have reported sexual activity within bathhouse settings. Co-infection with HSV (one case), HCV (one case) and HIV (one case) is confirmed. Two cases have travelled internationally (US, Central America, Mexico), with no cases reporting recent travel to Europe or endemic areas for LGV. Of interest are the varying clinical presentations with only two cases presenting with proctitis. Four cases (including one case with proctitis) presented with inguinal lymphadenopathy, two bilateral and two unilateral.

Conclusions: Although LGV is not a nationally reportable infection in Canada, ES efforts have identified five cases to date with more cases expected in the near future. Continued ES will allow for further identification of an outbreak, enabling rapid response measures to be put in place.

MP-141 IMPROVING CASE ASCERTAINMENT AND AWARENESS RAISING OF LYMPHOGRANULOMA VENEREUM (LGV) IN THE UNITED KINGDOM AMONGST MEN WHO HAVE SEX WITH MEN

N.D. Macdonald, C.A. Ison, I.M.C. Martin, S. Alexander, K.A. Fenton, H. Ward
Health Protection Agency, London, United Kingdom

Objectives: To improve the diagnosis and control of LGV amongst men who have sex with men (MSM) in the United Kingdom.

Specific objectives: to establish a clear case definition, raise awareness among clinical and public health colleagues, improve case ascertainment and conduct enhanced surveillance of LGV.

Methods: Following consultation, in October 2004 microbiologists and genito-urinary clinicians were sent a briefing alerting them of the outbreak of LGV in MSM and providing diagnostic procedures, case definitions and the enhanced surveillance protocol.

Results: By the end of March 2005 over 50 cases of LGV (serovar L2) had been confirmed. Surveillance questionnaires had been returned for 40 men, of which 8 were retrospective cases from stored samples taken before October 2004. Of the remaining 32, 19 (59%) were reported from London, the rest from cities widely dispersed across the UK. With a median age of 39, all were homo-

sexual and the majority of white ethnicity. 31 (97%) presented with symptoms (all anorectal, of whom 4 also had inguinal symptoms). 25 (78%) were HIV positive of whom 5 had previously tested HCV positive. Other concurrent STIs were reported for 14 men (44%). A probable country of LGV exposure was reported for 29 with 24 (83%) reporting the UK and 5 reporting countries in mainland Europe (Netherlands, Germany, Italy, Belgium).

Conclusions: Our data is consistent with those reported from other European countries. It is unclear how long the present outbreak of LGV has been affecting MSM in the UK, but the wide geographic distribution and ascertainment of cases based almost exclusively on anorectal symptoms gives cause for concern. Further investigation is required to estimate the prevalence of LGV in MSM and design effective measures to control this outbreak.

MP-142 RECTAL LYMPHOGRANULOMA VENEREUM IN FRANCE

M.H Herida

Institut de veille sanitaire, Saint-maurice, France

Background: LGV, caused by *Chlamydia trachomatis* (CT) serovars L1, L2, or L3, occurs sporadically in the western world where most cases are imported. In 2004, a European alert was launched concerning an outbreak of rectal LGV among men having sex with men (MSM). France began rectal LGV surveillance in April 2004.

Methods: All stored rectal specimens found positive for CT by PCR since January 2002 in three Paris laboratories or in the national reference centre from Bordeaux were retrospectively genotyped by using a *omp1* gene PCR-RFLP method. Prospectively, from April 2004 onwards, all the rectal PCR -positive samples obtained in men in 6 STI clinics and laboratories were genotyped. In some of the cases, the *omp1* gene of some L2 strains was directly sequenced from rectal specimens.

Results: From April 2002 to February 2005, 175 CT rectal strains were genotyped. Among them, 142 (81%) were identified as belonging to the L2 serotype which confirms the diagnosis of rectal LGV. The remaining strains were mainly belonging to serotypes Da and G (13%). Among LGV cases, 22 cases were diagnosed in 2002/2003, 104 cases in 2004 and 17 in the first two months of 2005. All cases occurred in MSM. Mean age of these patients was 38.5 (26-58). HIV status was reported for 41 patients of whom 33 (80%) were positive. Among the L2 strains, 42 were sequenced and all exhibited a mutation named L2b, on position 162 in variable domain 2, already described in L2 strains from Amsterdam.

Conclusion: With the largest number of cases in the western Europe, rectal LGV epidemic among MSM is still ongoing in France. Preliminary data on strains sequencing suggest that LGV is due to a new CT L 2 strain similar to that observed in Amsterdam.

MP-143 A CLUSTER OF LYMPHOGRANULOMA VENEREUM AMONG MEN WHO HAVE SEX WITH MEN—SAN FRANCISCO, 2004

J. Mitchell¹, C.K. Kent¹, J. Engelman¹, A. Wendt², J. Papp², J.D. Klausner¹

¹ San Francisco Dept of Public Health, San Francisco,

United States of America

² CDC / NCHSTP / DSTDP, Atlanta, United States of America

Objectives: Lymphogranuloma venereum (LGV) is an invasive sexually transmitted disease caused by *Chlamydia trachomatis* serovars L1, L2, and L3. LGV results in more serious morbidity than typical chlamydia by causing severe urogenital and rectal scarring. An outbreak of LGV among men who have sex with men (MSM) was recently reported in the Netherlands, and other cases have been reported throughout Europe. San Francisco reported only nine cases of LGV during the previous decade and none since 2001. We used molecular genotyping to determine if LGV is present in San Francisco.

Methods: Medical records were reviewed from all 415 patients diagnosed with rectal chlamydia by the San Francisco Department of Public Health laboratory during January–November, 2004. We selected 110 isolates for molecular genotyping on the basis of clinical findings. Serovars were identified by sequencing a chlamydia-specific gene (*ompA*) and comparing the DNA sequences to serovar-standardized genotypes. In November, prospective surveillance began by submitting samples from patients with newly-diagnosed chlamydial proctitis.

Results: Sixty-six samples have been analyzed, of which 31 could not be sequenced. Analysis of the 35 genotyped isolates demonstrated that ten rectal infections and one urogenital infection were attributable to *C. trachomatis* serovar L2. All 11 patients infected with LGV are MSM; five were coinfecting with HIV, two with syphilis, and two with gonorrhoea; and none reported sex partners outside of the United States. Thirteen patients (11.8%) were diagnosed with recurrent rectal chlamydial infection within 10–90 days and analyses of paired samples are pending.

Conclusions: Molecular genotyping has identified a cluster of LGV infection among MSM in San Francisco. Enhanced surveillance is necessary to monitor and control the reemergence of LGV. Further research is needed to develop methods for rapid LGV diagnosis and to improve our understanding of the natural history of LGV, including persistent or asymptomatic infection.

MP-144 CHALLENGES OF LYMPHOGRANULOMA VENEREUM SURVEILLANCE IN CALIFORNIA FOLLOWING EUROPEAN OUTBREAK

C.S. Hall¹, C.K.K. Kent², M. Samuel¹, S. Guerry³, J. Schachter⁴, G.A. Bolan¹

¹ California Department of Health, Oakland, CA, United States of America

² San Francisco Department of Public Health, San Francisco, CA, United States of America

³ Los Angeles Department of Health, Los Angeles, United States of America

⁴ University of California, San Francisco, San Francisco, United States of America

Objectives: Following recent reports of lymphogranuloma venereum (LGV) among men who have sex with men (MSM) in Europe, the California Department of Health Services initiated

surveillance of cases compatible with LGV through 61 local health jurisdictions (LHJs).

Methods: Clinicians were alerted to report cases with clinical symptoms consistent with LGV (proctitis and significant inguinal lymphadenopathy). Providers were instructed to: collect specimens for rectal *Chlamydia trachomatis* (CT) testing by culture or nucleic acid amplification (NAAT) and microimmunofluorescence (MIF)-based serology for CT; initiate presumptive treatment; and assist LHJs with specialized case report forms that captured demographics, travel history, and clinical information. CT positive rectal specimens were sent to the Centers for Disease Control and Prevention for LGV-specific polymerase chain reaction (PCR) testing. Current working definitions have included: suspect LGV- MIF titers greater than 1:128 or a positive rectal CT test and clinically compatible symptoms, and confirmed LGV - PCR L serotype.

Results: From 12/04-3/05, 75% (42/53) of reports had test results available from 11 LHJs (see table). Reports were primarily from MSM (89%) and HIV-positive persons (50%). Two rectal specimens that were CT NAAT positive and tested by PCR were L2. Most (58%) MIF results had titers <1:128, and three of three persons with moderate titers (1:256-1:512) and PCR results indicated D serovars. No cases reported travel to Europe.

Conclusions: There is little evidence of a widespread outbreak of LGV in California. However, LGV surveillance is limited by the availability of rectal chlamydia testing. The predictive value of MIF titers is unclear. Rectal CT NAATs should be validated in laboratories to facilitate identification of LGV, and availability of PCR CT serotyping should be expanded.

LGV Related Tests	N	(%)
Available test results (n=42)	29	(69%)
MIF alone	6	(14%)
MIF & rectal CT test	3	(7%)
MIF, rectal CT test & PCR	2	(5%)
Rectal CT test & PCR	2	(5%)
Rectal CT test		
MIF titers (n=38)		
≥ 1:1024	5	(13%)
1:256 – 1:512	11	(29%)
≤ 1:128	22	(58%)

Table 1: LGV test results

SESSION: MP - B18 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- OTHER TOPICS

MP-145 COMMUNITY PAEDIATRIC REFERRALS TO GENITOURINARY MEDICINE: APRIL 2004 - MARCH 2005

C. Thompson, J. Mok, L. Logie, L. Ross, S. Bloomfield

NHS Lothian Acute Hospitals Division, Edinburgh, United Kingdom

Objectives: The need for sexually transmitted infection (STI) screening, whether arising from consensual sexual intercourse or sexual assault/abuse is as important for young people as for adults. Within Lothian there is a direct referral protocol for the Forensic Medical

Examiners (FME) to use for adults to be seen at Genitourinary Medicine (GUM) for STI screening two weeks after an acute assault. Younger victims of sexual assault have previously been referred by Community Paediatricians (CP) for STI screening on an ad hoc basis but since April 2004, a regular fixed session has been established for joint examination on a 'one-stop-shop' basis. This paper reports the outcome of all CP referrals to GUM from 1st April 2004 until 31st March 2005.

Methods: Retrospective case note review of all referrals made by CP to GUM in the period 1st April 2004 to 31st March 2005.

Results: A total of 18 referrals were made, all female, median age 12 years (range 3-15). Eleven were seen at a joint consultation with the CP +/- FME at the Royal Hospital for Sick Children: 5/11 had genital symptoms but no concerns about sexual abuse; 4/11 disclosed historical assault; 2/11 had experienced recent rape requiring CP follow-up. Seven were seen at GUM: 4/7 disclosed consensual sexual intercourse; 2/7 had experienced recent rape; 1/7 was referred from elsewhere following historical assault. No STIs were detected.

Conclusion: Although the prevalence of STI in this study was zero, the importance of negative results for reassurance of both young person +/- carer must not be underestimated. Close liaison between CP and GUM has allowed the development of a 'one-stop-shop' service for the joint examination of the majority of young people thus saving them further appointments and visits to another unfamiliar department.

MP-146 MANAGEMENT OF VICTIMS OF SEXUAL ASSAULT IN A CITY-CENTRE GENITOURINARY MEDICINE CLINIC

C. Thompson

NHS Lothian Acute Hospitals Division, Edinburgh, United Kingdom

Objectives: This city-centre Genitourinary Medicine clinic (GUM) runs a weekly dedicated clinic (SA) for patients having experienced sexual assault, staffed by an all female multi-disciplinary team. Patients can self-refer but direct referrals are also made by the Forensic Medical Examiner (FME) at the time of forensic examination. Patients also self-refer for post-assault sexually transmitted infection (STI) screening to the routine busy morning walk-in clinics (WI) with staff of either gender. There is a written departmental protocol for the management of patients reporting sexual assault, based on the UK National Guidelines. This audit was undertaken to determine:

- the numbers of post-sexual assault patients attending the department
- the proportion attending SA compared with WI
- any differences in the two patient sub-populations
- adherence to the written protocol

Methods: Retrospective case-note review for the 2 year period 1/4/02 to 31/3/04.

Results: Two hundred and twelve patients (190 women, 22 men) identified; 113 (108 women) attended SA. Those attending WI were less likely to be offered extended STI screening [$p < 0.00001$] and HIV testing [$p = 0.05$] but rates of appropriate Hepatitis B vaccination and offering of psychological support were comparable. More [$p < 0.001$] of 42/212 aged less than 16 years attended SA.

Conclusion: This audit demonstrates that the provision of a dedicated clinic and close liaison with FMEs facilitates an appropriately timed and comprehensive follow-up for the exclusion of STI in sexual assault victims. One third of SA patients are under 16 years age; only 10% patients seen overall are men, the majority of whom access WI. The timing of SA, run by appointment, is deliberately outwith the busy routine clinics to help ensure a calm and minimal stress experience for this particularly vulnerable patient group.

SESSION: MP - C18 EPIDEMIOLOGY- OTHER TOPICS

MP-147 HEALTH CARE SEEKING BEHAVIOUR IN THE NETHERLANDS: GP SEES MAJORITY OF STI-CASES. RESULTS FROM THE 2ND DUTCH NATIONAL SURVEY

J.E.A.M. van Bergen¹, J. Kerssens², T. Sandfoort³, P. Bindels⁴, T. Coenen¹

¹ *Soa Aids Nederland, Amsterdam, Netherlands*

² *NIVEL, Utrecht, Netherlands*

³ *Columbia University, New York, United States of America*

⁴ *Academic Medical Centre, Amsterdam, Netherlands*

Objective: STI-clinics and Municipal Public Health Services(MHS) report a resurgence of STI. No recent data are available about STI-related health-care seeking behaviour in the Netherlands. We wanted to know what is the role is of the General Practitioner (GP) in STI-care.

Method: Within the framework of the second Dutch National Survey of General Practice of Nivel (2001), which has been carried out in cooperation with the National Information Network of General Practice (NINGP), data were collected about STI and STI-related health care seeking behaviour. 9687 persons were interviewed. The Electronical Medical Files of 400.000 clients of 165 GP's, with more than 2 million patient contacts during the year under study, were analysed for STI-related diagnoses and consultations.

Results: 5% of persons aged 18-24 reports STI-related signs and symptoms in the past year. 2/3 visited the GP for this; 20% visited the STI-or PHS-clinic. Almost 10% reported not to have taken any action. GP's in highly populated urban area's and in social deprived area's see more STI-related consultations. MSM and persons with Surinamese/Antillean ethnicity report significantly higher numbers of STI. The 'mean' GP sees in a year 10 patients with STI and 7 patients with questions on HIV/STI.

Discussion: The GP is an important player in STI care, covering at least 70% of the STD burden of disease. Moreover, there are some 50 consultations for contraceptive advice during which the GP can give tailored advice on risk reduction counselling.

MP-148 SEXUALLY TRANSMITTED INFECTIONS (STI) AND CANADIAN MESSAGE-PARLOUR WORKERS: APPLICATION OF SEXUAL NETWORK ANALYSIS TO DETERMINE THE POTENTIAL FOR DISEASE PROPAGATION

V.P. Remple¹, A. Jolly², D.M. Patrick¹, M.W. Tyndal³, C. Johnston⁴

¹ BC Centre for Disease Control, Vancouver, Canada

² Health Canada, Ottawa, Canada

³ BC Centre for Excellence HIV, Vancouver, Canada

⁴ A.S.I.A., Vancouver, Canada

Objectives: To determine structure and characteristics of massage parlour workers' sexual networks, and potential for STI transmission within the networks, and to lower risk populations.

Methods: Interviews were conducted with parlour workers, eliciting sociodemographic, sexual health, sexual behaviour, and egocentric network data from respondents, and proxy data on 5-10 recent sexual contacts.

Results: Interviews were conducted in three parlours with 16 women. All reported using condoms always with clients, and 50% always with non-paying partners. Women reported a median 25 (IQR 20-44) partners per month, and provided proxy network data for a median of 6 (IQR 4.5-7). Data were collected on 109 partners, 102 of whom were paying clients. The three parlours had component sizes of 43, 90, and 134, with densities of 7.5%, 6.5%, and 3.6%, respectively. Median age difference in all sexual dyads was 8yrs (range 0-43yrs), and proportion of same-race dyads was 30% (95%CI 22-39%). Nine clients were identified as 'house regulars' (i.e., sexual contact with all workers), and were highly central to the total network and bridged between sex venues and/or to the general population. Sixty-six percent (95%CI 56-74%) of the womens' partnerships were concurrent, and 54% (95%CI 44-63%) of all clients had a wife or girlfriend. Thirty nine percent (95%CI 30-49%) of all clients bridged between sex venues, and 52% (95%CI 43-61%) of all clients and parlour workers combined bridged to the general population. **Conclusion(s):** The potential for epidemic spread of STI is high both within massage parlour networks and to the lower risk, general population, particularly those for which condom use does not provide adequate protection. Outreach education should focus on condom use with non-paying partners, and reinforcement of 100% condom use with clients, with particular emphasis on 'house regulars'.

MP-149 SEXUAL MIXING PATTERNS AND HETEROSEXUALLY-ACQUIRED HIV INFECTION AMONG AFRICAN AMERICANS IN NORTH CAROLINA

I.A. Doherty, A.A. Adimora, V.J. Schoenbach

University of North Carolina, Chapel Hill, Chapel Hill NC, United States of America

Objectives: Disproportionately high HIV transmission among medium-risk African Americans in the southeastern US may be partly explained by sexual mixing patterns.

Methods: Data on respondents' three most recent sex partners were collected for a case-control study investigating heterosexually-acquired HIV among African Americans (n=432) in North Carolina. We compared mixing patterns across gender and HIV status for: low education, incarceration, exchange sex, non-IDU drug use, and concurrent sex partners. Mixing coefficients (1=assortative, 0=random, -1=dissortative) were computed within strata to assess

potential bridging between higher and lower HIV risk subgroups. **Results:** Generally, cases without the risk factor had more high-risk partners than did controls without the factor. For example, the percentage of non-crack users who had a partner who smoked crack was 34% for cases versus 12% for controls (p-val=0.004). Gender differences were also present: 7% of male controls who neither used drugs nor exchanged sex had a partner who did one of these, whereas 18% of comparable women had such a partner (p=0.05). Sexual mixing was highly assortative with respect to exchange sex (mixing coefficients 0.58-0.70) but largely random for concurrency (0.11-0.19). The most nearly random mixing was observed among female cases (0.06) and female controls (0.08) with respect to incarceration.

Conclusions: The low mixing coefficients for female controls with respect to incarceration and concurrency suggest that women without these risk factors have difficulty avoiding male partners who have been incarcerated or who have a concurrent sex partner, presumably due to African American males' high incarceration rates (26% of controls) and high concurrency rates (53% of controls). Sexual network characteristics that contribute to the spread of HIV among African Americans in the southern US include bridging between lower- and higher-risk groups compounded by concurrency.

MP-150 CONCURRENT SEXUAL PARTNERSHIPS AMONG ADOLESCENTS IN A LATINO COMMUNITY: OCCURRENCE, PATTERNS AND CORRELATES

I.A. Doherty¹, A.M. Minnis², C.L. Auerswald², A.A. Adimora¹, N.S. Padian²

¹ University of North Carolina, Chapel Hill, Chapel Hill NC, United States of America

² Univ. of California, San Francisco, San Francisco CA, United States of America

Objectives: Latino youth in the US are disproportionately affected by STIs, yet knowledge is limited of their sexual networks, particularly concurrent partners.

Methods: We conducted multivariate regression analyses, stratified by gender, of cross-sectional data from youth (ages 15-19) recruited from public venues within San Francisco's, predominantly Latino, Mission District. Within concurrent partnerships, we assessed types of partners, frequency of intercourse, and condom use. Sexual partnerships from the past 6 months were classified as concurrent if they overlapped at least 31 days.

Results: Among 321 sexually active youth, 22% reported concurrency, and males were 2.96 [95%CI: 1.67, 5.25] times more likely to report this behavior than females. Males reported that 33% of these pairs were with two casual partners, in contrast to 12.5% for females (p<0.005). In 40% of the male concurrent pairs, intercourse occurred at least weekly with both partners. In contrast, 34% of the female concurrent pairs involved weekly sex with one partner and, with the other partner, only 1-2 times ever. Consistent condom use occurred in 43% of all concurrent pairs, but less often for females (28%) than males (48%) (p<0.005). Multivariate analysis showed that among males correlates of concurrency included 3rd generation compared to 1st generation youth (OR=4.22 [95%CI: 1.58-11.31]), and being below grade level (OR=1.78 [95%CI: 1.08, 7.12]). Among females, older age (OR=1.47 [95%CI: 1.03, 2.11]), illegal substance use (OR=6.0 [95%CI: 1.39, 25.9]), and not identifying with familism

(OR=4.42 [95%CI: 1.10, 17.8]) were associated with concurrency. Conclusions: The extent of concurrency suggests dense network connections. Males had many ongoing simultaneous partnerships with frequent intercourse, which involved two casual partners. In contrast, among females, concurrency was typically involved a single episode with a casual partner during a steady relationship.

MP-151 PREGNANT WOMEN IN STD CLINICS: AN OPPORTUNITY FOR INTERVENTION

H.L.J. Johnson¹, E.J.E. Erbeling², J.M.Z. Zenilman², K.G. Ghanem²

¹ Johns Hopkins School of Public Health, Baltimore, United States of America

² JHU School of Medicine, Baltimore, United States of America

Objective: Preventing adverse pregnancy outcomes is a primary objective of STD prevention. Pregnant women attending STD clinics may be at high risk for adverse pregnancy and birth outcomes. We sought to more thoroughly characterize adult pregnant patients seeking STD clinic services.

Methods: Matched case-control study of adult pregnant women attending public STD clinics in Baltimore, MD, between 1996 and 2002. Cases (pregnant) were matched to controls (nonpregnant) by year of visit and clinic site. We used Student's T-test, Pearson's chi-squared and logistic regression to compare differences between groups.

Results: Among 31,369 women served from 1996-2002, 5.5% were pregnant. Pregnant women were younger (24.8 yrs vs. 30.3 yrs, $p<0.01$) and more likely to seek care because of symptoms (48.4% vs. 42.1%, $p<0.01$); they were, however, more likely to delay seeking care when symptoms were present (delay > 11days, 48.8% vs. 37.3%, $p<0.01$). Nearly 27% of all women reported both drug and alcohol use. Prevalence of gonorrhoea (5.3% vs. 3.9%, $p=0.05$) and chlamydia (8.3% vs. 5.4%, $p<0.01$) was high but there were no differences between groups after adjustment for age (OR 1.01, 95% CI: 0.72-1.41 and 1.07: 0.80-1.41, respectively). Pregnant women were more likely to be diagnosed with symptomatic herpes (4.4% vs. 1.3%, $p<0.01$) and early stage syphilis (4.3% vs. 1.5%, $p<0.01$), and were more likely to be contacts of partners with syphilis (7.4% vs. 3.6%, $p<0.01$); 17% of all women were diagnosed with multiple infections. STD prevalence was similar for women who knew of pregnancy status at clinic presentation, and those whose pregnancy was diagnosed during the visit.

Conclusion: Public STD clinics may provide services to pregnant women with very high STD morbidity. Understanding the impact of STDs on maternal-infant outcomes in this population is a critical public health issue.

MP-152 FEASIBILITY AND SAMPLE REPRESENTATIVENESS OF A POPULATION CHLAMYDIA TRACHOMATIS PREVALENCE AND SEXUAL BEHAVIOUR POSTAL SURVEY IN MALES AND FEMALES AGED 15-30 IN BRITISH COLUMBIA, CANADA

T.L. Kwindt, V.P. Remple, D. Taylor, J. Barnett, L. Knowles,

D.M. Patrick, R.C. Brunham, M.L. Rekart

UBC Centre for Disease Control, Vancouver, Canada

Objectives: To determine feasibility of and response rates to a cross-sectional survey, and to evaluate the representativeness of the resultant population sample.

Methods: Questionnaires and urine home-collection kits were mailed to 15,493 individuals randomly selected from the provincial medical services registry, stratified by age and sex. Non-respondents were prompted with postcards and telephone follow-up. Comparisons in terms of location of residence, sex, and age were made between eligible and non-eligible (i.e., incorrect locators) invitees, respondents and non-respondents, and respondents and the general population (as per provincial 2001 census statistics). Categorical and continuous variables were analysed using chi-square and Student's t test, respectively.

Results: Of the 9294 (60%) eligible invitees, 1596 (17%) responded. Eligibility was associated with residing in the Lower Mainland (the region of highest population density) (62% vs. 58%, $p<0.01$) and rural areas (16% vs. 14%, $p<0.01$). Fewer respondents than non-respondents resided in the Lower Mainland (59% vs 63%, $p<0.05$) and more were female (51% vs 41%, $p<0.01$). Females had a higher response rate than males overall (12% vs 9% of initial mailout, $p<0.01$), and in each age stratum. The 15-19yr stratum had a higher response rate than the 20-24 and 25-30 strata (14% vs 9% in both, $p<0.01$). There were no significant differences between respondents and the general population in terms of region of residence, age, or sex.

Conclusion(s): Postal STI prevalence and sexual behaviour population surveys in young adults are feasible, but our response rate was low. Despite geographical variation and over-representation by female and younger respondents from the eligible population, the sample may be generally representative of the provincial population as a whole in terms of regional residence, age, and sex. Reliability of public administrative data should be considered when used as a sampling frame.

MP-153 STISS: DEVELOPING A NATIONAL WEB-BASED STI CODING SYSTEM IN SCOTLAND, UK

A.J. Winter¹, C. Thompson², K. McIntyre³, G. Venters³, A. Leigh-Brown³, J. Chalmers³

¹ Sandyford Initiative, Glasgow, United Kingdom

² Dept. GU Medicine, Edinburgh, United Kingdom

³ National Services Scotland, Edinburgh, United Kingdom

Objectives: To improve timeliness, completeness and accuracy of disaggregate coding of STI episodes across Genitourinary Medicine (GUM) Clinics in Scotland. To collect improved denominator data and calculate test uptake and positivity rates.

Methods: Scotland introduced disaggregate coding of STI episodes in GUM clinics in 1995. However by 2002 data collection

was 3 years behind due to failing stand-alone IT systems, delays in processing paper-based returns and lack of prioritization by local NHS trusts. A Scottish Executive-funded STI epidemiology working group recommended adoption of centralized web-based data collection. The STISS (STI Surveillance Scotland) system was developed by Information Services of National Services Scotland (NSS). All salient information relating to a GUM clinic visit can be securely entered on a single browser screen. Data are validated in real time and stored securely at NSS. Context-sensitive help guides non-expert users. All clinics were given NHS-net-enabled computers; diagnostic codes were revised to introduce a unique service code per episode, yielding denominator data. See www.show.scot.nhs.uk/support/sti/ for a demonstration.

Results: Web-based coding went live on 22/04/04. By 30/03/05, 30501 records had been submitted from 23 sites, with 92% of clinics in Scotland participating. New mandatory service codes were complete for every record. Chlamydia positivity rate was 13.5% in women, 12.5% in men. HIV test uptake rate was 43.2% overall, 44.6% in those with acute STI.

Conclusion: We successfully introduced a national secure web-based STI coding system that allows timely reporting of episode-based STI trends, positivity rates and test uptake. Codes can be revised when necessary without site visits to amend local clinical systems. Any health centre with a web connection can contribute data. Our next challenge is to extend this system to non-expert users in primary care and contraceptive services and improve information about STIs diagnosed outside GUM clinics.

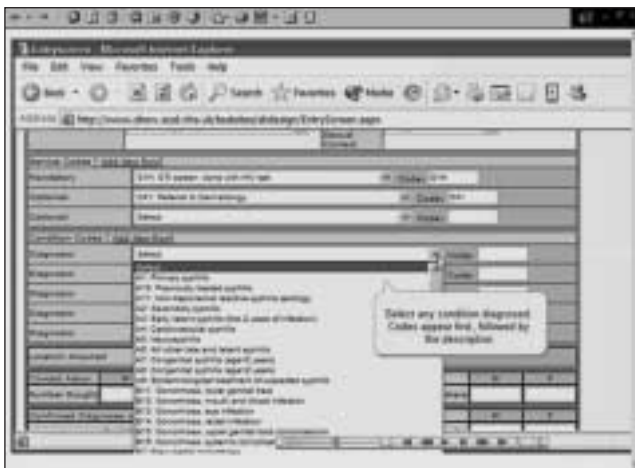


Figure 1: STISS system

MP-154 RISK OF CHLAMYDIAL INFECTION AMONG IMMIGRANT LATINO YOUTH IN SAN FRANCISCO: DOES THE 'HISPANIC PARADOX' APPLY?

A.M. Minnis¹, I. Doherty², R. Otero-Saboga¹, C. Rodas¹, C. Auerswald¹, S. Shiboski¹, J. Klausner³, N.S. Padian¹

¹ University of California, San Francisco, San Francisco, CA, United States of America

² University of North Carolina, Chapel Hill, United States of America

³ San Francisco Dept of Health, San Francisco, United States of America

Objectives: The Hispanic paradox suggests that, despite lower socioeconomic status, immigrant Latino youth in the U.S. may be at reduced risk for STIs compared to their U.S.-born counterparts.

We compared sexual behaviors, chlamydial (CT) infection and pregnancy rates between foreign- and U.S.-born Latino youth in San Francisco.

Methods: We conducted a two-year prospective cohort study with adolescents from a predominantly Latino neighborhood in San Francisco. Interview data were collected using face-to-face and computer-assisted questionnaires. CT was diagnosed with urine-based nucleic acid amplification tests. We used logistic regression to calculate odds ratios adjusted for gender and age.

Results: Of 411 participants, 34.6% were born outside the U.S., primarily in Mexico or Central America. Half of these (52.5%) had lived in the U.S. for ≤ five years. Most (85.6%) reported being sexually active. Incidence of CT and pregnancy (among females) over follow-up was 6.0% and 17.7%, respectively. Foreign-born youth reported more crowded housing (OR=3.2, 95% CI=2.0-5.0); more religious service attendance (OR=2.2, 95% CI=1.3-3.6); and greater family identity (p=0.02). Sexual behavior, however, did not differ between foreign- and U.S.-born youth. Youth in both groups were just as likely to have been sexually active by age 13; to have casual partners; and to have met partners on the street. Yet, foreign-born youth were more likely to have had unprotected vaginal intercourse during the prior six months (OR=2.3, 95% CI=1.1-4.9). CT and pregnancy incidence did not differ. Partner characteristics were the strongest predictors of CT infection (e.g., partner in a gang (OR=4.7, 95% CI=1.5-14.6)).

Conclusions: Immigrant Latino youth in this San Francisco neighborhood practiced sexual risk behaviors and had CT and pregnancy rates that were comparable to U.S.-born Latino youth. These findings weaken the Hispanic paradox as an appropriate characterization of their STI risk.

MP-155 INCREASED CONDOM USE AT SEXUAL DEBUT IN THE GENERAL POPULATION OF SLOVENIA AND ASSOCIATION WITH SUBSEQUENT CONDOM USE

I. Klavs¹, L.C. Rodrigues², K. Wellings², H.A. Weiss², R. Hayes²

¹ Institute of Public Health, Ljubljana, Slovenia

² LSHTM, London, United Kingdom

Objectives: The first Slovenian National Survey of Sexual Lifestyles, Attitudes and Health provided an opportunity to describe the extent of condom use at first heterosexual intercourse (FHI) in the general population of Slovenia, identify associated factors and assess the association with subsequent condom use.

Methods: Data were collected during 1999-2001 from a probability sample of the general population aged 18-49 years. Statistical methods for complex survey data were used to carry out weighted analyses.

Results: Condom use at FHI was reported by 23.6% of men and 21.3% of women. The more recently they experienced FHI, the more likely respondents were to report condom use (71.7% of men; 63.8% of women with FHI during 1995-9). Men with FHI at age 18 or older and those with higher levels of education were more likely to use a condom and those who lost control (because drunk or carried away by feelings) less likely. Men seem to have more control over condom use at FHI than women. Sexually active men and women who used condom at FHI were 11 and 2.5 times more likely to consistently use condoms during the month preceding the interview.

Conclusions: Currently, the majority of Slovenian men and women use protection against HIV, other sexually transmitted infections, and unplanned conception at FHI. The steep increase over time in condom use at FHI suggests that HIV-related condom use promotion has had an impact on preventive behaviors and should be sustained, especially since condom use at FHI predicts subsequent use.

MP-156 MALE SEXUAL IDENTITY AND SEXUAL BEHAVIOR DISCORDANCE AMONG A LARGE, POPULATION-BASED SAMPLE IN NEW YORK CITY

P. Pathela¹, A. Haja², J.A. Schillinger³, S. Blank³, R.L. Sell⁴, F. Mostashari¹

¹ New York City Department of Health, New York, United States of America

² UNC School of Public Health, Chapel Hill, United States of America

³ CDC - NCHSTP / DSTDP, Atlanta, United States of America

⁴ Mailman Schl of Public Health, New York, United States of America

Objectives: Persons reporting sexual identity discrepant from their self-reported sexual behavior may engage in riskier sexual behavior than persons reporting concordant identity and behavior. We describe the prevalence of male sexual identity-behavior groups in New York City (NYC), and associations with behaviors which pose a risk for STD/HIV acquisition/transmission.

Methods: Between March and August 2003, demographic and health-related information was collected from a probability-based sample of NYC adults (n=9802). The phone survey, conducted in several languages, included a standardized question on sexual identity and questions on number and gender of sex partners, HIV testing history, condom use, and STD history. Men's reported sexual identity and sex of sex partner(s) were used to construct concordant and discordant identity-behavior groups; differences in prevalence estimates for variables of interest were calculated.

Results: Of men who have sex with men (MSM) in NYC (13% of all sexually active men), 73% identified as straight (55% of white, 88% of black, and 76% of Hispanic MSM). There were no differences in the distributions of straight and gay-identified MSM according to language of interview, regardless of foreign born status. Compared to gay-identified MSM, straight-identified MSM were significantly more likely to belong to minority racial/ethnic groups, be foreign-born, have lower education and income levels, and be married. Although straight-identified were more likely than gay-identified MSM to report only one male sex partner in the previous year, they were less likely to report condom use during the last sexual encounter.

Conclusions: A surprisingly high proportion of NYC MSM identify as straight, a finding that does not appear to be due to miscomprehension of survey questions. Straight-identified and gay-identified MSM engage in different patterns of sexual behavior. Public health prevention messages should not rely on reported sexual identity, but rather focus on sexual activity that poses risk.

MP-157 ENHANCING EQUITY IN THE PROVISION OF SEXUALLY TRANSMITTED INFECTIONS (STI) SERVICES, THROUGH AN IMPROVED HEALTH MANAGEMENT INFORMATION SYSTEM (HMIS) IN MALINDI AND KILIFI DISTRICTS OF KENYA

V. Saliku¹, S.B. Sohani¹, G. Khosla²

¹ Aga Khan Health Services, Kenya, Mombasa, Kenya

² Aga Khan Foundation, Canada, Ottawa, Canada

Objectives: Typically in Kenya, STI services are underreported. Currently, facilities providing STI services are required to adapt to a pull system of requesting drugs based on STI cases. However, since facilities go for months without reporting, they do not receive drugs and therefore are unable to provide services. In an effort to equitably provide required drugs for STI services by improving dismal reporting rates, new HMIS tools have been introduced in four districts of Coast province of Kenya. The existing HMIS underwent review, revision and automation.

Methods: This paper analyzes the process of: i) Revision of HMIS tools particularly focusing on STI data for planners at district/provisional levels. ii) Training of health staff on the new HMIS. Thereafter, we retrospectively analyzed STI data since 2003 from both public/private health facilities. Secondly, we monitored current use of drug supply process in treatment of STIs.

Results: Presently, revised HMIS allows district health management teams to efficiently monitor service delivery. Particularly data from STI services show: 1) Clients prefer STI treatment in private vs. public facilities. 2) Women tend to seek STI treatment in urban clinics vs. rural. 3) Revised tools in place yield precise indicators and diagnosis, allowing operationalisation of the pull system. 4) Information from revised HMIS is feeding into decision forums at District/Provincial levels, allowing STI cases to be prioritized while effectively supporting the provision of required drugs. Such tools are contributing significantly to ensure that equity forms the basis in resource allocation, support, and supervision necessary for STI interventions.

Conclusions: Information from HMIS at various levels should be used in making evidence-based decisions. There is opportunity for replication of revised HMIS tools nationally, subsequently contributing to establishing the full extent of STI concerns in the country. Revised HMIS is a strategy in enhancing equity in health care.

MP-158 PREVALENCE, SEXUAL BEHAVIOURS AND HEALTH OUTCOMES AMONG WOMEN WHO REPORT SEX WITH WOMEN (WSW): RESULTS OF A NATIONAL PROBABILITY SURVEY

C.H. Mercer¹, A.M. Johnson¹, A.J. Copas¹, K. Wellings², B. Erens³, K.A. Fenton⁴

¹ University College London, London, United Kingdom

² School Hygiene & Trop Medicine, London, United Kingdom

³ Nat. Centre for Soc. Research, London, United Kingdom

⁴ Center for Disease Control, Atlanta, United States of America

Objective: To estimate the prevalence of reporting same-sex sexual experience and partnerships among British women; to identify sociodemographic, behavioural and health-related factors (including reporting STI diagnosis/es) associated with reporting female sexual partner(s) in the past 5 years.

Methods: Stratified probability sample survey of the British general population. Trained interviewers administered a face-to-face interview and computer-assisted self-interview to women aged 16-44 years, resident in Britain in 2000 (n=6399 women).

Results: 9.7% of women reported any sexual experience(s) with women; 4.9% reported female sexual partner(s) with median age on first occasion estimated as 22 years. 2.8% reported 1+ female sexual partner(s) in the past 5 years (median: 1 female partner). 85.7% of these WSW also reported male sexual partner(s) in the past 5 years; median: 4 male partners in comparison to a median of 1 male partner reported by women not reporting female partner(s) in this time-frame. WSW were significantly more likely than other women to report in the past 5 years: STD clinic attendance (25.3% vs. 6.2%, respectively, age-adjusted odds ratio (AOR) 4.81, $p < .0001$), HIV testing (21.6% vs. 8.2%, respectively, AOR 2.99, $p < .0001$), and STI diagnosis/es (14.7% vs. 3.7%, respectively, AOR, 3.91, $p < .0001$). After adjusting for numbers of partners, the magnitude of the AORs reduced but remained statistically significant (2.11, 1.74, 1.95, respectively, all $p < .05$). WSW also reported a significantly higher prevalence of smoking, high alcohol intake and injecting non-prescribed drugs than other women.

Conclusions: Most WSW in this population survey also reported heterosexual partners. The observed increased STI risk among WSW may result from higher-risk heterosexual behaviours. Sexual health promotion for WSW needs to take account of their heterosexual practices and partnerships.

MP-159 PATTERNS OF CONDOM AND HORMONAL CONTRACEPTION USE WITHIN AFRICAN AMERICAN ADOLESCENTS IN BALTIMORE, MD

P.A. Matson¹, J.M. Ellen²

¹ Johns Hopkins School of Public Health, Baltimore, MD, United States of America

² JHU School of Medicine, Baltimore, MD, United States of America

Objectives: Cross-sectional analyses have found that condom use is more frequent among younger compared to older adolescents while hormonal contraception is more frequently used among older adolescents. However, it cannot be inferred from these study designs whether these relationships hold within individuals as they age through adolescence. Methods: African American girls aged 14 to 19 years were interviewed at baseline and every 6 months for 24 months. Girls reported on the type of contraception and/or HIV/STD protection method used at last sex with their most recent partner. Both condom use and hormonal contraceptive use were reported as use or no use at last sex. Hormone use was defined as using either oral contraceptive pills, Depo-provera, or Norplant at last sex. McNemar's Test was used to compare correlated proportions. Results: The mean age was 17.6 years. Results indicated that there was no difference in the proportion of condom use or hormonal contraception between the baseline and 24 month follow-up visits among the individuals in this study. Next, we stratified the analyses on the basis of baseline age (< 17 years vs. ≥ 17 years). The change in proportion using hormonal contraception over 24 months was significant in the over 17 age group; 24.2% reported using hormonal contraception at baseline as compared to 16.4% at 24 months. No significant difference in condom use over time was

found in either age group. Conclusions: These results suggest that condom use and hormonal contraception patterns remain the same as adolescents age over two years of follow-up. Further within-subject analyses are needed to determine whether there are different patterns of use for older as compared to younger adolescents.

MP-160 MEASURING SEX PARTNER CONCURRENCY: IT'S WHAT'S MISSING THAT COUNTS

S.J. Nelson¹, P.M. Gorbach², S.O. Aral³, PA Totten¹, LE Manhart¹

¹ University of Washington, Seattle, United States of America

² UCLA, Los Angeles, United States of America

³ CDC, Atlanta, United States of America

Objective: Sex partner concurrency may facilitate spread of sexually transmitted diseases (STD), yet measurement is inconsistent. We compare two definitions of concurrency and correlates associated with each.

Methods: Young adults aged 18-26 attending a Seattle, Washington public STD clinic (n=589) enrolled in the Young Adults, Partnerships, and STD study between 2001-2004. Concurrency was defined as: a) ?1 other sexual contacts during the last sexual relationship (direct question), and b) overlapping start and end dates of the last and previous two sexual relationships.

Results: By direct questioning, the majority (52.6%) reported concurrency, with 10.2% non-response. Using overlapping dates, 46.6% were defined as concurrent, but had 20.2% non-response. With direct questioning, adjusting for number of sexual partners the prior year, history of STD (OR=1.7; 95%CI 1.12-2.54), being African-American (OR=1.6 [1.01-2.68]), ecstasy use (OR=1.6 [1.03-2.42]), and age at sexual debut (OR=0.9 per year [0.84-0.99]) were associated with concurrency. In contrast, using overlapping dates, sex the same day as meeting (OR=2.1 [1.38-3.18]), Mycoplasma genitalium infection (OR=2.1 [1.12-3.80]), and ecstasy (OR=1.6 [1.05-2.48]) were associated with concurrency, adjusting for number of partners. Participants not answering the direct question were less likely to use marijuana ($p=0.02$) but more often African-American ($p < 0.01$), younger at sexual debut ($p=0.01$), had history of STD (prior year, $p < 0.01$), and less than high school education ($p < 0.01$). The overlapping dates non-response pattern was similar but included anal sex (less likely, $p=0.01$), while history of STD was not associated with missing data.

Conclusions: Concurrency was high in this population, measured by either definition. Each method yielded different response rates and dissimilar correlates. For both measures, persons missing concurrency data had different risk profiles than those who responded. Direct questioning provided more complete data, but both measures of concurrency exhibited non-response bias.

**SESSION: MP - D18 PREVENTION STRATEGIES-
OTHER TOPICS****MP-161 THE EXPERIENCE OF A NETWORK FOR ACTION IN STI
IN LATIN AMERICA**

F. Moherdau

Ministry of Health - Brazil, Brasilia, Brazil

Background: STI continue to be a major cause of acute illness, infertility, long term disability and death, with severe medical and psychological consequences for millions of people. Each year 38 million new cases occur in the region.

Methods: In 1998 the WHO conducted qualitative research on the situation of the countries with regard to the activities in the STI control; after that, some activities were recommended to the governments. As, apparently, there are too much tasks to be implemented they are just beginning to understand the role of STI in the HIV epidemic. They were not capable to do it alone.

Results: the establishment of an STI technical network was proposed and is working with the following objectives: to strengthen the advocacy process, the management of STI programs, the information and surveillance systems on STI, the education and development of human resources in STI surveillance, prevention, care and programs management; to develop and to strengthen a model of coordination and cooperation in each country, based in the experience of horizontal cooperation and the multilateral collaboration; a process of integration among the programs of HIV/AIDS, sexual and reproductive health and STI; to support technically the STI programs in the region, international organizations, cooperation agencies, NGO and other institutions that need information and specific knowledge in STI. Are natural components of the STI Net: the National STI/AIDS Programs directors, experts in STI, the Cooperation agencies, the NGO that work in STI, scientific associations and regional professionals, representatives of groups interested in the work coordinated.

Conclusions: this kind of network is important to support the governments and others institutions of any region of the world in order to achieve the full integration of HIV/AIDS and STI Programs, to strengthen or to develop the STI surveillance systems, to improve the STI case management.

**MP-162 MEDIA, PUBLIC HEALTH AND LEGAL RESPONSES TO
WOMEN AND GIRLS TRAFFICKED INTO THE SEX INDUSTRY
IN THE USA**

J.A. Lipshutz, M.R. Ross, S.O. Aral

Division of STD Prevention, Atlanta, GA, United States of America

Objective: Laws, public health and moral values have led multiple parties to construct responses to the plight of women/girls trafficked into the sex industry with the goal of bettering their lives. However, approaches to this common goal are often in conflict. We aim to define the contextual challenges of STD prevention in the sex industry in the US.

Methods: We examined the intersection of: media coverage in nationally prominent and local newspapers distributed through a listserve on trafficking and sexual exploitation during 2004; recent US-based public health intervention literature addressing persons in the sex industry; and federal statutes related to trafficking in persons.

Results: Of the 244 articles identified, 115 (47%) focused on the plight of women/girls trafficked into sex work or business operations that recruited them. Fifty-six (23%) focused on laws, closures of operations (eg, sex rings, brothels, massage parlors) or the controversy between STD/HIV prevention and helping women/girls out of sex work altogether. Twenty-three percent were about pornography and its negative impact on women in this industry while 7% discussed sex tourism engaged in by US citizens. Laws focus on persecuting the perpetrators and helping women out of sex work though critics indicate untenable conditions for women choosing to leave. The dearth of public health literature on the US was striking revealing only descriptive data. Google searches found limited community efforts that provide health care for these women, including STD/HIV prevention education.

Conclusions: Tragedies of women/girls trafficked into the sex industry have been widely publicized, in sync with intentions of federally enacted laws, but little attention has been paid to disease prevention. This population needs help along the continuum of their interaction with the sex industry, whether for disease prevention or to get out of sex work altogether.

**MP-163 DOES THE REPEAL OF PROSTITUTION LAWS OPEN
THE FLOODGATES?**B. Donovan¹, C. Harcourt², S. Egger³, C.E. Rissel¹, A.E. Grulich³,
R.O. de Visser⁴, A.M.A. Smith⁵, J. Richters³¹ University of Sydney, Sydney, Australia² Sydney Sexual Health Centre, Sydney, Australia³ University of New South Wales, Sydney, Australia⁴ University of Sussex, Brighton, United Kingdom⁵ La Trobe University, Melbourne, Australia

Objectives: Politicians often express fear that the removal of laws against commercial sex will increase its prevalence - the 'open the floodgates' analogy. Yet laws against commercial sex may hamper health promotion for sex workers. We assessed if the different legal responses in Australia's 8 jurisdictions (states or territories) correlated with the purchase of sex.

Methods: The Australian Study of Health and Relationships included a national representative sample of men over 16 and under 60 years of age (Rissel CE et al. Aust NZ J Public Health 2003; 27: 191). Proportions of men that reported that they had paid for sex ever or in the last 12 months were correlated with the local prostitution laws.

Results: A response rate of 69% yielded 10,173 male respondents, 15.6% of whom overall reported that they had ever paid for sex, though only 1.9% did so in the last 12 months. Men living in the decriminalised jurisdictions of New South Wales (NSW - 17.8%) and the Australian Capital Territory (ACT - 10.7%) and the regulated jurisdictions of Victoria (VIC - 14.3%) and Queensland (QLD - 15.5%) had mid to low proportions who reported paying for sex (Figure).

The 4 jurisdictions where commercial sex is legally prohibited ranged from the lowest rate in South Australia (SA - 7.0%: OR 0.35; 95%CI 0.21-0.57 compared to NSW) to the highest in the Northern Territory (NT - 27%; OR 1.73; 95%CI 1.73-2.77). Notably, the police in SA refuse to enforce the prostitution laws while the police in the NT and Western Australia (WA) actively police them.

Conclusion: The Australian experience suggests that criminal laws prohibiting commercial sex do not suppress its incidence.

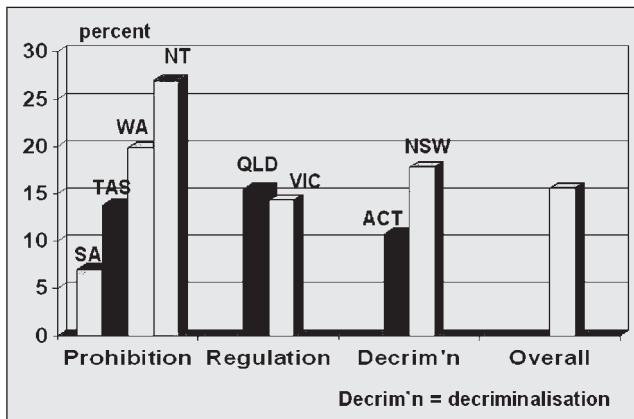


Figure 1: Proportion of men who paid for sex, by state law

MP-164 PREVENTION OF SEXUALLY TRANSMITTED INFECTIONS (STI) IN GENERAL PRACTICE: EXPERIENCES FROM RURAL AND URBAN ORISSA, INDIA

Ms Pati

General Practitioner, Orissa, India

Sexually transmitted infections (STIs), are a major public health problem affecting the Indian population and contributes to considerable burden of ill health and chronic morbidity. In addition, STIs increase the risk of transmission of HIV. As majority of patients in India consult a General Practitioner (GP) for their health problems, GPs are in a strategic position to have a significant impact on STI transmission by diagnosing and treating both asymptomatic and symptomatic disease. It is expected that all GPs will undertake certain actions when they are consulted by a patient with symptoms of an STI or who is vulnerable. This expectation is based on the premise that all GPs share the same knowledge of STI risk factors and symptoms. It assumes that they will have no difficulty in eliciting such information from the patient, that the patient will comply with STI testing and treatment and that the patient will return for follow-up. However, considering the constraints of resources, the sensitive nature of sexual health, and the stigma associated with STIs, there are many barriers to achieving such an outcome in the developing world. The present study is an attempt to examine the ideal practice and actual practice in the prevention and treatment of STIs and highlight some of the difficulties experienced by GPs in the area of STI control in Rural and Urban Orissa, India. A number of discrepancies are identified, and some appropriate recommendations for facilitating STI control in general practice have been suggested. Moreover, to ensure that the results of the study were more practicable, opinions on the recommendations were sought from GPs working in a variety of practice settings. Their remarks were used to modify the recommendation so as to make a practical and effective contribution to STI control in India.

MP-165 DISCREPANCY BETWEEN SELF-REPORTED CLINICAL PRACTICE AND MYSTERY PATIENT ASSESSMENTS IN THE EVALUATION OF STI SYNDROMIC CASE MANAGEMENT BY MEDICAL PRACTITIONERS IN KARNATAKA, INDIA

G. Washington¹, T. Rajarethnam², B.M. Ramesh³, S. Moses³, J.F. Blanchard³

¹ India-Canada Collaborative HIV/AIDS Project, Bangalore, India

² Population Research Centre, Dharwad, India

³ University of Manitoba, Winnipeg, India

Objective: To assess the appropriateness of primary care management of patients with STI syndromes.

Methods: The study was conducted in Karnataka state in South India as a baseline assessment for the establishment of a Regional Resource Training Centres system for training primary health care practitioners in STI/HIV care. In the first phase of sampling, 35 of the 175 taluks (sub-district administrative units) in the state were selected by probability proportionate to population size. Lists of all allopathic practitioners were compiled from the government, local Indian Medical Associations and the telephone directory. All practitioners who reported seeing at least 5 STI patients in the previous month were interviewed using a semi-structured questionnaire, to assess knowledge and practice in relation to STI management. To assess the validity of the responses to structured interviews, a mystery patient approach was concurrently used. The mystery patient had a standard history of urethral discharge syndrome. The supervisor of the team, using a structured checklist, conducted an exit interview of the mystery patient.

Results: 3376 medical practitioners were listed and 2846 (84%) were personally contacted by the field investigators. 814 of the 818 who reported seeing five or more STI/HIV/AIDS patients in the last month, were interviewed. 462 practitioners were presented with mystery patients. 70% of practitioners reported that they perform a genital examination of patients with STI, whereas only about a quarter (24.6%) of them examined the mystery patient. 22% of the practitioners reported practice of syndromic case management. In the prescription audit of the mystery patient less than 1% prescribed accordingly. Advice on condom use and partner treatment was given much less frequently than actually reported by practitioners. Conclusion: Training programs influence desirable responses in interviews, so the practice of practitioners is more accurately assessed using a mystery patient approach.

MP-166 THE MEDIA'S COVERAGE OF YOUTH AND SEXUALLY TRANSMITTED DISEASES: A FRAMING ANALYSIS

J.R. Cates

Univ. of North Carolina at Chapel Hill, Chapel Hill, NC, United States of America

Objectives: To describe and analyze print news media coverage before and after the release of a major report on youth and sexually transmitted diseases (STDs) in February, 2004. To compare news media coverage and news releases from public health advocacy organizations promoting the report.

Methods: An analysis was conducted of (1) 301 newspaper articles for a six month period before and six months after the release and (2) four media releases from public health advocacy organizations. The newspaper articles were collected from LexisNexis archives

of major newspapers and BurrellesLuce clipping service with search terms, 'sexually transmitted disease,' 'youth' or 'adolescents.' The articles and releases were coded to identify how the issue was 'framed' (categorized) within the context of a news story. Each dominant frame identified key aspects of the issue: (1) the problem, (2) source of the problem, (3) moral judgment about the problem, and (4) remedy.

Results: Five dominant frames were identified: lack of sex education (30.5%), high risk behavior (27.9%), access to STD services (15%), lack of communication between parents and children, youth and service providers (14%), and benefits of abstinence (12.6%). The media releases from public health advocacy organizations focused primarily on sex education and communication. The comparison of newspapers before and after release of the report showed an increase in the lack of sex education frame, especially in the short term. Other important research on youth and STDs (e.g. relationship between virginity pledges and STD acquisition) released to the media during this period could also have influenced the frame.

Conclusions: This analysis suggests that frames used by the news media on youth and STDs are multi-faceted and responsive to the release of new information. Advocates for STD awareness need to understand these framing contexts to optimize coverage of the issue.

MP-167 CHALLENGES AND SUCCESSES OF A CERVICAL CANCER SCREENING PROGRAMME WITH PUBLIC, MUNICIPAL AND NON-PROFIT MAKING CLINICS IN KENYA

E. Yard¹, S.M.F. Luchters¹, H. De Vuyst¹, E. Kirumira², A. Karani¹, K. Mandaliya³, M. Temmerman⁴

- ¹ ICRH, Mombasa, Kenya
- ² Makerere University, Kampala, Uganda
- ³ CPGH, Mombasa, Kenya
- ⁴ University of Ghent, Ghent, Belgium

Objective: The Mombasa Cervical Cancer Screening Programme (MCCSP) was implemented in November 2001 to integrate prevention and treatment services in existing health facilities in Mombasa District, Kenya. Conclusions are drawn from the final evaluation as this European Union funded project is phasing out.

Methods : MCCSP has established cervical cancer screening services in 9 peripheral health centers and integrated colposcopy and treatment facilities in the provincial hospital. A qualitative survey gathered information on the stakeholders' perceptions of the achievements and difficulties faced by the project with regards to external conditions and institutional setting. Views were collected through focus group discussions with target population and interviews with health personnel, outreach workers and local leaders.

Results: The data is currently under review and interpretation. MCCSP has recruited 4,381 women for screening. Early findings clearly outline that the project has reached its initial quantitative target and received positive response from the target population as well as acceptability by health care staff. The active sensitization carried out by community health workers has changed beliefs about cervical cancer and encouraged a prevention attitude. However, permanency of screening and colposcopy services as well as motivation of health staff and outreach workers stood as recurrent issues throughout the intervention.

Conclusion: The cervical cancer screening programme has made

screening and treatment services available and affordable to the women of Mombasa District. Strengthening of the health facilities and other involved institutions with regards to human resources and management would be needed for improved uptake and long-term sustainability.

MP-168 EXPERIENCE OF STI MANAGEMENT IN A COMMUNITY HEALTH CLINIC AMONG FEMALE SEX WORKERS IN MYSORE, INDIA

S.R.P. Reza-Paul¹, S. Modak², J.F. dr Blanchard³

- ¹ KHPT/Univeristy of Manitoba, Bangalore, India
- ² KarnatkaHealth Promotion Trust, Bangalore, India
- ³ University of Manitoba, Winnipeg, Canada

Objective: This paper documents the experience of managing STIs among street based female sex workers (FSWs) in Mysore, India. The presentation of sex work and mobility of FSWs present a challenge for an STI/HIV reduction program.

Methods: The Mysore program was initiated in January 2004 and primarily focuses on community mobilization as the main strategy to promote risk reduction. A social network based outreach has been developed with influential FSWs who are central to social networks being identified, recruited and trained to conduct health education, identification of STI and accompanying FSWs to the community clinic, ensuring treatment and follow-up promoting regular health check-ups.

Results: To date, a total of 1260 FSWs have been enumerated and 904 have been registered with the project (till February, 2005). 789 FSWs received 1st dose of presumptive treatment for cervicitis of which 175 have received 2nd dose. 638 clinical STI episodes have been treated among 389 FSWs. Of these STIs, 195 (31%) were diagnosed syndromically based only on symptoms and external examination (i.e. without speculum examination). Clinically, 21% of STI syndromes were a combination of cervicitis and vaginitis, 8% cervicitis alone, 23% vaginitis alone, 13% PID and 4% (26) GUD. Of these GUD, 14 were herpetic and 12 were non-herpetic. 10% women came for follow-up within 7 days of seeking treatment, whereas almost 85% came for follow-up within 21 days. 98% were 'cured' based on resolution of symptoms and clinical signs. Of the 904 registered, almost 65% are coming regularly for quarterly health check-ups

Conclusions: Community involvement with a proper follow-up system linking the clinic and the outreach as well as special clinical service delivery for FSWs contributes to increased identification and follow-up for STI care. This strategy can be used for improved health care seeking behavior of the FSWs.

Distribution of STI Cases					
WDPV	Cervicitis	Vaginitis	Cervicitis & Vaginitis	GUD	PID
195	51	146	137	26	83

Figure 1: Distribution of STI Cases

Category	Estimation	Contacted	Registered	PMT	STI	STI Episodes
Female Sex Workers	1280	930	904	789	389	638

Figure 1: FSWs reached, registered and treated for STI

MP-169 SCREENING FOR STIS AMONG WOMEN IN A HIGH RISK NEIGHBOURHOOD

L.A. Rusch¹, J. Shoveller¹, T. Ishida², K. Stancer³, S. Burgess¹, D. Patrick¹, M. Tyndall¹

¹ University of British Columbia, Vancouver, Canada

² BC Centre for Excellence HIV, Vancouver, Canada

³ Vancouver Coastal Health, Vancouver, Canada

Objective: Assess usefulness of STI screening among women attending a weekly clinic-based program in a high-risk neighbourhood.

Methods: Women attending a weekly 'Women's Night' (WN) at a community clinic were asked to participate in a survey about sexual health, including the option of submitting a urine sample for chlamydia testing and gonorrhoea screening. The survey covered demographics, outreach, risk behaviours and sexual health care. Samples were tested by the BC CDC provincial laboratory using nucleic acid amplification techniques (NAAT) as per standard protocols. Consent was sought to link participants with the provincial laboratory, providing information on previous syphilis testing.

Results: The majority of the 126 attendees were White (52.4%), Aboriginal or Metis (39.7%). The median age was 42 (IQR: 36 – 49). Approximately 40% were involved in commercial sex work (CSW) and 30% were former CSW. CSW were involved in sex trade for a median of 10 years, and 80% reported always using condoms with clients. Ninety-two (73%) of the women submitted to STI testing. There was no gonorrhoea, and two positive chlamydia tests (2.2%). Due to high levels of syphilis in this area, syphilis testing was looked at for comparison. Over the past 5 years, 37 (29%) of the women had tested for syphilis, with no positives.

Conclusion: Although WN is carried out in a high-risk neighbourhood and is attended by a range of women, there was not a high rate of STIs. This may be attributed to timely access to care through clinics and outreach. The lack of syphilis cases may reflect the demographics of the CSW population accessing this program. Outreach screening may better reach the high-risk populations not accessing health programs.

SESSION: MP - E18 BEHAVIORAL SCIENCE- OTHER TOPICS

MP-170 ADOLESCENT GIRLS' PERCEPTIONS OF THE IMPACT OF A MICROBICIDE SURROGATE ON THE SEXUAL EXPERIENCE

S.L. Rosenthal, E.A. Zubowicz, M.M. Perfect, B.A. Auslander, L.R. Stanberry

University of Texas Medical Branch, Galveston, United States of America

Objectives: Given that a barrier to condom use is perceived interference with sexual pleasure, adolescents' perceptions of microbicide surrogates on sexual experience were examined.

Methods: Girls, ages 14-21 years, were followed for 3 months in an ongoing study and asked to use Replens or Lubrin (surrogates) when they had intercourse. Girls were asked after use about the impact on sexual pleasure and given opportunities to describe their experiences with the product. Qualitative data were coded thematically.

Results: Data regarding experience with the product are available for 92 girls. They had a mean age of 18.6 years and were 30% Caucasian, 35% African-American, and 34% Hispanic. Most (66%) reported the product increased pleasure for them at least once; 5% reported that it decreased pleasure at least once; and 30% always reported use made 'no difference.' Most (68%) also reported the product increased pleasure for their partner at least once; 3% said it decreased pleasure for their partner at least once; and 32% always reported use made 'no difference.' Girls who ever reported increased pleasure did not differ by age, race/ethnicity, or the length of time sexually experienced from those who never reported increased pleasure. Qualitative data analysis indicated increased pleasure probably was associated with enhanced vaginal lubrication. Negative physical experiences included 'uncomfortable,' 'messy,' too much lubrication, leakage, and 'air trapping' in the vagina from the applicator. Several reduced product quantity to address over-lubrication. Girls reported partners' concerns about the product's safety for the penis.

Conclusions: Microbicides will offer some unique positive and negative impacts on the sexual experience for girls and their partners. Highlighting the positive and providing ways to manage the negative without influencing efficacy may enhance microbicide use.

MP-171 METHODOLOGIES TO IMPROVE RECRUITMENT AND RETENTION OF YOUNG ADULTS FOR AN ONLINE STD PREVENTION INTERVENTION

S. Bull¹, M. McFarlane², S. Watson¹, S. Pibbs¹, K. Anderson³, K. Rietmeijer⁴

¹ University of Colorado, Aurora, United States of America

² Centers for Disease Control, Atlanta, United States of America

³ Planned Parenthood, Denver, CO, United States of America

⁴ Denver Health, Denver, CO, United States of America

Objectives: Despite proliferation of STD Prevention interventions online, we don't know if they work. Online STD prevention efficacy studies have been hampered by low retention rates (between 23% and 48%), making interpretation of data challenging. In this study we test strategies to increase retention for participants enrolled in an online STD prevention intervention.

Methods: Participants are enrolled in clinic settings to participate in a randomized controlled trial online. Following a risk assessment and exposure to the Internet-based intervention or control material, participants are asked to return to the site for follow-up at one and three months. Initial retention efforts included offering incentive, and using letters, e-mail, and telephone calls to communicate with participants. To increase retention we began communicating with participants using text messaging (month five) and added a bonus incentive for persons who return within 48 hours of eligibility (month seven).

Results: A total of 516 persons have been enrolled over the past 10 months. In the first months of enrollment, return rates averaged 36% and 35% for one and three-month follow-up visits. Since implementing more rigorous follow-up protocols, follow up rates for months 5-7 averaged 42% and 38% for one and three-month follow-up visits. Since implementing the bonus incentive, we have seen one-month follow up rates increase to rates as high as 79% and three-month follow up rates to increase to rates as high as 57%. **Conclusions:** To determine if STD prevention interventions online have efficacy, we must have adequate follow-up. In this study, making contacts through multiple media (i.e. phone, text messaging, letters, and e-mail), offering incentives with a bonus for returning to the website 'on time' have increased retention rates and will allow for adequate evaluation of study efficacy.

MP-172 HETEROSEXUALLY IDENTIFIED, SOCIALLY MARGINALIZED MEN WHO REPORT RECENT SEX WITH MEN IN PERU

K.A.K. Konda¹, P. Fernandez², J.D. Klausner³, A.G. Lescano², S.R. Leon², C.F. Caceres², T.J. Coates⁴

¹ University of California, Los Angeles, Los Angeles, United States of America

² University Cayetano Heredia, Lima, Peru

³ San Francisco Dept. of Public Health, San Francisco, United States of America

⁴ University of California, Los Angeles, United States of America

Objectives: To describe the sexual risk behavior of heterosexually-identified, socially marginalized men who report recent male sex partners in urban Peru

Methods: During 2001-2002, a random community-based sample of heterosexually-identified, socially marginalized men was administered an epidemiologic survey to determine their sexual risk behavior and condom use with their last five partners in the past six months. We then determined frequencies and correlates of male-male sexual activity.

Results: In the sample of 924 heterosexually-identified, socially marginalized men, 131 (14.2%) reported at least one male partner among their last five partners. Of these, 113 (86.3%) reported both male and female partners while 18 (13.7%) reported having only male partners in the past six months. Among those with bisexual behavior their female partners, 84.2% of sexual acts were unprotected while with male partners 57.0% of sexual acts were unprotected, RR 1.48 (95% CI, 1.31 – 1.68). In multivariate analysis, same-sex behavior was associated with not having a primary partner, not having stable work, having unprotected sex with a non-primary partner in the past 3 months, increased numbers of partners in the past six months,

reporting an anal-genital ulcer in the past six months, the use of drugs and/or alcohol prior to sex, and exchanging sex for clothes, alcohol, or money.

Conclusions: Our sample of socially-marginalized men in urban Peru showed a high rate of recent bisexual behavior given that past studies in Peru report lifetime male-male sexual behavior in 10% of the male population. Additionally, condom use with both male and female partners was not consistent. Therefore, socially marginalized urban men have substantial potential to act as a bridging population between other MSM and their female partners, warranting focused intervention strategies.

MP-173 RISKY SEXUAL BEHAVIOR AND ATTACHMENT STYLE

M. Hogben, N.C. Liddon, E. Koumans

Centers for Disease Control & Prevention, Atlanta, United States of America

Objectives: Attachment style is a construct governing relationship quality between two people. Attachment develops from infancy and derives from views of the self (esteem) and of others (trust). Those with positive views of themselves and others are categorized as secure; those with positive views of themselves, but not others, are dismissing; those with negative views of themselves but high trust are preoccupied; those with negative views of themselves and others are fearful. We examined the correlations between attachment styles and risky sexual behaviors.

Methods: Participants were recruited at an adolescent clinic at a southeastern US public pediatric hospital. Non-pregnant, HIV-negative, sexually active females were eligible if a pelvic examination was clinically indicated. 161 female participants (M = 16.2 years, 97% African American) reported number of sex partners in the previous 90 days and vaginal sex (with and without condoms) with those partners. Participants also responded to four 10-item attachment style measures with 5-point response scales.

Results: Participants reported mean (SD) scores on attachment subscales: for secure, 36.7 (5.1); dismissing, 34.7 (5.1); preoccupied, 27.6 (6.5); and fearful, 27.1 (6.5). Both preoccupied and fearful attachment styles were negatively correlated with proportion of vaginal sex protected by condoms, $r = -.18$ and $-.17$, $p < .05$. These styles were also correlated with higher numbers of sex partners, $r = .17$ and $.16$, $p < .05$. Regarding classification, 52% scored highest on secure attachment, followed by dismissing, 32%; fearful, 5%; and preoccupied, 3% (8% tied scores). A median rank test of condom use proportion revealed 55% of securely attached participants above the median proportion, versus 38% of others, $p = .06$.

Conclusions: Higher levels of insecure attachment styles that include low self-esteem are correlated with riskier sexual behaviors.

MP-174 COMPUTER-ASSISTED SELF-INTERVIEWING (CASI) VERSUS FACE-TO-FACE (FTF) INTERVIEWING FOR SEXUAL HISTORY TAKING

R.L. Tideman¹, C.K. Fairley¹, M.K. Pitts²

¹ Melbourne Sexual Health Centre, Melbourne, Australia

² Australian Research Centre in, Melbourne, Australia

Objective: Computer-assisted self-interviewing (CASI) may be useful in encouraging clients to report sensitive sexual behaviour and lifestyle information in the sexual health clinic. To see if there are

differences in client responses depending on the method of data collection used we are conducting a study at Melbourne Sexual Health Centre (MSHC) to compare a client computer-assisted self-interview (CASI) and a Face to-Face (FTF) interview for sexual history taking.

Methods: Previously we developed a core sexual history from the results of a survey of the practice of sexual health specialists in Australia and New Zealand regarding the questions they consider should be asked all or nearly all the time when taking a sexual history from a new client. The core history questions will be asked by both CASI and FTF interviewing and compared to identify which questions may be sensitive. A random control trial (RCT) randomised participants into either the 'practitioner arm' (FTF) or the 'computer arm' (CASI) in a 2FTF:1CASI ratio.

Results: To date 207 of the 750 clients required to detect statistically significant differences between the two methodologies have been recruited. Initial results available so far show that all 71 participants who have completed the CASI answered all the questions presented to them. The most sensitive question concerned males engaging in anal intercourse. Ninety percent (90.1%) of participants found the use of the computer 'very easy' or 'easy' to use and 87.3% were 'very comfortable' or 'comfortable' entering their sensitive details into the CASI.

Conclusions: We are encouraged by the results so far and expect to be able to present the results of the completed study at the conference.

MP-175 NON-GAY-IDENTIFIED MEN WHO HAVE SEX WITH MEN ON THE INTERNET: PARTNERS AND BEHAVIORS

M. McFarlane¹, L. Lloyd², S. Bull³, R. Kachur¹, C. Rietmeijer²

¹ U.S. Centers for Disease Control, Atlanta, GA, United States of America

² Denver Public Health Department, Denver, CO, United States of America

³ University of Colorado Health, Denver, CO, United States of America

Objectives To compare Internet- and non-Internet-based sexual behaviors between non-gay-identified and gay-identified men who have sex with men (GI-MSM and NGI-MSM).

Methods 158 men (80% White; 30% NGI-MSM; 87% employed; median 35 years) were recruited from three venues (Internet 38%; bathhouses 25%; and STD clinic 37%) based in Denver, Colorado. Men were asked about their Internet- and non-Internet-based sexual behavior.

Results GI-MSM had significantly more non-internet partners than NGI-MSM. About one quarter of NGI-MSM had both male and female Internet partners (23%). More NGI-MSM reported that their 'offline' partners were all female (18%) or both male and female (45%). Of those NGI-MSM with main partners, 62% stated that the main partner was female. Of those NGI-MSM reporting non-main partners, 53% had non-main partners of both genders. GI-MSM reported no female main or non-main partners. The groups did not differ on condom use at last sex with either main or non-main partners, or on number of Internet partners in the past 12 months or lifetime. GI-MSM reported faster partner turnover, more past STD, more HIV infection and more HIV testing than NGI-MSM.

Conclusions The Internet is an excellent means of recruiting and collecting data from NGI- and GI-MSM. For NGI-MSM, the Internet appears to be a venue for finding male sex partners, though their

non-Internet partners may be female. Because GI-MSM and NGI-MSM exhibit similar patterns of risk behavior, the key difference appears to be the female partnerships of NGI-MSM. In addition, the difference in HIV testing history suggests that NGI-MSM may not be receiving messages about HIV testing, or may interpret those messages as being intended for an audience with which they do not identify.

MP-176 GENITAL CLEANSING BEHAVIORS AND STI RISK AMONG ADOLESCENT WOMEN

M.A. Ott, S. Ofner, J.D. Fortenberry

Indiana University School of Medicine, Indianapolis, IN, United States of America

Objective: Describe genital cleansing behaviors and STI risk and protective factors among adolescent women at high STI risk.

Methods: 173 women (ages 14 – 17 years) were enrolled from primary care clinics in an area with high STI prevalence. We collected detailed information on genital hygiene and STI risk over the previous 3 months by personal interviews. Items included the use of douches, feminine sprays, feminine wipes, and topical yeast medications, as well as STI risk and protective factors (previous STI, condom use, lifetime partners, and age at first sex). Data from each subject's most recent interview were analyzed using chi-square and t-tests.

Results: 87/173 (50%) women used any genital cleansing products (douche, spray, or wipe), with 41/173 (24%) douching, 48/173 (28%) spraying, and 51/173 (29%) wiping their genitals in the previous 3 months. We observed significant overlap among these behaviors, with subjects who douche more likely to spray ($p < .01$) or wipe ($p = .02$), and subjects who spray more likely to wipe ($p < .001$). We found associations between genital cleansing behaviors and STI risk and protective factors. Subjects who douche were more likely to have had a previous STI ($p = .02$) and to use a condom ($p = .06$). Subjects who sprayed were also more likely to use a condom ($p = .02$). Subjects who used a yeast cream reported more lifetime partners ($p = .002$) and less condom use ($p = .001$).

Conclusions: High risk adolescent females frequently use genital cleansing products. Clinicians should inquire about use as they may mimic or mask signs of STI. The adolescents using cleansing products also had higher rates of condom use, demonstrating motivation for self care and STI protection. Genital cleansing and STI protection may be important considerations for development of STI prevention products such as vaginal microbicides.

MP-177 FACTORS ASSOCIATED WITH GENITAL PAIN AMONG SEXUALLY ACTIVE ADOLESCENT WOMEN

D.P. Orr, M. Temkit, B.P. Katz, J.D. Fortenberry

Indiana University School of Medicine, Indianapolis, United States of America

Objective: to determine the frequency of and factors associated with genital pain among adolescent women.

Methods: 206 sexually active adolescent women (ages 14 – 18) were recruited from primary care adolescent clinics. Data collected in quarterly visits included genital pain (pain with tampon use, genital touch, coitus and gynecologic examination), sexual anxiety, sexual

and general self-esteem, depression, frequency of coitus and condom use, and history of candida vaginitis and sexual coercion. Data analysis was conducted by multivariable logistic regression (using SAS Proc NL MIXED), with a random subject intercept to control for multiple within-person observations.

Results: Pain during and following coitus was reported by 39% 30% of the subjects respectively. In multivariate analysis women reporting genital pain reported greater sexual anxiety ($\beta = 0.14$; $p = .04$ and tended to have initiated sexual intercourse at an earlier age ($\beta = 0.178$; $p = .06$). There was no association with frequency of coitus, condom use, general and sexual self-esteem, depression, sexual coercion, current age or history of yeast infection.

Conclusion: Genital pain is common in this population of adolescent women. Its association with sexual anxiety and earlier age of sexual debut (independent of current age) suggests that early sexual activity may have lasting negative consequences.

MP-178 PREDICTORS OF INCONSISTENT CONDOM USE IN A POPULATION SAMPLE OF SEXUALLY ACTIVE MEN AND WOMEN AGED 15-30 IN BRITISH COLUMBIA, CANADA

V.P. Remple¹, J. Barnett¹, G.S. Ogilvie¹, L. Knowles¹, D. Taylor¹, D.M. Patrick¹, R.C. Brunham², T.L. Kwindt¹, M.L. Rekart¹

¹ BC Centre for Disease Control, Vancouver, Canada

² UBC Centre for Disease Control, Vancouver, Canada

Objectives: To describe self-reported condom use, and correlates of inconsistent condom use (ICU) in a population sample. Methods: Anonymous, self-completed questionnaires were mailed to individuals randomly selected from the medical services population registry, stratified by age and sex. ICU was defined as not answering 'always' regarding frequency of condom use. Stepwise logistic regression modeled the association between ICU and variables of interest and those achieving a significance level of 0.1 or greater in bivariate analyses (chi square and Student's t test). Results: Of 1088 respondents, 45% were male. Condom use was reported as 'always' by 21%, 'most' or 'half of the time' by 31%, 'rarely' by 26%, and 'never' by 22%. ICU was associated with higher mean age (25 vs. 22yrs, $p < 0.01$), being female (57% vs. 48%, $p < 0.05$), living with a romantic partner (42% vs. 22%, $p < 0.01$), not having had a prior Chlamydia test (38% vs. 22%, $p < 0.01$), 6+ lifetime sex partners (39% vs. 19%, $p < 0.01$), and 2+ sex partners in the past three months (13% vs 9%, $p < 0.01$). There were no differences in terms of having a current STI, symptoms, ethnicity, risk perception, knowledge, or drug/alcohol use prior to last sex. Of the six variables entered into the model, ICU was significantly associated with having had two or more sex partners in the past 3 months (OR 2.7, 95%CI 1.4-5.6), and female sex (OR 1.4, 95%CI 1.1-1.9). Conclusion(s): Less than 25% of sexually active adults under 30 report consistent condom use. Despite being at greater risk for STI acquisition, individuals with a greater number of partners are less likely to report consistent condom use. Barriers to condom use need to be examined, and skills to improve condom negotiating skills in women are needed.

MP-179 SEXUALLY TRANSMITTED INFECTION (STI)-RELATED KNOWLEDGE OF MEN AND WOMEN AGED 15-30 IN BRITISH COLUMBIA, CANADA

J. Barnett¹, V.P. Remple¹, G.S. Ogilvie¹, L. Knowles¹, D. Taylor¹, D.M. Patrick¹, R.C. Brunham², T.L. Kwindt¹, M.L. Rekart¹

¹ BC Centre for Disease Control, Vancouver, Canada

² UBC Centre for Disease Control, Vancouver, Canada

Objectives: To describe knowledge of STI prevention methods, and identify correlates of knowledge in a population sample. Methods: Anonymous questionnaires were mailed to individuals randomly selected from the provincial medical services population registry, stratified by age and sex. A summary knowledge score was calculated from six STI prevention questions with a range of 0-6 (6=highest knowledge). Stepwise linear regression was used to model the relationship between the summary knowledge score and variables of interest and those achieving a significance level of 0.1 or greater in bivariate analyses (chi square, Student's t test, ANOVA). Results: Of 1537 respondents, 48% were male. The proportion demonstrating accurate knowledge regarding the STI prevention effectiveness for the following methods was as follows: male condoms 88%, female condoms 54%, oral contraceptives 78%, diaphragm/sponge 63%, spermicidal foam/jelly 69%, and abstinence 88%. Fifty seven percent answered at least 80% of the six questions correctly. Higher mean knowledge scores were associated with being female (4.5 vs 4.3, $p < 0.05$), being born in Canada (4.6 vs. 3.8, $p < 0.01$), being sexually active (4.6 vs. 3.9, $p < 0.01$), Caucasian ethnicity (4.6 vs. 3.1-4.4, $p < 0.01$), older age (4.7 in 25-30yrs vs. 4.5 in 10-24yrs, 4.0 in 15-19yrs, $p < 0.01$), urban residence (4.4 vs. 4.0, $p < 0.01$), and having greater than high school (HS) education (4.6 vs. 4.3 for HS only, 3.9 currently in HS, $p < 0.01$). Of the six variables entered into the multivariate model, being born in Canada, ethnicity, and history of sexual activity were strongly associated with knowledge scores ($p < 0.001$), and female sex and urban residence were moderately associated ($p < 0.05$). Conclusion(s): Although STI prevention knowledge is high within certain subgroups, important gaps remain. Specific groups, including men, rural inhabitants and immigrants, require particular attention in STI education initiatives.

MP-180 SEEKING NOTIFICATION OF STDs: THE RELATIONSHIP BETWEEN ALCOHOL USE, OTHER RISKY BEHAVIORS, AND RETURNING FOR STD LAB RESULTS IN RURAL ZIMBABWE

L.A. Cubbins¹, C. Freeman¹, D. Kasprzyk¹, D. Montano¹, G. Woelk², NIMH Collaborative HIV/STD Prev Grp³

¹ Battelle Seattle Research Center, Seattle, United States of America

² University of Zimbabwe, Harare, Zimbabwe

³ NIMH, Bethesda, United States of America

Objective: Examine alcohol's role in STD risk and returning for STD lab results in rural Zimbabwe.

Methods: As part of a multi-national study, a national survey of risk behavior and STD/HIV was conducted in 32 rural growth point villages (GP) in Zimbabwe. Biological and survey data were collected from a random household sample of 50 individuals from each GP, along with community contextual data. Using ACASI, participants answered questions on risk behaviors and other health-related factors, and were asked to return for STD lab

results and treatment. Logistic regression was used to analyze data from 1,270 participants who ever had sex, controlling for gender, age, marital status, education, number of sex partners in past year, and community characteristics, as well as ever had an STD when analyzing returning for results. Interaction analyses tested for alcohol and gender specific associations.

Results: Alcohol use at least monthly was associated with having an STD (OR=1.669, $p<.01$), HSV2 (OR=1.604, $p<.01$), and HIV (OR=2.001, $p<.001$). Alcohol use at least monthly was negatively associated with returning for STD test results (OR=.713, $p<.05$), as were being married, having a lower education (for men only), and GP distance from a major town. Factors positively associated were age, ever had an STD (for women only), and number of clinics in GP. Having a positive STD test was not associated with returning for results for the full sample. However, alcohol use was negatively associated among subjects with positive STD tests (OR=.607, $p<.05$), though no alcohol association with returning for results was found among those with negative STD results.

Conclusions: Alcohol may be associated with the spread of STDs by increasing the risk of infection, as well as by lowering the likelihood of getting test results, treatment, and of knowing one's risk to other sexual partners.

MP-181 ACCEPTABILITY OF GEL AND CONDOM USE AND OF STI PARTNER NOTIFICATION AMONG COUPLES PREPARING FOR A MICROBICIDE DEVELOPMENT PROGRAMME EFFECTIVENESS TRIAL

A.S. Ssalil¹, J.O. Ouma¹, W.N. Nalukenge¹, R.L. Lubega¹, M.K. Kasse¹, S.W. Wandiembe¹, S.M. McCormack², H.G. Grosskurth¹, A.K. Kamali¹

¹ Medical Research Council/UVRI, Kampala, Uganda

² MRC Clinical Trials Unit, London, United Kingdom

Objectives: To evaluate the potential willingness of women and their regular male partners of using gel as well as condoms and to notify their partners of intercurrent STI, during a microbicide trial.

Methods: Between August 2003 and September 2004, 85 women from HIV discordant and 38 from concordant negative couple relationships were systematically recruited to a microbicide trial feasibility study, following a serological survey in 5 rural communities, enrolled at government health units and followed every 3-months for one year. At each visit couples were interviewed independently on sexual behaviour and gel acceptability. Ten single sex focus group discussions (FGDs) and in-depth interviews were conducted to assess attitudes and issues surrounding participation in the study. STIs were treated and VCT and condom use strongly recommended and provided by research team.

Results: At enrolment, only 12% of couples reported consistent condom use. After 12 months this had increased to 33%. 67% of 186 (79 men, 107 female) at 12 months reported sharing HIV test results with partners. 33 (33%) of women at baseline and 5 (5%) at 12 months had STI symptoms and were given treatment for partner. However, during FGDs, men and women independently reported difficulties in communicating positive HIV test results and other STIs to their partners. Women feared being asked the source of STIs, and both men and women feared marital breakdown. Majority of men and women reported that gel use was acceptable and easy to discuss with partners provided it has no side effects.

Conclusion: There is a high level of willingness to use gel, but only a third of couples use condoms consistently. There are fears among both men and women associated with partner notification about STIs and HIV infection. These are important findings for the design of future microbicide effectiveness trials in this population.

MP-182 ENVIRONMENTAL HEALTH CHALLENGES TO REDUCING STIS & HIV/AIDS

V. Saliku¹, S.B. Sohani¹, G. Khosla²

¹ Aga Khan Health Services, Kenya, Mombasa, Kenya

² Aga Khan Foundation, Canada, Ottawa, Canada

Objectives: The Community Health Department of Aga Khan Health Services Kenya works in rural communities across the Coast of Mombasa. In order to understand the context of STIs and HIV prevalence, CHD conducted a community level, field-based research study to assess current levels of STI & HIV/AIDS awareness. The analysis aimed to uncover what challenges exist in the effective delivery of sexual health interventions and the adoption of behaviour change.

Methods: A structured questionnaire was administered in Kilifi and Kwale districts using 30x10 cluster sampling (n=821), covering 84 villages. The questionnaire was designed and analyzed using SPSS software.

Results: Through ongoing public health education efforts, prevention messages are reaching communities in these areas: 90.6% of respondents were aware of STIs with 58.1% referring specifically to HIV/AIDS. The socio-economic environment of these communities poses challenges to the efforts of community health workers and communities themselves in the adoption of necessary behaviour change. These include: limited access to drugs in health facilities (33% requesting more drugs to improve their facility); high cost of medical treatment (53% felt cost was too expensive); high prevalence of other priority health issues as malaria and diarrhoea (37.9% & 20.4% of illnesses occurring within last 2 weeks); low monthly household income (80% living on less than \$3USD/day); and widespread food insecurity (49% exhausting food reserves in less than 3 months after harvest).

Conclusions: The effect of the socio-economic environment on behaviour change warrants further insight and understanding to enable community development organizations to revise their approach. What are lacking are innovative community partnerships in a revised approach towards STI prevention. Such efforts should address improvement of socio-economic status and environmental health conditions to better reach the rural population and realize a faster reduction in the national prevalence of STIs and HIV.

MP-183 DEVELOPMENT OF A COMMUNITY-ACADEMIC PARTNERSHIP TO ACCESS HIDDEN SEX WORKER POPULATIONS IN VANCOUVER, CANADA: THE ORCHID PROJECT

C.L. Johnston¹, V.P. Remple², M. Kharod³, R. Leclair³, D.M. Patrick², M.W. Tyndall⁴, A. Jolly⁵

¹ UBCCDC, Vancouver, Canada

² BC Centre for Disease Control, Vancouver, BC, Canada

³ A.S.I.A., Vancouver, Canada

⁴ BC Centre for Excellence HIV, Vancouver, Canada

⁵ Health Canada, Ottawa, Canada

Objectives: Asian female sex workers (AFSW) are at high risk for HIV/STI. Because many AFSW work indoors, they are invisible and have been largely ignored by service, healthcare, and research organizations. Furthermore, language barriers and concerns regarding police and immigration agency involvement make accessing AFSW difficult. Novel approaches are needed to provide education and services and to conduct research to determine their HIV/STI risk environment. The objective of this project was to develop a model of service delivery and research to massage parlour workers.

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 trains and employs ex-FSW on HIV/STI education, outreach and research methods. PHE teams visit parlours and provide culture- and language-specific HIV/STI education, condoms, referrals, and support services.

Results: Since July, 2004, the PHE teams have visited 51 parlours, 38 (75%) of which have permitted repeat visits. Teams have distributed 6500 male condoms, 175 female condoms, and other preventive materials, and have facilitated HIV/STI screening for 10 women. Thirty in-depth sexual network interviews have been conducted onsite in four parlours.

Conclusions: Engaging the target community in the development, implementation, and evaluation of a service and research 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 AFSW through systematic research. Furthermore, the development of rapport and trust with parlour owners and workers by PHEs is essential to enable research data collection.

MP-184 THE RELATIONSHIP BETWEEN SEXUAL PARTNERSHIPS CHARACTERISTICS AND CONDOM USE AMONG YOUNG LOW INCOME FEMALE SEX WORKERS IN KOROGOCHO SLUMS, NAIROBI, KENYA - A LOCAL SEXUAL NETWORK STUDY

T.N. Kinyari¹, E. White², A. Sharma³, M. Morris², E.A. Bukusi⁴, A. Meier², C. Farquhar², E. Ngugi², C. Cohen⁵

¹ University of Nairobi, Nairobi, Kenya

² University of Washington, Seattle, United States of America

³ Kenya Medical Research Institute, Nairobi, Kenya

⁴ KEMRI, Nairobi, Kenya

⁵ UCSF, San Francisco, United States of America

Objectives: Female sex workers (FSWs) at risk of sexually transmitted infections (STIs) could benefit from improved condom promotion efforts that reflect reduced STI/HIV acquisition and transmission. We described the local sexual network of female sex workers enrolled in the Korogocho sex worker cohort.

Methods: Twenty two 18-25 year old FSWs participated in two focus group discussions (FGDs) conducted in Kiswahili about how they chose sexual partners and experiences negotiating for condom use. Another group of twenty FSWs described their last five sexual partnerships including non-commercial (*mabeste*) and commercial (*wateja*) sexual partners and condom use. In-depth interviewer administered interviews using a modified UNAIDS questionnaire were done. Structural and composition variables were obtained and analyzed using generalized estimated equations. Concurrency was calculated using kappa based on dates of first and last sex.

Result: In the FGDs, FSWs reported that older men would pay more for protected sex compared with younger men. Regular partnerships involved minimal condom use, emotional attachment and financial support. In the in-depth interviews, condom use during last sex with a *mabeste* was reported 29% of the time compared to 75% with *wateja* ($p < .001$). For 18 (23%) and 23 (29%) of the 79 partnerships with a *mteja*, condoms were never or inconsistently used, respectively. Unprotected sex with a *mteja* correlated with hormonal contraception use, repeated coitus, longer-term unions and forced sex, but not with substance abuse. The mean number of partnerships in concurrency with each individual partnership was 3.2 (possible range 0 – 4). Analysis at the partnership level showed 65 (65%) of the partnerships were fully saturated. In addition, a high partnership concurrency ($\bar{a} = 0.81$) was reported

Conclusions: Condom use declines with familiarity and longevity of the FSW-male client relationship. FSWs need individualized risk reduction counseling and condom negotiation skills capacity building.

Table 1: Comparative characteristics for commercial (*wateja*) and non-commercial (*mabeste*) male sex partners of female sex workers (FSWs) in Nairobi, Kenya

Characteristic	Mabeste n=21	Wateja n=79	P-value†
Had sex in lodging	8 (38%)	65 (82%)	<.001
Had sex with FSW first day met	6 (29%)	62 (78%)	<.001
Had sex with FSW >3 times last month	14 (67%)	15 (19%)	<.001
Used condom with respondent last act	6 (29%)	59 (75%)	<.001
Always used condoms with partner	6 (29%)	56 (8%)	.001

Figure 1: FSWs reached, registered and treated for STI

Variable	Number and percent who used condoms at last sexual encounter		P value
	No	Yes	
FSW knew where partner lived	30/33 (10%)	29/45 (64%)	.025
FSW knew who partner lived with	38/45 (84%)	21/33 (64%)	.009
Hormonal contraception*	25/26 (96%)	34/52 (65%)	.044
R ever initiates condom use	9/24 (37%)	50/54 (93%)	<.001
Sex against her wish	49/62 (79%)	8/14 (57%)	.001

Figure 2: customer condom use correlates

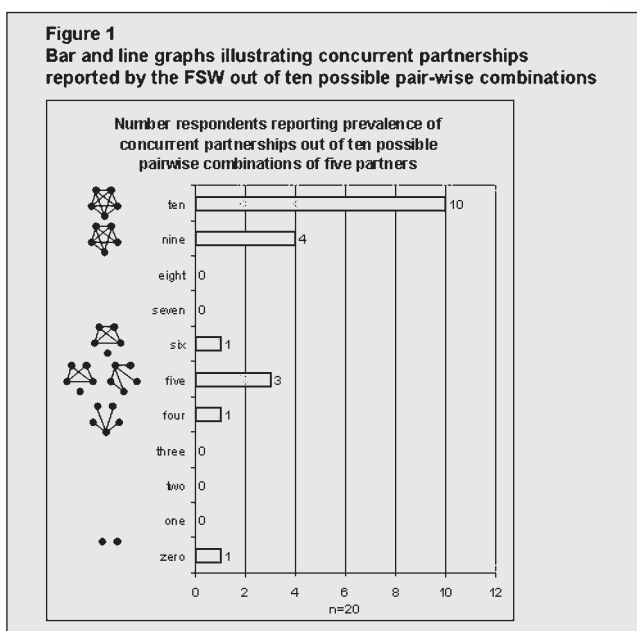


Figure 3: concurrent sexual partnerships

MP-185 PREVALENCE AND CORRELATES OF ‘FISTING’ IN A UK CLINIC SAMPLE OF HIV POSITIVE MEN WHO HAVE SEX WITH MEN (MSM)

J. Imrie¹, C.H. Mercer¹, M.D.M. Davis¹, J.M. Stephenson¹, G.J. Hart², I.G. Williams¹, O.R. Davidson³, K.A. Fenton⁴

- ¹ University College London, London, United Kingdom
- ² MRC Soc & Public Health Unit, Glasgow, United Kingdom
- ³ Camden Primary Care Trust, London, United Kingdom
- ⁴ Center for Disease Control, Atlanta, United States of America

Background: Brachioprotic eroticism or fisting is usually described as a ‘specialist’ sexual practice, primarily among MSM, with small risk for STI/HIV transmission. However, recent reports linking fisting and acute Hepatitis C, and fisting and lymphogranuloma venereum (LGV) suggest it is time to re-examine the prevalence and correlates of the practice to better understand its importance in current MSM STI/HIV epidemiology.

Methods: Cross-sectional study of 408 HIV-positive MSM attending a London HIV outpatient clinic between July 1999-August 2000. Participants completed a computer-assisted-self-interview that

asked in detail about the two most recent sexual episodes (within the last 6 months) involving different partners. ‘Fisters’ (participants with 1+ report(s) of insertive and/or receptive fisting with the most recent or second most recent sexual partner) were compared to other men (‘non-fisters’) in relation to socio-demographics, HIV and sexual health, drug use, sexual partnership and behavioural risks. Results: In total 13.5% reported ‘any fisting’ with the most recent or second most recent partner [insertive fisting 11.8%; receptive fisting 2.2%]. Men who reported ‘any fisting’ were younger than ‘non-fisters’ (mean ages (years): 36.1 and 39.1 respectively, p=0.009), more likely to have asymptomatic HIV disease (p=0.006) and to report STI diagnosis/es in the last year (p=0.012). In respect to sexual networks, ‘fisters’ were significantly more like to have a primary partner (p=0.042) as well as reporting recent sexual episodes involving multiple partners (p=0.011). Behaviourally, they reported more unprotected anal intercourse (p<0.0001); rimming (p=0.042); use of sex toys (p<0.0001) and multiple recreational drug use (p<0.001) than other men.

Conclusions: Although higher than expected, prevalence in this sample is likely to be underestimated because reporting was restricted to only two sexual episodes. The correlations between fisting and sexual partnership and behavioural risks suggest that men who report fisting are at an increased risk of adverse sexual health outcomes.

MP-186 SEX UNDER THE AGE OF 25: NATIONAL RESEARCH ON THE SEXUAL HEALTH OF DUTCH YOUNG PEOPLE: THE INVOLVEMENT OF MULTIPLE STAKEHOLDERS IN RESEARCH AND ACTION

S. Meijer¹, H. de Graaf², J. Poelman¹, I. Vanwesenbeeck²

- ¹ Sti Aids Netherlands, Amsterdam, The Netherlands
- ² Rutgers Nisso Groep, Utrecht, The Netherlands

Objectives: ‘Sex under the age of 25’ is a large scale national research on the sexual health of young people in the Netherlands based on the principles of Participatory Action Research (PAR). The research results will inform an action plan to be presented to the Ministry of Health by the end of 2005.

Methods: Almost 5000 young people from 12-25 years old were interviewed using a questionnaire based on the input from over 40 stakeholders. Questionnaires were filled in electronically. About 2000 pupils from 12-18 years old participated in the study through a random sample of secondary schools in the Netherlands. Young people from 18-25 were randomly selected through a sample from the register of 31 municipalities. The classroom school sample had a response rate of almost 100%. The older sample, resulted in a total of 3000 participants, a response rate of almost 25%.

Results: First results show that the number of school going youth (12-18) that has experienced sexual intercourse has grown from 24% in 1995 to 31% in 2005. Among sexual active secondary school students the average age of the first intercourse remained at 15,1. Both condom-use and pill-use among 12-18 year olds and during the first intercourse has gone up since 1995, respectively from 70%-76% and from 37% -44%. Of the boys and the girls of 13 years or younger at the first intercourse, 40% and 24% respectively did not use any form of protection. The number of school going youth who experienced anal sex, has grown from 3 % to 7%. In the age

group from 21-25, 28% have experienced anal sex. 71% of the girls, 55% of the heterosexual boys and 29% of the homosexual boys reported not to have used a condom during anal sex with their last partner.

MP-187 ASSOCIATION OF SEXUAL BEHAVIOR CHANGE WITH PERSONAL NETWORK DYNAMICS IN A COHORT OF INNER-CITY ADULTS IN BALTIMORE, MARYLAND, USA

W.H. Hua, C.A. Latkin, E. Costenbader

Johns Hopkins U. School of Public Health, Baltimore, MD, United States of America

Objectives: Temporal change in sexual risk behavior is critical to the transmission of HIV and other STDs. Evidence has shown that sexual risk behavior is associated with both personal and network level characteristics. However, little is known regarding the change of sexual behavior in a dynamic social context. The purpose of this study is to examine the association between changes in sexual risk behavior and personal network dynamics.

Methods: Data were collected as part of the SHIELD study, an HIV/STD prevention intervention targeted at drug users and their social networks from 1996-2000, in Baltimore, Maryland, USA. Network methodology was used to examine the effect of losing, retaining, and gaining network members on 1) increasing to high risk in the low-risk group, and 2) maintaining high risk in the high-risk group, among 491 participants in a 3-year time period.

Results: Movement of sexual contacts out of one's network was associated with both an increase in sexual risk (OR=2.7, 95%CI:1.8-4.0) in the low-risk group and maintaining high sexual risk (OR=1.3, 95%CI:1.0-1.7) in the high-risk group. In spite of the individual's own drug use, influx of crack smokers into network had significant impact on his/her sexual behavior change. In the low-risk group, participants who increased risk gained more crack smokers in their sex network, particularly for men (OR=6.0, 95%CI:1.2-26.3). In the high-risk group, participants who maintained high risk gained more crack smokers in their non-sex network (OR=1.2, 95%CI:1.0-1.4).

Conclusion: These findings suggest that changes occurring over time in an individual's personal network have an important impact on whether he/she increases, maintains, or decreases his/her sexual risk behavior. More importantly, network dynamics of different parts of the network have differential impacts for low and high risk groups. This may be useful to tailor interventions to specific risk groups.

MP-188 EVALUATING THE ROLE OF SUBSTANCE USE AND RISKY SEXUAL BEHAVIOR AMONG ADOLESCENTS IN SAN FRANCISCO

L. Wright, A. Minnis, N Padian

University of California San Francisco, San Francisco, CA, United States of America

Objectives: Substance use is associated with risky sexual behavior. We examined the relationships of substance use with several sexual risk behaviors to better understand these risks in a community-based sample of San Francisco adolescents.

Methods: A multi-ethnic sample of 552 adolescents age 14-19 was recruited from a low-income San Francisco neighborhood. We analyzed data on demographics, sexual behavior, and substance use using multinomial and standard logistic regression. We examined

substances individually, created a composite 'user' variable for using alcohol, marijuana, or getting drunk weekly or using hard drugs in the prior six months, and examined associations with early coital debut (< age 14), multiple partners, and condom use (never, inconsistent, always) in the prior six months.

Results: Six months prior to enrollment, 82% drank alcohol, 63% smoked marijuana, 35% ever tried hard drugs, and 2% injected drugs. Marijuana use was more common among girls (68% vs. 56%, $p=0.005$); however weekly use was less prevalent (14% [girls] vs. 29% [boys], $p<0.001$). Girls were less likely to report getting drunk weekly (8% vs. 15%), $p=0.012$. Being a user and female were associated with multiple partners (OR=2.2, CI 1.3-3.8; OR=0.5, CI 0.3-0.8) and early coital debut (OR=3.4, CI 1.8-6.5; OR=0.3, CI 0.6-0.9), but not condom use. When tested individually, all components of 'user' were associated with multiple partners and all except getting drunk with coital debut. Drinking alcohol was associated with never and inconsistent condom use (vs. always) (OR=12.6, CI 2.0-78.4; OR=4.9, CI 1.2-19.9). Marijuana use was associated with inconsistent condom use (vs. never, OR=4.5, CI 1.1-19.5).

Conclusions: Relationships between substance use, coital debut and multiple partners are strong, but are inconsistent for condom use. Data suggest that, for condom use, risk conferred may differ between marijuana and other substances.

MP-198 'THAT'S A GREAT IDEA, BUT I WOULDN'T USE IT' – EXPLORING DIAPHRAGM AND MICROBICIDE ACCEPTABILITY IN HIGH-RISK WOMEN

A.G. Goodfellow, J. dr. Zenilman, P. Letke-Alexander, E. Erbeling

Johns Hopkins University, Baltimore, United States of America

Objectives: Cervical barriers, especially diaphragms and microbicides, are attractive as female controlled methods for STD/HIV prevention. Little qualitative research on the acceptability of these methods as STD/HIV and pregnancy prevention has been done with women who would constitute the important consumers of these products, such as women with STDs or commercial sex workers. Our objective is to determine the social and personal factors that shape attitudes toward, and the possible acceptance of, the diaphragm as a method to prevent STD/HIV among women at high risk.

Methods: A trained ethnographer administered a combined survey and open-ended qualitative interview to 21 women and 20 men recruited from a Baltimore STD clinic. The domains explored include: 1) sexual history; 2) knowledge and experience of STD and pregnancy prevention; 3) willingness to use a diaphragm in conjunction with a microbicide to prevent STD/HIV; and 4) attitude towards the product.

Results: All subjects scored high on STD knowledge and pregnancy prevention measures. The risked associated with STD acquisition were also well known, as was efficacy of consistent condom use. Despite high knowledge, most subjects had repeated STDs. We hypothesize that non-compliance with recommended and proven methods for STD prevention, therefore, is not a matter of possessing appropriate skills and knowledge. It is a matter of the social meaning and affect associated with undertaking effective safe sex practices, such as diaphragm or condom use.

Conclusion: The vaginal diaphragm when used in conjunction with a microbicide to prevent pregnancy and STD/HIV may be seen as an acceptable means for women to protect themselves from STD/HIV, but acceptability does not equate with the willingness to use.

SESSION: MP - B20 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- MATHEMATICAL MODELLING AND HEALTH ECONOMICS

MP-190 EVALUATION OF SELF-COLLECTED GLANS AND RECTAL SWABS FROM MSM FOR THE DETECTION OF CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE BY NUCLEIC ACID AMPLIFICATION TESTS

J. Moncada¹, J. Schachter¹, S. Liska², C. Shayevich², J.D. Klausner²

¹ University of California, San Francisco, San Francisco, United States of America

² Department of Public Health, San Francisco, United States of America

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. Self-collected glans and rectal swabs may be appropriate, convenient specimens in MSM. We evaluated self-administered male swabs for CT and NG by SDA (ProbeTec, Becton Dickinson, Co).

Methods: Symptomatic MSM were seen at the San Francisco City Clinic. Each patient provided a self-collected and three clinician-collected rectal swabs, and a self-collected glans and first catch urine (FCU) specimen. Self-collected swabs were tested for CT and NG by SDA. We performed SDA, PCR (Amplicor, Roche Diagnostics Corp) and AC2 (Aptima COMBO2, Gen-Probe Inc) on FCU and clinician-collected rectal swabs. The latter was used for CT and NG culture. True positives were defined by anatomic site, as a positive CT or NG isolation, or with two positive different NAATs.

Results: Prevalence of CT and NG was 7.0% (6 /86) and 9.3% (8/86) for the rectum; and 10.8% (9/83) and 24.1% (20/83) for the urethra, respectively. The table shows performances: (image2)

Conclusions: We found self-collected rectal and glans swabs are comparable to clinician-collected rectal and FCU for CT and NG detection. CT sensitivity was lower with self-collected glans swabs. With a small sample size, our preliminary results are promising and further evaluations are needed.

Type	Test	<i>N. gonorrhoeae</i>		<i>C. trachomatis</i>	
		Sensitivity	Specificity	Sensitivity	Specificity
Glans Self-Collected	SDA	90	100	66.7	100
FCU	SDA	100	100	100	100
FCU	AC2	100	98.4	100	97.3
FCU	PCR	95	100	88.9	100
Rectal Self-Collected	SDA	87.5	97.4	83.3	100
Rectal	SDA	87.5	100	66.7	100
Rectal	AC2	100	100	100	98.8
Rectal	PCR	82.5	100	83.3	100
Rectal	Culture	62.5	100	16.7	100

Figure 3: concurrent sexual partnerships

MP-191 AN ESTIMATE OF THE DIRECT MEDICAL COST OF TRICHOMONIASIS IN PRIVATE SECTOR HEALTH SETTINGS IN THE UNITED STATES, 2000-2002

M. Tejani, G. Tao, T.L. Gift

CDC, Atlanta, GA, United States of America

Objectives: To estimate the per-case direct medical costs for trichomoniasis using private insurance claims in the United States. Methods: We used a commercial claims database to identify outpatient and prescription drug claims for trichomoniasis in women with drug coverage from ages 14 to 64 between January 1, 2000, and December 31, 2002. We defined a case as any outpatient or emergency department visit for which trichomoniasis was the only diagnosis coded by ICD-9, and any trichomoniasis-related followup visits within 14 days. We included drug claims for medications conforming to the CDC 2002 STD Treatment Guidelines dispensed within one week before and 30 days after the initial visit. To reduce bias from exceptionally expensive or inexpensive claims, possibly caused by coding error or care for unrecorded health conditions, we excluded cases with visit claims or treatments with drug claims within the upper or lower 5% of costs. Dollar values were adjusted to 2002 U.S. dollars using the Medical Care component of the Consumer Price Index. Statistical analysis was performed using Student's t-test. Results: In total, 5088 cases were identified, with an annual average of 1.13 cases per patient. The mean cost per case of trichomoniasis ranged from \$59 in 2000 to \$67 in 2002 and was significantly different by year (p<0.05). In 2000, 44% of cases received documented treatment; mean treatment cost was \$14. The treatment rate increased to 57% in 2002; mean cost was \$11 (brand-name drug claims averaged \$44 vs. \$7 for generic drugs in all years). Visit costs of treated cases were significantly higher than untreated cases (p<0.05), averaging \$5 more in 2000 and 2001, and \$19 more in 2002. Conclusions: Total trichomoniasis outpatient costs increased from 2000 to 2002. This increase was attributable to increased visit costs because treatment costs declined due to greater generic drug use.

SESSION: MP - C20 EPIDEMIOLOGY- MATHEMATICAL MODELLING AND HEALTH ECONOMICS

MP-192 SPACE-TIME MODELING OF AN EARLY SYPHILIS OUTBREAK

K.T. Bernstein¹, D.C.G. Law², M.L. Serre³, C.M. Schumacher¹, P.A. Leone³, W.C. Miller³, J.M. Zenilman¹, A.M. Rompalo¹

¹ Johns Hopkins University, New York, NY, United States of America

² NIEHS, Research Triangle Park, United States of America

³ University of North Carolina, Chapel Hill, NC, United States of America

Objective: To describe changes in the spatial distribution of early syphilis for Baltimore, Maryland, USA, from 1994 to 2002 using Bayesian Maximum Entropy (BME), a modern geostatistical technique for space-time analysis and mapping.

Methods: We conducted simple and composite space/time analyses of the density of syphilis infection, based on early syphilis cases reported to the Baltimore City Health Department between January 1, 1994 and December 31, 2002. BME kriging was used to generate syphilis density estimates with minimal bias for 1994 through 2002 by combining appropriate spatial or spatiotemporal

covariance models and observed syphilis densities for each year. Nine temporally independent maps were produced from the simple space-only analysis, and nine temporally dependent maps were produced from the composite space-time analysis. We interpreted these maps to track the movement of early syphilis before, during, and after the outbreak.

Results: Spatial covariance plots indicated that spatial variability increased until it peaked in 1998, then monotonically decreased. The neighborhood of influence increased until 1997, decreased in 1998, and stabilized thereafter. Spatiotemporal covariance plots indicated that syphilis exhibited both spatial and temporal dependence. Disease maps showed that syphilis increased within two geographic core areas of infection, spread outwards, and a new core area was established to the northwest. As the outbreak waned, the density diminished and receded in all core areas. The new northwestern core remained an area of morbidity.

Conclusions: Composite space/time modeling using the BME approach enabled us to produce a series of temporally dependent maps that we used to better understand the spatial development and spread of the syphilis outbreak. Real-time application of these methods could improve the efficiency of outbreak responses.

MP-193 THE VALUE OF REDUCTIONS IN GONORRHEA AND SYPHILIS INCIDENCE IN THE UNITED STATES, 1990-2003

H. Chesson, T. Gift, A. Pulver

Centers for Disease Control, Atlanta, United States of America

Objectives: Efforts to prevent sexually transmitted diseases (STDs) can mitigate the substantial health and economic burdens imposed by STDs. We estimated the reduction in direct medical costs associated with reductions in gonorrhea and syphilis incidence from 1990 to 2003.

Methods: We estimated the costs of primary and secondary (P&S) syphilis, congenital syphilis, gonorrhea, and HIV costs attributable to the facilitative effects of gonorrhea and syphilis on HIV transmission from 1990 to 2003. We calculated annual costs for each year by multiplying the reported number of new cases by published estimates of the direct medical cost per case, which included the costs acute infection and sequelae. To estimate the value of reductions in STD rates, we calculated the costs that would have been incurred over the 14-year period if rates had remained at 1990 levels. **Results:** Preliminary results suggest that the annual costs associated with syphilis, congenital syphilis, and gonorrhea decreased from \$586 million in 1990 to \$169 million in 2003 (2003 US dollars). Over the 14-year period, the total costs of syphilis and gonorrhea was \$3.8 billion. If STD rates had remained at 1990 levels through 2003, the total costs of syphilis, congenital syphilis, and gonorrhea would have been \$8.9 billion, suggesting that the decreases in gonorrhea and syphilis since 1990 were associated with savings of \$5.0 billion. When excluding the HIV costs attributable to syphilis and gonorrhea, the estimated reduction in costs remained substantial (\$1.1 billion).

Conclusions: The decreases in syphilis and gonorrhea over the last decade have greatly reduced the estimated economic burden of these STDs. These estimated reductions in the burden of these STDs show the benefits of reducing STD incidence and the value of preventing a resurgence of these diseases.

MP-194 ESTIMATED GONORRHEA RATES IN THE UNITED STATES IN THE ABSENCE OF FEDERALLY-FUNDED PREVENTION EFFORTS, 1971-2003

H. Chesson

Centers for Disease Control, Atlanta, United States of America

Objectives: Reported gonorrhea incidence rates in the United States declined by 75% from 1975 to 2003 following implementation of the national gonorrhea control program in the mid-1970s. In this study, we estimated national gonorrhea rates that might have occurred from 1971 to 2003 had there been no federally-funded STD prevention activities. We also calculated crude estimates of the overall cost-effectiveness of federally-funded STD prevention activities.

Methods: The impact of STD prevention programs on the national gonorrhea rate was estimated based on (1) the amount of federal funding allocated to state and local health departments for STD prevention and (2) a previously published estimate of the impact of STD prevention funding on gonorrhea rates in the US. Reported cases of gonorrhea were adjusted for underreporting assuming that one-third of all cases are not reported. We used standard methods of cost-effectiveness analysis.

Results: Preliminary results suggest that over the 33-year period, an estimated 32.5 million cases of gonorrhea were averted by prevention efforts. In the main analysis, prevention efforts were cost-saving, meaning that the total program costs were less than the total averted costs of treating gonorrhea and its associated sequelae. When we varied the estimated impact of STD prevention funding on gonorrhea incidence rates, the cost per case averted range from cost-saving to \$440 (2003 \$US).

Conclusions: Gonorrhea incidence would likely be substantially higher in the US without federally funded STD prevention efforts. STD prevention efforts appeared to be cost-saving when considering only the benefits of gonorrhea prevention. If other benefits were considered (such as the prevention of other STDs), the estimated effectiveness and cost-effectiveness of federally-funded STD prevention activities in the US would be even more favorable.

SESSION: MP - D20 PREVENTION STRATEGIES-MATHEMATICAL MODELLING AND HEALTH ECONOMICS

MP-195 IMPACT OF OPPORTUNISTIC CHLAMYDIA SCREENING IN ENGLAND: RESULTS FROM A MATHEMATICAL MODEL

K.M.E. Turner, E.J. Adams, W.J. Edmunds, L. Emmett, K. Baster, D.S. LaMontagne

Health Protection Agency, LONDON, United Kingdom

Objectives: To assess the potential impact of a range of opportunistic screening strategies on the prevalence of chlamydia in England.

Methods: An individual-based dynamic network S-I-S model was developed to simulate the effects of different opportunistic chlamydia screening strategies. The model was extensively parameterised to represent current sexual behaviour and the epidemiology of chlamydia in England.

Results: The female-only screening strategy that yielded the greatest reduction in prevalence was that in which women aged 16-24 were screened annually and when they changed partner (overall population prevalence decreased 76% after 5 years). The greatest reduction

in prevalence is seen in those age groups targeted (prevalence in 16-24 year old women fell from 6.3% to 0.8% after 5 years of screening), though prevalence would be expected to fall in other groups (prevalence decreased from 1.6% to 0.7% in 25-44 year old women). If partner notification is maintained at the current level (50%), then the prevalence reduction in men is comparable to that in women (prevalence in 16-24 year old men fell from 7.3% to 1.0% after 5 years of screening), without screening men. Screening men and women aged 16-24 reduces prevalence more than screening women alone (overall prevalence reduction of 87% after 5 years). The model suggests that frequency of attendance at health care settings and uptake of screening are major determining factors of screening effectiveness.

Conclusions: Chlamydia screening is likely to reduce chlamydia prevalence, providing that partner notification activities are maintained and that the emphasis on screening young, sexually active women is continued. Including men in the screening programme may increase the speed and magnitude of the reduction in prevalence, but improving partner notification would have a similar effect. Appropriately parameterised models can be useful tools for assessing the longer-term impacts of public health programmes.

SESSION: MP - E20 BEHAVIORAL SCIENCE-MATHEMATICAL MODELLING AND HEALTH ECONOMICS

MP-196 HEALTHCARE ASSESSMENT METHODOLOGY IN DEVELOPING COUNTRY

S.D. Joshi¹, N. Pandit¹, S. Kumar¹, R.P. Bhandari²

¹ Nepal Medical College Teaching Hospital, Kathmandu, Nepal

² Cyhain, Nepal, Kathmandu, Nepal

Issues: health care assessment system in Nepal is still take long time and high cost. Collection of data about prioritization of community health problems by the community is essential for planning and monitoring of programs and interventions for improving community health status. Scientific Rapid Community Health Assessment Methodology needs to be validated in rural community developing country like Nepal which is economic and less time consuming.

Objective: To validate the Rapid Community Health Assessment Methodology (RCHA) for prioritization of community health problems in a rural community.

Methods: Study Area: 14 Villages of rural areas. Study Population: 34 Primary School Teachers from 10 randomly selected Primary Schools in above villages. (One Teacher each from Class I to V, in each School). Validation: Heads of households from 500 Households (50 per village, systematically sampled). Data Collection Technique: Self-Administered Questionnaires for Teachers, Interview Schedules for Heads of Households. Data Analysis: with the help of EPI info program.

Results: There was significant correlation between the responses of the school teachers and heads of households on community health problems viz., (a) the prioritization of ten village problems ($r=+0.77$, $p<0.02$), (b) prioritization of utilization of services of various health functionaries for treatment of and advice for children's

illnesses ($r=+0.75$, $p<0.05$), and (c) prioritization of households using water from different sources ($r=+0.975$, $p<0.02$). The method was also found to be more rapid (3.3 times) and less costly (6.3 times) compared to the traditional household survey method.

Conclusion: RCHA for prioritization of community health problems in a rural community is validated. The information thus obtained can be utilized for purposes of health policy and program planning, monitoring and evaluation. This is especially relevant for micro planning of child health services in developing countries. Repeated use of questionnaires for monitoring disease control programs must be carefully considered.

MP-197 ASSOCIATION OF SEXUAL BEHAVIORS AND WILLINGNESS TO DELAY GRATIFICATION AMONG YOUTH IN THE UNITED STATES

H. Chesson¹, J.S. Leichliter¹, G.D. Zimet², S.L. Rosenthal³, D.I. Bernstein⁴, K.H. Fife²

¹ Centers for Disease Control, Atlanta, United States of America

² Indiana University School of Medicine, Indianapolis, United States of America

³ University of Texas, Galveston, United States of America

⁴ University of Cincinnati, Cincinnati, United States of America

Objectives: Because the consequences of acquiring sexually transmitted diseases (STDs) may persist for several years, a person's perception of the disadvantages of acquiring an STD might be influenced by that person's discount rate. Higher discount rates indicate less willingness to delay gratification or to exchange current benefits for future benefits. Using data from a 2001-2002 survey in 2 US cities, we examined the relationship between discount rates and sexual behaviors.

Methods: Our sample included 1042 youth (42% male, mean age 21.8 years) recruited from an STD clinic, general adult medical clinics, an adolescent medical clinic, and a university campus. We calculated discount rates based on stated preferences for receiving an immediate monetary prize (\$400 USD) versus larger monetary prizes (such as \$1200 USD) awarded one year later.

Results: Preliminary results indicate that in univariate analyses, respondents with higher discount rates were significantly more likely to ever have had sexual intercourse, to ever have had gonorrhea or chlamydia, to have had sexual intercourse before age 16 years, to have had more than one recent sex partner, and to have been or currently be pregnant. There was no significant association between discount rates and having at least one recent unprotected sex act, acceptance of herpes simplex virus type 2 (HSV-2) testing, or presence of HSV-2 antibody.

Conclusions: Teenagers and young adults, even if fully aware of the potential consequences of various sexual behaviors, might make choices that adversely affect their health because they minimize the importance of future consequences. It is possible that prevention programs could be more effective by emphasizing the potential short-term consequences of STDs that may be more important to youth than long-term consequences.

SESSION: TP - B2 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- HERPES SIMPLEX VIRUS INFECTION (HSV)

TP-001 THE IMPACT OF SEROLOGICAL DIAGNOSIS ON PERSONS WITH UNRECOGNIZED HSV-2

S.L. Rosenthal¹, G.D. Zime², J. Leichter³, L.R. Stanberry¹, K.H. Fife², W. Tu², D.I. Bernstein⁴

¹ University of Texas Medical Branch, Galveston, United States of America

² Indiana University, School of Medicine, Indianapolis, United States of America

³ Centers for Disease Control, Atlanta, United States of America

⁴ Cincinnati Children's Hospital, Cincinnati, United States of America

Objectives: To evaluate the impact of a positive HSV-2 serological test on psychosocial functioning among persons with no known history of genital herpes.

Methods: Individuals (age 14-30) without a history of genital herpes were recruited from STD, primary care, and adolescent clinics and an urban university. Participants completed a questionnaire addressing psychological functioning, psychosocial adjustment, and perceived quality of sex. They were then offered free HSV-2 antibody testing. Thirty-three HSV-2 positive persons and 60 demographically-matched HSV-2 negative persons were re-administered the questionnaire at a 3-month follow-up visit. HSV-2 positive participants also completed a genital herpes quality of life (GHQOL) measure.

Results: Of the 33 persons who were HSV-2 positive, 4 did not recall their diagnosis. In comparing those who were HSV-2 positive to those who were negative, repeated measures analysis of variance indicated there were no significant differences over time on any of the measures. Nonetheless, HSV-2 positive persons indicated that the diagnosis had a notable impact on their quality of life. Also, among the HSV-2 positive persons, more GHQOL problems at 3-month follow-up were predicted by baseline measures of higher interpersonal discomfort ($r=.44$), lower social support ($r=-.40$), poorer relationship quality ($r=-.41$), and lower quality of sex ($r=-.62$). **Conclusions:** Consistent with others' findings, a diagnosis of asymptomatic HSV-2 does not appear to cause significant lasting psychological difficulties. Those for whom the diagnosis had the greatest impact were interpersonally vulnerable prior to the diagnosis. These results suggest that assessment of interpersonal distress may be important to include as part of pre- and post-test counseling.

TP-002 QUANTITATIVE DETECTION OF HERPES SIMPLEX VIRUS 2 GENITAL SHEDDING IN PATIENTS ATTENDING A GENITOURINARY MEDICINE CLINIC IN THE GAMBIA

E.A.N. Aryee¹, R.L. Bailey², A. Natividad-Sancho², M.J. Holland¹

¹ Medical Research Council Laboratories, Banjul, Gambia

² L.S.H.T.M., London, United Kingdom

Objective: Most routinely available laboratory diagnoses for Herpes Simplex Virus (HSV) are time consuming, laborious and insensitive. This study was designed to quantitate HSV-2 genital shedding in Genitourinary Medicine (GUM) clinic attendees, and relate this to HSV-2 serostatus, presence of herpetic lesions or other sexually transmitted infections (STI).

Methods: Seventy consecutive female subjects attending a GUM clinic were recruited. Cervical/vaginal swabs, cervicovaginal lavages and venous blood were sampled from them. Detection of HSV was done using real time quantitative PCR with HSV specific primers and Syber Green I. Fluorogenic TaqMan Minor Groove Binder (MGB) probes designed around a single base mismatch in the HSV DNA polymerase I gene were used for the HSV typing. The presence of other STIs was detected by standard methods. Statistical analysis of results was conducted using Minitab, Epi Info and SPSS.

Results: Twenty-seven subjects out of 70 (39%) were shedding HSV by PCR. Nineteen of these 27 subjects (70%) were shedding HSV-2, 4 (15%) were shedding HSV-1 and 4 (15%) others were dually infected. Eleven (41%) of the 27 subjects in which HSV shedding was observed had specific IgG antibodies to HSV-2. Three of 7 (42%) HIV-1 positive subjects were shedding HSV. Two of 5 (40%) subjects with genital ulcers were shedding HSV-2 as judged by PCR typing.

Conclusion: An assay for the detection and typing of HSV-2 has been developed using a quantitative real-time PCR and Taqman MGB probes specific for HSV. The assay was effective in a cohort of female GUM attendees and estimated the amount of HSV shedding and was able to distinguish HSV-1 and -2. Most HSV PCR positive subjects shed low levels of HSV, had no detectable HSV-2 antibodies and were asymptomatic.

TP-003 COMPARISON OF KALON® AND HERPESSELECT (FOCUS)® GLYCOPROTEIN G-2 (G-G2)-BASED ELISA SEROLOGICAL TESTS TO DETECT HERPES SIMPLEX VIRUS TYPE 2 (HSV-2) ANTIBODIES IN BRAZIL

M.-C. Nascimento¹, V.A.U. Souza², H.A. Weiss¹, S. Ferreira³, E. Sabino³, J. Parry⁴, I. Hamilton⁴, L.M. Sumita⁵, C.S. Pannuti⁵, P. Mayaud¹

¹ London School of Hygiene & Tropical Med, LONDON, United Kingdom

² Virology Laboratory, Sao Paulo, United Kingdom

³ Hemocentro, SP, Sao Paulo, Brazil

⁴ Health Protection Agency, London, United Kingdom

⁵ Virology Laboratory, IMT, Sao Paulo, Brazil

Background: There is little data and some controversy regarding the performance of Herpes simplex virus (HSV) type-specific serological assays outside Western populations.

Objectives: To evaluate the performance of two g-G2 ELISA serological assays, HerpesSelect (Focus)? and Kalon?, to detect HSV-2 antibodies in Brazil.

Methods: We tested 585 stored sera from 6 distinct groups representing populations likely to be at high-risk (patients with proven herpetic ulcer), intermediate-risk (AIDS patients, MSM, STI patients) and low-risk (children under 2 years and students of high socio-economic status) of HSV-2 infection. Sera were tested in Sao Paulo using Kalon? and HerpeSelect? ELISAs, and at the Health Protection Agency (UK), using their reference monoclonal antibody-blocking enzyme-linked immunoassay (MAB-EIA).

Results: Overall, 143/585 (24%), 149/576 (26%) and 179/546 (30%) samples tested positive by MAB, Kalon? and HerpeSelect?, respectively. The sensitivities and specificities of Kalon? and HerpeSelect? vs. MAB were 93% and 96% (Kalon?), and 94% and 86% (HerpeSelect?), respectively. Specificity of HerpeSelect?

improved to 98% when a higher cut-off of 3.5 (instead of 1.1) was used, without compromising sensitivity (93%).

Conclusions: HerpeSelect? has lower specificity than Kalon? to detect HSV-2 in these Brazilian populations. This can be improved by raising the cut-off, without compromising sensitivity.

TP-004 USE OF A SIMPLE, RAPID TEST (BIOKIT-HSV-2) TO CONFIRM SCREENING HSV-2 ANTIBODY RESULTS BY HERPESELECT -HSV-2 ELISA ('FOCUS')

L. Ashley-Morrow¹, D. Friedrich², A. Meier¹, L. Corey¹

¹ University of Washington, Seattle, WA, United States of America

² Children's Hospital, Seattle, WA, United States of America

Objectives: To evaluate an accessible, cost-effective alternative to western blot (WB) to confirm HSV-2 screening antibody results by HerpeSelect HSV-2 ELISA.

Methods: 1,297 sera from Seattle men who have sex with men (N=673) or lower risk sera submitted to a diagnostic laboratory for HSV testing (N=624) were tested by Focus-HSV-2 (Focus Diagnostics, Cypress CA) and WB. Of 1235 evaluable sera, 442 (35.8%) were positive by Focus and 793 (64.2%) were negative. All 442 positive sera and 340 of 442 negative sera (total N=782) were then tested by biokit-HSV-2 ('biokit'; Biokit USA, Lexington MA). Test results were compared with WB. Then, ability of the biokit-HSV-2 test to confirm positive Focus results (index values >1.1) was assessed.

Results: Sensitivity, specificity, positive and negative predictive values were: 99.7, 79.8, 80.5, and 99.7 for Focus and 94.7, 92.9, 91.8, and 95.4 for biokit. Concordance was 87.8 (Focus-biokit); 88.8 (Focus-WB) and 93.7 biokit-WB). Discordant results were rare in Focus negative sera: 11 (3%) by biokit and 1 (<1%) by WB. Of 442 positive Focus results, 357 (80.8%) confirmed by biokit; 356 (80.5%) by WB. Of 105 Focus positive results that did not confirm, 68 (65%) were negative by both biokit and WB and most (89/105; 84.8%) were low positive (index value >1.1; <3.5). Use of biokit on Focus positive sera increased the specificity from 79.8 to 94.5 with sensitivity of 99.7; PPV 94.7; and NPV 99.7. Results that did not give a clear indicator of HSV-2 infection status increased from 21/1297 (1.6%) to 106/1297 (8.2%) with the confirmatory step.

Conclusions: The biokit-HSV-2 test, when used as a confirmatory test, can markedly increase the specificity of HSV-2 antibody screening results by Focus HerpeSelect.

TP-005 ONE-DAY PATIENT-INITIATED FAMCICLOVIR THERAPY FOR RECURRENT GENITAL HERPES: A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED TRIAL

F. Aoki¹, S. Tyring², F. Diaz-Mitoma³, M. Roberts⁴, J. Gao⁴, K. Hamed⁴

¹ University of Manitoba, Winnipeg, Canada

² University of Texas, Houston, TX, United States of America

³ University of Ottawa, Ottawa, Canada

⁴ Novartis Pharmaceuticals, East Hanover, NJ, United States of America

Objective: To assess the efficacy and safety of patient-initiated, 1-day, high-dose famciclovir versus placebo in adult immunocompetent patients with recurrent genital herpes.

Methods: Multicenter, multinational, randomized, double-blind, placebo- controlled study comparing 1-day famciclovir (1 g PO twice;

n = 163) with placebo (n = 166). Patients were instructed to initiate therapy within 6 hours of onset of prodromal symptoms and/or genital herpes lesions. They were required to return to the clinic within 24 hours of initiating therapy (day 1) and on days 2 and 3. Patients with persistent lesions were asked to return for clinic visits on days 4 and 5, and then every other day until all lesions healed, or until day 14. Healing was defined as loss of all crusts and reepithelialization of genital herpes lesions. Aborted lesions were defined as herpetic lesions not progressing beyond the papule stage.

Results: Famciclovir was superior to placebo in reducing the time to healing of nonaborted lesions (median time, 4.3 vs 6.1 days; P < .001) and all lesions (median time, 3.5 vs 5.0 days; P < .001). The proportion of patients with aborted lesions was significantly larger in the famciclovir group than in the placebo group (23.3% vs 12.7%; P = .003). Adverse events in the famciclovir group were infrequent overall, of mild to moderate severity, and similar to those in the placebo group.

Conclusions: A 1-day, high-dose famciclovir regimen was well tolerated, safe and effective in shortening the duration of recurrent genital herpes lesions. Lesions in famciclovir-treated patients healed approximately 2 days faster than lesions in placebo-treated patients. Importantly, 1-day famciclovir treatment prevented the appearance or progression of lesions. The more convenient 1-day famciclovir treatment has the potential for improving patient compliance.

TP-006 HSV-2 SEROLOGIC TESTING IN AN HMO POPULATION: ACCEPTANCE AND PSYCHOSOCIAL SEQUELAE

J.E. Richards¹, D. Scholes², A.S. Meier¹, S. Caka¹, P. Yarbro², L. Drolette¹, R. Crosby³, A. Wald¹

¹ University of Washington, Seattle, United States of America

² Group Health Cooperative, Seattle, United States of America

³ University of Kentucky, Lexington, United States of America

Objectives: To prospectively measure the acceptance of HSV-2 testing and psychosocial response to a new serologic HSV-2 diagnosis.

Methods: Randomly-selected urban HMO enrollees were invited by mail and phone to be tested for HSV-2 by type-specific serologies. At enrollment, participants completed a 90-item psychosocial questionnaire, and had blood drawn. All HSV-2 seropositive and a subset of HSV-2 seronegative participants repeated the questionnaire 2-weeks, 3- and 6-months after receiving test results. Genital herpes counseling was provided for HSV-2 seropositive participants.

Results: Of 3117 eligible HMO enrollees contacted, 344 (11%) were tested for HSV. Eighty-seven of 344 (26%) were HSV-2 seropositive and, of these, 43 (49%) had a history of genital herpes. Six-month follow-up was 93%. Distress, measured by the Profile of Mood States (POMS) composite score, did not differ between subjects with a new HSV-2 diagnosis, subjects with a history of genital herpes, or HSV-2 negative subjects either at baseline (p=.17) or post-diagnosis (p=.40). However, POMS score increased 6 points (possible range -20 to 100) after receiving serostatus for the new HSV-2 diagnosis group (p<.001). Subjects with a new HSV-2 diagnosis also demonstrated a transitory increase in coping strategies,

particularly 'wishing the situation would go away' ($p=0.029$). No significant time changes or between-group differences were detected on life quality or sexual satisfaction scales. Participants perceived having genital herpes as more traumatic than 'committing a minor violation of the law,' but less traumatic than 'receiving a poor work evaluation.'

Conclusions: Unexpectedly testing HSV-2 positive was associated with a mild increase in psychosocial distress. However, scores at later follow-up were comparable to seronegative subjects and those with herpes history. This finding suggests that concerns about psychosocial burden should not deter serologic HSV-2 testing in primary care settings where post-test counseling is applied.

TP-007 RANDOMISED TRIAL OF ACYCLOVIR TREATMENT IN ADDITION TO SYNDROMIC MANAGEMENT OF GENITAL ULCER DISEASE IN WOMEN OF GHANA AND CENTRAL AFRICAN REPUBLIC (ANRS 1212 STUDY): BASELINE RESULTS.

H. Bouhla¹, H.A. Weiss², N. Khonde³, G. Gresenguet⁴, P. Mayaud², J. Legoff¹, J. Pepin⁵, L. Belec¹, D. Mabey⁶, R. Hayes⁶

¹ INSERM U743, PARIS, France

² London School of Hygiene & Tropical Medi, London, United Kingdom

³ WAPTCAS, Accra, Ghana

⁴ CNRMST/SIFDA, Bangui, Republic Central Africa

⁵ University of Sherbrooke, Quebec, Canada

⁶ LSHTM, London, United Kingdom

Objectives: A randomised controlled trial of acyclovir treatment for Herpes simplex virus type-2 (HSV2) added to syndromic management of genital ulcer disease (GUD) is underway among women in Ghana and Central African Republic. The aim is to evaluate the impact on HIV genital shedding. In this abstract, we describe the study population and evaluate associations between HIV-1 and HSV-2 infections and HSV2 genital shedding at baseline.

Methods: Interviews were administered and biological samples collected prior to randomisation and at follow-up visits at days 2/4, 7, 14 and 28. GUD aetiology was determined by PCR of a lesional swab; other samples include cervico-vaginal lavages (CVL) for the measurement of genital shedding of HIV-1 RNA and HSV-2 DNA by real-time PCR. Blood was tested for HSV-2, syphilis, and HIV serologies; CD4 counts and HIV-1 RNA viral plasma load were also done where appropriate.

Results: 256 women were screened, of whom 236 were eligible, and 235 were randomised. Of these, 216 (92%) were seen at the primary outcome day (day 7). Self-reported adherence to the drugs was good, with 94% of women reporting having taken the correct number of tablets by day 7. No severe adverse events were reported. 69% of women were HSV2 seropositive and 33% HIV-1 seropositive. HIV-1 and HSV-2 seroprevalence were strongly associated with each other (adjusted OR=3.1, 1.3-7.2). HIV-1 was also significantly associated with city, older age, being widowed, separated or divorced, and being a sexworker. 77% of HIV-1 seropositive women had either genital herpes or HSV-2 DNA shedding from CVL samples or a cervical swab at baseline.

Conclusion: Adherence and follow-up rates are high in this population of women with genital ulcer disease. HIV and HSV2 are highly prevalent infections, especially in Accra and Bangui, and are strongly associated.

TP-008 EVALUATION OF THE HERPESELECT ASSAY FOR THE DETECTION OF ANTIBODIES AGAINST HERPES SIMPLEX VIRUS TYPE 2 IN AFRICAN POPULATIONS SUFFERING OF RECURRENT OR PRIMARY HERPES GENITAL ULCERATIONS.

J. Legoff¹, H. Bouhla², C. Chemin², H. Weiss³, N. Khonde⁴, G. Gresenguet⁵, E. Frost⁶, A. Si-Mohamed¹, P. Mayaud³, L. Belec²

¹ Hopital Europeen Georges Pompidou, Paris, France

² INSERM U743, Paris, France

³ LSHTM, London, United Kingdom

⁴ WAPTCAS, Accra, Ghana

⁵ CNRMST/SIFDA, Bangui, Republic Central Africa

⁶ Centre for International Health, Sherbrooke, Canada

Objectives: Recent data on the performance of enzyme immunoassays for the detection of herpes simplex virus type 2 (HSV-2) infection have identified differences in sensitivity and specificity between commercial assays when used on serum samples from sub-Saharan Africa. The aim of the study was to assess sensitivity and specificity of Herpesselect assay by analyzing serological results obtained at successive dates associated with genital HSV-2 DNA detection.

Methods: Sera and genital samples from 94 African women with genital ulceration were tested for the presence of HSV-2 antibody and HSV-2 DNA respectively. Women who presented with primary genital herpes (PGH) were further tested for HSV-2 specific antibody 14 or 28 days following primary infection. Serological results were compared with those obtained with the Kalon assay.

Results: 66 women were HSV-2 seropositive with Herpesselect, and 44% of them demonstrated a genital herpes ulceration. Ten HSV-2 seronegative women had a genital ulceration positive for HSV-2, suggesting a PGH. For six of them, further HSV-2 specific serology could be determined 14 and 28 days following the ulceration, providing a seroconversion profile. Agreement of results between Herpesselect and Kalon assays was observed for 93% of all samples, while the remainder were positive on Focus and negative or indeterminate on Kalon. Three of these samples had evidence of HSV-2 infection as determined by PCR from the genital ulcer. For 5 of the 10 women with PGH, subsequent sera could be tested for HSV-2 serology with the Kalon assay and all gave negative results but with a 2.3 to 4.9 fold increase in optical density between two successive sera for three samples.

Conclusion: These results suggest that Herpesselect allows detection of HSV-2 antibody early after infection and that the lack of specificity suspected may be due to in part of high sensitivity in the seroconversion window.

TP-009 PREMENSTRUALLY-RECURRENT GENITAL HERPES IN PERIMENOPAUSAL WOMEN: PREVENTION BY LUTEAL PHASE ACICLOVIR OR TRANSDERMAL OESTROGEN

P. Greenhouse, A.E. Evans

Bristol Royal Infirmary, BRISTOL, United Kingdom

Objectives: We observed nine women in whom genital herpes recurred only in the immediate premenstrual phase of their cycle, associated with worsening premenstrual syndrome (PMS) and other classic perimenopausal symptoms. We set out to show if perimenopause treatment, or intermittent luteal phase Aciclovir, could prevent recurrences.

Methods: Observational case study. We took detailed sexual health life-histories of women with recurrent genital herpes (RGH). All but one had a similar history of primary acquisition in their twenties, with a period of Aciclovir suppression (range 2-6 years), followed by a long asymptomatic phase (range 6-11 years). Each then developed classical perimenopausal symptoms including insomnia, forgetfulness, breast tenderness, menorrhagia and deteriorating PMS, accompanied by monthly RGH occurring 3-8 days prior to menstruation. HSV2 was isolated and candidiasis excluded in each case. Aciclovir suppression (400mg BD) was commenced for 7-14 days before each period.

Results: Eight women (age range 32-49 years, mean 40) had luteal-phase aciclovir suppression, with no self-reported herpetic recurrences over 6 to 36 months' follow-up. Two then discontinued aciclovir and had successful treatment for perimenopausal symptoms with luteal-phase transdermal oestrogen, with no subsequent RGH episodes. One woman who was unable to tolerate aciclovir due to headache, started on luteal-phase oestrogen and has had no recurrences to date (7 months follow-up).

Conclusions: No significant link with menstrual cycle has been demonstrated in studies of women with RGH. Our group of women were older than previous series and all had significant PMS impinging on lifestyle. We postulate that combination of severe psycho-neuro-endocrine stress and progestogenic effect on immune function triggered cyclical herpetic recurrences, similar to the mechanism of premenstrually recurrent vulvo-vaginal candidiasis. We propose that brief, cyclical anti-herpetic therapy could reduce drug costs, and treatment of perimenopausal symptoms could reduce or prevent herpetic recurrences and improve quality of life.

TP-010 PRIMARY GENITAL HERPES (PGH) IN GHANA AND CENTRAL AFRICAN REPUBLIC: FINDINGS FROM A RANDOMISED TRIAL OF EPISODIC ACYCLOVIR TREATMENT IN ADDITION TO SYNDROMIC MANAGEMENT (ANRS 1212 STUDY)

P. Mayaud¹, H.A. Weiss¹, J. Legoff², E. Frost⁵, H. Bouhla², N. Khonde³, G. Gresenguet⁴, J.E. Malkin¹, L. Belec²

¹ London School of Hygiene & Tropical Medicine, London, United Kingdom

² INSERM U743, Paris, France

³ WAPTCAS, ACCRA, Ghana

⁴ CNRMST/SIFDA, Bangui, Republic Central Africa

⁵ University of Sherbrooke, Quebec, Canada

Objectives: Genital herpes treatment, including primary genital herpes (PGH), is not currently routinely provided in the management of GUD in Africa. To describe the prevalence and characteristics of PGH among women participating in a randomised controlled trial of acyclovir addition to syndromic management of GUD in Ghana and Central African Republic.

Methods: Interviews and genital and blood sampling were conducted prior to randomisation (day 0). GUD aetiology was determined by PCR of a lesional swab for *H. ducreyi*, *T. pallidum*, HSV-1 and -2, *C. trachomatis* and *K. granulomatis* at day 0. Other samples included cervico-vaginal lavages for the measurement of genital shedding of HIV-1 and HSV-2 by real-time PCR. Blood was tested for HSV-2 (HerpeSelect, confirmed by Western Blot), syphilis and HIV serologies at day 0; and at day 28 for initially seronegative participants. PGH was defined as an HSV-2-seronegative woman at day 0 with an HSV-positive ulcer by PCR.

Results: 80/207 (39%) women enrolled in the trial had HSV-2 ulcers and 8 of these were PGH ulcers. Women with PGH were more likely to have had a new partner within the last 3 months and less likely to report other STI related symptoms within the last week. PGH ulcers tended to present more frequently as blisters, were of shorter duration at first presentation, and smaller size, but women tended to have more ulcers than those with other HSV-2 ulcers. Only one woman with PGH was HIV seropositive.

Conclusion: This is one of the first reported series of PGH in Africa. PGH carries a very high risk of HIV acquisition or transmission. Episodic treatment with ACV may represent a useful strategy for HSV and HIV control.

TP-011 COMPARISON OF FOCUS HERPESELECT[®] AND KALON[®] GLYCOPROTEIN G-2 (G-G2) BASED ELISA SEROLOGICAL TESTS TO DETECT HERPES SIMPLEX VIRUS TYPE 2 (HSV-2) ANTIBODIES IN SOUTH AFRICA

S. Delany¹, W. Stevens², H. A. Weiss³, U. Jentsh², J. Moyes¹, R. Ashley-Morrow⁴, P. Mayaud³

¹ Reproductive Health & HIV Research Unit, Johannesburg, South Africa

² Wits University, Johannesburg, South Africa

³ LSHTM, London, United Kingdom

⁴ University of Washington, Seattle, United States of America

Background: Sero-epidemiological studies of Herpes simplex virus type-2 (HSV-2) remain fraught with difficulty owing to the high rate of false positive results observed when using the new recombinant gG2 HSV-2 ELISA tests in African populations. Background HIV prevalence may also influence the performance of these tests.

Objectives: We compared the performance of Focus HerpeSelect[®] and Kalon[®] HSV-2 ELISA to determine an appropriate testing strategy for use in South Africa.

Methods: Sera from 210 women attending primary health care services in Johannesburg were tested using Focus HerpeSelect and Kalon[®] g-G2 based Elisa assays. Sera from 19 discordant pairs, 44 concordant positive and 35 concordant negative samples were tested by Western Blot. Sensitivity and specificity of each test compared to Western Blot was calculated.

Results: By manufacturers' instructions, HerpeSelect[®] was 98% sensitive and 61% specific. Kalon[®] was 89% sensitive and 86% specific. Seroprevalence was overestimated by as much as 14% by HerpeSelect[®]. Specificity was improved by raising the cut-off for determination of a positive result to >3.4 for HerpeSelect[®], but not for Kalon[®]. Optimal sensitivity and specificity was obtained by using a two-test algorithm with HerpeSelect[®] (index > 3.4) as the first test, and Kalon[®] to resolve equivocal results (sensitivity 92% and specificity 93%). **Conclusion:** Newer HSV-2 serological tests do not perform as well in African populations. A two-step testing strategy using HerpeSelect[®] and Kalon[®] as a resolver test provides a rational testing alternative to the Western Blot for South Africa.

TP-012 HERPES SIMPLEX VIRUS TESTING IN QUÉBEC PROVINCE: SURVEYS OF MICROBIOLOGISTS AND MICROBIOLOGY LABORATORIES

M. Steben¹, G. Boivin², C.A. Dimitry¹

¹ Institut national de santé publique, Montréal, Québec, Canada

² Centre de recherche, CHUL, Québec City, Canada

Objectives: Decreasing the burden of Herpes simplex virus type 2 (HSV-2) is an objective of Quebec's national public health program. Genital herpes is not only a common STI but also a major public health problem. Availability and efficient laboratory testing are

necessary for diagnosis, counselling and epidemiologic surveillance. Our objectives were: Conduct an inventory of virologic tests and survey microbiologists' opinion about HSV testing.

Methods: Two trans-sectional studies of microbiologist-immunologists of Quebec province were done in 2004: one by the provincial laboratory on inventory of testing and one by the genital herpes working group of the Quebec national public health institute on opinion of microbiologists about HSV testing. The availability survey was returned by 113/114 laboratories and 49 microbiologists filled the opinion survey. Subsequently, a descriptive analysis was done. Results: 17% of laboratories do viral culture with typing (19/113), 5% anticipate to offer by one year, 72.7% said little demand, 90.9% said it is too expensive, 10% considered clinical diagnosis sufficient, 100% believe that there is no validity issue for viral isolation. 14% (16/113) offer immunofluorescent testing. In total, 21/113 laboratories in perform research on herpes simplex virus 2 by a direct method. Only two laboratories propose type specific serology. 90% of respondents say that there is little demand and 70% think that is too expensive, 30% believe that the test validity is not good enough. Discussing CDCs' 2002 STD guidelines, 90% agreed that clinical diagnosis should be confirmed by a lab test and 84% agreed that these tests should be available at clinics were patients are seen. Conclusion: Evaluating the availability of viral testing and opinion allow defining the problem, planning strategies, and making concrete propositions to public health policy-makers and clinicians.

SESSION: TP - C2 EPIDEMIOLOGY- HERPES SIMPLEX VIRUS INFECTION (HSV)

TP-013 HSV-2 ANTIBODIES IN FEMALE SEX WORKERS IN VIETNAM

N. O'Farrell¹, N.V. Thuong², K.V. Nghia², L.T. Tram²

¹ Ealing Hospital, LONDON, United Kingdom

² Pasteur Institute, HO CHI MINH CITY, Vietnam

Objectives: To determine the prevalence of herpes simplex virus 2 (HSV-2) antibodies and correlates of HSV-2 infection in female sex workers (FSWs) in border provinces of Vietnam.

Methods: 904 FSWs in five border provinces of Vietnam were interviewed about selected socio-demographic and behavioral characteristics, history of STIs and information about cohabiting partners by a standard interview schedule between 12/2002 and 01/2003. Serological samples were collected for HSV-2 antibodies, syphilis and HIV.

Results: The overall prevalence of HSV-2 antibodies among FSWs in border provinces was 27.7% (95%CI: 24.8%-30.7%). The prevalence of HSV-2 in Southern border (Dong Thap 32.3%; An Giang 33.3%; Kien Giang 29.9%) was higher than that in Central border (Quang Tri 20.8%) and Northern border areas (Lai Chau 5.0%). In multivariate analysis, age \leq 20 (OR=0.65), Kinh ethnicity (OR=2.59), direct sex work (OR=1.61), ?9 clients/week (OR=2.11), ever worked outside Vietnam (OR=2.12), current oral contraceptive use (OR=0.55), >1 pregnancy termination (OR=1.58), syphilis (OR=5.19) and HIV (OR=2.68) were associated with HSV-2 (p<0.05).

Conclusions: HSV-2 antibodies were detected in a significant proportion of FSWs in border provinces, more so in the southern region. FSWs should be educated about recognition of signs and symptoms of genital herpes and the role this infection has in facilitating HIV transmission.

TP-014 FURTHER CHANGES IN THE AETIOLOGY OF GENITAL ULCER DISEASE IN DURBAN, SOUTH AFRICA: IMPLICATIONS FOR STI CONTROL

N. O'Farrell¹, P. Moodley², K. Pillay², T. Vanmal², P. Bhola², M. Quigley³, L. Morison³, R. Hayes³, A.W. Sturm²

¹ Ealing Hospital, London, United Kingdom

² University of Kwazulu, Natal, South Africa

³ London School of Hygiene & Tropical Med, London, United Kingdom

Objectives: To determine the aetiology of genital ulcers in men in Durban and assess STI treatment patterns in this group.

Methods: PCR tests for Herpes Simplex type 2 (HSV-2), Treponema pallidum (TP), Chlamydia trachomatis (CT) and Haemophilus ducreyi (HD) were undertaken from material obtained from consecutive men with genital ulcers at the main Durban STI clinic between Jan-Mar 2004. Serological tests for syphilis (TPHA + RPR) and HSV-2 and HIV antibodies and PCR tests for gonorrhoea (GC), chlamydia (CT) and trichomonas (TV) were undertaken in urethral specimens from subjects with dysuria and/or urethral discharge.

Results: Of 162 patients enrolled, 76% were HIV positive and 85% had antibodies to HSV-2. PCR results showed the following prevalences: HSV-2 53%, CT 16%, TP 4%, HD 1%, mixed 4%, no pathogens identified 33%. An additional 6% had both positive TPHA and RPR tests. In those without a laboratory diagnosis, 87% had antibodies to HSV-2 and 70% were HIV positive. One case of donovanosis was diagnosed clinically. Of the ulcer patients, 78 (48%) were also treated syndromically for urethral discharge syndrome because of a complaint of urethral discharge and/or dysuria. In this group, the following STIs were identified- GC 15, CT 7, TV 11. Of the 85 herpes confirmed cases by PCR, 39 (46%) were also treated for urethral discharge syndrome. Of these, 15 (38%) cases complained of urethral discharge including 9/10 that were confirmed with urethral GC and/or CT. The remaining 24 (62%) received treatment for chancroid, syphilis, GC and CT although only six co-infections infections (4 syphilis, all with low RPR titres, and 2 LGV) were identified.

Conclusions: Chancroid and donovanosis have diminished considerably. The high prevalence of HSV-2 and associated dysuria has implications for the urethral discharge/dysuria STI algorithm. Anti-herpes therapy should be introduced with educational support.

TP-015 FIFTEEN YEARS OF HIV IN DURBAN- NO EVIDENCE OF CHANGE IN HIGH-RISK BEHAVIOUR IN MEN WITH GENITAL ULCER DISEASE

N. O'Farrell¹, P. Moodley², K. Pillay², T. Vanmal², P. Bhola², M. Quigley³, L. Morison³, R. Hayes³, A.W. Sturm²

¹ Ealing Hospital, London, United Kingdom

² University of Kwazulu, Natal, South Africa

³ London School of Hygiene & Tropical Med, London, United Kingdom

Objective: A study of men with genital ulcer disease (GUD) in Durban at the start of the HIV epidemic in 1988/89 found that 36% of men with GUD continued with sexual intercourse despite symptoms. The aim of this study was to determine whether this high-risk behaviour had changed in the interim.

Methods: 162 men attending the main Durban STI clinic with a new complaint of genital ulceration were enrolled. A standard questionnaire was administered by two interviewers in a face to face interview.

Results: Fifty five (34%) of the men had had sex since the start of symptoms, 51 (93%) of whom had had unprotected sex. Of 85 men with genital ulcers confirmed positive for genital herpes by PCR testing, 30 (35%) had had sex since the start of symptoms, 26 (87%) of whom had had unprotected sex.

Conclusions: There is a high level of risk behaviour in this group, similar to that of fifteen years ago. Since then, genital herpes has emerged as the most common cause of GUD. The risky sexual behaviour demonstrated here could therefore reflect disinhibition, possibly because so many are infected with HSV-2 already, lack of education or other unknown factors. Syndromic STI management should be strengthened with intensive health education to promote community awareness of genital ulceration and genital herpes in particular and their role in facilitating HIV transmission. The effect of the introduction of anti herpes treatment in this setting needs to be studied urgently. The low level of condom use indicates that condom promotion programmes still have much to achieve.

TP-016 RISK FACTORS FOR HIV AND HSV IN HIGH RISK WOMEN, TANZANIA

M. Rusizoka¹, D. Watson-Jones¹, J. Chantalucha², L. Knight², A. Gavyole¹, H. Weiss³, R. Balira², D. Everett², D. Ross³, R. Hayes³

¹ AMREF, Mwanza, Tanzania

² NIMR Mwanza Centre, Mwanza, Tanzania

³ LSHTM, London, United Kingdom

Objectives: Herpes simplex virus type 2 (HSV-2) infection is an important co-factor in HIV transmission. The effect of HSV suppressive therapy on HIV incidence and HSV-2 and HIV viral shedding is being evaluated in high risk women in Tanzania. Baseline results and risk factors for HIV and HSV in this population are described. Methods: A double-blind, placebo-controlled trial of HSV-2 suppressive therapy with aciclovir 400mg bd is being conducted in female bar, hotel and other facility workers in NW Tanzania. Preparatory work included: (1) community information and mobilisation (2) mapping of food and recreational facilities (3) a baseline survey to screen for antibodies to HSV-2 and HIV in facility workers. Multiple logistic regression was used to estimate OR associated with HSV2 and HIV infection respectively.

Results: Initial mapping of bars, guesthouses and other facilities within 16 high transmission areas (truckstops and around gold-mines) found 4952 women working in 1989 facilities. Following mobilisation, female facility workers aged 16-35 years were invited to attend a baseline survey in a mobile clinic to screen for antibodies to HSV-2 and HIV. Exclusion criteria included self-reported pregnancy and mobility. Of the 2113 women who attended, 79% were HSV2 seropositive and 30% were HIV seropositive. HSV2 seropositive women were more likely to be HIV seropositive (37% vs 9% in HSV2 seronegative women; $p < 0.001$). Independent risk factors for HIV and HSV2 infection were similar and included older age, being widowed, being a bar worker and having had more lifetime partners. In addition HSV2 infection was associated with a lower level of education.

Conclusions: Young women working as facility workers have a high HSV and HIV prevalence in this population and are suitable study population for a trial of HSV suppressive therapy for HIV acquisition and transmission.

TP-017 EPIDEMIOLOGY OF NEONATAL HERPES SIMPLEX VIRUS INFECTIONS IN CANADA

R.Y. Kropp¹, T. Wong¹, L. Cormier¹, A. Ringrose¹, J. Embree², M. Steben³

¹ Public Health Agency of Canada, Ottawa, Canada

² University of Manitoba, Winnipeg, Canada

³ Institut de Santé Publique, Montreal, Canada

Objectives: To determine the incidence, determinants and morbidity/mortality of neonatal herpes simplex virus (HSV) infections in Canada.

Methods: From October 2000 to October 2003, CPSP actively elicited reports of laboratory-confirmed neonatal HSV infections from all Canadian paediatricians and paediatric sub-specialists on a monthly basis. The reporting paediatrician completed a questionnaire on demographics, maternal/neonatal risk factors, laboratory results, treatment, and outcomes.

Results: Fifty-eight cases of neonatal HSV infection were reported (5.9 per 100,000 live births). Mothers under 20 years of age and those reporting Aboriginal ethnicity were disproportionately affected. Caesarean section was performed in 24.6% of cases, 28.1% of cases were born prematurely, 28.6% had birthweight less than 2500g, and 7.5% of cases had an APGAR under 7 at five minutes of life. No history of genital herpes was present for 40% of mothers (8/20) prior to delivery and intrapartum genital lesions were present in only one of 58 cases (1.7%). Of neonatal cases with known HSV type ($n=48$), 30 (62.5%) were HSV-1. Dissemination occurred in 35.1% of cases, all but one to the CNS. Localized infections (64.9%) were more likely to be caused by HSV-1 and disseminated infections by HSV-2 ($p=0.02$). Nine of the 58 cases were fatal (case fatality rate=15.5%), with death more likely for disseminated than localized cases (36.8% vs. 2.8%, $p < 0.001$), and HSV-2 than HSV-1 infections (33.3% vs. 6.7%, $p=0.02$). All cases with known treatment information ($n=55$) were treated with IV acyclovir.

Conclusions: Many women had no genital HSV history prior to delivery and intrapartum genital lesions were absent in all but one case. Dissemination and fatality were associated with HSV-2. The majority of cases were HSV-1, which has implications for vaccine and drug development. Outcome follow-up for the surviving cases is being done annually for 3 years, to be completed October 2006.

TP-018 INCIDENCE AND PREVALENCE OF HSV INFECTION IN ADOLESCENT WOMEN

K.H.F. Fife, J.D. Fortenberry, S. Ofner, B.P. Katz, D.P. Orr

Indiana University, Indianapolis, United States of America

Objectives: Few studies have evaluated genital HSV infection prospectively in patients at risk. We conducted this study to examine the incidence and prevalence of HSV 1 and HSV 2 infection in a cohort of young women who were closely followed for acquisition of sexually transmitted infections.

Methods: Women between 14 and 18 years seeking health care at a community adolescent health clinic were invited to participate. Study subjects had blood and genital specimens obtained quarterly to test for incident sexually transmitted infections. Subjects also had two 12-week periods each year when they kept a detailed behavioral diary and performed weekly vaginal swabs. Serum specimens were tested for HSV 1 and HSV 2 antibody with the

HerpeSelect? immunoblot and seroconversions were confirmed by western blot. HSV DNA PCR was performed using the LightCycler? HSV 1/2 Detection Kit.

Results: A total of 104 subjects enrolled and had at least 2 sera that could be analyzed for seroconversion. The mean age of the subjects was 15.8 years at entry. The median duration of follow up of the subjects was 15 months (range 3 mo to 27 mo). The HSV 1 and HSV 2 seroprevalence at entry was 59.6% and 13.5%, respectively. During the study, 4 subjects acquired HSV 1 antibody and 7 acquired HSV 2 antibody (including 1 subject who acquired both sequentially). The annualized incidence among susceptible individuals was 8.9% for HSV 1 and 7.4% for HSV 2. Three of the 7 HSV 2 seroconverters had HSV 2 DNA detected in vaginal swabs, although no subject had symptomatic genital herpes. No HSV 1 seroconverter had viral DNA detected in a genital swab.

Conclusions: Acquisition of HSV 1 and HSV 2 is relatively common in adolescent women.

TP-019 SEROPREVALENCE AND COINFECTION WITH HERPES SIMPLEX VIRUS TYPE 1 AND TYPE 2 IN FIVE UNITED STATES SEXUALLY TRANSMITTED DISEASE CLINICS

S.L. Gottlieb¹, M. Foster², J.M. jr. Douglas¹, D.S. Schmid¹, M.L. Kamb¹, G. Bolan³, C.K. Malotte⁴, J. Zenilman⁵, L.E. Markowitz¹

¹ CDC, Atlanta, United States of America

² Denver Public Health, Denver, United States of America

³ California Dept of Health, Oakland, United States of America

⁴ California State University, Long Beach, United States of America

⁵ Baltimore City Health Dept, Baltimore, United States of America

Background: Herpes simplex virus type 1 (HSV-1) is an increasingly common cause of genital herpes; however, data are limited regarding its seroepidemiology and coinfection with HSV type 2 (HSV-2) in high-risk populations.

Objectives: To determine HSV-1 and HSV-2 seroprevalence and prevalence of coinfection among U.S. STD clinic patients.

Methods: Serum samples were collected at enrollment into Project RESPECT, a randomized controlled trial evaluating HIV/STD counseling efficacy among HIV-negative, heterosexual patients aged ?14 years from five urban STD clinics between 1993-1996. Serum was tested for HSV-1 and HSV-2 antibodies using a type-specific strip immunoblot assay (Chiron).

Results: Among 4128 participants with HSV tests, 18% were seronegative, 41% were positive for HSV-1 only, 11% were positive for HSV-2 only, and 30% were coinfecting with HSV-1 and HSV-2. Results varied according to sex and age (see Table). Of the 234 study participants that reported a prior diagnosis of genital herpes, 3% were seronegative, 12% had HSV-1 only, 33% had HSV-2 only, and 52% were coinfecting. Only 10% of those who were HSV-1 and HSV-2 co-infected reported a prior diagnosis of genital herpes, versus 17% of those infected only with HSV-2 (p<.001). Of the 751 participants who were HSV-seronegative, 72% had received oral sex in the preceding 3 months; 86% reported ever receiving oral sex.

Conclusions: The majority (82%) of these STD clinic patients had already acquired HSV-1 and/or HSV-2. Nonetheless, the high proportion of seronegative persons receiving oral sex suggests that many are at risk of acquiring genital HSV-1 as well as HSV-2 infection.

	Sero-negative	HSV-1 only	HSV-2 only	Co-infected
Males <25 years (n=976)	30%	49%	8%	13%
Females <25 years (n=946)	19%	41%	10%	30%
Males ≥25 years (n=1372)	15%	44%	12%	29%
Females ≥25 years (n=834)	8%	26%	15%	51%

Figure 1: HSV-1/2 prevalence, coinfection by age, sex

TP-020 A MATHEMATICAL MODEL OF THE ROLE OF HERPES SIMPLEX VIRUS TYPE 1 IN THE EPIDEMIOLOGY OF HERPES SIMPLEX VIRUS TYPE 2

KJ Looker, G.P. Garnett

Imperial College London, LONDON, United Kingdom

Objective: To explore the role of herpes simplex virus type 1 (HSV-1) in the epidemiology of HSV-2.

Methods: A mathematical model of the heterosexual transmission of HSV-1 and HSV-2 was developed. The model was stratified by HSV-1 and HSV-2 infection status, site of infection (oral or genital), type of risk behaviour (oral-oral, oral-genital or genital-genital contact) and frequency of sexual risk behaviour. The predicted prevalences of HSV-2 in HSV-1 positives and HSV-1 negatives for a range of levels of cross-protection by prior HSV-1 were compared with those observed in an earlier systematic review of seroprevalence surveys.

Results: In our model a protective effect for previous HSV-1 infection against subsequent HSV-2 infection has a substantial influence on the epidemiology of HSV-2. Our model predicts increased odds of HSV-2 associated with HSV-1 infection under no cross-protection by HSV-1 due to common sexual risk behaviours associated with acquisition of both viruses, and infection with HSV-1 after infection with HSV-2. Introducing cross-protection by HSV-1 decreases the odds of HSV-2 amongst those HSV-1 infected. The odds of HSV-2 infection in seroprevalence surveys are most consistent with a 30 to 40 percent reduction in susceptibility to HSV-2 provided by any prior HSV-1 infection in our model. Cross-protection provided only by genital HSV-1 infections in the model is insufficient to explain the observed pattern of HSV-1 and 2 infections.

Conclusions: Our analysis suggests that the null model for odds ratio of HSV-2 infection as a function of prior HSV-1 should not be one, and that HSV-1 provides partial protection against genital HSV-2. Changes in the prevalence of HSV-1 both acquired in childhood and genitally will have an impact on the population level incidence of HSV-2. These findings should be considered when assessing the potential impact of genital herpes vaccines.

TP-021 ORAL HSV-2 SHEDDING BY PCR

H.N. Kim¹, A. Meier¹, M.L. Huang¹, S. Kuntz¹, S. Selke¹, E. Krantz¹, C. Celum¹, L. Corey², A. Wald¹

¹ University of Washington, Seattle, WA, United States of America

² Fred Hutch Cancer Research Ctr, Seattle, United States of America

Objective: To characterize oral herpes simplex virus-2 (HSV-2) shedding among HIV-positive and HIV-negative men.

Methods: HSV-2 infected men collected daily swabs from oral and anogenital areas. Type-specific HSV DNA was measured by quantitative real-time PCR assay.

Results: 109 HSV-2 seropositive men (68 also HSV-1 seropositive) were followed for a median of 64 days. 83% were men who had sex with men – 59 HIV-negative and 50 HIV-positive. Of these 109, 44 (40.4%) had HSV-2 detected by PCR from the mouth on at least one day. Overall, the rate of oral HSV-2 detection was 2.3% compared to 17% for genital HSV-2 and 5.5% for oral HSV-1. No days of oral HSV-2 shedding were associated with a corresponding lesion compared to 27.3% days for genital HSV-2 and 9.5% days for oral HSV-1. During 90 days when both oral and genital HSV-2 were detected, the mean HSV-2 DNA quantity was 6.2 for genital versus 3.6 log₁₀ copies/ml for oral (mean difference 2.6, 95% CI 2.2-2.9). Among those infected with both HSV-1 and HSV-2 who shed both orally at least once, the mean maximum quantity shed was 5.6 for HSV-1 versus 4 log₁₀ copies/ml for HSV-2 (mean difference 1.6, 95% CI 0.6-2.6).

HIV-positive men shed HSV-2 orally more frequently than HIV-negative men (OR 2.7; 95% CI 1.1-7.1). Even HIV-positive men on highly active antiretroviral therapy were more likely to shed HSV-2 orally than HIV-negative men (OR 2.9, 95% CI 1.0-8.5).

Conclusion: Oral HSV-2 shedding as measured by PCR was not uncommon, especially among HIV-positive men, always asymptomatic, and often occurred on days of genital HSV-2 shedding. Oral HSV-2 copy numbers were lower than those of genital HSV-2 or oral HSV-1, possibly explaining the lack of HSV-2 detection in oral specimens in prior studies.

HSV Shedding Frequency (Days PCR+/Days tested)			
	HIV negative	HIV positive	Total
Oral HSV-2 (109 subjects)	45/3468 (1.3%)	103/2954 (3.5%)	148/6422 (2.3%)
Genital HSV-2 (109 subjects)	411/3520 (11.7%)	699/2985 (23.4%)	1110/6505 (17%)
Oral HSV-1 (68 subjects)	79/1896 (4.2%)	141/2122 (6.6%)	220/4018 (5.5%)
Genital HSV-1 (68 subjects)	35/1920 (1.8%)	53/2153 (2.5%)	88/4073 (2.2%)

Table 1:

TP-022 HSV-2 SHEDDING DURING DELIVERY AND RISK OF MOTHER-TO-CHILD HIV-1 TRANSMISSION

C. Farquhar¹, A. Wald¹, M. Huang², S. Emery², S. Selke¹, B. Lohman¹, R. Ashley-Morrow¹, L. Corey¹, G. John-Stewart¹

¹ University of Washington, Seattle, United States of America

² Fred Hutch Research Center, Seattle, United States of America

Objective: While herpes simplex virus type-2 (HSV-2) is highly prevalent in sub-Saharan Africa, it has not been well-studied in the context of mother-to-child HIV-1 transmission. The goal of this

study was to determine whether intrapartum cervical HSV-2 shedding was associated with risk of infant HIV-1 acquisition during delivery.

Methods: We performed a nested case-control study in a cohort of pregnant HIV-1-infected women followed antenatally, intrapartum, and for 12 months postpartum. Maternal blood and cervical swabs were obtained intrapartum and infant HIV-1 status determined at birth and month 1 using HIV-1 DNA PCR. HSV-2 serology was assessed by Focus ELISA with Western blot confirmation, and HSV-2 DNA was detected in cervical specimens using PCR. Cases and controls were selected based on infant HIV-1 status; statistical analyses were conducted using logistic regression and independent T tests.

Results: Among 510 mother-infant pairs, we included 55 women who transmitted HIV-1 between birth and month 1 and 121 randomly selected non-transmitters. Overall, 153 (87%) of the 176 women were HSV-2 seropositive, with no difference in HSV-2 seroprevalence between transmitting and non-transmitting women (49 [89%] vs. 104 [86%] seropositive; respectively; P=0.6). Thirteen (8.5%) of 153 women had cervical HSV-2 detected, with 6 (12%) of 49 transmitters versus 7 (7%) of 104 non-transmitters positive for HSV-2 DNA (odds ratio [OR]=1.9; 95% CI 0.6-6.0). Mean plasma HIV-1 at 32 weeks gestation was higher for women shedding versus not shedding HSV-2 (5.4 vs. 4.8 log₁₀ copies/ml; P=0.008), an association observed as a trend at delivery (4.9 vs. 4.2; P=0.08).

Conclusion: These preliminary data confirm a positive relationship between intrapartum HSV-2 shedding and maternal HIV-1 viral load and suggest increased risk of vertical HIV-1 transmission for women shedding HSV-2 at delivery.

TP-023 CLINICAL SPECTRUM OF GENITAL HERPES SIMPLEX VIRUS INFECTIONS AMONG PREDOMINANTLY BLACK MEN ATTENDING AN URBAN US STD CLINIC

J.M. Sizemore, A. Hughes, F. Lakeman, R. Whitley, E.W. Hook

University of Alabama at Birmingham, Birmingham, AL,

United States of America

Objectives: The clinical spectrum of genital herpes infections has been understudied in heterosexual men, particularly black men. This study describes the clinical spectrum of both genital HSV-1 and HSV-2 infections among predominantly black heterosexual men attending an STD clinic.

Methods: Using a cross-sectional design, consecutive heterosexual men attending an STD Clinic for acute care were approached to enroll in an ongoing study of genital herpes epidemiology. Consenting men underwent serological testing for HSV-1 and HSV-2 (Focus EIA) and had genital swabs collected for HSV detection using culture and PCR techniques.

Results: 518 men were enrolled. 465 (90%) were black and the median age was 25 years (range 18-68). 315 (61%) had antibodies to HSV-1 and 233 (45%) had antibodies to HSV-2. 52 men had HSV detected from genital swabs, 43 HSV-2 (82.7%) and 9-HSV-1). Among those 241 men with evidence of HSV-2 infection, 6 (2.5%) had primary infection, 2 (0.8%) had first episode genital infection, 27 (11.2%) had a recurrent episode, 8 (3.3%) were asymptotically shedding, and 198 (82.2%) had antibody evidence only of infection. Among the nine men with HSV-1 detected from their genitalia, 2

had primary genital infection, 1 had first episode genital infection, 1 had a clinical recurrence, and 5 were asymptotically shedding. The sensitivity of culture for HSV-1 and HSV-2 were .22 and .58 respectively when compared to PCR. All isolates that were culture positive were PCR positive.

Conclusions: Genital HSV infections, particularly type 2, are common among this previously understudied segment of the population. Type 1 genital infections represent a non-trivial proportion of genital HSV detected, yet they were more likely to be asymptomatic than their type 2 counterparts.

SESSION: TP - D2 PREVENTION STRATEGIES- HERPES SIMPLEX VIRUS INFECTION (HSV)

TP-024 PRIISME: A QUEBEC PROVINCE CONJOINT PUBLIC HEALTH AND PRIVATE SECTOR INITIATIVE ABOUT REDUCING THE BURDEN OF GENITAL HERPES

M. Steben¹, G. Boivin², C.A. Dimitry¹, D.A. Toutant³

¹ Institut national de santé publique, Montréal, Québec, Canada

² Centre de recherche, Chul, Québec City, Québec, Canada

³ Glaxo SmithKline Canada, Montréal, Québec, Canada

Objectives: Reduce incidence and impact of genital herpes according to the objective of Quebec's national public health program 2003-2012

Methods: The Quebec National Public Health Institute has the mandate to implement Quebec's national public health program. A working group was created to advise the Institute on how to reduce the incidence and impact of genital herpes. This group is chaired by a public health officer and a microbiologist and includes public health physicians, STI/HIV physicians, vaccine specialist, gynaecologist, dermatologists, microbiologists, family physicians and sexologist. Members are from the ministry of health, the Institute, the hospitals/clinics of the health care system. All of the appointed members have experience in genital herpes research and/or clinic.

Results: The working group objectives were centred

1. On surveillance
 - Evaluate the prevalence and incidence of HSV infection in the general and high risk populations.
2. On care and services
 - Circumscribe optimal diagnostic norms
 - Circumscribe optimal therapeutic norms
 - Define pre and post test counselling for serology testing
 - Define adequate counselling for persons recently diagnosed
 - Do an inventory of national laboratory resources
 - Develop support material for health care professionals
 - Prepare continuing health formation
 - Circumscribe unmet needs of Quebec healthcare network
3. On prevention
 - Circumscribe individual optimal preventive strategies
 - Develop preventive messages to the general population, youths and high risk populations
 - Propose transmission preventive measures to recently diagnosed persons
 - Do an inventory of national prevention tools
 - Develop support material for infected persons and their partners

4. On research

- Circumscribe specific national research needs
- Define populations for type specific serology screening pilot project

Conclusion: This project's objectives are being worked upon and will lead to a national formation program about reducing the burden of genital herpes.

SESSION: TP - C4 EPIDEMIOLOGY- VIRAL HEPATITIS

TP-025 HEPATITIS B VIRUS (HBV) SEROLOGY IN HIGH- PREVALENCE RURAL COMMUNITIES IN GUERRERO, MEXICO

L.A. Juarez-Figueroa, C. Conde-Glez, F. Uribe-Salas, M. Sanchez-Aleman, V. Guerrero-Lemus

National Institute of Public Health, CUERNAVACA, Mexico

Objectives: A previous study demonstrated high HBV seropositivity in adult rural populations from at least 10 Mexican states. In order to verify these data in a larger sample, a serosurvey for HBV, HIV, and HCV was conducted in two towns in the state of Guerrero, along with a survey for variables related to HBV transmission.

Methods: Each household was visited, a questionnaire was applied to all adolescents and adult inhabitants, and blood samples were taken from 295 individuals. An HBsAg rapid test (Abbott/ Determine HBsAg) was applied and an additional blood sample was taken from positives for ALAT quantification. Anti-HBc, anti-HBs, HBsAg, anti-HIV, and anti-HCV (Abbott/AxSYM) antibodies were tested in all samples. PCR (Roche/Cobas Amplicor) was performed on all samples positive for anti-HCV and those positive only for anti-HBc.

Category	Number	Percentage
HBsAg chronic carrier (HBsAg+, anti-HBs-, anti-HBc+, ALAT normal)	4	1.4%
HBV infected and recovered (HBsAg-, anti-HBs+, anti-HBc+ or HBsAg-, anti-HBs-, anti-HBc+, PCR-)	145	49.2%
HBV Vaccinated (HBsAg-, anti-HBs+, anti-HBc-)	10	3.4%
HCV Infected and recovered (anti-HCV+, PCR-)	3	1%
HCV chronic carrier (anti-HCV+, PCR+)	1	0.3%
HIV infected (anti-HIV+)	0	0

Table 1:

Results and conclusions: A low number of asymptomatic HBsAg chronic carriers were identified, while HBV infected and recovered individuals represented half of the surveyed people. There was a low prevalence for HCV, and none were positive for HIV (Table 1). HBV affected mostly the older age groups, but the increase in anti-HBc prevalence coincides with adolescence (Figure 1), suggesting that HBV transmission may initiate with sexual activity in these communities. The majority of susceptible individuals are young, indicating the need for prompt HBV vaccination among adolescents. There was no difference in HBV seroprevalence between men and women, while illiterate individuals were the most exposed. There was a tendency for association of anti-HBc positivity with migratory sexual habits. Iatrogenic transmission through dental care and malaria testing (finger prick) was also significant (Table 2). The high

HBV prevalence, albeit in the absence of HIV positive individuals, should alert authorities to a potential emergence of HIV in Mexican rural communities.

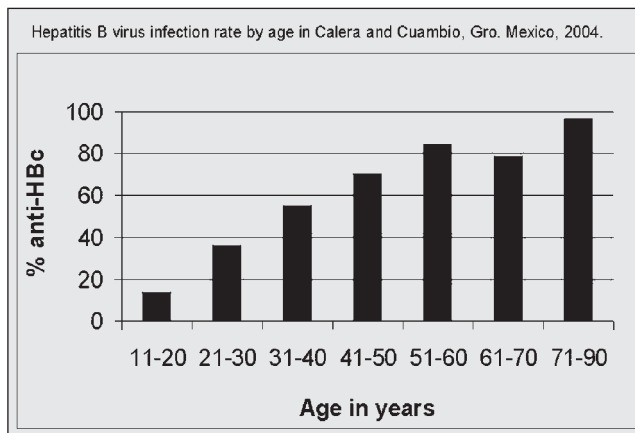


Figure 1:

		Prevalence% (n)	Odds Ratio
Sex	Woman	50.0% (93/186)	0.9 (0.6-1.5)
	Man	51.4% (56/109)	1.0
Literacy	No	85.2% (69/81)	9.8 (5.0-19.2)
	Yes	37.0% (78/211)	1.0
Blood Transfusion	Yes	62.5% (15/24)	1.7 (0.7-3.9)
	No	50.0% (133/266)	1.0
Sex with IV drug users/ sex worker in US	Yes	80% (8/10)	4.1(0.8-19.5)
	No	49.6% (138/278)	1.0
Dental care	Yes	57.1% (93/163)	1.8(1.1-2.9)
	No	42.6% (55/129)	1.0
Tested for malaria	Yes	55.1% (114/207)	1.7(1.0-2.9)
	No	41.5% (34/82)	1.0

Table 2: Factors associated to anti-HBc positivity

TP-026 THE CHANGING PREVALENCE OF HEPATITIS B AMONGST MEN WHO HAVE SEX WITH MEN ATTENDING A STD CLINIC IN EDINBURGH

A. McMillan, M.M. Ogilvie

NHS Lothian, Edinburgh, United Kingdom

Objective: To discover if the annual prevalence of serological markers of hepatitis B virus (HBV) infection amongst men who have sex with men (MSM) has changed in a 15-year period.

Methods: A retrospective study of 3,747 MSM attending a STD clinic in Edinburgh, Scotland.

Results: 41 men (1%) had hepatitis B surface antigenaemia. Sera from 347 (9%) of HBsAg-negative men gave positive results for anti-HBc. There was no significant difference in the annual prevalence of anti-HBc between 1989 and 1995 (average 14% of 1,428 men) ($\chi^2 = 6.23$; $P > 0.05$). However from 1996 the annual prevalence of anti-HBc was significantly lower than in the preceding seven-year period (6% of 2,278 MSM) ($\chi^2 = 61.7$; $P < 0.001$). The median ages of the men in whom anti-HBc was detected did not differ significantly between each year of the study.

Conclusions: These findings suggest that although there has been a decline in the prevalence of infection in clinic attendees, there is continued transmission of HBV amongst young MSM in Edinburgh, and that vaccination should be promoted further.

TP-027 IS HEPATITIS C A SEXUALLY TRANSMITTED DISEASE (STD)? EVIDENCE-BASED REVIEW

S. Semaan¹, K. Workowski², D. Des Jarlais³

¹ Centers for Disease Control & Prevention, Atlanta, United States of America

² Emory University, Atlanta, United States of America

³ Beth Israel Medical Center, New York, United States of America

Objective: Although direct percutaneous exposure (e.g., injecting drugs, blood transfusion) is the most important risk factor for infection with hepatitis C virus (HCV), sexual infection with HCV also deserves attention. As HCV transmission through blood transfusion has essentially stopped in industrialized countries, evolutionary pressure may select HCV strains that are more easily transmitted sexually. Given the large proportion of HCV-infected drug users and men who have sex with men (MSM), it is important to assess the sexual risk of their sex partners for HCV infection.

Methods: By carrying out automated (using multiple search engines and standardized key terms) and manual searches, we located the 1990–2004 published literature on observational and intervention studies on sexual acquisition of HCV.

Results: Review of over 100 studies showed research gaps. Earlier studies, primarily with heterosexual populations, suggest a small risk for sexual infection. Later studies, with heterosexual and MSM populations, suggest the need for additional research. Recent clinical observations and case studies, especially with MSM, suggest that sexual infection with HCV is possible.

Conclusions: Although one might assume that sexual activities causing micro tears and abrasions increase the sexual risk for infection with HCV, research gaps exist about the role of certain factors. These factors include traumatic sex among MSM, prolonged vaginal sex under the influence of cocaine (delays in male orgasm), or sex under the influence of crack (multiple sex partners in a short time). There is a need to examine the role of HIV and coinfection with other STDs, especially ulcerative STDs, such as syphilis and HSV-2; characteristics of the sex act (e.g., rough sex, blood-producing sex, rimming, fisting); and viral load of the HCV-infected partner in influencing sexual risk for HCV infection.

TP-028 HEPATITIS B VIRUS INFECTION IN MEN AT HIGH RISK FOR STDs AND HIV IN MUMBAI, INDIA

J. Moncada¹, A. Hernandez¹, E. Stein¹, S. Mungekar², K. Deshmone²,

M. Mathur², H. Jerajani², M. Ekstrand¹, C. Lindan¹

¹ University of California, San Francisco, San Francisco,

United States of America

² LTMM College and LTMG Hospital, Mumbai, India

Objectives: There is a high prevalence of hepatitis B virus (HBV) infection among individuals at high risk for STD/HIV. Co-infection is associated with an increase risk of virologic failure, acute hepatitis and mortality. In developing countries, HBV infection is commonly acquired by vertical transmission, but is also spread sexually and intravenously. India has 3–26% HBV prevalence, but data on HBV in STD settings are limited. We evaluated HBV prevalence, surface antigen (HBsAg) and core antibody (anti-HBc), in male STI patients in Mumbai, India.

Methods: Risk behavior data and sera were collected from men seen in STI clinics for a randomized HIV intervention trial. Samples were tested for HIV with the Vironostika-BioKit EIA and confirmed by western blot. For HBsAg, the Hepanostika EIA was performed, and for anti-HBc, the DiaSorin EIA was done on a random subset of samples.

Results: Of 2534 men tested, 14% were HIV positive. HBsAg was detected in 5% and of those, 23% were HIV infected ($p < .01$). In a subset of men (147), anti-HBc was found in 56%. The proportion with anti-HBc was higher in HIV infected men (67% vs 45% in HIV negatives; $p < .01$). Having a tattoo was a significant risk factor for HBsAg (OR 1.5; 95%CI, 1.0-2.0) and anti-HBc (OR 1.8; 95%CI, 1.0-3.4). Age, >27 years (OR 2; 95%CI, 1.0-4.0) and living in slums (OR 2.3; 95%CI, 1.1-4.9) when controlling for HIV status, were also associated with anti-HBc.

Conclusions: High rates of HBV infection among male STI patients in Mumbai indicates there is a need to detect and treat HBV infection, to vaccinate those that are susceptible, and to further explore cultural practices such as tattooing and body piercing as potential sources of infection.

TP-029 CHANGES IN TRANSMISSION PATTERNS OF HEPATITIS B OVER THE LAST DECADE IN AMSTERDAM, THE NETHERLANDS

R. van Houdt¹, S.M. Bruisten¹, N.H.T.M. Dukers¹, L.P.M.J. Bovee¹, J.A.R. van den Hoek¹, R.A. Coutinho²

¹ GG&GD Amsterdam, Amsterdam, Netherlands

² Nat. Inst. for Health & the Environment, Bilthoven, Netherlands

Objectives: To evaluate the impact of intervention programs among high-risk groups, we compared the spread of hepatitis B virus (HBV) in Amsterdam in 1992-1997 versus 1998-2003, using molecular epidemiology.

Methods: Retrospective DNA sequencing studies were performed on 86 sera from reported cases of acute HBV in Amsterdam. The S-gene (nucleotide 112-778) was sequenced. The sequence data were then subjected to phylogenetic analysis. HBV cases were classified according to risk behavior, as determined by interviews. The phylogenetic data were compared and linked to the epidemiological data. **Results:** A decline of the incidence of acute HBV in Amsterdam was observed, from 204 in 1992-1997 to 140 in 1998-2003. The largest decrease was seen in the heterosexual population. Based on phylogenetic analysis, in the first time period three main clusters could be distinguished: I) men having sex with men (MSM, genotype A), II) Moroccan (genotype D) and III) injecting drug user (IDU) and their heterosexual partners cluster (genotype D). In the second time period the IDU cluster had disappeared. In the Moroccan and the other clusters originating from HBV endemic countries, little or no decline was seen in 10 years time. We also noticed a decrease in the number of patients in the MSM cluster, but the circulating virus strains were conserved in sequence over time.

Conclusions: The decline of acute HBV in Amsterdam is especially due to a lack of reported cases of IDUs and their heterosexual partners in recent years, probably caused by a decline in injecting. However, it is remarkable that no heterosexual partners of IDUs were infected in recent years. The decline in the MSM cluster is

possibly influenced by the active vaccination program that started in 1998. However, the same virus strains are still circulating among MSM, therefore vaccination efforts towards MSM will have to be intensified.

TP-030 HEPATITIS B IN CANADIAN STREET YOUTH: TRENDS IN IMMUNITY BETWEEN 1999 AND 2003

M. Gully, S. Shields, C. Bowman, J. Phelan, T. Wong
Public Health Agency of Canada, OTTAWA, Canada

Objectives: To report on the proportion of Canadian Street Youth that show no immunity to Hepatitis B (HBV) and to examine trends over time in this population.

Methods: The Enhanced Surveillance of Canadian Street Youth (ESCSY) is a repeated cross-sectional survey conducted in 1999, 2001 and 2003. 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 in 7 cities across Canada. Detailed questionnaires were administered and SY were invited to provide biological samples to test for various pathogens. Statistical analyses were carried out using SAS version 8.

Results: This analysis is based on 1142, 910 and 1245 youth from 1999, 2001 and 2003 respectively, who provided a blood sample. Sera samples were tested for HBV core and surface antibodies to determine exposure to HBV and vaccination. The percentage of SY whose sera showed no immunity to HBV was 67.3%, 49.8% and 40.4% in 1999, 2001 and 2003 respectively (trend $p < 0.0001$). Of SY who showed no immunity to HBV in 2003, 22.2% reported injection drug use (IDU).

Conclusions: The percentage of SY showing no immunity to HBV decreased significantly over the study period, likely due in part to community interventions aimed at increasing vaccine coverage. However the proportion of this population that remains susceptible to the virus is high. SY who have no immunity to HBV put themselves at risk of infection by engaging in high risk behaviours such as IDU. Further prevention and control of HBV among SY can be achieved by targeting reduction of risky behaviours and continuing HBV immunization initiatives.

TP-031 PREVALENCE AND GENOTYPES OF HEPATITIS B VIRUS (HBV) IN POPULATIONS FROM PORTUGAL, MACAU AND ANGOLA: PRELIMINARY RESULTS.

R. Gameiro¹, E. Prieto², R. Castro², M. Pedro³, F. Exposto²

¹ Gilead Sciences, LISBOA, Portugal

² Inst. de Higiene e Med. Tropical, Lisboa, Portugal

³ Inst. Português de Med. Prev., Lisboa, Portugal

Hepatitis B virus (HBV) is the 9th cause of death worldwide and one of the major causes of liver transplant. Although an effective vaccine exists, it is not available for most of people at risk of acquiring this infection. Knowledge on circulating genotypes is important, since interferon (IFN) therapy is less efficient in some of them. Objectives of this study were to evaluate the prevalence of HBV in populations from Portugal, Macau and Angola and to characterize circulating genotypes.

One hundred and ninety five serum samples from Macau, 73 from Angola and 187 from Portugal were tested for HBsAg, HBeAg and HBV-DNA (HBV-DNA AMPLICOR, Roche Diagnostics). All samples found to have HBV-DNA were genotyped (INNO-LiPA HBV Genotyping, Innogenetics).

Results obtained were: Macau – all samples were from females, who had a mean age of 24,3 years (18-43), 17/195 (8,7%) being HBsAg positive. Six of these (3,1%) had HBeAg. Genotypes found were C and B, in 3 and 1 samples, respectively. Angola – samples studied were from males (42) and females (31), with a mean age of 30,5 years (15 - 51). HBsAg seroprevalence was 23,3% (17/73) and 6 (8,2%) were HBeAg positive. HBV genotype E was identified in all (4) genotyped samples. Lisbon - 114 and 73 samples, respectively from males and females, with a mean age of 41,3 years (17 - 76) were studied, from which 3,2% (6/197) were HBsAg positive. HBeAg was not identified in any of these. Therefore, genotyping could not be performed.

In conclusion, hepatitis B infection seems to be highly prevalent among these populations. If further studies confirm that genotype E is the most common in Angola, this could have therapeutic implications, since this genotype responds less to IFN. In that case, nucleosides analogues should be the treatment of choice.

SESSION: TP - D4 PREVENTION STRATEGIES- VIRAL HEPATITIS

TP-032 HOW TO REACH BEHAVIOURAL RISK GROUPS FOR HEPATITIS B VACCINATION?

Q. Waldhober¹, M.L.A. Heijnen¹, C. Schout¹, A.G. Kraaijeveld², M. de Vries¹

¹ GGD Nederland, Utrecht, Netherlands

² GGD Gelre-IJssel, Deventer, Netherlands

Objectives: To increase hepatitis B protection in behavioural risk groups and reduce transmission, a national campaign was started. This implies an extension of the Dutch policy of risk group vaccination. The Netherlands is a low-endemic country for hepatitis B, but in certain risk groups hepatitis B is more prevalent and poses a health problem.

Methods: Vaccination is offered for free to men who have sex with men (MSM), ever or current hard drug users, heterosexual people who are advised to be tested for STI, male and female sex workers and people who visit sex workers. The Netherlands Association for Community Health Services (GGD Nederland) coordinates the project nationally and the Community Health Services (GGD) regionally. The GGD cooperate with regional organisations in contact with people at risk. Recruitment and vaccination takes place at many locations like sex clubs, red-light districts, gay bars, anonymous meeting places for MSM, methadone outlet places, prisons, homeless centres, STI clinics and GGD.

Results: All GGD participate voluntarily. Between November 2002 and December 2004 28,670 persons started the vaccination series, of whom 11.9% turned out to be immune and 0.8% carrier. So far, 82% of the susceptible participants received a second vaccination and 63% a third at least 1 and 6 months after the first dose.

Conclusion: Tailor-made enhanced outreach activities, specific to region and target group, enable to contact even the hard-to-reach

individuals of the behavioural risk groups. This further requires good coordination by GGD and cooperation with local organisations working specifically with the target groups. The campaign has also had extra benefits: there have been new and strengthened regional collaborations, and the hepatitis B work with risk groups has also enabled other STI prevention work. About a third of the MSM were vaccinated against hepatitis A at the same time.

TP-033 TARGETED HEPATITIS B VACCINATION PROGRAMMES FOR FEMALE SEX WORKERS IN PRAGUE AND GHENT

I.K. Kuklova¹, R. Mak², R. Pankova¹, H. Zakoucka¹, M. Drazakova³

¹ 1st Faculty of Medicine, Charles Univer., Prague 2, Czech Republic

² Flemish Community, Ghent, Belgium

³ General Faculty Hospital, Prague, Czech Republic

Objectives: To test the feasibility of a pilot hepatitis B vaccination programme targeting female sex workers (FSW) in Prague, Czech Republic and to compare the results with a similar programme in Ghent, Belgium.

Methods: The vaccination programme was conducted at the STD clinic of the Charles University and NGO R-R (Bliss without Risk, drop-in centre) in Prague from January 2004 till February 2005 following earlier developed methodology in Belgium. FSW were offered anonymous and free of charge testing for STI, and those with no immunity for HBV were offered a free vaccination with recombinant hepatitis B vaccine, 20mcgr/ml. The vaccination scheme was 0, 1, 6 months. Outreach to clubs and brothels from the STD-clinic and the Drop-in centre R-R tried to lower the barrier for FSW to join the programme.

Results: From January 2004 till February 2005 239 FSW were included in the project in Prague. One third were examined at the STD clinic and the others at the drop-in centre. Seventy nine percent were of Czech nationality, 9.6% Slovak, 5.8% Ukrainian and 5.4 % other. The average time as sex worker was 1,7 years. Chlamydia was diagnosed in 6.3%, gonorrhoea in 4.6%, 4 FSW had syphilis in their history, nobody had HIV. Naturally acquired HBV was found in 5.4%, and one person had active HBV.

Conclusions: These results are very similar to those in Ghent. The majority of FSW in Prague have the Czech nationality, and most of them have no immunity for HBV. Specific services with outreach and the involvement of a drop-in centre are successful in reaching this target group in Prague.

Grant support: Flemish Government (TSJ/ 004/ 03). Ministry of Health, Czech Republic /IGA MZ 219564, 8091-3/

TP-034 MSM AND PREVENTATIVE MEASURES: GOOD NEWS FOR HEPATITIS B VACCINATION

H.L. Munro¹, C.M. Lowndes¹, M. Ramsay¹, G. Hughes², M. Elghorri¹

¹ Health Protection Agency, London, United Kingdom

² GPRD, London, United Kingdom

Men who have sex with men (MSM) are a high-risk group for hepatitis B infection. Since 2003 an enhanced surveillance system (the HepB3 study) has been in place in England to monitor the uptake of vaccination in MSM at their first attendance at a GUM clinic. The Department of Health's HIV and Sexual Health Strategy (2000) suggests that by 2006 coverage for first dose and complete

course should be 90% and 70% respectively. Comparable data from the study for 2003 and 2004 indicate that for eligible patients, the coverage rate at dose one has increased from 85% (3480/4754) in 2003 to 90% (2753/3499) for the same time period in 2004 (January to June). This trend is consistent at the regional level in all but one of the nine regions and suggests the DH target for dose one has been met. The national coverage rate at dose three was 42% in 2004 compared to 44% in 2003. The response rate for the study remains high, with 86% and 80% of GUM clinics returning data in 2003 and 2004 respectively. Of those returning, 88% of all clinics returned data for both years. This suggests that response fatigue is not likely to have an impact on coverage rates. Other than loss to follow up, factors which are likely to contribute to a low coverage rate for dose three include variations in methods of recall, patients using a mix of healthcare providers and the length of time required to complete the course. Of patients who received dose one during 2003 or 2004 and who completed the course, 37% received the third dose >6 months after dose one. Time delay for 2004 data may explain an apparent reduction, and underestimate dose-three coverage.

SESSION: TP - E4 BEHAVIORAL SCIENCE- VIRAL HEPATITIS

TP-035 HEPATITIS B VIRUS VACCINATION AMONG STD CLINIC PATIENTS: DOES INTENT MEDIATE THE EFFECT OF HEALTH BELIEFS?

G.D. Zimet¹, A.D. Cox², D.S. Cox², Y.F. Dotson¹, E.J. Brizendine¹, R. Cyrier³, J. Arno¹, B.P. Katz¹

¹ Indiana University School of Medicine, Indianapolis, United States of America

² Indiana University School of Business, Indianapolis, United States of America

³ Chicago Department of Public Health, Chicago, United States of America

Objectives: Widely used health behavior theories propose that intent to engage in a health behavior mediates the association of health beliefs to the health behavior. Our objective was to examine the extent to which intent to accept HBV vaccination mediated the association of health beliefs to vaccine acceptance.

Methods: Patients attending 3 public health STD clinics were recruited from waiting rooms to complete an audio computer-assisted self-interview (A-CASI). Upon completion of the interview free HBV vaccination was offered. The A-CASI assessed health beliefs and intent to accept vaccination. Health beliefs measured included fear of vaccine, worries about infection, perceived benefits of vaccination, and normative beliefs about vaccination. Logistic regression was conducted to examine intent and health beliefs as predictors of vaccine acceptance and to evaluate the mediational role of intent.

Results: 286 patients completed the A-CASI. They were 58% male and were 18-59 years old (mean = 30). 73% indicated intent to accept HBV vaccine and 58% actually accepted the first dose of vaccine. Greater intent (OR=15.6; 95%CI=7.8-31.0), lower fear (OR=.42, 95%CI=.27-.66), higher worries (OR=2.8; 95%CI=1.9-4.0), higher perceived benefits (OR=3.0; 95%CI=2.0-4.5), and higher belief that vaccination is normative (OR=2.9; 95%CI=1.9-4.5) predicted

HBV vaccine acceptance. Similar, though slightly stronger results were found for the associations of the 4 health beliefs with intent to receive vaccine. With intent controlled for, the association of fear to vaccine acceptance became non-significant (OR=.61; CI=.36-1.02). However, the associations of worries (OR=1.8; 95%CI=1.2-2.7), benefits (OR=1.8; 95%CI=1.2-2.9), and norms (OR=2.0; 95%CI=1.3-3.3) to vaccine acceptance, while reduced, remained statistically significant.

Conclusions: Intent and health beliefs predicted acceptance of the 1st dose of HBV vaccine. Our results suggest that although intent to get vaccinated acts as a partial mediator for health beliefs, health beliefs maintain an independent effect on vaccine acceptance.

SESSION: TP - B5 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- OTHER VIRAL STI'S

TP-036 PERFORMANCE OF KSHV SEROLOGICAL ASSAYS TO DETECT KSHV ANTIBODIES IN BRAZILIAN POPULATIONS USING CLINICALLY AND HISTOLOGICALLY DEFINED 'GOLD STANDARDS' AND LATENT CLASS ANALYSIS

M.-C. Nascimento¹, V.A.U. Souza⁴, D. Lagos², D. Bourbouli², H.A. Weiss¹, J. Kim¹, S. Ferreira³, E. Sabino³, C.S. Pannuti⁴, P. Mayaud¹

¹ London School of Hygiene & Tropical Med, London, United Kingdom

² Wolfson Institute, UCLMS, London, United Kingdom

³ Hemocentro, SP, Sao Paulo, Brazil

⁴ Virology Laboratory, IMT, Sao Paulo, Brazil

Background: Lack of a gold standard test and of well-validated serological assays to detect Kaposi's sarcoma-associated herpesvirus (KSHV) preclude accurate estimation of KSHV seroprevalence.

Objectives: To evaluate the performance of 8 serological assays to detect KSHV infection among Brazilian blood donors, prior to a large multi-centre serosurvey.

Methods: A panel of 449 sera was assembled from 6 groups representing populations likely to be at high-, intermediate- and low-risk of KSHV infection: (1) AIDS patients with Kaposi's sarcoma (KS); (2) AIDS-non-KS patients; (3) HIV-negative homosexual men; (4) STI clinic attenders; (5) blood donors; and (6) children under 2 years. Samples were tested using 6 in-house and 2 commercially-available (ABI? and DIAVIR?) serological assays to detect KSHV anti-Lytic and anti-LANA (latency-associated nuclear antigen) antibodies. Three different definitions of presence/absence of KSHV infection based on clinico-histological parameters were used to evaluate the performance of the tests. Latent class analysis using Latent-Gold? software was conducted to find the best-fitting model for our data.

Results: When compared to the clinical definitions, 3 of 5 ELISA-based assays (ABI?; in-house IMT whole-lysate; and mixed peptide) yielded sensitivities ranging from 91% to 99%, and specificities between 65% (ABI?) and 100% (all 3 tests). The two in-house IFA-LANA assays from UCLMS and IMT yielded sensitivities of 73% and 86%, respectively, and specificity of 100%. Comparable results were obtained using a 3-cluster latent class model, with sensitivities ranging from 85% (IMT IFA-LANA) to 98% (DIAVIR?), and specificities ranging from 76%(ABI?) to 98% (IMT IFA-Lytic).

Conclusions: This complex validation study was necessary because

of the absence of a well recognised gold standard. Both the clinical grouping and the latent class analysis indicated that an in-house whole-lysate ELISA-assay developed at IMT performed best to detect KSHV among Brazilian sera. Commercial assays appeared to have low specificity.

TP-037 PERFORMANCE OF KSHV SEROLOGICAL ASSAYS TO DETECT KSHV ANTIBODIES IN BRAZILIAN POPULATIONS USING CLINICALLY AND HISTOLOGICALLY DEFINED ‘GOLD STANDARDS’ AND LATENT CLASS ANALYSIS

M.C. Nascimento¹, V.A.U. Souza³, D. Lagos², L.M. Sumita³, E. Sabino⁴, J. Kim¹, W.S. Freire³, H.A. Weiss¹, C.S. Pannut³, P. Mayaud¹

¹ London School of Hygiene & Tropical Med., London, United Kingdom

² Wolfson Institute, UCLMS, London, United Kingdom

³ Virology Laboratory, IMT, Sao Paulo, Brazil

⁴ Hemocentro, SP, Sao Paulo, Brazil

Background: Lack of a gold standard test and of well-validated serological assays to detect Kaposi’s sarcoma-associated herpesvirus (KSHV) preclude accurate estimation of KSHV seroprevalence. **Objectives:** To evaluate the performance of 8 serological assays to detect KSHV infection among Brazilian blood donors, prior to a large multi-centre serosurvey.

Methods: A panel of 449 sera was assembled from 6 groups representing populations likely to be at high-, intermediate- and low-risk of KSHV infection: (1) AIDS patients with Kaposi’s sarcoma (KS); (2) AIDS-non-KS patients; (3) HIV-negative homosexual men; (4) STI clinic attenders; (5) blood donors; and (6) children under 2 years. Samples were tested using 6 in-house and 2 commercially-available (ABI? and DIAVIR?) serological assays to detect KSHV anti-Lytic and anti-LANA (latency-associated nuclear antigen) antibodies. Three different definitions of presence/absence of KSHV infection based on clinico-histological parameters were used to evaluate the performance of the tests. Latent class analysis using Latent-Gold? software was conducted to find the best-fitting model for our data.

Results: When compared to the clinical definitions, 3 of 5 ELISA-based assays (ABI?; in-house IMT whole-lysate; and mixed peptide) yielded sensitivities ranging from 91% to 99%, and specificities between 65% (ABI?) and 100% (all 3 tests). The two in-house IFA-LANA assays from UCLMS and IMT yielded sensitivities of 73% and 86%, respectively, and specificity of 100%. Comparable results were obtained using a 3-cluster latent class model, with sensitivities ranging from 85% (IMT IFA-LANA) to 98% (DIAVIR?), and specificities ranging from 76%(ABI?) to 98% (IMT IFA-Lytic).

Conclusions: This complex validation study was necessary because of the absence of a well recognised gold standard. Both the clinical grouping and the latent class analysis indicated that an in-house whole-lysate ELISA-assay developed at IMT performed best to detect KSHV among Brazilian sera. Commercial assays appeared to have low specificity.

SESSION: TP - A6 BASIC SCIENCE- CHLAMYDIA TRACHOMATIS

TP-038 IN VITRO EFFECTS OF SPECTINOMYCIN AND CEFTRIAXONE ALONE OR IN COMBINATION WITH OTHER ANTIBIOTICS AGAINST CHLAMYDIA TRACHOMATIS

S. Shang¹, L.Q. Xia¹, M.Y. Zhong¹, J.P. Zhang¹, J.B. Zhao¹, X.D. Gong¹, D. Mabey², Q.Q. Wang¹

¹ Institute of Dermatology, Nanjing, China

² London School, London, United Kingdom

Objectives: To investigate the in vitro effects of spectinomycin and ceftriaxone alone and in combination with erythromycin, ofloxacin and doxycycline against 12 isolates of *C. trachomatis*.

Methods: In order to evaluate the interactions, checkerboard method was used. Minimal inhibited concentrations (MICs) and fractional inhibitory concentrations (FICs) of the antimicrobials against all *C. trachomatis* were calculated. Ridit test was used to compare the interactions among the various combinations.

Results: Indifference was observed in most of the combinations. No antagonism was observed in all except for ceftriaxone-doxycycline combination. Synergism was observed in 42% (5 of 12) and 50% (6 of 12) of the chlamydial isolates for erythromycin-spectinomycin and doxycyclin-spectinomycin combinations respectively. No significant difference was observed among the three combinations with spectinomycin or with ceftriaxone. When the interactions of erythromycin, ofloxacin and doxycycline with spectinomycin were compared to those with ceftriaxone respectively, both interactions of erythromycin (U=2.46, P=0.014) and doxycycline (U=2.83, P=0.005) were more synergistic with spectinomycin than with ceftriaxone. **Conclusions:** This study indicated that the combination of spectinomycin with erythromycin or doxycycline is more effective against *C. trachomatis* than that of ceftriaxone. Therefore, spectinomycin rather than ceftriaxone might be recommended in the dual therapy against *C. trachomatis* and *N. gonorrhoeae*.

	Synergism (FIC ≤ 0.5)	Indifference (0.5 < FIC ≤ 4)	Antagonism (FIC > 4)	Ridit	P
SPT ^a -ERY ^b	5	7	0	0.55	
SPT-OFX ^c	0	12	0	0.35	0.08
SPT-DOX ^d	6	6	0	0.60	
CRO ^e -ERY	0	12	0	0.5	
CRO-OFX	1	11	0	0.54	0.79
CRO-DOX	0	11	1	0.46	

a: spectinomycin; b: erythromycin; c: ofloxacin; d: doxycycline; e: ceftriaxone

Table 1: Comparison of three combinations

	Synergism (FIC ≤ 0.5)	Indifference (0.5 < FIC ≤ 4)	Antagonism (FIC > 4)	Ridit	P
SPT ^a -ERY ^b	5	7	0	0.55	
SPT-OFX ^c	0	12	0	0.35	0.08
SPT-DOX ^d	6	6	0	0.60	
CRO ^e -ERY	0	12	0	0.5	
CRO-OFX	1	11	0	0.54	0.79
CRO-DOX	0	11	1	0.46	

a: spectinomycin; b: erythromycin; c: ofloxacin; d: doxycycline; e: ceftriaxone

Table 2: Comparison between SPT and CRO

TP-039 COMPARISON OF APTIMA COMBO 2 ASSAY WITH PCR ROCHE ASSAY FOR DETECTION OF CHLAMYDIA TRACHOMATIS INFECTION

A. Khryanin¹, O.V. Reshetnikov², N.A. Krivenchuk³, O.A. Alaeva³,
T.R. Teinina³, F. Vlaspolder⁴, P. Singer⁴

¹ Novosibirsk State Medical University, Novosibirsk, Russian Federation

² Institute of Internal Medicine, Novosibirsk, Russian Federation

³ ImDi Diagnostics, Novosibirsk, Russian Federation

⁴ Medical Center Alkmaar, Alkmaar, Netherlands

Objectives. The Gen-Probe APTIMA Combo 2 Assay (AC2) is a recently developed nucleic acid amplification test for detection of Chlamydia trachomatis and Neisseria gonorrhoeae. The aim of the present study was to compare AC2 Assay with PCR Roche Assay for detection of Chlamydia trachomatis using endocervical swabs. **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. APTIMA Combo 2 Assay (Gen-Probe Incorporated, San Diego, CA, USA) was used for C. trachomatis testing in one specimen, and Amplicor PCR CT Kit (Roche Diagnostic System Inc., Mississauga, Ontario, Canada) was used in another paired sample.

Results. Out of 100 samples, two were not tested with PCR assay, and 11 occurred to be invalid. Thus the calculation was performed between 87 pairs of samples. Nine were positive for C. trachomatis with both assays, two were positive with AC2 only, and one was positive with PCR only. These three samples with discordant results were re-tested with APTIMA CT assay which targets other rRNA sequence than AC2 (16S rRNA instead of 23S rRNA) and may serve as a confirmatory test. All three results obtained with AC2 were confirmed with APTIMA CT. Thus, the sensitivity, specificity, positive and negative predictive values of PCR Roche Assay related to combined APTIMA Combo 2 and APTIMA CT assays were 81.8%, 98.7%, 90.0%, and 97.4%, respectively.

Conclusions. Correlation of the APTIMA Combo 2 Assay with PCR Roche Assay in detection of C. trachomatis infection in swab specimens is quite good, however APTIMA is more sensitive and specific test than PCR.

TP-041 IL-10 POLYMORPHISM AND C. TRACHOMATIS SPECIFIC IMMUNE RESPONSES

H. Öhman¹, P. Koskela¹, A. Tiitinen², S. Birkelund³, G. Christiansen³,
M. Halttunen², J. Paavonen², H-M. Surcel¹

¹ National Public Health Institute, Oulu, Finland

² University of Helsinki, Helsinki, Finland

³ University of Aarhus, Aarhus, Denmark

Objectives: Pathogenesis of C. trachomatis (CTR) associated infertility is thought to involve genetic background and impaired host immune defence during the infection. To study a relationship between IL-10 -1082 promoter polymorphism and specific immune responses to CTR we analysed lymphocyte proliferation and cytokine secretion in different genotype groups.

Methods: The study population consisted of 75 women with tubal factor infertility (TFI) and 175 blood donors as controls. IL-10 -1082 (A/G) genotyping was performed from isolated DNA by PCR technique.

CTR specific cell mediated immunity was analysed by measuring lymphocyte proliferative (LP) responses against CTR EB antigen and humoral immunity by measuring CTR specific IgG antibodies (Medac). Antigen induced cytokine production was measured from cell culture supernatants using Human Th1/Th2 Cytokine Cytometric Bead Array kit (CBA, BD Biosciences).

Results: CTR EB specific IgG antibody prevalences did not differ between genotype groups (32% of AA types, 33% of AG types and 23% of GG types). However, they differed in terms of CTR induced cell mediated responses. Median LP responses were clearly higher in subjects with IL-10-1082 AA genotype (27; range 0,4-310,0) than in AG genotype (8; 0,1-293) or GG genotype (3; 0,4-116). IL-10 -1082 AA genotype was associated with higher IFN-gamma production (median 356 pg/106 CD3+ cells; range 0-1512 pg) than GG genotype (0 pg; 0-344 pg) (p<0,05) in response to CTR. On the other hand, IL-10 -1082 GG genotype was associated with higher IL-10 production (12703 pg/106 monocytes; 8039-14464 pg) than IL-10 AA genotype (4438 pg; 0-7610 pg) (p<0,001).

Conclusions: IL-10 genotype plays a role in determining the balance between IL-10 and IFN-gamma during CTR infection. However, the comparison of immune markers between subjects with a history of non-complicated and complicated infection is needed to further understand the confounding factors in development of Chlamydia associated chronic infection.

SESSION: TP - B6 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- CHLAMYDIA TRACHOMATIS**TP-042 CHLAMYDIA TRACHOMATIS INFECTIONS IN PATIENTS WITH ECTOPIC PREGNANCY IN KHON KAEN POPULATION**

Ch. Pientong¹, T. Ekalaksananan¹, B. Kongyingyoes¹, N. Wonglikitpanya²,
U. Swadpanich²

¹ Khon Kaen University, Khon Kaen, Thailand

² Khon Kaen Hospital, Khon Kaen, Thailand

Objectives: To explore the prevalence of C. trachomatis infection and to evaluate the relation between C. trachomatis infection at genital tract and ectopic pregnancy.

Methods: Thirty two patients diagnosed as ectopic pregnancy by laparotomy were included as case group. The control subjects were 57 women undergoing tubal ligation after normal labour. All subjects were admitted to Obstetric and Gynecology unit, Khon Kaen Hospital, Khon Kaen, Thailand. After an informed consent was obtained, cervical cells and fallopian tube tissue were collected. DNA was extracted by using commercial kit (PURE gene, USA). Chlamydia DNA was investigated by polymerase chain reaction (PCR) using the following primers: downstream primer corresponding to bases +333 to +363 of chlamydia 16S rRNA gene and upstream primer corresponding to bases -103 to -73 of the primary (unprocessed) rRNA transcript.

Results: The prevalence of chlamydia DNA in fallopian tube tissue in ectopic pregnancy was 34.38% (11 cases) whereas none of this DNA was detected in control subjects. This chlamydia DNA detection rate in fallopian tube tissue was significantly higher (P<0.05) in case than control subjects. In cervical cell samples, chlamydia DNA detection was 3.13% (1 case) and 3.5% (2 cases) in ectopic pregnancy and in control subjects respectively.

However, no significant difference of chlamydia DNA in cervical cells between case and control subjects was detected. This result suggested that previous or ongoing infection of *C. trachomatis* in genital tract with persistence of chlamydia DNA in fallopian tissue may be the cause of tubal damage in ectopic pregnancy.

Conclusion: This study showed high correlation between the persistent infection of *C. trachomatis* in genital tract and the ectopic pregnancy and suggested that rapid therapeutic intervention is required to avoid the sequela resulting from *C. trachomatis* genital infection.

TP-043 RAPID MOLECULAR TYPING METHODS TO DIFFERENTIATE BETWEEN THE LYMPHOGRANULOMA VENEREUM AND THE GENITOURINARY/TRACHOMA BIOVARS OF CHLAMYDIA TRACHOMATIS

H. Liu, K. Chi, C. Chen, R. Ballard

Centers for Disease Control & Prevention, Atlanta, United States of America

Objectives: Lymphogranuloma venereum (LGV) is a sexually transmitted disease caused by *Chlamydia trachomatis* serovars L1, 2, and 3. The disease is prevalent in Southeast Asia, South America and sub-Saharan Africa. Recently, LGV outbreaks have been reported in the Netherlands and some U.S. cities among men who have sex with men (MSM). Although LGV can usually be identified clinically, differential diagnosis of LGV is difficult, especially in cases where enlarged inguinal lymph nodes do not manifest. Serological typing, isolating the organisms, NAATs, and genotyping based on sequencing of the MOMP gene are the common laboratory methods used to differentiate LGV from other *C. trachomatis* infections. These methods are time consuming and must be performed by dedicated laboratories. Methods: We have developed two molecular methods, which can quickly identify LGV infection and differentiate it from other *Chlamydia* biovars. In the first method, PCR amplification of the PMPH gene followed by sizing analysis was used to differentiate LGV from other biovars based on a 36-bp deletion on LGV serovars. In the second approach, two TaqMan probes and primers were designed for a multiplexed real-time PCR assay. One probe detected all *Chlamydia* serovars (A to L3) whereas the second probe only detected serovars A-K. Results: Both methods had high specificity and sensitivity and were able to differentiate between the trachoma/genitourinary and the LGV biovars. Conclusion: These molecular tests can be performed by laboratories with little experience in PCR and are expected to help physicians to diagnose *Chlamydia*/LGV and assist epidemiologists in contact tracing LGV cases.

TP-044 EVALUATING TESTS TO SCREEN WOMEN FOR CHLAMYDIA TRACHOMATIS INFECTION USING MULTIPLE-TEST REFERENCE STANDARDS

R.E. Johnson, J.R. Papp

Centers for Disease Control, Atlanta, GA, United States of America

Objectives: The objective of this study was to model the bias in sensitivity and specificity estimates for *Chlamydia trachomatis* nucleic acid amplification tests using multiple-test reference standards.

Methods: We applied elementary probability theory to calculate the bias in sensitivity and specificity estimates to be expected of multiple-test reference standards. We performed the calculations using a range of values that should encompass sensitivities and specificities for *C. trachomatis* culture and NAATs and prevalence of *C. trachomatis* in screened populations. We assumed that evaluated test specificity was independent of the reference test classification of infection status.

Results: The modeling demonstrated important differences in reference standard sensitivity and specificity. These differences, in conjunction with prevalence of *C. trachomatis* infection, were associated with important differences in the accuracy of evaluated test performance estimates. No one reference standard provided adequate accuracy of sensitivity and specificity estimates over the full prevalence range (0.02 – 0.15) modeled. Two-test reference standards can provide accurate estimates of specificity, but estimates of sensitivity are either positively or negatively biased. A combination of 3-test reference standards were found that provided accurate sensitivity and specificity estimates under restricted conditions of prevalence. Four-test reference standards added little to 3-test standards, but can be less biased if our assumptions do not hold.

Conclusions: Two- and three-reference test standards performed adequately, but more than one algorithm (i.e., using a variable number of positive reference tests) to classify infection status might be indicated for analysis of a data set. Studies should be conducted to assess the extent to which correlation of errors among reference and evaluated tests affect the estimates.

TP-045 MUCOSAL IMMUNE RESPONSES IN THE ENDOMETRIUM TO CHLAMYDIA TRACHOMATIS ARE DIRECTED TO THE HEAT SHOCK PROTEIN-60

B.O. Ondo¹, R. Brunham², P. Sheth³, T. Kinyari⁴, R. Nguti⁴, N. Mugo⁵, R.C. Cohen⁶

¹ University of Oxford, Oxford, United Kingdom

² British Columbia CDC, British Columbia, Canada

³ University of Toronto, Toronto, Canada

⁴ University of Nairobi, Nairobi, Kenya

⁵ Kenyatta National Hospital, Nairobi, Kenya

⁶ University of California, San Francisco, United States of America

Objective: A cellular immune response characterised by IFN-g production is known to confer high levels of protective immunity during *Chlamydia trachomatis* (CT) infection. Due to its significant homology with human heat shock protein (HSP), the *Chlamydia* HSP-60 is associated with severe autoimmune reactions; the most severe forms of infection (e.g. pelvic inflammatory disease and tubal infertility) correlate with high levels of antibodies against HSP-60. However, cellular immune responses to HSP-60 which may protect against infection have not been investigated in the endometrium (target site for tissue pathology).

Methods: Using an IFN-g Elispot assay, we investigated the immune response to *Chlamydia* elementary body (EB) and HSP-60 in PBMC obtained from 66 female sex workers aged 18-35 years. Endometrial biopsies were obtained from 25 (38%) women and the mononuclear cells (EMC) were analysed using a similar Elispot assay. A positive test was defined as an SFU/million cells ≥ 50 and 3-times above background.

Results: Overall, 42 (64%) women had an IFN-g response to either EB or HSP-60 in PBMC, EMC or both. The magnitude of the IFN-g response was fairly similar in EMC and PBMC (range 54-4950 SFU/106 in EMC vs. 50-4000 SFU/106 in PBMC). Of the total response, 83% and 57% were directed to EB and HSP-60, respectively. In PBMC alone, 94% of the responses were to EB in comparison to 59% to HSP-60. In comparison, the EMC response to HSP-60 was more common (87%) than for EB (67%) implying that HSP-60 is highly immunogenic in the endometrium.

Conclusion: This study is the first to detect an immune response to CT-specific antigens in the endometrium. Although an immune response to HSP-60 occurs in both PBMC and EMC, the EMC response appears predominantly directed to HSP-60. Further experiments should attempt to correlate these findings with risk of infection and disease sequelae.

TP-046 IMPROVED SENSITIVITY AND COST-EFFECTIVENESS OF LARGE SCALE TESTING FOR CHLAMYDIA TRACHOMATIS IN PREGNANT WOMEN USING POOLED URINES AND AUTOMATED DNA ISOLATION

G.I.J.G. Rours, R. Verkooyen, E.A.E. Zwaan van der, H.F.M. Willemse, R. de Groot, H.A. Verbrugh, A. Belkum van, J.M. Ossewaarde
Erasmus MC, Rotterdam, Netherlands

Objectives: *C. trachomatis* during pregnancy can cause acute and chronic disease in mother and infant. Chlamydial data from pregnant women in The Netherlands are limited. We aimed to develop a sensitive method for large scale screening of asymptomatic pregnant women.

Methods: From 750 pregnant women in Rotterdam first void urines were collected before 24 weeks gestation. Initially, performance of three different DNA isolation methods on 350 individual urines (method A) and 70 pools of 5 urines (method B) was investigated. We compared routinely used Cobas Amplicor (IA, IB) to Cobas Amplicor with prior DNA isolation by MagNA Pure Large Volume Kit (IIA, IIB) and MagNA Pure Bacterial DNA Isolation Kit (Bacterial Kit) (IIIA, IIIB). Next, using all 750 urines, we compared standard Cobas Amplicor performance for individual urines to pooled testing and subsequently to pooled Cobas Amplicor testing combined with the Bacterial Kit.

Results: Initial comparison of DNA isolation methods using pooled urines resulted in sensitivities of 41% (IB), 38% (IIB) and 93% (IIIB). Best method for DNA processing was the Bacterial Kit (McNemar's test, $p < 0.01$) with equal sensitivity and specificity for individual and pooled urines. Using all 750 urines, sensitivity of Cobas Amplicor individual testing was 65% compared to 42% for pooled testing and 92% for pooled testing combining the Cobas Amplicor and Bacterial Kit. *C. trachomatis* prevalence was 6.4%. Additionally, the combined Bacterial Kit and Cobas Amplicor method on pooled urines only cost 56% of standard Cobas Amplicor testing on individual urines. Costs per positive case detected in the combined method were 39% of standard costs.

Conclusions: The sensitivity for pooled testing in asymptomatic pregnant women was significantly higher using the combined MagNA Pure Bacterial DNA Isolation Kit and Cobas Amplicor method and additionally costs were much lower.

TP-047 CHLAMYDIA TRACHOMATIS AND RESPIRATORY DISEASE IN INFANTS IN A DUTCH INNER CITY

G.I.J.G. Rours, G. van Doornum, W. Hop, R. de Groot, H.A. Verbrugh, R. Verkooyen
Erasmus MC, Rotterdam, Netherlands

Objective: *C. trachomatis* is the most common sexually transmitted infection in The Netherlands, but data concerning chlamydial infection in infants aren't available. We evaluated *C. trachomatis* as cause of respiratory disease in infants focusing on prevalence and clinical presentation.

Methods: Stored respiratory specimens were used from infants under 6 months presenting during one year with respiratory complaints to the Sophia Children's Hospital in Rotterdam. Most samples were sent requesting respiratory virus testing (hRSV, influenza A, B and C, human para-influenza type 1-4, adenovirus, rhinovirus). Human metapneumovirus and *Mycoplasma pneumoniae* were tested. Clinical and bacterial culture data were collected from medical records. All specimens were processed for *Chlamydia trachomatis* PCR (Cobas Amplicor).

Results: 148 specimens were available for chlamydial PCR. Overall 73/148 (49.3%) had positive tests. Most common pathogens were hRSV (27.7%), *C. trachomatis* (6.8%), enterovirus (4%), Influenza A (2%), picornavirus/ adenovirus/ para-influenza 3 (1.4%). *H. Influenzae* and *Str. Pneumoniae* were isolated once.

Evaluation by age group revealed RSV as most common pathogen (27.7%) in both age groups. Under 3 months *C. trachomatis* was next (8%), followed by enterovirus (4%), rhinovirus (3%), picornavirus/influenza A/para-influenza 1 (2%). Between 3 and 6 months RSV was followed by rhinovirus (6%) and *C. trachomatis* (4%). *C. trachomatis* was the most important pathogen detected outside RSV season (9.3%). Symptoms recorded for chlamydia positive infants were cough (50%), sputum (70%), rhinitis (60%), wheezing (60%), fever (60%), tachy-/dyspnoea (60%/90%), retractions (60%), rhonchi (60%), apnoea (20%), crepitations (20%), feeding difficulties (100%).

Conclusions: *C. trachomatis* was the most common pathogen throughout the year and second to RSV in RSV season. However, no chlamydial testing was requested. This knowledge should impact the choice of diagnostic testing and empiric antibiotic treatment in this population, and increase the awareness of missed chlamydial infection in pregnant women.

TP-048 CLINIC-BASED EVALUATION OF CLEARVIEW EIA FOR DETECTION OF CHLAMYDIA TRACHOMATIS IN FEMALE ENDOCERVICAL SPECIMENS IN CHINA

Y.P. Yin¹, X.S. Chen¹, R.W. Peeling², D. Mabey³, H. Zhou⁴, M.Q. Shi¹, W.M. Gu⁵, Z.S. Wang⁶, W.H. Wei¹, X. Gao¹

¹ National Center for STD Control, Nanjing, China

² World Health Organization, Geneva, Switzerland

³ LSHTM, London, United Kingdom

⁴ Shenzhen Institute of Dermatology, Shenzhen, China

⁵ Shanghai Skin Diseases & STD Hospital, Shanghai, China

⁶ Fujian Institute of Dermatology, Fuzhou, China

Objectives: To determine the performance of rapid *Chlamydia Trachomatis* (CT) tests compared to the current 'gold standard' (Roche Amplicor CT assay) tests, and to assess acceptability of the tests to patients.

Methods: A total of 1,497 women at STD clinics or reeducation centers in 6 urban cities (Shanghai, Nanjing, Shenzhen, Guangzhou, Chengdu and Fuzhou) in China were invited to participate in the study. Three vaginal and three cervical swabs were collected from each participant. Rapid CT tests were performed locally on the first vaginal and cervical swabs and the results were read independently by two staff members. The second and third swabs were randomized for performing the Roche CT assay at national STD Reference Laboratory. Acceptability of the rapid tests to patients was determined by asking patients in clinics about their willingness to wait for the results.

Results: The prevalence of CT was 13.2%, as determined by the Roche assay with cervical specimens. CT was detected in 77-78 vaginal and 125-127 cervical specimens by the rapid test and the positive rates determined with cervical specimens were significantly higher than those with vaginal specimens ($P < 0.001$). There were good agreement between the results read by 2 independent staff for either vaginal or cervical specimens (both $\text{Kappa} = 0.98$, $P < 0.001$). After discrepant analysis, sensitivities for vaginal and cervical specimens were 32.8-33.3% and 49.7-50.3%, respectively; and specificities were 99.2% and 97.8-97.9%, respectively. The positive predictive values ranged 85.7-85.9% for vaginal and 78.0-78.4% for cervical specimens. The vast majority of the patients (99.1%) were willing to wait for the results, among whom 83.1% preferred to waiting for 30 minutes.

Conclusion: The Clearview CT EIA, while yielding a rapid result and requiring minimal laboratory facilities, had unacceptably low sensitivity. Rapid tests yielding results within one hour are generally accepted by the clients.

TP-049 URINE POOLING AND DNA ISOLATION IN A COMMUNITY-BASED SCREENING PROGRAM FOR CHLAMYDIA TRACHOMATIS: COBAS AMPLICOR AND PROBETEC SHOW DIVERGENT RESULTS

J.M. Ossewaarde¹, I.K. Veldhuijzen², C.I.M. Vrolijk¹, J. Maaskant¹, E.G. Dullaart¹, E.A.E. van der Zwaan¹, H.M. Götz²

¹ Erasmus MC, ROTTERDAM, Netherlands

² Municipal Health Service, ROTTERDAM, Netherlands

Objectives: Previously we have reported an increase in sensitivity after DNA isolation from pooled urines using the MagNA Pure LC system (Rours et al., In: Deak J, editor. Proceedings of the Fifth Meeting of the European Society for Chlamydia Research. Budapest; 2004. p. 74). Preliminary studies showed that the ProbeTec (PT) test might be more sensitive than the Cobas Amplicor (CA) test using individual urines. The objective of this study was to compare both tests using individual urines and pooled urines with DNA isolation in a community-based screening program.

Methods: Urine specimens were anonymously tested using 500 µl in the CA and 4 ml in the PT according to the instructions of the manufacturers. Five urines were pooled by adding 200 µl of each to one tube. DNA was isolated using the MagnaPure with an elution volume of 100 µl. 25 µl was mixed with 25 µl (CA) or 1 ml (PT) diluent and subsequently tested. When a pool was negative, all individual urines were reported as negative. From a positive pool 500 µl of each urine was used to isolate DNA and subsequently tested by the same procedure. Individual results were reported as positive

or negative. Thus, each urine specimen was linked to the results of four different tests. For calculations the gold standard consisted of at least two positive results.

Results: Two hundred and five specimens were tested. The number of positive results are listed in table 1. The CA with urine pools and the PT with individual urines performed nearly identical. The CA with individual urines and the PT with urine pools were significantly different from the gold standard.

Conclusion: The ProbeTec performed better than the Cobas Amplicor on individual urines, but for pooling of urines a small volume is not sufficient.

Test	Number positive	Percentage positive
Cobas Amplicor	21	10.2%
Cobas Amplicor with pools	27	13.2%
ProbeTec	27	13.2%
ProbeTec with pools	15	7.3%
Gold standard	27	13.2%

Table 1: Number of positive results of each test

Test	Sensitivity	Specificity	PPV	NPV	McNemar
Cobas Amplicor	77.8%	100.0%	100.0%	96.7%	$P < 0.05$
Cobas Amplicor with pools	100.0%	100.0%	100.0%	100.0%	NS
ProbeTec	96.3%	99.4%	96.3%	99.4%	NS
ProbeTec with pools	55.6%	100.0%	100.0%	93.7%	$P < 0.05$

Table 2: Statistics compared to the gold standard

TP-051 EVALUATION OF THE COBAS TAQMAN 48 ANALYZER TO DETECT CHLAMYDIA TRACHOMATIS IN ENDOCERVICAL AND SELF-COLLECTED VAGINAL SWABS

B. de Barbeyrac¹, S. Frantz-Blancpain², S. Raheison³, K. Tilatt², C. Bébéar³, C. Hocké², C. Mathieu²

¹ Université Bordeaux, Bordeaux, France

² Service de gynécologie, Bordeaux, France

³ Laboratoire de Bactériologie, Bordeaux, France

Objectives: To evaluate the performance of paired endocervical specimens collected in different media using the COBAS AMPLICOR CT/NG test and the COBAS TaqMan CT test (CTM CT). In addition, evaluate performance of paired endocervical and self collected vaginal specimens processed with the CTM CT test.

Methods: In this study, 500 women are planned to be enrolled at either the family planning clinic for routine examination or abortion clinic from January 2005 – July 2005. The women self-collected a vaginal swab before the physician collected an endocervical swab during a pelvic examination. Endocervical swabs were then placed in either M4RT or 2SP chlamydia collection transport media. The vaginal swabs were transported dry. All swabs were transported to the Pellegrin hospital laboratory within 6 hours, per manufacturer instructions. In the laboratory, dry swabs were transferred into M4RT transport medium.

Results: Out of 142 women included at this time, eight were infected by *C. trachomatis* as demonstrated by COBAS AMPLICOR CT/NG and COBAS TaqMan CT tests with endocervical specimens. The results obtained by using both transport media were concordant. Additionally, all results were also confirmed with self-collected vaginal specimens processed with COBAS TaqMan CT.

Conclusion: The COBAS TaqMan CT test performs as well as COBAS AMPLICOR CT/NG with the use of self-collected vaginal swabs and endocervical swabs, irrespective of the transport media used. The advantages of the COBAS TaqMan CT test are shorter procedure (2h versus 4h), higher throughput (48 versus 24 specimens), smaller reagent boxes and less waste production.

TP-052 EVALUATION OF SELF-SAMPLING EFFICACY FOR C. TRACHOMATIS DETECTION AMONG FRENCH FEMALE STUDENTS AT THE UNIVERSITY OF BORDEAUX, FRANCE

B. de Barbeyrac¹, S. Raheison², S. Malembic², A. Bernabeu³, M. Clerc², Maris-Chr. Marso², C. Bébéar², F. Jeanson³

¹ Université Bordeaux2, Bordeaux, France

² Laboratoire de Bactériologie, Bordeaux, France

³ Centre de Médecine Préventive, Bordeaux, France

Objectives: To estimate the prevalence and predictors of *C. trachomatis* infection among young students (18-25 years) using self-collected vaginal swabs (VS) and urine and to evaluate the preferences for self-testing (VS vs urine).

Methods: Students were invited to participate in the study during their obligatory health medical consultation in 2004. With the nurse, the student decided if she wanted to participate, informed consent was obtained, the inclusion criteria assessed (age, sexually active, not having urinated < 2h prior, not menstruating, and not taking antibiotics). Following data collection on demographics, sexual health and behavior, students were given the sampling kits. The on site sampling pack contained a swab for vaginal self-collection and a container for first void urine. The home self-sampling pack contained a swab for vaginal self-collection and a self administered questionnaire on preference for testing (self-collected swab versus urine in a medical center versus at home). The clinic samples were taken to the laboratory the same day and processed the following day using COBAS AMPLICOR. The home samples were processed the day they arrived at the laboratory.

Results: Out of 2378 female students visiting the center, 825 were enrolled (34.7%). Non-participants either did not meet the inclusion criteria (29.5%), had at least one exclusion criteria (20.5%) or refused to participate (15.3%). The overall prevalence of *C. trachomatis* infection detected in VS were 2.42% (20/825) and 2% in urine (17/825). The infected students had at least two risk factors, number of partners >1 ($p = 0.0037$), a new partner ($p=0.004$). The home sample was done by 92% of students.

Conclusion: The study was a success concerning the acceptability of VS in screening, and the acceptability and the quality of swab samples collected either at home or in a medical center.

TP-053 THE ROLE OF THE GENETIC VARIATION IN THE LPS SENSING TLR4 CO-RECEPTOR CD14 IN THE SUSCEPTIBILITY TO AND SEVERITY OF CHLAMYDIA TRACHOMATIS INFECTION IN DUTCH CAUCASIAN WOMEN

S Ouburg¹, J. Spaargaren², J. Land³, J. Pleijster¹, R.A. Coutinho⁴, A.S. Peña¹, S.A. Morré¹

¹ VU University Medical Center, Amsterdam, Netherlands

² Municipal Health Services, Amsterdam, Netherlands

³ Academic Hospital Maastricht, Maastricht, Netherlands

⁴ Nat. Inst. for Health & the Environment, Bilthoven, Netherlands

Objectives: The functional polymorphism -260 C>T in the LPS sensing TLR4 co-receptor CD14 enhances the transcriptional activity of the CD14 gene and individuals carrying the T/T genotype also have significantly higher serum levels of soluble CD14. This polymorphism has recently been linked to *C. pneumoniae* infection. Its role in the sexually transmitted *C. trachomatis* species has not yet been assessed. We investigated the role of the CD14-260 C>T polymorphism in the susceptibility to and severity of *C. trachomatis* infection in Dutch Caucasian women.

Methods: The different CD14 -260 C>T genotypes were assessed by PCR-based RFLP analysis in three cohorts: 1) A cohort (n=463) of women attending a STD clinic, 2) a cohort (n=256) of women with subfertility, and 3) a control cohort (n=170). The following variables were used in the analysis: In cohort 1 the CT-DNA status, CT IgG serology status, self reported symptoms and in cohort 2, the CT IgG serology status and the tubal pathology status.

Results: In Cohort 1 the overall prevalence of CD14 -260 genotypes were 29%, 50%, and 21%. No differences were observed in this distribution between women with or without CT-DNA, with or without serological CT responses, with or without symptoms, or for combination of these 3 variables. In cohort 2 in women with tubal pathology (n=50) the genotype distribution was 28, 48, and 24% and in women without tubal pathology (n=206), 28, 49 and 23%. This distribution did not change when the CT IgG status was introduced. In the control cohort 3 the CC, CT and TT genotypes were: 28%, 48%, and 24% respectively.

Conclusions: The CD14 -260 C>T genotypes were identical in all three cohorts, showing that this polymorphism does not play a significant role in the susceptibility to or severity of *C. trachomatis* infection.

TP-054 SELF-COLLECTED VAGINAL SWABS CONTAIN GREATER QUANTITIES OF C. TRACHOMATIS THAN URINE AS DETERMINED BY REAL-TIME PCR : IMPLICATIONS FOR SCREENING PROGRAMS

S. Raheison¹, M. Clerc², M. Razafimpanarivo², C. Bébéar², B. de Barbeyrac²

¹ Université de Bordeaux, Bordeaux, France

² Laboratoire de Bactériologie, Bordeaux, France

Objectives: To measure the *C. trachomatis* (CT) load in self-collected vaginal swab (VS) and first void urine (FVU) (paired) by using quantitative real-time PCR – to find out which of the two specimens would be more appropriate for screening programs.

Methods: VS taken at center and at home and FVU taken at center,

were obtained during a screening study from students visiting a medical center for their obligatory health consultation in 2004. COBAS AMPLICOR detected 20 students positive for CT. We compared the mean and the standard deviation of cycle thresholds obtained for the three specimens by using real time PCR with two sets of primers (omp1 gene and cryptic plasmid).

Results: Firstly, 15/20 students were positive in all three specimens. In two cases, both VS and FVU taken at center were positive, VS at home being not returned. In three cases, both VS were positive and FVU negative. COBAS AMPLICOR sensitivity was higher with VS (100%) than with FVU (85%). Secondly, with quantitative PCR, cycle threshold means (standard deviation) were as follows: 29.8 (2.34) for VS at center, 29.4 (2.43) for VS at home, 34.87 (3.8) for FVU by using omp1 gene as target and 28.21 (3.9), 27.89 (3.9), and 34.93 (5.89) respectively by using plasmid as target. The difference of at least 4 cycle thresholds observed between the results of VS and FVU corresponds to a load at least 10 fold superior in VS than in FVU in our procedure. Moreover, no difference was observed between the VS taken at center and the VS taken at home and mailed.

Conclusion: the VS presents many advantages over urine furthermore the higher load of CT in VS than in urine justify its use in screening program

TP-055 ANALYSIS OF GENETIC VARIATION IN THE LPS SENSING TLR4 GENE AND ITS CO-RECEPTOR CD14 IN RELATION TO TUBAL PATHOLOGY AND CHLAMYDIAL SEROLOGY STATUS

J.E. den Hartog¹, S. Ouburg², J. Pleijster², A.S. Peña², J.A. Land³, S.A. Morré²

¹ Academisch Ziekenhuis Maastricht, Maastricht, Netherlands

² VU University Medical Centre, Amsterdam, Netherlands

³ Academic Hospital Maastricht, Maastricht, Netherlands

Objective: Host factors determine in part the course and severity of the infection and could in part explain why not all women will develop tubal pathology (TP) after a *C. trachomatis* infection. Toll-like receptor 4 (TLR4) is involved in the recognition of chlamydia lipopolysaccharide (cLPS) via its co-receptor CD14. In addition, chlamydial heat shock protein 60 (cHSP60) and also human HSP60 are agonists for TLR4. (Functional) single nucleotide polymorphisms (SNPs) in these genes may influence the risk to develop TP. Methods: Serum of 255 Dutch Caucasian subfertile women was tested for the presence of IgG antibodies to *C. trachomatis* (Ctr) (MIF, Anilabsystems, Finland), cLPS (ELISA, Medac, Germany) and cHSP60 (ELISA, Medac, Germany) and the frequency of TLR4 +896 A>G and the CD14 -260C>T SNPs (by PCR-based RFLP analysis). The risk of TP (extensive periadnexal adhesions and/or distal occlusion of at least one tube) was calculated for different combination. Healthy Dutch Caucasian blood donors (n = 166) served as controls for background SNP prevalences.

Results: As shown in the table the frequency of TLR4 and CD14 SNPs in subfertile women were comparable to the control group 12 vs 11% and 73 vs 72% respectively. However, women with the TLR4 SNP and Ctr-IgG antibodies positive had a higher risk of TP (83%) as compared to Ctr-IgG positive women with a normal TLR4 genotype (66%) (CT+TP+ 18% and in CT+TP- women 8%). For CD14 no such associations were found. Combining Ctr-IgG and cHSP60 serological positivity resulted in a risk of 100% for TP.

Conclusions: CD14 is not associated with an increase risk in CT+

women to develop TP while TLR4 was (clear tend). This association can be explained by linkage (nearby genes) or by bacterial agonists sensing through another co-receptor than CD14.

		n	Risk of TP	1.1		1.2 or 2.2	
				n	Risk of TP	n	Risk of TP
TLR4	Subfertile Women	255	20%	88%	19%	12%	23%
	Ctr+	41	68%	85%	66%	15%	83%
	Ctr+ & cLPS+	38	68%	84%	66%	16%	83%
	Ctr+ & cHSP60+	32	75%	88%	71%	12%	100%
	Control Group	166	NA	89%	NA	11%	NA
CD14	Subfertile women	255	20%	27%	20%	73%	19%
	Ctr+	41	68%	32%	69%	68%	68%
	Ctr+ & cLPS+	38	68%	29%	73%	71%	67%
	Ctr+ & cHSP60+	32	75%	34%	64%	66%	81%
	Control Group	166	NA	28%	NA	72%	NA

Table 1: TLR4 and CD14 in relation to serology and TP

TP-056 COMPARISON OF LIQUID CYTOLOGY MEDIUM TO DIGENE SPECIMEN TRANSPORT MEDIUM IN THE DIGENE HYBRID CAPTURE® CT-GC ASSAY FOR DETECTION OF *C. TRACHOMATIS* AND *N. GONORRHOEA*

B. Van Der Pol, J.A. Williams, B.E. Batteiger

Indiana University, Indianapolis, United States of America

Objectives: To validate performance of the Digene Hybrid Capture? 2 CT-ID (hc2-CT) and GC-ID (hc2-GC) assays using PreservCyt? liquid cytology (LC) specimens.

Methods: *C. trachomatis* (CT) and *N. gonorrhoeae* (GC) culture results were obtained from 493 women attending an STD clinic. Paired specimens for hc2 testing were collected in Digene Specimen Transport Medium (STM) or LC medium. Patients were classified as infected if either the culture or the hc2 STM test method was positive. Positive and negative agreements and kappa ($\hat{\kappa}$) were used to evaluate concordance between the investigational hc2 LC result to the reference STM method or infection status (IS). Results between 1.0-2.5 RLU/CO were considered presumptive positive and unevaluable.

Results: Fifty-two LC samples had insufficient volume for comparison testing. Therefore, hc2 data was available for 441 women. In this cohort, 47 (10.7%) and 36 (8.2%) women were classified as infected with CT or GC, respectively. The LC hc2-CT results were concordant with the IS and the hc2-CT STM assay: $\hat{\kappa} = 0.939$ and 0.950 , respectively. Positive and negative agreement between LC and STM hc2-CT results were 95.2% (40/42) and 99.2% (387/390), respectively. The LC hc2-GC results were concordant with both the IS and the HC2 STM result: $\hat{\kappa} = 0.884$ and 0.896 , respectively. Positive and negative agreement between LC and STM hc2-GC results were 96.0% (24/25) and 99.8% (406/407), respectively.

Conclusions: LC medium offers an advantage for screening women attending clinics for annual OB/GYN exams, as it requires no extra sample collection or handling for clinicians. In this evaluation, the LC sample performed equivalently to STM in the hc2 CT and GC assays. Further studies may be warranted to determine performance in annual well-woman care populations with low prevalence.

TP-057 EVALUATION OF THE BD PROBETEC™ URINE PRESERVATIVE TRANSPORT (UPT) FOR USE WITH THE BD PROBETEC™ ET CHLAMYDIA TRACHOMATIS AMPLIFIED ASSAY

J. Williams¹, B. Van Der Pol¹, R.B. Jones¹, D. Fuller², T. Davis², C.L. Cammarata³, C.J. Lenderman⁴, C.A. Aycok⁴, E.W. Hook⁴

¹ Indiana University School Of Medicine, Indianapolis, Indiana, United States of America

² Wishard Health Services, Indianapolis, IN, United States of America

³ Louisiana State University, New Orleans, LA, United States of America

⁴ Univ. of Alabama-Birmingham, Birmingham, AL, United States of America

Objectives: To compare performance of the BD ProbeTec[®] ET CT Amplified DNA Assay with urine specimens processed using the new BD ProbeTec Urine Preservative Transport (UPT) or unpreserved urine (neat) to that obtained using the current Urine Processing Pouch (UPP).

Methods: Patients eligible for STI screening were enrolled in the study. Urine was aliquoted into empty processing tubes or into UPTs containing NAP Guard, a novel specimen preservative. A UPP was added to the remaining urine and incubated at room temperature for at least 2h prior to processing. The UPP sample was the reference for all comparisons. Samples were processed and tested according to the assay package insert with the addition of a pre-warm step for neat urine and UPT.

Results: Comparison of neat to UPP-treated urine was made across 599 women and 364 men. Concordant results were obtained for 99.2 [95% CI 98.1, 99.7%] and 98.6% [95% CI 96.8, 99.6%] of samples, respectively. For UPT, 595 female and 361 male samples were available for analysis. Agreement was obtained with 98.8% [95% CI 97.6, 99.5%] and 99.2% [95% CI 97.6, 99.8] of specimens, respectively. For UPT-treated specimens, >98% concordance was observed with both symptomatic and asymptomatic patients.

Conclusions: Excellent agreement from neat urine and UPT results were obtained when compared to UPP treated samples. Neat urine is an appropriate alternative when extended transport and storage time is not required and the temperature can be maintained within specified limits. The UPT offers the advantage of extended transport and storage times and temperatures compared to UPP. The UPT also improves laboratory workflow by obviating the need for incubation of specimens with the UPP prior to processing and reduces pipetting if utilized at the collection site.

TP-058 GENITAL EXAMINATION FINDINGS AND CHLAMYDIA TRACHOMATIS INFECTION IN ASYMPTOMATIC YOUNG WOMEN

W.M. Geisler¹, J.M. Chow², W.M. McCormack³, J. Schachter²

¹ University of Alabama at Birmingham, Birmingham, Alabama, United States of America

² University of California, San Francisco, California, United States of America

³ State University of New York, Brooklyn, New York, United States of America

Objectives: Assess the relationship of Chlamydia trachomatis infection with genital examination findings in asymptomatic women undergoing routine chlamydial screening by nucleic acid amplification testing.

Methods: Retrospective analysis of clinical data and chlamydial transcription-mediated amplification (TMA) results from 658 non-pregnant asymptomatic females ages 17 to 25 undergoing routine

chlamydial screening at the University of California, San Francisco and the State University of New York at Brooklyn. A subanalysis compared clinical findings in chlamydial TMA-positive subjects, stratified by chlamydial culture results. Subjects with gonorrhea, antibiotics in the prior month, or symptomatic partners were excluded. Fisher's Exact test and logistic regression were utilized.

Results: The most common examination finding was vaginal discharge (6.8%), followed by cervical ectopy (3.8%), endocervical mucopus (2.3%), easily induced endocervical bleeding (2.1%), and cervical motion (1.4%) or adnexal (0.8%) tenderness. Chlamydial TMA was positive in 101 (15.4%) women. Univariately, endocervical bleeding was significantly positively associated with chlamydial infection (5.4% vs. 1.7%; P = 0.041), while mucopus and vaginal discharge were moderately positively associated (5.0% vs. 1.8%; P = 0.065 and 10.9% vs. 6.1%; P = 0.087, respectively); however, upon controlling for bacterial vaginosis (present in 17%) and trichomoniasis (present in 3.5%) multivariately, only bleeding and mucopus remained associated with chlamydial infection (P = 0.047 and P = 0.067, respectively). The presence of combined endocervical bleeding and/or mucopus was even a stronger predictor (11.9% vs. 3.8%; P = 0.019). In chlamydial TMA-positive women with culture results (n = 70), combined bleeding and/or mucopus was present in (18%) of culture-positive (n = 61) versus both being absent in culture-negative (n = 9) women (P > 0.1).

Conclusions: Abnormal genital examination findings were infrequent in these asymptomatic young women undergoing chlamydial screening by TMA. However, endocervical bleeding and/or mucopus, when present, predicted chlamydial infection.

TP-059 EVALUATION OF SELECTIVE SCREENING CRITERIA FOR CHLAMYDIA AMONG WOMEN >25 SEEN IN FAMILY PLANNING SETTINGS IN CALIFORNIA

A.L. Amey¹, J.M. Chow², H.M. Bauer², C.K. Kent³, G. Bolan², P. Blackburn⁴

¹ California Family Health Council, Berkeley, CA, United States of America

² California Dpt Health Services, Oakland, CA, United States of America

³ San Francisco Dpt Public Hlth, San Francisco, CA, United States of America

⁴ Center for Health Training, Oakland, CA, United States of America

Background: A prevalence of 3% or more is required for a cost-effective chlamydia screening program in women. Overall prevalence for women >25 is less than 3% in most family planning settings, yet many older women are still universally screened, resulting in over-screening in this low prevalence population. To reduce over-screening and to use resources more effectively, we developed selective chlamydia screening criteria for asymptomatic, non-pregnant women >25 years.

Objective: Develop selective chlamydia screening criteria for asymptomatic, non-pregnant women > 25 by analyzing behavioral risk factor data.

Methods: Behavioral risk factor data was collected from 2001 through 2004 from 7 family planning clinics in California. Logistic regression is used to create a hierarchical ordering of risk factors and estimate the association of these risk factors and chlamydia infection.

Results: Observed prevalence in the sample was 3.1% for women 26-30 (N=4,500) and 1.6% for women 31+ (N=4,699). The strongest associations between risk factors and chlamydia infection were

reporting multiple partners (40% of total positive chlamydia cases for women 26-30; 30% for women 31+) or a past history of chlamydia (10% for women 26-30; 20% for women 31+). Reporting partners with other sexual partners or a new partner accounted for less than 8% of cases in both age groups. Screening 31% of women 26-30 with any risk factor accounted for 57% of chlamydia cases and screening 28% of women 31 or older accounted for 65% of cases. Conclusions: Our data suggest that selective screening criteria based on behavioral risk factors could significantly reduce the number of older women who are screened and still detect the majority of chlamydial infections among women seen in family planning settings in California.

Age	Percent Positive	Percent Screened	Percent of chlamydia detected	Percent positive in screened group
26-30	3.1 %	31.4 %	56.7 %	5.7 %
31+	1.6 %	27.8 %	64.9 %	3.7 %

Table 2: Sensitivity Analysis

TP-060 THE APTIMA COMBO 2[®] ASSAY DETECTED MORE WOMEN INFECTED WITH CHLAMYDIA TRACHOMATIS THAN THE AMPLICOR ASSAY BY TESTING CERVICAL AND VAGINAL SWABS AND URINE

D. Jang¹, M. Chernesky¹, K. Luinstra¹, S. Chong¹, M. Smieja¹, W. Cai¹, B. Hayhoe², C. MacRichie³, C. Main³

¹ McMaster University, Hamilton, ON, Canada

² Evergreen Clinic, Toronto, ON, Canada

³ Women's Health Clinic, Hamilton, ON, Canada

Background: Non-Invasive samples such as first void urine [FVU] and self-collected vaginal swabs [VS] are likely specimen candidates for *C. trachomatis* screening programmes, needed to identify and treat asymptomatic women. Two nucleic acid amplification test candidates are the APTIMA Combo 2 [AC2, Gen-Probe Incorporated] and AMPLICOR[®] CT [AMP, Roche Diagnostics] assays. The objectives were to evaluate the performance of these two tests to detect lower genital tract CT-infections in women.

Methods: A total of 300 women consented to the collection of a cervical swab [CS], vaginal swab [VS] and first void urine [FVU]. Each sample was processed within 48 hours into the AC2 and AMP assays using published protocol. A VS protocol was established for AMP following their endocervical swab method. An infected patient was determined to be positive in more than one specimen or when a single specimen was positive in both assays.

Results: There were 67 [22.3%] women infected. For the non-invasive specimens: AC2 detected 100% by VS and 89.5% by FVU; and AMP identified 67.2% by VS and 59.7% by FVU. The results for CS were 95.5% by AC2 and 89.4% by AMP. For VS, FVU and CS the AC2 assay confirmed 98.1, 94.3 and 90.6% of the AMP-positives but the AMP confirmed only 52.3, 46.5 and 47.7% of the AC2-positives. Using the AMP amplification control, 33 CS [11%], 27 FVU [9%] and 7 VS [2.3%] were recorded as inhibitory. Seven patients with inhibitory AMP samples were CT-infected. Equivocal readings were encountered in AMP-tested VS [n=11]. Inhibitory and equivocal samples required retesting.

Conclusions: Significantly more CT-infected women were identified by AC2 testing of any of the three specimen types, than by AMP testing [p<0.001]. VS testing by AC2 identified the greatest number of infections. Using AMP to confirm AC2 results was inadequate. Inhibition of AMP appeared to play a role in its clinical efficiency.

SESSION: TP - C6 EPIDEMIOLOGY- CHLAMYDIA TRACHOMATIS

TP-061 CHLAMYDIA RISK FACTOR AND PREVALENCE SURVEY OF YOUNG WOMEN AGED 18 TO 35 YEARS LIVING IN VICTORIA, AUSTRALIA

J.S. Hocking¹, J. Willis¹, S. Tabrizi², C.K. Fairley³, S.M. Garland², M.E. Hellard¹

¹ Burnet Institute, Melbourne, Australia

² Royal Women's Hospital, Melbourne, Australia

³ University of Melbourne, Melbourne, Australia

Objectives: To estimate the population-based chlamydia prevalence; risk factors for infection; and sexual health service use of Victorian women aged 18 to 35 years.

Methods: A random sample of households was selected from the telephone directory. Each household was sent a letter of invitation and an information leaflet. After one week, households were telephoned and eligible women identified. Participants completed telephone interviews and were asked to provide urine specimens through the post for chlamydia testing. Participants were provided with an 1800 number, an email address, a study web address and information about sexually transmitted infections. Urines were tested using PCR. Treatment was provided free of charge.

Results: 11,001 households were sent letters and telephoned. Telephone interviews were completed with 979 women and 657 women provided a urine specimen. Among sexually active women aged 18 to 24 years the chlamydia prevalence was 3.7% (95%CI: 1.2%, 8.4%). Chlamydia prevalence increased with an increasing number of male sexual partners with a prevalence of 14.3 % (3.0%, 36.3%) among those reporting three or more partners in the last 12 months. Women aged 18 to 24 years who reported a new sexual partner in the last three months had a chlamydia prevalence of 16.7% (95%CI: 3.6%, 41.4%). Those infected reported inconsistent condom use.

Conclusion: This is the first study of its kind in Australia. As about 12% of participants under 25 years reported three or more partners in the last 12 months, a 14% prevalence in this group could translate into significant numbers with undiagnosed chlamydia infection in the community.

TP-062 CHLAMYDIA TRACHOMATIS TESTING AND PREVALENCE AMONG YOUNG MEN AND WOMEN IN CENTRAL NORWAY 1990-2003: A POPULATION BASED REGISTRY STUDY

I.J. Bakken

SINTEF Health Research, Trondheim, Norway

Objectives: To investigate Chlamydia trachomatis (CT) testing patterns, and prevalence and incidence of Chlamydia among young men and women in Norway.

Methods: The study is based on routinely collected laboratory data (1990-2003) from the only facility for Chlamydia diagnostics in one Norwegian county (Sør-Trøndelag). Men and women 15-24 years

old at first registered test and resident in the county were included in the study. The main outcome measures were age-specific testing rates (first test), cumulative incidence of first test, cumulative incidence of an infection before the age of 25, hazard ratios for repeated testing, and 12-mo incidence of Chlamydia among people with two or more tests.

Results: 28 599 persons were tested for CT over the study period. Testing rates were significantly higher for women than for men (Table 1). In the cohorts born 1976-79, 4% of men and 44% of women had been tested by the age of 20, whereas 21% of men and 84% of women had been tested by the age of 25. Repeat testing was more common among women than among men (hazard ratio 1.9, 95% CI 1.8-2.1). Prevalence at first test was higher for men than for women throughout the study period (Table 2). The incidence of Chlamydia was higher among men than among women (hazard ratio 2.4, 95% CI 2.0-2.9), and higher among people who initially tested positive than among people who initially tested negative (hazard ratio 1.8, 95% CI 1.5-2.1).

Conclusion: In order to reduce the burden of disease caused by Chlamydia trachomatis more men and women have to be tested at younger age. People who have been diagnosed with Chlamydia are at higher risk for subsequent infections and repeated testing at appropriate time intervals is particularly important in this group.

	Time interval				
	1990-93	1994-96	1997-99	2000-02	2003
Tests (N)	11 362	5 265	4 654	5 317	2 001
Men /age					
15-19	7	9	8	13	19
20-24	27	25	28	36	48
Women /age					
15-19	92	88	81	95	90
20-24	166	77	72	82	92

Table 1: CT testing rates (first test) per 1 000

	Time interval				
	1990-93	1994-96	1997-99	2000-02	2003
Tests (N)	11 362	5 265	4 654	5 317	2 001
Men /age					
15-19	18.7	22.7	19.8	18.2	15.5
20-24	16.7	15.4	17.8	23.4	20.7
Women /age					
15-19	8.8	7.9	7.1	11.2	10.9
20-24	5.8	7.5	5.7	8.7	8.5

Table 2: Prevalence of CT at first test (%) by age and sex

TP-063 THE EVALUATION OF NUCLEIC ACID AMPLIFICATION TESTS IN THE ABSENCE OF A PERFECT GOLD-STANDARD TEST

A. Hadgu¹, N. Dendukur²

¹ Centers for Disease Control & Prevention, Atlanta, United States of America

² McGill University, Montreal, Canada

Over the last decade, medical diagnostic testing for sexually transmitted infections (STIs) has changed markedly as a result of the rapid expansion and marketing of nucleic acid amplification tests (NAATs). Unfortunately, the test evaluation process undergone by

these tests has not been rigorous nor scientifically sound. In the past, researchers have proposed appropriate statistical methods for estimating the sensitivity and specificity of a new test in the absence of a gold standard, however, these methods have failed to account for the nature of the tests being evaluated. In this presentation we propose a hierarchical latent class model for evaluating NAATs. We describe a new method for modeling dependence between tests that separates groups of tests based on different biological phenomena, thus measuring different latent variables (detection of DNA/RNA and detection of current infection). In this approach, estimates of test performance parameters are then provided for both DNA/RNA detection as well as infection detection. Based on this model the specificity of the LCR and PCR tests for the detection of infection are 96.8% (C.I. 96.2%-97.4%), and 97.3% (C.I. 96.7%-97.8%), respectively. Similarly, the specificity of these tests for the detection of DNA are 98.9% (C.I. 98.4%-99.7%) and 99.4% (C.I. 98.9%-99.9%), respectively.

TP-064 CHLAMYDIA TRACHOMATIS GENITOURINARY INFECTION IN LISBON, 1991-2004

M.J. Borrego¹, J.P. Gomes¹, M.A. Ferreira¹, C. Florindo¹, S. Viegas¹, A.

Paulino¹, A. Brito de Sá², J. Azevedo³, I. Santo³

¹ Inst. Nac. Saúde Dr. Ricardo Jorge, Lisboa, Portugal

² Faculdade de Medicina, Lisboa, Portugal

³ Consulta DST, CSLapa, Lisboa, Portugal

Objective: The purpose of this study was to diagnose Chlamydia trachomatis (CT) genitourinary infections and establish the infection rate in the Lisbon area.

Methods: Urethral and cervical swabs and urines were collected between 1991 and 2004 from 7873 patients (1147 men and 6726 women) attending to general practice (GP), family planning (FP) or urology (U) clinics of the Lisbon area and 9191 attendees (3054 men and 6137 women) of the major Portuguese sexually transmitted diseases (STD) clinic, located in Lisbon. Female patients were predominantly asymptomatic and male patients were predominantly symptomatic. The laboratory diagnose of CT was performed in the Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA), Lisbon, through direct immunofluorescence (IF) and culture in McCoy cells (1991-1994), and PCR-Amplicor (Roche) (1994-2004). Isolates were further genotyped through a modified protocol of the nested-PCR first described by Lan et al, 1994.

Results: During the study period, a total of 1177 CT were isolated in INSA. As expected, the positivity rate among STD clinic patients was 2.2-fold higher (847/9191, 9.2%) than the observed among GP, FP or U patients (330/7873, 4.2%). Overall CT infections were found more often in men (9.3%) than in women (6.1%). Genotype E was the most frequent (41.9%), followed by F (15.4%), D/Da (10.6%), G (10.4%), H (8.1%), J/Ja (4.4%), I/Ia (3.9%) and K (2.0%).

Conclusions: Surprisingly, the mean positivity of CT infection didn't exhibit a major evolution since 1991 (7.4% in 1991 to 7.1% in 2004) in GP and FP clinics or STD patients (7.8% in 1993 to 7.7% in 2004), with 1991-2 exceptions for the later when the number of positive cases reached 16.4% and 13.1% respectively. According to the other STD pathogens diagnosed in our lab during the same period, CT was the most frequent STD for both men and women.

TP-065 TRENDS IN CHLAMYDIA TRACHOMATIS INFECTIONS IN YOUNG WOMEN ENTERING A NATIONAL JOB TRAINING PROGRAM, 1998-2004

M. Joesoef, D.J. Mosure

Centers for Disease Control & Prevention, Atlanta, United States of America

Objectives: To assess the trends and patterns of chlamydia infections in disadvantaged young women entering a national job training program in the US from 1998-2004.

Methods: We calculated the prevalence of chlamydia infections by demographic and geographic characteristics among 106,375 women aged 16 to 24 years who enrolled in the program from 1998 through 2004. DNA hybridization probe (GenProbe) was used to detect chlamydia infections for 93.1% of cervical specimens. We divided the US geographically according to the US Bureau of Census (West, Midwest, South, and Northeast).

Results: Overall, chlamydia prevalence was 10.9%. Chlamydia prevalence was highest in women 16 years old (13.3%) and lowest in those 24 years old (5.5%). African Americans had the highest prevalence (13.1%) while non-Hispanic Whites had the lowest prevalence (6.8%). Women who lived in the South had the highest prevalence (12.6%) while those who lived in the West had the lowest prevalence (8.7%). After adjustment for age and race/ethnicity, the differential rates between these two regions persisted (adjusted odds ratios of 1.3 [95% CI 1.2-1.3]). After adjustment for age and race/ethnicity (using the 1998 population as the 'standard' population), chlamydia prevalence significantly declined from 11.7% in 1998 to 10.4% in 2004. This decline in chlamydia prevalence was seen across all age groups (16-19 and 20-24 years) and census regions, and among African Americans and Hispanics, but not among non-Hispanic Whites.

Conclusions: The decline in prevalence suggests that chlamydia intervention efforts may have reached the population of disadvantaged youth. Despite the decline, the chlamydia prevalence in this population remains high. This high prevalence underscores the need for expanded and better targeted interventions such as screening and treatment in high-risk populations.

TP-066 CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEA INFECTIONS IN WOMEN AGED 15-24 YEARS ATTENDING PRENATAL CARE CLINICS IN THE U.S., 2003

M. Joesoef, D.J. Mosure, L.W. Dicker

Centers for Disease Control & Prevention, Atlanta, United States of America

Objectives: To describe the patterns of chlamydial and gonorrheal infections in women attending prenatal care clinics in 2003.

Methods: We analyzed demographic characteristics of women aged 15-24 years who were universally screened for chlamydia (18 states) and gonorrhea (13 states) in prenatal care clinics that conducted at least 500 chlamydia or gonorrhea tests. We computed positivity (number of positive tests divided by number of total tests) by state and reported the median state positivity. Various nucleic acid amplification techniques from urine specimens were used to detect chlamydia and gonorrhea infections.

Results: Of 86,070 chlamydia tests, 5.8% were positive. The median state chlamydia positivity rate was 5.4% (range from 1.8% in Maryland to 10.4% in Louisiana). The median positivity rate decreased

from 9.7% in women aged 15-19 years to 2.3% in women aged ≥ 30 years. African Americans had the highest median rate (11.1%), followed by non-Hispanic Whites (3.9%) and Hispanics (3.8%). Of 45,239 tested for both chlamydia and gonorrhea, 1.2% were positive for gonorrhea. The median state gonorrhea positivity rate was 1.0% (range from 0.1% in New Mexico to 2.4% in Louisiana). Median gonorrhea positivity was 1.9% in women aged 15-19 years, 0.9% in women aged 20-24 years, 0.3% in women aged 25-29 years, and 0.5% in women aged ≥ 30 years. African Americans had the highest median positivity (4.9%), followed by Hispanics (2.9%) and non-Hispanic Whites (0.8%). Among women infected with gonorrhea, co-infection with chlamydia was 48.1%. Among women infected with chlamydia, co-infection with gonorrhea was 6.9%. **Conclusions:** Chlamydia positivity is high among women attending prenatal care clinics. Expanded screening and treatment programs are needed to prevent adverse pregnancy outcomes. These data support the recommendation to treat persons infected with gonorrhea for chlamydia as well.

TP-067 A NEW WIDESPREAD SCREENING PROGRAM IN THE U.S. FOR CHLAMYDIA IN MALES: PREVALENCE IN YOUNG MEN ENTERING A JOB TRAINING PROGRAM

D. Mosure, M.R. Joesoef

Centers for Disease Control & Prevention, Atlanta, United States of America

Objectives: In July 2003, the first widespread chlamydia screening activity in the U.S. addressing men was implemented in a national job training program for socioeconomically disadvantaged young men aged 16-24 years. All men are screened for chlamydia during their entrance physical examination. We describe the prevalence and epidemiology of chlamydia among these young men.

Methods: We calculated the prevalence of chlamydia by demographic, behavioral, and geographic characteristics from 50,599 men aged 16 to 24 years who enrolled in the program at 119 training facilities from July 2003 through December 2004. Urine-based nucleic acid amplification testing was used.

Results: Overall chlamydia prevalence was 8.2%. Prevalence was higher in men 20-24 years (8.8%) than in men 16-19 years (8.0%). Blacks had the highest prevalence (13.0%) while non-Hispanic whites had the lowest (3.1%). Only 2.4% of men had reported symptoms of an STD when screened at entrance examination; chlamydia prevalence was 16.0% in symptomatic men versus 8.1% in asymptomatic men ($p < 0.05$). In men who smoked marijuana (29%), 11.9% were infected with chlamydia versus 6.4% who did not smoke marijuana ($p < 0.05$). No significant differences in prevalence were found for cocaine, opium, PCP, or amphetamine use. Chlamydia prevalence varied by state of residence ranging from 1.5% in Maine to 12.8% in Georgia. Men who lived in the Southern region had the highest prevalence (10.6%) while those who lived in the Western region had the lowest (3.5%). After adjustment for age and race/ethnicity, the differential rates between these two regions persisted.

Conclusions: Chlamydial infection is highly prevalent among these socioeconomically disadvantaged young men. Young men entering this national job training program represent an important population for such screening, which also allows trends in chlamydia prevalence among high risk, often hard-to-reach, out-of-school men to be monitored.

TP-068 METHODS FOR ESTIMATING CHLAMYDIA SCREENING COVERAGE AMONG WOMEN ATTENDING FAMILY PLANNING CLINICS

D. Gunter¹, D. Fine², L. Dicker¹, D. Mosure¹

¹ Centers for Disease Control & Prevention, Atlanta, GA, United States of America

² Center for Health Training, Seattle, United States of America

Objectives: Chlamydia screening is recommended annually for all women under age 25. Estimates of screening coverage are important for measuring progress towards this goal. Frequently, it is difficult to assess coverage because clinics do not have integrated data systems that use common patient identifiers. We present a method using aggregated clinic level data to estimate screening coverage in clinics where patient identifiers are not available.

Methods: We analyzed chlamydia screening status for 15,497 women aged 15-24 years seen at 22 Idaho family planning clinics in 2002 and who had patient identifiers available. Clinic screening coverage was defined as number of women screened for chlamydia divided by total number of women eligible for screening. Data from 2001 were analyzed to determine if a woman was screened within the year prior to her 2002 visit. We determined the number of visits that would have involved chlamydia screening (based on reason for visit), calculated the number of chlamydia tests done, and compared aggregated estimates with the patient-level estimates.

Results: On average, 59% of women aged 15-24 years in Idaho family planning clinics in 2002 had been screened for chlamydia in the last year based on data that included patient identifiers. Using aggregated data that included number of initial or annual exams or other medical visits as the denominator and number of chlamydia tests as the numerator, mean screening coverage among women aged 15-24 years was 52%.

Conclusions: When unique patient identifiers are not available, aggregate clinic-level data may provide reasonable estimates of chlamydia screening coverage. Less than adequate coverage may be a function of fiscal, program, and test technology (tests often require a physical exam). Regardless of the method used to assess coverage, only 52% to 59% of women ages 15-24 years were screened for chlamydia in a population targeted for 100% coverage.

TP-069 POPULATION PREVALENCE AND CORRELATES OF CHLAMYDIA TRACHOMATIS (CT) INFECTION IN MEN AND WOMEN AGED 15-30 IN BRITISH COLUMBIA, CANADA

V.P. Remple¹, J. Barnett¹, D.M. Patrick¹, R.C. Brunham², D. Taylor¹, G.S. Ogilvie¹, L. Knowles¹, C. Shaw¹, T.L. Kwindt¹

¹ BC Centre for Disease Control, Vancouver, Canada

² UBC Centre for Disease Control, Vancouver, Canada

Objectives: To determine prevalence of Ct and identify infection correlates in a population sample, and to compare sample prevalence to Ct reporting rates (CtRR).

Methods: Urine testing kits and questionnaires were mailed to individuals randomly selected from the provincial medical services population registry, stratified by age and sex. Urines were screened at the Provincial Laboratory using Roche Cobas Amplicor™. All positive tests in the province are reported to the STD/AIDS Control

Division. General population statistics are used as the CtRR denominator. Categorical and continuous variables were analysed using chi square and Student's t test, respectively.

Results: Of the 1461 participants, 49% were male. History of sexual activity (SA) was reported by 71%. Prevalence was 1.1% (95%CI 0.67-1.76%) and 1.6% (95%CI 1.0-2.5%) in all and SA participants, respectively; 1.8% and 1.3% (p=0.7) in SA females and males, respectively; and 1.6%, 2.1%, and 1.0% (p=0.2) in 15-19yr, 20-24yr, and 25-30yr age groups, respectively. Infection was associated with having had a prior Ct test (63% vs. 24%, p<0.05), having 6+ lifetime sex partners (69% vs 24%, p<0.01), and 2+ in the past three months (38% vs. 12%, p<0.01). CtRR was 0.74% (95% CI 0.72-0.76%) overall. Age-sex stratified study prevalence and CtRR are summarized in Table 1. **Conclusion(s):** Prevalence of Ct in the general 15-30yr population is under 2%. Ct screening should target those with new or multiple sex partners, and those who have had prior screening. The differences between study prevalence and CtRR were not statistically significant although there was a trend to lower reporting rates, especially among males. This finding suggests that reporting rates may be a valid measure of the burden of Ct infection, at least in British Columbia for this age group.

Table 1. Chlamydia reporting rates (CtRR) and study sample prevalence, stratified by age and sex						
Age	MALES			FEMALES		
	CtRR +ve/1000	Sample prevalence +ve/1000	p-value	CtRR +ve/1000	Sample prevalence +ve/1000	p-value
15-19	2.2	4.3	1.0	13.7	8.7	0.7
20-24	6.3	13.5	0.4	14.1	21.6	0.5
25-30	3.5	7.8	0.5	5.6	10.4	0.5
Total	4.0	8.5	0.1	10.8	13.3	0.6

Table 1:

TP-070 TRANSMISSIBILITY OF CHLAMYDIA TRACHOMATIS INFECTIONS DETECTED USING NUCLEIC ACID AMPLIFICATION TESTS

S.M. Rogers¹, W.C.M. Miller², J.E. Ellen³, J. Zenilman³, R. Rothman³, C.F. Turner¹, A.A. Al-Tayyib¹, M.A. Villarroel¹

¹ RTI International, Washington, DC, United States of America

² University of North Carolina, Chapel Hill, United States of America

³ Johns Hopkins, Baltimore, United States of America

Objective: To determine whether C. trachomatis (Ct) infections that can only be detected by NAAT are as transmissible as Ct infections that also are detectable using traditional assays, e.g., culture, DFA. **Methods:** Young adult patients ages 18-35 attending the Johns Hopkins Hospital Emergency Department (JHH ED) were screened for Ct; study participants provided urine specimens and self-administered vaginal swabs for Ct testing using PCR. Positive subjects and their partners were contacted and referred to the JHH General Clinical Research Center (GCRC) for examination, additional testing (repeat NAAT and traditional assay), and treatment.

Results: Between November 2002 and December 2004, 5,107 eligible ED subjects provided specimens for Ct testing; 7.3% tested NAAT positive. Nearly 70% of eligible subjects received testing and treatment at the GCRC; 77% of these subjects tested positive for Ct by repeat NAAT and 60% named partners who were treated at the GCRC. Approximately 66% of partners tested Ct positive (either NAAT, traditional assay, or both). Among partners of index subjects with a Ct infection that was detected by NAAT but not by traditional assay (N+T-), 50% tested positive for Ct. Among the partners of index subjects with a Ct infection that was detected by both NAAT and traditional assay (N+T+), 81% tested positive for Ct ($p=0.02$). Conclusions: Chlamydial infections that were detectable by NAAT only (N+T-) were less transmissible, as defined by partner concordance, than infections that also were detected by traditional assay. A positive NAAT could reflect a variety of 'true' states: clinically active infection, persistent but non-cultivable infection, residual DNA from previous infection, or a false positive result. These findings have important implications for interpretation of studies that use NAAT for detection of asymptomatic Ct.

TP-071 HEALTH INSURANCE COVERAGE, HEALTH CARE SEEKING BEHAVIORS, AND GENITAL CHLAMYDIAL INFECTION PREVALENCE IN YOUNG ADULTS

W.M. Geisler¹, L. Chyu², Y. Kusunok², D.M. Upchurch², E.W. Hook, III¹

¹ University of Alabama at Birmingham, Birmingham, Alabama, United States of America

² University of California, Los Angeles, California, United States of America

Objectives: Assess associations of health insurance coverage and health care seeking behaviors, both indicators of health care access, with genital chlamydial infection prevalence in a nationally representative sample of young adults.

Methods: Cross-sectional analysis of data from interviews and chlamydial LCR testing of 9,347 sexually-active individuals ages 18 to 27 enrolled in Wave III of the National Longitudinal Study of Adolescent Health. Outcomes were chlamydial prevalence and likelihood of infection by insurance coverage and health care seeking behaviors, stratified by gender and controlling for age and race/ethnicity.

Results: Overall chlamydial prevalence was 4.7% (95% CI, 3.9%-5.5%), and lower in men (4.1%; 95% CI, 3.3%-5.2%) than women (5.4%; 95% CI, 4.4%-6.5%) (prevalence ratio, 0.75; 95% CI, 0.58-0.98). Chlamydial prevalences were lower in individuals with continuous insurance coverage versus uninsured (men: 3.2% vs. 6.5%; AOR, 0.57; 95% CI, 0.34-0.94; $P < .05$ and women: 4.8% vs. 7.5%; AOR, 0.66; 95% CI, 0.43-1.03; $P < .10$). Chlamydial prevalence among men usually seeking health care in emergency rooms was higher versus those seen in primary care settings (9.4% vs. 2.9%; AOR, 1.96; 95% CI, 1.05-3.68; $P < .05$), with a similar trend in women. Females receiving usual health care in school clinics had an even lower chlamydial prevalence than those seen in primary care settings (1.0% vs. 5.0%; AOR, 0.17; 95% CI, 0.05-0.57; $P < .01$). Men, but not women, with provider visits in the preceding 12 months had a lower chlamydial prevalence (3.6% vs. 5.3%; AOR, 0.62; 95% CI, 0.39-0.97; $P < .05$). Despite insurance coverage and health care seeking behaviors differing by race/ethnicity, associations remained significant.

Conclusions: Independent of race/ethnicity, indicators of health care access, such as health insurance status and preferred sites for health care, are associated with variation in chlamydial prevalence in young adults.

TP-072 RACIAL DIFFERENCES IN ORAL SEX

J. Chapin¹, J.A. Schillinger¹, K. Hutchins¹, B. Batteiger², D. Orr², P.A. Rice³, L. Shrier⁴, L.E. Markowitz¹

¹ US Centers for Disease Control and Prev, Atlanta, United States of America

² Indiana Univ Sch of Medicine, Indianapolis, United States of America

³ Boston Medical Center, Boston, United States of America

⁴ Children's Hospital, Boston, United States of America

Objective: To examine racial differences in the frequency of performing oral sex in the past sixty days among men and women enrolled in a study of Chlamydia trachomatis (Ct) transmission.

Methods: Sexually active males and females attending STD clinics, an adolescent clinic and an emergency room in Boston and Indianapolis were enrolled in a cross sectional study of Chlamydia trachomatis (Ct) transmission. Sex partners (partners) to Ct-infected participants (index patients) were sought and enrolled. Participants completed an enrollment interview that included a question regarding how frequently they had performed oral sex within the past sixty days.

Results: A total of 755 index patients completed an enrollment interview; 396 from Indiana and 359 from Boston. The median age was 20; females accounted for 57% of participants. Sixty-two percent of enrollees were non-Hispanic (NH) Black. Overall, 43% of enrollees reported giving oral sex within the past sixty days. Study participants in Boston were more likely to report giving oral sex (180/359; 50% vs. 141/395; 36%); ($p < .0001$). Forty-four percent of females and 41% of males reported giving oral sex. Compared to other race/ethnicity groups, NH Blacks were the least likely to report giving oral sex: NH Blacks 33% (150/465) vs. NH White 63% (98/155); NH Other (52%) 31/60; and Hispanic (57%) 42/74; $p < .0001$; this remained significant when the data were stratified by sex and by study site.

Conclusions: The frequency of oral sex differs across population subgroups. NH Blacks were less likely than other racial/ethnic groups to report giving oral sex in the last sixty days.

TP-073 COMPLICATIONS IN MANAGEMENT OF SEXUALLY TRANSMITTED DISEASE IN CANADA

E. Lemstra, J. Opondo, K. Grauer, C. Neudorf, J. Wright, P. de Bruin
Saskatoon Health Region, Saskatoon, Canada

The age-standardized rate of chlamydia in 2001 in Saskatoon, Canada, was 269.4 per 100,000 with the national average being only 161.8. The authors designed a retrospective cohort to try to determine why. All STD (chlamydia and gonorrhea) patient files from 1998 to 2003 were reviewed. Testing counts increased from 10,425 in 1998 to 28,285 in 2003. Positive test counts increased from 576 (5.5% positive) in 1998 to 1094 (3.9% positive) in 2003. Only 1.3% (95% CI- 0.9-1.8) of physicians notified Public Health within 72 hours of a suspected STD and only 75.7% (95% CI- 73.1-78.4) notified Public Health at all (mean 15.25 days). Only 51.2% (95% CI 49.0-53.4) of physicians listed sexual partner contacts in comparison to 85.4%

of public health nurses (95% CI- 81.1-89.7). For sexual partner contacts located, 46.2% (95% CI- 43.3-49.0) tested positive for STD. Re-occurrence rates were 7.2% of cases treated by physicians and 5.7% of those treated by public health nurses (RR= 1.26; 95% CI- 1.00-1.58). Age standardized chlamydia incidence in 2001 was highly influenced by neighborhood low income status in comparison to average (RR= 4.32; 95% CI- 3.68-5.07) and high income status (RR=14.89; 95% CI- 8.51-26.06). For gonorrhoea, the rate ratio for low income to average income was 7.76 (95% CI- 5.46-11.02). Increased testing is only partially responsible for increased STD incidence as the experience in Saskatoon is very similar to the comparable cities of Regina and Winnipeg (data not shown). Physicians, however, must begin to notify Public Health within the mandated 72 hours and must also list sexual partner contact information in order to control STD incidence. STD incidence is also highly associated with low income status.

TP-074 REINFECTIONS, PERSISTENT INFECTIONS AND NEW INFECTIONS AFTER GENERAL POPULATION SCREENING FOR CHLAMYDIA TRACHOMATIS INFECTION IN THE NETHERLANDS

I.K. Veldhuijzen¹, J.E.A.M. van Bergen², H.M. Götz¹, C.J.P.A. Hoebe³, J Broer³, S.A. Morré⁴, J.H. Richardus⁵

¹ Municipal Health Service Rotterdam area, Rotterdam, Netherlands

² STI AIDS The Netherlands, Amsterdam, Netherlands

³ Municipal Health Service, Heerlen, Netherlands

⁴ VU University Medical Center, Amsterdam, Netherlands

⁵ Erasmus University Medical Ctr, Rotterdam, Netherlands

Objectives: To determine the rate of new infections and reinfections or persistent infections with Chlamydia trachomatis a year after screening in initial C. trachomatis negative and positive persons and to identify risk factors for reinfection.

Methods: Cross-sectional study among a subsample of participants in a population-based chlamydia screening in the Netherlands. In the screening 21,000 15-29 year-old women and men in urban and rural areas were invited for home-based urine testing. One year after the study a subsample of 299 participants were offered retesting. Serovar determination was used to potentially discriminate between reinfections or persistent infections and new infections. **Results:** Nine C. trachomatis infections were found among 187 responders (4.8% CI 1.7-7.9). The prevalence was 10.4% (5/48) in previously positives, and 2.9% (4/139) in negatives. Three of five repeatedly positive participants were infected with a different C. trachomatis serovar, two had the most prevalent serovar, serovar E, at both time points. Failing partner treatment was identified as a potential reason for reinfection in these two cases, although a reinfection with the same strain (Serovar E) by a different partner cannot be excluded, especially because Serovar E is the most prevalent serovar (40%) in the Netherlands

Conclusions: Our study indicates that infected persons found in a systematic, population based screening should be rescreened within one year. Optimal screening intervals still need to be determined. The higher risk of reinfection in persons with a previous positive C. trachomatis test stresses the need for improved partner treatment strategies and upgrading of counselling performance in primary care.

TP-075 PROGRESSING TOWARDS NATIONAL COVERAGE: AN UPDATE ON THE PHASED IMPLEMENTATION OF THE NATIONAL CHLAMYDIA SCREENING PROGRAMME IN ENGLAND

D.S. LaMontagne, L. Emmett, V. Delpech

Health Protection Agency, London, United Kingdom

Objectives: Opportunistic screening for Chlamydia trachomatis among women and men under the age of 25 in clinical and non-clinical settings is being phased across England. The first year of the programme (2003) found 10% positivity among women and 13% among men. Sixteen additional areas began screening in April 2004. This presentation highlights results from the second year of screening with comparison to the first year. **Methods:** Local areas offer screening to women and men under 25 years of age attending clinical and non-clinical settings using urine or self-taken vaginal swab samples, tested by nucleic acid amplification. Treatment, partner notification, and follow-up services are provided by nurse health advisors based in genitourinary medicine or community settings. Screening data from April 2003 through December 2004 were analysed; positivity by key demographic and behavioural characteristics was calculated. **Results:** Chlamydia positivity among women under 25 years old increased from 10.2% (9.7-10.6) in year 1 to 11.4% (11.0-11.8) in the first nine months of year 2 (fig. 1). Among men opportunistically screened the positivity was 14.1% (12.8-15.4), but this was not a statistically significant increase from 13.1% (11.2-15.0) in year 1. Screening volumes by 125% (1,198 to 2,695) for men and 51% (15,869 to 23,994) for women. Peak positivity remained the same for both groups: ages 16-19 for women and 20-24 for men. **Conclusions:** The National Chlamydia Screening Programme in England has experienced dramatic increases in screening volume in year 2 of operation. Positivity rates remained high but fairly stable, although a slight increase was observed among women aged 20-24 years. The government's recent White Paper on Public Health commits to expanding the NCSP to all of England by 2007. Monitoring important epidemiological trends will be critical to provide data on the impact of screening on the prevalence of chlamydia among young people.

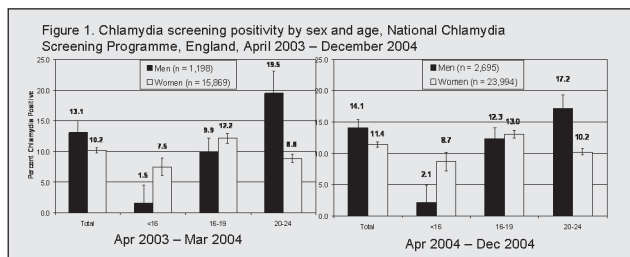


Table 1: Chlamydia positivity by age and sex

TP-076 A DECADE OF CHLAMYDIA IN LEEDS, UK: COMPARATIVE ANALYSIS OF DEMOGRAPHIC AND GEOSPATIAL RISK FACTORS AT THE ONSET OF CHLAMYDIA SCREENING

A.L. Evans¹, D. Merrick², E.F. Monteiro¹, M.H. Wilcox¹, C.J.N. Lacey³

¹ Leeds General Infirmary, Leeds, United Kingdom

² Y&H Public Health Observatory, York, United Kingdom

³ Hull York Medical School, York, United Kingdom

Objectives: To compare the demographics and geospatial distribution of Chlamydia in Leeds in 2003-4 with that analysed in 1994-5, and assess for subpopulations attending different healthcare settings. **Methods:** Disaggregate laboratory data for all Chlamydia diagnoses in Leeds in 2003-4 were captured, cross-checked for duplicates, and compared to the original data from the 1994-5 study (1).

Results: For persons aged 15 to 54, total annualised positivity rates increased 4-fold from 159.0/106 in 1994/5 by ELISA (95% CI 150.4 to 167.9) to 644.8/106 in 2003/4 by SDA (95% CI 627.4 to 662.5). This increase was the same for both sexes; peak age groups remained 15-19 for women and 20-24 for men. Ethnicity data (Genitourinary Medicine (GUM) diagnoses only) showed a persistent relative risk of 10 for black as opposed to white ethnic groups. In 2003/4, GUM diagnosed 42% of Chlamydia positives compared with 80% in 1994/95. 51% were diagnosed in the community: General Practice (39%), Contraceptive services (7%) and Chlamydia Screening Project (5%). A positive female was 4.5 times more likely than a positive male to be diagnosed in a non-GUM setting. Analyses of setting-specific positivity rates and geospatial distribution are underway.

Conclusions: Chlamydia continues to show a wide geospatial distribution with increased risk in under-25s and black ethnic groups. Women are now diagnosed mostly in community settings and efforts will need to be concentrated on partner notification to reduce transmission. (1) EF Monteiro, CJN Lacey, D Merrick. The interrelation of demographic and geospatial risk factors between four common sexually transmitted diseases. Sex Transm Infect 2005;81:41-46

TP-077 YOUNG WOMEN IN ADULT DETENTION: THE NEXT PRIORITY POPULATION FOR CHLAMYDIA AND GONORRHEA SCREENING

C.K.K. Kent, K.C. Scott, J.D. Klausner

San Francisco Department of Public Health, San Francisco, CA, United States of America

Objective: The Centers for Disease Control and Prevention, USA, recommends chlamydia screening for females in youth detention. Because partnerships already exist in youth detention, STD programs may consider implementing male screening in youth detention before establishing new partnerships in adult detention. However, cost-effectiveness studies suggest that screening males is effective only when the prevalence is about twice that in females, e.g. it is more effective to screen a population of females with a prevalence of 3% than a male population with a prevalence of < 6%. We compared the prevalence of chlamydia and gonorrhoea in females and males screened in youth and adult detention.

Methods: We examined the prevalence of chlamydia and gonorrhoea in detention facilities in San Francisco in 2003-2004 by demo-

graphic characteristics. Urine-based testing was performed at the Public Health Laboratory using ProbeTec (BD Laboratories).

Results: The prevalence of infections was nearly identical in women 18-25 years in adult detention as in girls 12-17 years in youth detention. Also, the prevalence of chlamydia was three times higher in adult women 18-25 years than among boys 12-17 years. The prevalence of chlamydia in males peaked at 18-25 years.

Conclusions: Based on the prevalence of chlamydia and gonorrhoea in detention settings, the rank priority for screening should be girls in youth detention, women 18-30 years in adult detention, followed by men 18-25 years in adult detention. San Francisco has moderate rates of chlamydia and gonorrhoea among heterosexuals, thus our findings may not be applicable to all programs. However, the ratio of infections in females to males in youth detention is consistent with national data. Other programs should consider piloting screening in adult detention before expanding screening to males in youth detention.

Age group (Detention Setting)	Females		Males	
	%+	N	%+	N
12-17 yrs (youth)	9.7%	(838)	2.1%	(795)
18-25 yrs (adult)	9.4%	(1577)	6.6%	(4810)
26-30 yrs (adult)	3.5%	(475)	2.7%	(475)

Table 1: Prevalence of chlamydia and gonorrhoea in detention

TP-078 PREVALENCE OF CHLAMYDIA AND GONORRHEA IN THE UNITED STATES AMONG PERSONS AGED 14-39 YEARS, 1999-2002

S.D. Datta, M. Sternberg, R. Johnson, J. Papp, G. McQuillan, H Weinstock
Centers for Disease Control (CDC), Atlanta, United States of America

Objective: We report Chlamydia trachomatis and Neisseria gonorrhoeae prevalence from a representative sample of the U.S. population aged 14-39 years.

Methods: Information about demographics, sex behaviors and sexually transmitted disease history was obtained and urine specimens were collected as part of the ongoing National Health and Nutrition Examination Survey (NHANES) from 1999 to 2002, a probability sample of the U.S. population. Results were weighted to represent the U.S. civilian, non-institutionalized population aged 14-39 years. Urine specimens were tested for C. trachomatis and N. gonorrhoeae using the LCx assay (Abbott Laboratories, Abbott Park, IL).

Results: Testing for chlamydia and gonorrhoea was performed on 6632 respondents. The prevalence of C. trachomatis infection was 2.2% (95%CI 1.8-2.75) with no significant differences observed between men and women. Among women, highest prevalence was in the 14-19 year age group (4.6% [95%CI 3.7-5.8]), while among men prevalence was highest among those aged 20-29 years (3.2% [95%CI 2.38-4.30]). Prevalence was significantly higher among Non-Hispanic Blacks (6.37% [95%CI 5.40-7.51]) than among Non-Hispanic Whites (1.52% [95%CI 0.97-2.38]). C. trachomatis preva-

lence among Non-Hispanic Blacks aged 14-19 years was 11.1% (95%CI 9.1-13.6). The prevalence of *N. gonorrhoeae* was 0.24% (95% CI 0.16-0.38%). The prevalence of gonorrhea among non-Hispanic blacks (1.2% [95%CI 0.7-1.9%]) was markedly higher than among non-Hispanic whites (0.07% [95% CI 0.02-0.24%]) ($p < 0.05$). Among those infected with *N. gonorrhoeae*, 46% were also infected with *C. trachomatis*.

Conclusions: The burden of *C. trachomatis* in the U.S. is sizable. Although prevalence among men and women is similar, differences exist across age groups between the sexes. While overall prevalence for *N. gonorrhoeae* is low, significant racial/ethnic disparities exist for both gonorrhea and chlamydia. Our data support recommendations to cotreat patients infected with *N. gonorrhoeae* when *C. trachomatis* infection is not ruled out.

TP-079 YOUNG WOMEN IN ADULT DETENTION: AN IMPORTANT CHLAMYDIA SCREENING OPPORTUNITY

M.R. Boudov, M. Javanbakht, M. Mejia, G. Escoto, P.R. Kerndt
Sexually Transmitted Disease Program, Los Angeles, CA, United States of America

Objectives: Routine chlamydia screening is rarely conducted in adult jails. Therefore, the purpose of this study was to describe results of a four-year large-scale chlamydia screening program for females in adult detention and analyze trends in chlamydia prevalence.

Methods: Data were collected from screenings conducted at an adult detention facility from January 2001 through December 2004. During medical intake, female inmates who are age 30 or under, pregnant, or charged with prostitution were offered urine-based chlamydia screening. Demographic, clinical, and behavioral data were collected from participants, and analyzed together with laboratory results.

Results: A total of 24,998 female inmates were screened for chlamydia during the study period, and the overall prevalence of chlamydia was 12.5% ($n=3,116$). The prevalence was highest among women ages 18-19 (19.1%) followed by those ages 20-24 (14.6%) and lowest among those ages 40-44 (3.4%) (Cochran-Armitage z -statistic= -16.31; $p < .0001$). The biggest change in prevalence during this four-year period came between 2002 and 2003 when overall prevalence rose from 11% to 14%, and remained higher in 2004 (13.5%) (Cochran-Armitage z -statistic= 5.09; $p < .0001$). Chlamydia prevalence among 18-19 year olds went from 18% in 2002 to 23% in 2003 (Chi-Square= 5.85; $p=0.0155$). The prevalence peak in 20-24 year olds was also in 2003, from 14% to 16% (Chi-Square= 3.82; $p=0.0508$).

Conclusion: Nearly 1 of 5 young women in adult detention has chlamydia. Routinely screening young women in adult detention is an effective case-finding tool, and should be a high priority for STD Programs and health departments. Trend analysis of the results of this four year large-scale chlamydia screening program for females in adult detention underscores the utility and importance of screening in this setting to reach this high risk population.

SESSION: TP - D6 PREVENTION STRATEGIES-CHLAMYDIA TRACHOMATIS

TP-080 ACCEPTABILITY OF SELF-TAKEN VAGINAL SWABS (SVS) AND FIRST-CATCH URINE (FCU) SAMPLES TO DIAGNOSE C. TRACHOMATIS AND N. GONORRHOEAE WITH AMPLIFIED DNA ASSAY IN WOMEN AT A PUBLIC HEALTH STD CLINIC

C.J.P.A. Hoebe

Municipal Public Health Service S-Limburg, Heerlen, Netherlands

Objective and study design: Exploring the acceptability and feasibility of two non-invasive diagnostic methods in a public health setting.

Methods: Patients participating in the study were young women visiting a public health STD clinic between August 2003 and August 2004. 380 women between 14 and 30 were included, their mean age was 22,0 (sd. 3,5). 4% were working as commercial sex workers (CWS). Patients were instructed in taking a SVS and a FCU by educated STD-nurses, using a checklist, a diagram and demonstration material. All patients filled out a questionnaire concerning demographic data, reason(s) for STD examination, acceptability of both methods and preferable examination method. SVS and FCU samples were tested with BD-Probtect. Positive tests were retested for confirmation and to avoid false-positive results.

Results: Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (NG) were diagnosed in 11,5% and 1,5% of the patients, respectively. In 99% of all cases test results of SVS and FCU were the same, whereas in 1% test results showed discrepancy.

About 11% (37/326) of the included women who never previously had a STD-examination, tested positive for CT and/or NG. More than 13% mentioned 'not having to undergo intimate vaginal examination' as one of the reasons to go to a public health STD clinic. Self collection of vaginal swabs was almost uniformly reported as easy to perform (97%). Self collection of urine samples and vaginal swabs were preferred (76%) above a gynecologic examination (1%); 23% did not voice a preference.

Conclusions: To exclude false-negative results both techniques should be used. Using SVS combined with FCU can be an important enhancing tool in public health approaches to encourage young women to get tested for STDs. It has a high feasibility and acceptability, enabling the detection of CT and NG that would otherwise remain undiagnosed and untreated.

Crosstabulation: Result Chlamydia FCU * Result Chlamydia SVS					
		Result SVS		total	
		negative	positive		
Result FCU	negative	Count (% of total)	337 (90)	4 (1)	341 (91)
	positive	Count (% of total)	1 (0)	38 (9)	39 (9)
Total		Count (% of total)	338 (90)	42 (10)	380 (100)

Table 1: Table sensitivity and specificity

TP-081 ACIDFORM DOES NOT PREVENT CHLAMYDIAL INFECTION IN THE MACAQUE MODEL FOR TOPICAL MICROBICIDE EFFICACY TESTING

Y.T. Cosgrove Sweeney, D.L. Patton

University of Washington, Seattle, WA, United States of America

Objective: ACIDFORM gel is a topical microbicide product in development, which completed macaque safety studies in this laboratory and was reported¹ to cause no deleterious effects on cervicovaginal tissues after repeated use. Amphora Gel, a trade name selected for ACIDFORM, was provided by Instead, Inc.(La Jolla, CA) for efficacy testing in our macaque model for Chlamydia trachomatis infection.

Methods: Six animals received a 1.5ml intravaginal application of Amphora gel, followed at 30-minutes by a cervical challenge with C. trachomatis, serovar E (5X10⁵ IFU). Infection was assessed by culture and NAAT (Aptima) from cervical swabs collected on day 2 and weeks 1 through 5 post-inoculation. Weekly blood samples were collected for detection of serum antibody. Six positive control animals followed the same protocol, with no product exposure prior to chlamydial challenge.

Results: Five of six test animals tested positive for cervical chlamydial infection by culture and NAAT; four of these animals developed serologic IgG (>1:8) during follow up. Similarly, five of six control animals developed cervical infection documented by the same assays.

In each arm of the study, a single animal tested positive by nucleic acid amplification test (NAAT, Aptima 2) only. The animal in the control arm of the study tested positive by NAAT only on days 2 and 7. The test animal had a single NAAT positive result on day 28, with no other documentation of infection throughout the experiment. Because these results were not confirmed by any other test, it is unlikely that the animals were infected.

Conclusions: A single intravaginal application of the Amphora gel test product (ACIDFORM in a 1.5 ml volume) did not protect cervical tissues from acquiring chlamydial infection. 1. Microbicides 2004, London. Abstract 0243-3. Study funded by N01-AI-95388 and WaNPRC RR00166

	Day 0	Day 2	Day 7	Day 14	Day 21	Day 28	Day 35
Amphora gel (n=6)							
NAAT	0	5	5	5	5	6	5
culture	0	2	5	4	5	5	4
IgG >1:8	0	Not assessed	Not assessed	0	2	4	4
No Product (n=6)							
NAAT	0	6	6	5	5	5	5
culture	0	3	5	5	4	4	5
IgG >1:8	0	Not assessed	Not assessed	1	4	5	5

Table 1: Chlamydial infection in test and control macaques

TP-082 COST-EFFECTIVENESS OF SCREENING FOR CHLAMYDIA TRACHOMATIS USING THE APTIMA COMBO 2[®] ASSAY IN AN STD CLINIC SETTING

D.R. Blake¹, M. Barnes², A. Hardick², T.C. Quinn³, C.A. Gaydos²

¹ Univ. of Massachusetts Medical School, Worcester, United States of America

² The Johns Hopkins University, Baltimore, MD, United States of America

³ NIAID, NIH, Bethesda, MD, United States of America

Objective: To evaluate the cost-effectiveness of Chlamydia screening strategies requiring and not requiring a speculum exam. First catch urine and vaginal swab specimens are FDA-cleared for APTIMA COMBO 2 (AC2, Gen-Probe Inc) and do not require speculum examinations.

Methods: A decision analysis was modeled for a hypothetical cohort of 10,000/year of women attending STD clinics. Incremental cost-effectiveness of 4 screening strategies were compared: 1) Endocervical DNA probe (PACE2, Gen-Probe Inc), 2) Endocervical AC2, 3) Vaginal AC2, and 4) Urine AC2. Strategies 1 and 2 always require a speculum exam; strategies 3 and 4 only require a speculum exam for symptomatic patients or those due for a Pap smear. Sensitivities of the vaginal, urine, and cervical AC2 tests were derived from 324 women attending Baltimore STD clinics. Sensitivity of the DNA probe was derived from the literature. The primary outcome was cases of PID prevented. The model incorporated programmatic screening and treatment costs and medical cost savings from sequelae prevented.

Results: Chlamydia prevalence in the sampled population was 11.1%; 70% were symptomatic. Sensitivities of vaginal, urine, and cervical AC2 were 97.2%, 91.7%, and 91.7%, respectively. The endocervical DNA probe strategy was the least expensive, at a cost of \$580,800. The vaginal AC2 strategy was the most cost-effective with a total cost of \$596,000, 79 fewer cases of PID, and a C/E of \$192 per case of PID prevented. Vaginal specimen collection received the highest preference rating by clinic attendees. Threshold analysis demonstrated that the vaginal AC2 becomes less expensive than the PACE2 strategy at a prevalence of 12.2%. **Conclusions:** Use of the vaginal AC2 test to detect Chlamydia in this STD clinic population was cost-effective and preferred by the women attending the clinic.

TP-083 COMMUNITY-BASED CHLAMYDIA SCREENING IN MULTI ETHNIC URBAN YOUTH: A PILOT IN ROTTERDAM (NETHERLANDS)

HM Gotz¹, IK Veldhuijzen¹, JM Ossewaarde², O de Zwart¹, L Wouter¹, A van 't Westeinde¹, J.H. Richardus³

¹ Municipal Health Service Rotterdam, Rotterdam, Netherlands

² Erasmus MC, Dept.Med.Microbiol, Rotterdam, Netherlands

³ Erasmus Medical Centre, Rotterdam, Netherlands

Objectives: Screening for chlamydia trachomatis (Ct) is less accepted in migrants compared to the native Dutch population. We offered testing for Ct to women and men through our outreach STD-prevention program for migrants to determine whether acceptance of testing could be increased by this strategy. Feasibility (process outcomes) and result (prevalence) of this community based screening pilot were assessed.

Methods: From September to December 2004 migrant outreach workers offered test kits to women and men aged 15-29 years, in group and field-based (street) settings as well as in a vocational training school. Demographic and behavioural data were collected and characteristics of non-responders were assessed. DNA was isolated (using the MagNA Pure LC system) from pooled urine and tested using the Cobas Amplicor test. Urine from positive pools were tested individually after DNA isolation.

Results: Among sexually active persons, 47% (208/447) accepted a test-kit and 38% (172/447) were actually tested, a difference due to a relatively low use (59%) of test-kits in street-settings. The test rate differed by venue (groups 80%, [74/93], school 73%, [49/67], street 17% [49/287]; $p < 0.001$); sex (female 53% [99/187], male 28% [73/260]; $p < 0.001$), and ethnicity (Dutch 63% [44/70], Surinamese/Antillean 32% [80/251], other 41% [47/115]; $p < 0.001$). Surinamese/Antillean women were more likely to get tested than Surinamese/Antillean men (45% vs 22%; $p < 0.001$). Ct prevalence was (14.5% (25/172), [95% CI 10.0-20.6]), women 20.2% versus men 6.8% ($p = 0.01$). The highest prevalence was detected in Surinamese/Antillean women (25.5%).

Conclusions: The acceptance of Ct testing in health education settings is higher than in street outreach settings and comparable to systematic home-based screening. Surinamese/Antillean women are more likely to accept testing. The prevalence found indicates that we have indeed accessed high-risk persons. Although efficiency was lowest in street outreach, this service may reach those who do not access health care in any other way.

TP-084 LESSONS LEARNED FROM A POPULATION BASED CHLAMYDIA SCREENING PILOT

H.M. Gotz¹, J.E.A.M. van Bergen², I.K. Veldhuijzen¹, C.J.P.A. Hoebe³, J. Broer⁴, M.J.C. Verhooren⁵, D.T. van Schaik², F. de Groot⁴, J.H. Richardus⁶

¹ Municipal Health Service Rotterdam, Rotterdam, Netherlands

² STI AIDS Netherlands, Amsterdam, Netherlands

³ MHS Eastern South Limburg, Heerlen, Netherlands

⁴ MHS Groningen, Groningen, Netherlands

⁵ MHS 'Hart voor Brabant', Tilburg, Netherlands

⁶ Erasmus Medical Centre, Rotterdam, Netherlands

Objectives: Large-scale chlamydia trachomatis (Ct) screening programmes face challenges such as process organisation, choice of target population, screening method and response optimisation. These issues were evaluated in a systematic home-based Ct screening project in the Netherlands among 15-29 year old women and men, organised by the Municipal Public Health Services (MHS).

Methods: Computer-supported data flow from population sampling to informing participants of the result. A reminder – either a new test kit or a letter – was sent to non-respondents after 6 weeks. Fifteen year olds were invited for screening, requiring parental consent.

Results: The median periods between invitation and urine sampling, urine arrival at laboratory, sending out results and consultation of physician in case of infection were 7, 10, 17 and 24 days respectively. Urine arrived at the laboratory 4 (1-11) days after collection, indicating good specimen quality. A reminder contributed to 18% of the total response of 41%, with test kits having a higher response

than letters (15% versus 10%). Sexual activity corresponds with an increase in response of 15-19 year olds. A Ct positivity of 2% warrants the extra efforts of including parental consent to invite 15 year olds.

Conclusion: Purpose made computer software is essential for an efficient screening programme. A reminder letter after 4 weeks is sufficient. Necessary parental consent for under 16 year olds should not be a deterrent to include this age group in a Ct screening programme.

TP-085 EXTENDING PREVENTIVE CARE TO PEDIATRIC URGENT CARE: A NEW VENUE FOR CT SCREENING?

M.A. Shafer¹, K.P. Tebb¹, T. Ko², C. Wibbelsman², A. Tipton², M. Pai-Dhungat¹, J. Williams¹, J. Neuhaus¹, R. Pantell¹

¹ University of California, San Francisco, SAn Francisco, United States of America

² Kaiser Permanente, Oakland, United States of America

Objective: To evaluate the effectiveness of a modified clinical practice improvement intervention (CPI) to increase Chlamydia trachomatis (CT) screening among 14-18yo sexually active girls attending pediatric urgent care in an HMO setting, as CT is the most common reportable bacterial infection in teen girls and less than 25% are currently being screened.

Methods: As part of a larger, randomized control trial, the CPI was extended to 2 pediatric urgent-care clinics. A CPI team was formed at each clinic to establish protocols for confidential sexual history taking and urine collection. CPI teams met monthly, reviewed protocols, screening rates and problem-solved barriers using a rapid cycle change format. Screening rates were analyzed over three, 3-month periods (baseline and two post-tests). The proportion screened = number tested/(number seen x sexual activity rate).

Results: Compared to well care, teen girls attending urgent care had higher sexual activity rates (42% vs 26%; $P < 0.01$), were older (15.6 vs 15.4; $P < 0.05$) and more ethnically diverse. At baseline, 92/1072 (9%) of girls were tested for CT with 11/92 (12%) positive. At time-two, 472/1248 (38%) were tested; 33/472 (7%) were positive. At time-three, 407/659 (62%) were tested; 26/407 (6%) positive. This represents a 7-fold screening increase and identification of 2-3 times as many CT infected girls.

Conclusion: Adolescent females attending urgent care appear to be at greater risk for CT and screening in this setting is feasible. The high rate of positives shows CT testing to be necessary in urgent care to reach the majority of at-risk girls who would otherwise remain undetected. Future research needs to include larger number of clinics and should assess the quality of follow-up care.

TP-086 CHANGING HEALTHCARE SYSTEMS TO INCREASE CHLAMYDIAL SCREENING IN ADOLESCENTS

M.A. Shafer¹, K.P. Tebb¹, R. Pantell¹, J. Neuhaus¹, D. Bergman², L. Hwang¹, M. Pai-Dhungat¹, A. Tipton³, C. Wibbelsman³

¹ University of California, San Francisco, San Francisco, United States of America

² Stanford Medical Center, Palo Alto, United States of America

³ Kaiser Permanente, Oakland, United States of America

Objective: To develop, implement and evaluate a systems-level Clinical Practice Improvement Intervention (CPI) to increase urine-based screening for Chlamydia trachomatis (CT) among sexually active 14-18 yo during pediatric visits and to examine management of positive tests.

Methods: Ten pediatric clinics in a large, ethnically diverse HMO were randomly assigned to an intervention or control group. The controls received a traditional 1-hour presentation on the epidemiology of CT and urine-based testing. The intervention group received the systems-level CPI intervention: a CPI team (provider, medical assistant, clinic manager, and facilitator) was formed and met monthly to develop/review protocols, screening rates and problem-solved barriers using a rapid cycle change format. After implementing the CPI in wellcare it was extended to urgentcare. Unbiased clinic staff reviewed patient records for CT treatment, testing for other STIs, safer-sex counseling, partner-notification, and reinfections.

Results: CT screening rates in the intervention wellcare clinics improved from 5% (females/males) to 65% females, 60% males ($p < .001$). CT prevalence in wellcare was 6% (females) and 4% (males). Compared to wellcare, teens attending urgentcare had higher sexual activity rates (42% vs 26%; $p < 0.01$), were older (16 vs 15; $p < .05$) and more ethnically diverse. CT screening in urgentcare improved from 10% to 70%. Of the 122 teens testing positive for CT - 98% of females were treated with antibiotics, 83% received safer-sex counseling and 57% of partners were notified. Females were more likely than males to receive safer-sex counseling (83% vs 62%, $p=.016$) and partner-notification (57% vs 31%, $p=.007$). Only 10% received appropriate CT retesting.

Conclusion: This intervention increased CT screening for males and females in both wellcare and urgentcare. Clinics successfully treated teens with positive CT infections; however gaps exist in their follow-up care.

TP-087 ROLE OF PERSISTENT CHLAMYDIA TRACHOMATIS INFECTION IN DEVELOPMENT OF CERVICAL CANCER

M. Noguchi, H. Yabushita, Y. Noguchi, M. Noguchi

Aichi Medical University, AICHI, Japan

Objective: A high-risk type HPV DNA, Chlamydia trachomatis DNA, C. trachomatis-specific IgG and IgA antibodies, and Chlamydial heat shock protein 60 (CHSP60) antibody were examined in healthy women and women with cervical intraepithelial neoplasia and invasive carcinoma, to investigate possible relationships between C. trachomatis infection and cervical cancer.

Method: Sera and cervical cell samples were obtained from 122 healthy women with negative cervical cytology (Group A), 23 women with mild or moderate cervical dysplasia (Group B), 51 women with

severe dysplasia and carcinoma in situ (Group C), and 47 women with cervical invasive squamous cell carcinoma (Group D). High-risk HPV DNA was detected using PCR-RFLP, C. trachomatis DNA was detected using PCR. Serum titers of C. trachomatis-specific IgG, IgA and CHSP60 antibodies were measured using ELISA.

Results: Mean age for each group ranged from 40.4-48.3 years. Prevalence of smoking increased with progression of cervical neoplasia. Prevalence of high-risk HPV DNA was significantly higher in Groups C and D than in Groups A and B. No subjects tested were positive for C. trachomatis DNA. Serum antibody titers to CHSP60 and positive rates were higher in Groups C and D than in Groups A and B. Serum antibody titers to C. trachomatis IgA and IgG were also higher in Groups C and D than in Groups A and B. IgG antibody positive rate was significantly higher in Groups C and D compared to Groups A and B. Multiple regression analysis using groups as dependent variables revealed the independent variables of age and CHSP60 as significant risk factors.

Conclusions: The finding that CHSP60 antibody is associated with increased risk of cervical cancer suggests that persistent C. trachomatis infection may contribute to cervical neoplasia, and that CHSP60 antibody could offer a significant prognostic marker of high-risk cervical dysplasia.

TP-088 STI-TESTING BEHAVIORS IN THE US NATIONAL LONGITUDINAL STUDY OF ADOLESCENT HEALTH: DO YOUNG ADULTS WANT TO KNOW IF THEY ARE INFECTED WITH CHLAMYDIA OR GONORRHEA?

A. Ford¹, J. Jaccard², S.G. Millstein³, P.E. Bardsley¹, W.C. Miller¹

¹ University of North Carolina, Chapel Hill, NC, United States of America

² Florida International University, Miami, Florida, United States of America

³ University of California, San Francisco, United States of America

Objective: Four percent of young adults in the US, and 14% of women in certain minority race/ethnic groups, have Chlamydia trachomatis (CT) – suggesting current clinic-based control strategies are failing. Screening outside of clinic settings is now feasible, but testing and result-seeking behaviors will influence program effectiveness. This study identifies factors that predict actively seeking CT and Neisseria gonorrhoeae (GC) test results when testing is initiated outside of clinic settings.

Methods: Prospective study. All participants in Wave III of the US National Longitudinal Study of Adolescent Health (Add Health) conducted in 2001-02 were asked to provide a urine specimen in their home for anonymous CT/GC testing, and advised to call a toll-free number for results. We identified sociodemographic and behavioral factors predicting calling for results among 11,583 sexually experienced participants' ages 18-26. Bivariate and multivariate analyses used weighted data and adjusted for the complex sampling design. **Results:** One-third called for test results, and 38% of those with a positive test called. In multivariate analyses, males were less likely to call than females (27.9% vs. 36.5%; OR=0.65[0.57-0.74]). Blacks were less likely (30.0% vs. 32.1%; 0.84[0.70-0.99]) and Latinos were more likely (36.6% vs. 32.1%; 1.28[1.07-1.53]) to call than Whites. Participants who were unmarried, inconsistent condom users, or reported 3 or more partners in the past year were more likely to call than comparison groups (OR range 1.23-1.70). Participants who reported CT/GC testing in the past year were more likely to

call for results than those not tested (40.3% vs. 30.4%; 1.19[1.02-1.39]), although participants reporting past-year CT/GC diagnoses were not.

Conclusions: Most sexually experienced young adults who participated in anonymous in-home CT/GC testing in Add Health did not call to learn their infection status, and factors predicting result-seeking were inconsistently linked to STI-risk.

SESSION: TP - B13 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- OTHER BACTERIAL STI'S

TP-089 MOXIFLOXACIN VERSUS OFLOXACIN PLUS METRONIDAZOLE IN UNCOMPLICATED PELVIC INFLAMMATORY DISEASE: RESULTS OF A MULTICENTRE, DOUBLE-BLIND, RANDOMISED TRIAL

J.D.C. Ross¹, H.S. Cronje², T. Paszkowski³, I. Rakoczi⁴, D. Vildaite⁵, A. Kureish⁶, M. Alefelder⁷, P. Arvis⁸, P. Reimnitz⁷

¹ Whittall Street Clinic, BIRMINGHAM, United Kingdom

² University of the Free State, BLOEMFONTEIN, South Africa

³ Medical University of Lublin, LUBLIN, Poland

⁴ St. Imre Teaching Hospital, BUDAPEST, Hungary

⁵ Vilnius University Hospital, VILNIUS, Lithuania

⁶ Bayer Healthcare Group, WUPPERTAL, Germany

⁷ Bayer Vital, LEVERKUSEN, Germany

⁸ Bayer Pharma, PUTEAUX, France

Objectives: To compare the efficacy and safety of moxifloxacin with a combination of ofloxacin plus metronidazole for the treatment of women with uncomplicated pelvic inflammatory disease.

Methods: Multinational, multicentre, prospective, randomised, double-blind, parallel group study where patients received a 14-day course of either:

- oral moxifloxacin 400 mg QD or
- oral ofloxacin 400 mg BID plus oral metronidazole 500 mg BID.

Clinical and bacteriological outcomes were assessed at test-of-cure (5-24 days post-therapy) and subsequent follow-up (28-42 days post-therapy).

Results: Of the 760 patients enrolled, 741 (97.5%) comprised the intent-to-treat population and 564 (74.2%) were valid for the per-protocol analyses; 112 of these patients (19.9%) had an initial positive microbiological test with appropriate follow up (microbiologically valid population). Overall, demographics and baseline characteristics were similar between treatment groups. Clinical resolution rates in the per protocol population at test-of-cure assessment (primary efficacy endpoint) were 90.2% (248/275) for moxifloxacin and 90.7% (262/289) for ofloxacin plus metronidazole (95% CI: -5.7%, 4.0%). At the subsequent follow up visit, continued resolution rates were 95.9% (231/241) and 96.5% (246/255) for moxifloxacin and ofloxacin plus metronidazole respectively (95% CI: -3.9%, 2.7%). Bacteriological success rates in the microbiologically valid population were 87.5% (49/56) for moxifloxacin and 82.1% (46/56) for ofloxacin plus metronidazole (95% CI: -8.3%, 18.8%). Against *Chlamydia trachomatis* and *Neisseria gonorrhoeae*, bacteriological success rates with moxifloxacin were 88.5% (23/26) and 100.0% (13/13), respectively. Corresponding success rates for ofloxacin plus metronidazole were 85.7% (18/21) and 81.8% (18/22), respectively. Drug-related adverse events occurred in 22.5%

(85/378) of moxifloxacin and 30.9% (112/363) of ofloxacin plus metronidazole patients, the most common being gastrointestinal disorders: 14.3% and 19.6% of patients, respectively.

Conclusions: In uncomplicated pelvic inflammatory disease, once-daily moxifloxacin monotherapy was clinically and bacteriologically as efficacious as twice-daily ofloxacin plus metronidazole combination therapy, with a trend for less drug-related adverse events.

SESSION: TP - B15 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- CANDIDIASIS

TP-090 CANDIDA GLABRATA - A PREVALENT NON-ALBICANS CANDIDA SPECIES AND A POTENTIAL THERAPEUTIC PROBLEM

P.-A. Mårdh¹, V. Tolbert², N. Novikova², A.G. Rodrigues³, K. Kristof⁴, J. Martinez-de-Oliviera⁴, C. Pina-Vaz⁵, I. Sziller⁶

¹ University Hospital, LUND, Sweden

² Department of Obstet. and Gynecol., Munich, Germany

³ Department of Microbiology, Porto, Portugal

⁴ Beira Intersciency University, Covilha, Portugal

⁵ Dept. of Microbiology, Porto, Sweden

⁶ 1st Dept. of Obst and Gynecol, Budapest, Sweden

Objectives: To study prevalence of *C. glabrata* in European pregnant and non-pregnant women and determine its antifungal susceptibility.

Methods: Colonisation of *C. glabrata* was studied in 1589 non-pregnant women with vaginal disorders, incl. VVC/RVVC and in 611 pregnant women. Vaginal content was studied by Amsel's criteria and vaginal smears for microbial morphotypes. Cultures were made on Sabouraud- and Chromagar and speciation on Chromagar, by API kits and Vitek. *C. glabrata* susceptibility to ketoconazole, itraconazole, fluconazole, caspofungine, voriconazole and amphotericin B, was determined.

Results: Of 946 German women with vaginal conditions, 249(26.3%) harboured *Candida*, 55(22.1%) were *C. glabrata*. Of 438 Hungarian women referred as RVVC cases, 147(34.0%) harboured *Candida*, 12(8.2%) were *C. glabrata*. Of 91 *Candida* culture-positive Portuguese RVVC cases, 5(5.5%) yielded *C. glabrata*. Of 113 Ukrainian assumed RVVC cases, only 57(50.4%) had a positive *Candida*-culture, 3(5%) were *C. glabrata*. Of 611 pregnant Swedish women, 127(20.1%) were *Candida*-positive in the second trimester and 48(19.0%) of 256 also in the 3rd trimester. *C. glabrata* was recovered from 24(3.9%) and 7(2.7%) at those occasions. Only 0.4% of all women had a double *Candida* infection. Six of 12 Hungarian *C. glabrata* isolates were resistant to 32mg/ml of itraconazole and amphotericin B. Of 23 Swedish *C. glabrata* isolates, all were resistant to ketoconazole, 5 (22%) to 4mg/ml and 14 (61%) to 64 mg/ml of fluconazole. Strains were highly sensitive to caspofungine and voriconazole ($\leq 0.06-0.125\text{mg/ml}$ and 0.125-0.250mg/ml).

Conclusions: A large proportion of assumed RVVC cases, cannot be confirmed as *Candida* carriers. *C. glabrata* constitutes a high proportion of all *Candida* isolates in pregnant women. Double *Candida* infections are uncommon. Antifungal susceptibility of *C. glabrata* is unpredictable. Caspofungine and voriconazole, may be useful in therapy-resistant infections. There is value of speciation and susceptibility testing of *Candida* in RVVC.

SESSION: TP - B17 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- MULTIPLE STI'S**TP-091 EVALUATION OF THE BD PROBETEC ET SYSTEM FOR CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEA INFECTIONS OF THE ENDOCERVIX AND OROPHARYNX IN WOMEN**

Y. Noguchi¹, A. Ohishi¹, M. Fujita¹, T. Hondo², M. Sugase², J. Yasuda³, M. Fujiwara⁴, T. Hojo⁵, S. Hoshina⁶, M. Noguchi¹

¹ Aichi Medical University, Aichi, Japan

² Nagano Red Cross Hospital, Nagano, Japan

³ Matsushita Memorial Hospital, Moriguchi, Japan

⁴ Kawasaki Hospital, Okayama, Japan

⁵ Gamagori City Hospital, Gamagori, Japan

⁶ Hoshina Clinic, Kyoto, Japan

Objectives: To determine the performance of a real-time DNA amplification assay, BD ProbeTec ET System (BDPT, BD Diagnostic Systems), for the detection of Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (GC) from both endocervical and oropharyngeal samples.

Methods: Swab samples were collected from women attending an OB/GYN clinic at each of six study sites. Endocervical swab samples were assayed by BDPT and Amplicor (AMP, Roche). Oropharyngeal swab samples were assayed by BDPT and DNA probe (Gen-Probe). For the oropharyngeal swab samples, discordant results for CT were confirmed by AMP and discordant results for GC were confirmed by established PCR methods as follows, cpp B PCR, nested cpp B PCR, and 16SrRNA PCR.

Results: A total of 364 endocervical and 247 oropharyngeal specimens were collected under informed consent from 364 patients. The agreement rates of the BDPT and AMP assays for the detection of CT and GC from endocervical samples were 99.2% (361/364) for CT and 99.5% (362/364) for GC. For oropharyngeal swabs the BDPT yielded 21 CT positives. Of these, 19 samples were CT negative by DNA probe. Using AMP, 16/19 (84.2%) of the BDPT+/DNA probe-samples were positive. The BDPT also yielded 21 GC positives of which 15 samples were negative by DNA probe. After additional testing 14/15 BDPT+/DNA probe- samples (93.3%) were positive by at least two of the PCR methods.

Conclusions: The BDPT performs comparably to AMP for detection of CT and GC from endocervical swab samples. Because the DNA probe method is low in sensitivity, the BDPT yielded several additional positive results on oropharyngeal swab samples. Further analysis using alternative methods of DNA amplification illustrated the BDPT to be more sensitive than DNA probe and that it may be clinically useful for the detection of CT and GC from oropharyngeal samples.

TP-092 THE PATTERN AND DIAGNOSTIC CHALLENGES OF SEXUALLY TRANSMITTED INFECTIONS AMONG INDIAN MEN AT HIGH RISK FOR HIV INFECTION

C.P. Lindan¹, H.R. Jerajan², M. Mathur², S. Kane³, J. Engelman⁴, J. Moncada⁵, A. Hernandez¹, E.S. Stein¹, A. Gogate⁶

¹ University of California, San Francisco, SAN FRANCISCO, United States of America

² LTMM & LTMG Medical College, Mumbai, United States of America

³ UCSF CAPS-Mumbai Project, Mumbai, India

⁴ SF Department of Public Health, San Francisco, United States of America

⁵ UCSF Laboratory Medicine Department, San Francisco, United States of America

⁶ MDACS, Mumbai, India

Objectives: Untreated sexually transmitted infections (STI) still factor into the transmission of HIV in many developing countries, despite recognition that diagnosis and treatment are cornerstones of prevention. The global pattern of STIs has been changing, and HSV2 is now the most prevalent infection in many regions. In India, genital ulcer disease (GUD) predominates. We evaluated the prevalence of STIs, their association with HIV infection, and physicians' initial clinical diagnosis compared with laboratory confirmation, among high-risk men in Mumbai, India. **Methods:** Lower SES men attending public STI clinics in Mumbai were enrolled into a randomized HIV intervention trial, and tested for HIV 1&2, HepBsAg, HSV2 IgG, VDRL, TPHA; urine PCR for chlamydia (CT) & gonorrhea (GC); multiplex PCR for H.ducreyi, T.pallidum, and HSV2. Based on presenting signs, physicians performed RPR, gram stain with culture, and wet mount of urethral discharge or urine sediment. **Results:** Of 1929 men evaluated, 14% were HIV+ and 42% were HSV2IgG+; 7% presented with an HSV2 ulcer; 2% had primary syphilis, 19% had secondary or latent syphilis; 1% had chancroid; 7% GC; 1% CT. No laboratory diagnosis could be made in 11% of genital ulcers (GU). Doctors correctly diagnosed GU 63% of the time, missing 22% of HSV2 cases. GC diagnosis was accurate 92% of the time. NGU was overdiagnosed 41% of the time. Multivariate analysis identified independent predictors of HIV as: HSV2 ulcer (OR 9.0), HSV2IgG+ (OR 4.2), chancroid (OR 5.0), primary syphilis and GC. 5% of men were HepBsAg+ and of those, 25% were HIV infected (p<.01). **Conclusions:** HSV is the predominant STI overall and the primary GU among men in Mumbai. Treatment and prophylaxis of HSV may reduce transmission of HIV, but improved recognition by treating physicians is needed.

TP-093 PERFORMANCE OF AMPLICOR CT/NG FOR DETECTION OF CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEA IN MEN'S URINE

M. Hobbs¹, M.P. Smikle², A. Anglin², K. Francis², J. Braham³, J.B. Parker¹, J.P. Figueroa⁴, A. Brathwaite⁴, F.M.T. Behets¹, M.J. Steiner⁵

¹ University of North Carolina, Chapel Hill, NC, United States of America

² University of the West Indies, Kingston, Jamaica

³ Comprehensive Health Centre, Kingston, Jamaica

⁴ Ministry of Health, Kingston, Jamaica

⁵ Family Health International, Research Triangle Park, United States of America

Objective: To evaluate the operational performance of Amplicor PCR for detection of *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG) in men's urine.

Methods: Men with urethritis were screened for inclusion in a randomized controlled trial of condom choice for STI prevention at an STI Clinic in Kingston, Jamaica. Participants provided written informed consent and a first-catch urine specimen. Urines were tested using the Roche Amplicor CT/NG assay according to the manufacturer's instructions. All specimens with initial positive, equivocal or inhibitory results and 13% of those with initial negative results were retested using the same assay. Persistently inhibitory specimens were diluted 1:10 for repeat testing. Possible NG outcomes for the test are positive and negative; CT results may be indeterminate.

Results: Urines from 278 men were tested from May 2003 through January 2004. CT was detected in 16% of men; NG was detected in 35%. Fifty-six urines (20%) were initially inhibitory; 1 remained inhibitory despite dilution. Among 30 urines with initial equivocal CT results, retesting identified 6 positives, 5 negatives and 19 remained equivocal. Ten initially CT-negative or inhibitory urines retested as equivocal; 11% of final CT results in this study were reported as indeterminate. Most initial CT and NG positives were confirmed by retesting. Analysis of 278 urine specimens required 513 CT tests and 646 NG tests; this included repeat testing required by the assay instructions and dilution and confirmatory retesting for quality assurance in the study.

Conclusions: To increase confidence in the results from nucleic acid amplification testing in this study, we included repeat testing beyond that specified in the Roche Amplicor CT/NG product insert. In this clinical research setting, Amplicor CT/NG PCR testing was costly, and uninterpretable CT results were unexpectedly common.

TP-094 CONFIRMATION OF APTIMA COMBO 2? CHLAMYDIA TRACHOMATIS (CT) AND NEISSERIA GONORRHOEA (GC) POSITIVE RESULTS BY APTIMA CT (ACT) AND APTIMA GC (AGC)

A. Gaydos¹, A. Hardick¹, B.J. Wood¹, J. Hardick¹, M. Barnes¹, R. Miller¹, T.C. Quinn²

¹ Johns Hopkins University, Baltimore, United States of America

² NIAID, NIH, Bethesda, MD, United States of America

Objective: To retest positive CT and GC samples with alternative gene-target tests. The recommendation that confirmatory testing of positive results for CT/GC, if the positive predicative value is <90%, is controversial. **Methods:** We tested Gen-Probe's ACT ASR and AGC ASR (FDA-cleared), which target different sequences

than APTIMA Combo 2 (AC2), to confirm AC2 positive results for CT/GC. We enrolled 290 men and 325 women from STD clinics. Male urine and female cervix (cx), vaginal (vag), and urine specimens were tested for CT and GC using AC2. For confirmation, AC2 CT or GC positive samples were retested by ACT or AGC. **Results:** CHLAMYDIA: Males: 59/290 (20.3%) urines were AC2 positive for CT; 59/59 (100%) confirmed positive. Females: 34/320 (10.6%) cx samples were AC2 positive; 35/323 (10.8%) vag samples were positive; 33/324 (10.2%) urines were positive. Of cx positives, 32/33 (97.0%) confirmed positive (one was quantity-non-sufficient, QNS); of vag positives, 34/34 (100%) confirmed positive (one QNS); of urine positives, 32/33 (97.0%) confirmed positive. For one cx sample not confirming, the matching vag and urine samples were AC2 negative for CT. For one unconfirmed urine sample, the matching cx was AC2 and ACT positive; the vag was AC2 negative. GONORRHEA: Males: 37/290 (12.8%) were AC2 positive for GC and 37/37 (100%) confirmed positive. Females: 12/319 (3.8%) cx samples were AC2 positive, 11/11 (100%) confirmed positive by AGC (one QNS); 16/323 (5.0%) vag samples were positive, 14/15 (93.3%) confirmed positive (one QNS); the unconfirmed vag sample was AC2 negative for cx and urine. 14/325 (4.3%) urine samples were positive, 14/14 (100%) confirmed positive. **Conclusion:** Results suggest that AC2 is highly specific and may not require confirmation of positive results in such high prevalence populations. Further investigation of confirmation in low prevalence populations is required.

TP-095 COMPARISON OF LIQUID PAP VERSUS ENDOCERVICAL SWAB SPECIMENS IN SCREENING FOR SEXUALLY TRANSMITTED INFECTIONS

D. Fuller¹, T. Davis¹, P. Fine², A. Sheikh³, M. Martens³, C. Meyers⁴, L. Mena⁵, N. McGloster⁶

¹ Wishard Hospital-Indiana Univ. Sch. Med., Indianapolis, IN, United States of America

² Planned Parenthood of Houston, Houston TX, United States of America

³ University of Oklahoma, Oklahoma City, OK, United States of America

⁴ Planned Parenthood of Maryland, Baltimore, Maryland, United States of America

⁵ University of Mississippi, Jackson, MS, United States of America

⁶ Mississippi Dept. of Health, Jackson, MS, United States of America

Objectives: To compare the performance of the APTIMA COMBO 2? (AC2) Assay using ThinPrep? Pap TestTM (TP) specimens processed with the APTIMA Specimen Transfer Kit (STK) versus endocervical swab specimens for the detection of *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (GC).

Methods: A total of 1741 symptomatic and asymptomatic females from 6 geographically diverse, low-to-high prevalence sites in the U.S. One TP Pap and 1 endocervical swab specimen were collected from each subject and transported, stored, and processed according to manufacturer's recommendations. Once TP Pap processing was completed, the TP Pap specimens were transferred to the APTIMA STK for testing in the AC2 Assay. The processed liquid Pap specimen (TP-STK) and the endocervical swab specimen from each subject were tested in the AC2 Assay in accordance with the package insert instructions. To determine AC2 Assay performance between the 2 specimen types, positive, negative, and overall percent agreements were calculated.

Results: Of the 1741 subjects enrolled, 1647 were included in calculations of percent agreement. The overall percent agreement between the 2 specimen types for CT detection was 98.9% (positive agreement = 92.6%, negative agreement = 99.3%), while the overall percent agreement for GC was 99.7% (positive agreement = 92.3%, negative agreement = 99.8%).

Conclusions: Results obtained from this study indicate excellent overall agreement between TP-STK and endocervical swab specimens using the AC2 Assay. Further, these data suggest that the TP Pap specimen collection device is an appropriate alternative collection device for testing gynecologic specimens using the AC2 assay which offers the advantage of multiple analyte testing from one specimen source.

TP-096 PREPARING FOR MICROBICIDE TRIALS IN RWANDA: PRELIMINARY FEASIBILITY AND ACCEPTABILITY OF SELF-ADMINISTERED VAGINAL SWABS

N.J. Veldhuijzen¹, J. Vyankandondera², E. Gahiro³, C. Ingabire³, R. Musabyimana⁴, B. Mukarutamu⁴, E. Kayibanda⁴, J. van de Wijgert¹

¹ IATEC, Amsterdam, Netherlands

² CHUK, Projet Ubuzima, Kigali, Netherlands

³ Projet Ubuzima, Kigali, Rwanda

⁴ CHUK, Kigali, Rwanda

Objective: To assess the preliminary feasibility and acceptability of self-administered vaginal swabs among Rwandan women in preparation for a microbicide trial.

Methods: Twenty HIV-positive women were enrolled at Centre Hospitalier Universitaire de Kigali. All women performed self-sampling with a vaginal swab observed by a research nurse and underwent a speculum examination. During the speculum exam, vaginal and cervical specimens were collected for diagnostic purposes. Standardized questionnaires were administered about reproductive tract infection (RTI) symptoms, opinions about self-sampling and speculum examination, and sampling preferences.

Results: Thirteen of the 20 women presented with one or more gynecological symptoms. Dyspareunia (46.2%) and vaginal itching (38.5%) were most frequently reported. Eighty percent of the women thought that self-sampling was (very) easy, whereas 50% thought that the speculum examination was (very) easy. All women used the correct position for self-sampling after an explanation by the nurse. Only one woman had some difficulty and another woman was very nervous during self-sampling. All swabs were considered by the nurse to be of sufficient quality. Eleven women preferred speculum examination and 9 women self-sampling. The most frequently reported reason to prefer a speculum examination was having more confidence in the nurse or physician than in oneself. Preference for self-sampling among women without RTI symptoms was 57.1%, compared to 38.5% of women presenting with one or more RTI symptoms.

Conclusion: We conclude that self-sampling is feasible in Rwandan women. Acceptability of self-sampling seemed higher among women who did not have any gynecological symptoms probably because women with symptoms prefer a thorough medical evaluation by a trained clinician. Self-sampling could therefore be used as a screening method in microbicide trials, but women who present with symptoms should be offered a pelvic examination.

TP-097 SYNDROMIC APPROACH FOR VAGINAL DISCHARGE IN PREGNANT WOMEN IN TETE, MOZAMBIQUE

W.P.W. Arrazola de Onate¹, E. Folgosa², F. Wuillaume³, J. Fernando⁴, R. Bastos², J. Melo², F. Sambola Estrada³, M. Temmerman³

¹ International Centre for Reproductive He, Gent, Belgium

² Eduardo Mondlane University, Maputo, Mozambique

³ International Centre for RH, Gent, Belgium

⁴ Ministry of Health Mozambique, Maputo, Mozambique

Objective: To study STI prevalence and to assess the standard syndromic approach (SA) protocol for vaginal discharge in pregnant women in a high HIV-prevalent area (21,7%) in Tete, Mozambique. Methods: In 2004, pregnant women in 3 antenatal clinics were invited to the study at their first visit. Standard syndromic protocol was used for STI screening. In addition urine was collected for *Neisseria gonorrhoeae* (NG) and *Chlamydia trachomatis* (CT) detection by polymerase chain reaction (PCR / Amplicor NGCT Roche).

Results: Out of 629 women enrolled, 244 (38,8%) had signs or symptoms of vaginal discharge (syndromic approach positive). Laboratory based prevalence of *N. gonorrhoeae* was 2,9% [1,8 – 4,6], of *C. trachomatis* 4,5% [3,0 – 6,5] and of NG or CT 7,0% [5,2 – 9,3]. Sensitivity of SA was 52,2 % [37,5 – 66,9], specificity 62,2 % [58,3 – 66,1], positive predictive value (PPV) 9,4 % [5,7 – 13,1] and negative predictive value 94,5 % [92,1 – 96,9]. With syndromic approach over 47,7 % [33,0 – 62,4] of NG/CT infections were missed (asymptomatic), whereas 90,6 % of women who received SA treatment did not need it.

Conclusions: In Tete, overall prevalence of bacterial STI in pregnant women was 7,0%. Standard syndromic approach for pregnant women appeared to be ineffective. Nearly half of the cases with CT or NG infection were missed, whereas only 61,5% of women was correctly classified for CT or NG infection. Research into alternative policies of STI management in ANC is urgently needed. Screening of men for STI combined with partner treatment may improve the detection of STI in pregnant women.

TP-098 WHAT'S NEW IN STI DIAGNOSTICS? KEEPING UP THROUGH EXPERT REVIEWS. MR TAM, J KUYPERS, KK HOLMES, A BUFFARDI, RW PEELING. UNIV. WASHINGTON, SEATTLE AND WHO/SDI, GENEVA.

R. Tam

University of Washington, Seattle, Washington, United States of America

Objectives: The purpose of this novel resource is to provide health-care providers in all economic settings, including those in resource-limited settings, with timely, critical, and concise information concerning new developments in laboratory and/or field diagnosis of sexually transmitted infections (STI).

Methods: For the past two years, the WHO Sexually Transmitted Diseases Diagnostic Initiative's (SDI) web site (www.who.int/std_diagnostics) has included Literature Reviews covering original studies and reviews on diagnostics, commercially available or under development for detection of genital herpes, syphilis, chancroid, gonorrhoea and chlamydial infection. Articles are identified through PubMed, specific journals, and referrals from Editorial Board members, and selected for review according to specific criteria. Associate Editors summarize the objectives, methods,

results, and conclusions for selected articles and contact Board members who agree to prepare brief commentaries addressing study design, statistical methods, related articles, comparison to existing diagnostics, and/or applicability of the findings to end users/test developers. The returned commentaries are reviewed and posted to the web site.

Results: Currently, 73 STI diagnostics experts from 17 countries on six continents serve on the Editorial Board. To date, 10 issues have been posted, including summaries of 182 original articles and 15 review articles published from January 2002 through September 2004, with expert commentaries on 107 summarized articles. Additional issues are available quarterly, with commentaries posted as they are returned. Interest in the site has doubled over the past two years; in 2004, over 32,000 unique visitors from nearly 100 countries viewed over 70,000 pages of information.

Conclusions: The summaries and expert reviews of recently published STI diagnostics articles presented on the web site as literature reviews are contributing to SDI's goal of improving care for patients with STI by increasing available information, knowledge, and awareness of SDI's diagnostic product development, evaluation, and implementation programme.

TP-099 TIME-MOTION COMPARISON OF BD PROBETEC™ ET SYSTEM AND GEN-PROBE® APTIMA® COMBO 2™ ASSAY FOR CHLAMYDIAL AND GONORRHEA DIAGNOSIS

S.C. Collum, C.J. Lenderman, P.B. Dixon, G.E. Daniel, C.A. Aycock, S.I. Mableton, E.W. Hook

University of Alabama at Birmingham, Birmingham, United States of America

Objectives: We performed time-motion studies of the total time and numbers of technician steps required for testing swab and urine specimens for *Neisseria gonorrhoeae* (GC) and *Chlamydia trachomatis* (CT) with the BD ProbeTec™ ET (PT) Amplified DNA Assays and Gen-Probe® APTIMA® Combo 2™ Assays (AC2).

Methods: Duplicate direct observation of two experienced technicians, each of whom processed 20, 40, and 120 specimens using each of the two assays.

Results: To process 20 swab specimens using the PT assay, 22 steps were performed over a period of 165 minutes. When the numbers of specimens increased to 120 the time required to carry out the assay increased 90% to 315 minutes. In contrast, to process 20 swab specimens using the AC2, 43 steps were performed over 265 minutes. When 120 specimens were processed using AC2, the average time required increased 25% to 330 minutes. Detailed, step-by-step time-motion comparison for swab and urine specimens, for different specimen numbers, and hands on time will be presented.

Conclusions: For runs of small to moderate size, total time for performance of the BD ProbeTec™ CT/GC assays is substantially less, and requires fewer steps than the AC2 assay. As specimen run size increases to 120 specimens, run times become more similar although the BD ProbeTec assay is still faster from start to finish.

TP-100 ALTERNATIVE STRATEGIES FOR COLLECTION OF SPECIMENS FOR STI DIAGNOSTICS: ACCEPTABILITY AND FEASIBILITY OF HOME-BASED SELF-SAMPLING IN S+O PAULO, BRAZIL

S.A. Lippman¹, A. Pinho², C.G. Lupp³, H. Jones⁴, J. Van de Wijgert⁵, M. A. Veras³, J. Díaz⁴

¹ *University of California, Berkeley, Berkeley, CA, United States of America*

² *Centro de Saude Escola, Barra Funda, São Paulo, Brazil*

³ *Santa Casa Medical School, São Paulo, United States of America*

⁴ *Population Council, New York, United States of America*

⁵ *IATEC, Amsterdam, Netherlands*

Objectives: To determine whether self-collection of vaginal specimens at home increases the detection and treatment of gonorrhea, chlamydia and trichomoniasis compared to self-collection in a clinic setting.

Methods: We randomized 818 mid-low income women aged 18-40 in São Paulo, Brazil to self-sampling at home or at the study clinic. The home group received a collection kit for subsequent drop-off at the clinic; the clinic group received a clinic appointment. Acceptability and feasibility of self-sampling in both settings was evaluated by comparing response rates and self-reported preferences following collection and 6 weeks later.

Results: Preliminary data indicate that response rates were equivalent between the home and clinic groups: 86% in each group adhered to sample drop-off or clinic appointment within 2 weeks of randomization. The majority of women would perform self-sampling again (98%), rated self-sampling as easy (97%), and successfully collected specimens at home (97% in home group). Collection procedure preferences were influenced by randomization group: the clinic group preferred sampling by a clinician at the clinic, while the home group preferred self-sampling at home. However, the home group preference for home-sampling was stronger immediately following collection (65%) than 6 weeks later (45%), while the clinic group consistently reported clinic-sampling preference (59%). Controlling for randomization group, preference for home-sampling was significantly related ($p < .05$) to being younger, higher income and having more bathrooms at home. Preference for self-sampling regardless of location was significantly associated to more years of schooling. Number of infections detected and treated in each group will also be presented.

Conclusion: Self-sampling at home and in the clinic are feasible and acceptable alternatives to clinician-based sampling in low-income women in Brazil. While home-sampling did not increase (or reduce) the proportion of women screened, this may be due to high quality of care in the study clinic.

TP-101 USE OF WELL-WOMAN EXAMINATION (WWE) TO DIAGNOSE VAGINAL INFECTIONS AND ABNORMAL CERVICAL CYTOLOGY IN SUBSTANCE-ABUSING WOMEN

B.P. Stoner, K. Chandler-Ezell, C.C. Meeks, E. Spitznagel, L.B. Cottler
Washington University, St Louis MO, United States of America

Objective: Women with alcohol and other substance dependencies are at increased risk of health problems, yet often have reduced rates of access to medical services and routine health-care seeking. We sought to document the prevalence and correlates

of vaginal infections and abnormal cervical cytology diagnosed during routine well-woman examination (WWE) in a cohort of out-of-treatment substance-abusing women in St. Louis, MO (USA).

Methods: Out-of-treatment substance-abusing women were recruited to participate in a longitudinal intervention trial to reduce high-risk behaviors. At enrollment, women were screened for prevalent gonococcal, chlamydial, or syphilis infections, and treatment was provided as indicated by test results. WWE was performed at the first study follow-up visit (1-3 months later), and included routine pelvic examination with cervical cytological testing (Pap smear) as well as vaginal pool testing for bacterial, parasitic, and fungal vaginal infections.

Results: WWE was performed on 194 women who presented for follow-up evaluation. The most frequent diagnoses were bacterial vaginosis (53.6%) and trichomoniasis (21.6%). Abnormal Pap smears (dysplasia / atypia) were diagnosed in 13.9% of women, and were more likely in women who used cocaine ($p < .05$) or traded sex for drugs or alcohol ($p < .05$). Nearly three-quarters of the sample (73.2%) were found to have a gynecologic health problem during WWE (vaginal infection or cervical abnormality). Lack of health insurance, as well as having a prior positive test for syphilis or chlamydia in the previous 12 months, were associated with having a gynecologic abnormality at WWE ($p < .05$).

Conclusion: Out-of-treatment substance-abusing women represent a high-risk population for gynecologic abnormalities. Urine-based and serologic STI screening can detect some, but not all prevalent STIs in this population. Routine pelvic examination is warranted, even in the absence of gynecologic symptoms.

TP-102 COMPARING DIAGNOSTIC STRATEGIES FOR CHLAMYDIA, GONORRHEA AND TRICHOMONIASIS SCREENING IN REPRODUCTIVE AGE WOMEN: DATA FROM AN URBAN PRIMARY HEALTH CARE CENTER IN SÃO PAULO, BRAZIL

R.L.S.O. Oliveira¹, M.E. Enriquez², S.L. Lippman³, C.G.L. Luppi¹, H.J. Jones⁴, J.D. Diaz⁴

¹ Santa Casa de Misericórdia de São Paulo, São Paulo, Brazil

² Stanford School of Medicine, Stanford, Brazil

³ University of California, Berkeley, United States of America

⁴ Population Council, New York, United States of America

Objective: To evaluate the accuracy of syndromic management for Chlamydia trachomatis (CT), Neisseriae Gonorrhoeae (NG) and Trichomonas vaginalis (TV) genital infections against a polymerase chain reaction (PCR) gold standard in a primary care center in São Paulo, Brazil.

Methods: We randomized 818 women aged 18-40 to collect vaginal samples at the study clinic (408) or at home (410) to test for CT, NG and TV using PCR. A questionnaire, bimanual/speculum exam and wet mount were provided by trained nurses. Risk factors were assessed. The positive predictive value (PPV), sensitivity and specificity for World Health Organization (WHO) syndromic management algorithms were calculated. WHO 1 was defined including symptoms and signs for vaginal discharge algorithm and WHO 3 was defined adding bimanual/speculum examination and microscopy. **Results:** Prevalence of CT, NG, and TV were 8%, 2% and 3% respectively. 13% of the women (n=101) were PCR positive for at least one infection. Preliminary analysis for the clinic group (n=213) for

either CT or NG suggests a PPV of 5% (95% CI: 0-17), considering risk factors only. WHO 1 sensitivity was 50% (CI: 23-77), specificity was 68% (CI: 61-75), and PPV was 10% (CI: 4-20). WHO 3 sensitivity was 50% (CI: 23-77), specificity 66% (CI: 59-73), and PPV 9% (4-19). WHO 1 for TV revealed a 50% (CI: 1-99) sensitivity, a 68% (CI: 61-74) specificity, and PPV of 1% (CI: 0-8), while WHO 3 showed a 100% (CI: 16-100) sensitivity, 66% (CI: 59-72) specificity and 3% (CI: 0-10) PPV. **Conclusions:** Syndromic management performed in routine conditions helped diagnose TV infections, especially when improved by microscopy but were inadequate for CT and NG diagnosis. New compatible tests that are with local resources should be made available to improve diagnosis and outcome.

TP-103 ACCEPTABILITY OF GENITAL EXAMINATIONS AND ESTIMATION OF STI PREVALENCE AMONG WOMEN PARTICIPATING IN A MICROBICIDES FEASIBILITY STUDY IN RURAL SW UGANDA

K.M. Kasse¹, G.N. Nabunnya¹, M.M. Mukyala¹, W.S. Wandiembe¹, A.S. Ssali¹, P.H. Hughes¹, S.M. McCormack², H.G. Grosskurth¹, A.K. Kamali¹

¹ Medical Research Council/UVRU, Kampala, Uganda

² Clinical Trials Unit-London, Uganda

Objective: Phase III microbicide trials require that women regularly undergo genital examinations and STI screening. To assess acceptability of genital and speculum examination (GE) and determine STI prevalence among females in a microbicide feasibility study.

Methods: Between August 2003 and September 2004, 85 women from HIV discordant and 38 from concordant negative couple relationships were recruited following a serological survey in 5 rural communities, enrolled at government health units and followed every 3-months for one year. At each visit, women were requested to undergo GE for STI screening. Genital specimens for STI/RTI diagnosis and serum for syphilis and HIV were collected. Exit interviews among women and single sex focus group discussions (FGDs) were conducted to assess acceptability of GE. STIs were treated syndromically and/or after laboratory diagnosis. Treatment for partners was through index cases. VCT and condom use were strongly recommended and provided by research team.

Results: All women (123) were seen at enrolment and at 3 months, 115 (97.5%) at 6 months, 100 (84.7%) at 9 months and 94 (80%) at 12 months. 84 (68%) participants attended all visits. Reasons for refusal were: partner's disapproval, misconceptions about speculum and pain/bleeding during previous examinations. During FGDs, men and women preferred female health workers for performing GE. Exit interviews indicated that GE was accepted by 91% (80/88) women interviewed. STI/RTI prevalence declined between baseline and at 12 months follow-up: N.gonorrhoeae from 1.3% to 0%, C.trachomatis from 1.0% to 0%, T.vaginalis from 7.0% to 1.9%, C.albicans from 8.6% to 8.0%, Bacterial vaginosis from 38.9% to 34.4% and syphilis (RPR+/TPHA+) from 5.9% to 0.9%.

Conclusions: Regular GE among women with no genital complaints was necessary and acceptable in this target population. STI/RTI prevalence was substantial, but significantly reduced through screening and treatment. These findings have implications for planned phase III microbicide trials.

TP-104 THE PERFORMANCE OF SELF-ADMINISTERED VAGINAL SWABS STORED AT ROOM TEMPERATURE ON PCR DETECTION OF SEXUALLY TRANSMITTED INFECTIONS

S.O. Odugwu¹, B.D. Deperthes², F.M. Radebe¹, V. Maseko¹, R. Ballard³, T. Farley², N. Broutet², H.J. Koornhof¹

¹ National Institute for Comm. Diseases, Johannesburg, South Africa

² World Health Organization, Geneva, Switzerland

³ Centres for Disease Control, Atlanta, United States of America

Objectives: To assess whether self-administered vaginal swabs (SAVS) preserved at room temperature for four days in a DNA/RNA stabiliser are comparable to speculum-assisted clinician-collected swabs in detecting STIs.

Methods: Female STI patients were recruited into the study and asked to simultaneously take two vaginal swabs from themselves by gently inserting them into the vagina. One swab was placed into a dry plastic tube, and the second one was placed in a tube containing DNA/RNA ProtectTM transport fluid for four days. Cervical and vaginal specimens collected at the same clinic by a clinician were sent to the laboratory on ice where they were subjected to PCR amplification within five hours of collection. PCR findings were compared with those of the self-collected swabs.

Results: A total of 773 women with a median age of 24 years were enrolled into the study. True positive specimens were defined as PCR-positive clinician-collected specimens. Chlamydia trachomatis, Neisseria gonorrhoeae and Trichomonas vaginalis were detected in 19.7%, 19.4% and 39.8% of clinician-collected specimens respectively. More than half of the women (65%) had at least one STI. The sensitivity, specificity, positive predictive value and negative predictive value of the self-administered vaginal swab were 100%, 99.7%, 99.3% and 100% for C. trachomatis; 100%, 99.7%, 99.3% and 100% for N. gonorrhoeae; and 86.6%, 99.6%, 99.4% and 90.5% for T. vaginalis respectively. The acceptability of self-swabbing was very high among the women.

Conclusion SAVS stored for up to four days at room temperature in DNA/RNA ProtectTM was an effective means of collecting and transporting vaginal secretions to detect selected STIs.

TP-105 THE FEASIBILITY, ACCEPTABILITY AND PERFORMANCE OF RAPID POINT-OF-CARE STI DIAGNOSTICS AT HOME AND AT THE CLINIC: A COMPARISON OF FINDINGS FROM SOUTH AFRICA AND BRAZIL

H Jones¹, L. Altin², C.G. Lupp³, S.A. Lippman¹, T. Young⁴, J. Diaz¹, A. Pinho³, A de Kock², J.H.H.M. van de Wijgert⁵

¹ Population Council, New York, NY, United States of America

² University of Cape Town, Cape Town, South Africa

³ Centro de Saúde Escola BF, São Paulo, Brazil

⁴ South African Cochrane Center, Cape Town, South Africa

⁵ IATEC, Amsterdam, Netherlands

Objective: To evaluate the feasibility, acceptability, and performance of rapid diagnostics for trichomoniasis (TV), chlamydia (CT), and gonorrhoea (NG) at home and at the clinic.

Methods: We randomized 626 women aged 14–25 years in Gugulethu, South Africa, and 818 women aged 18–40 in São Paulo, Brazil, to screening by self-collection of vaginal swabs at home or at a clinic. All women who responded were screened for TV/CT/NG

by PCR and performed the Xenotope XenostripTM rapid TV test. Clinic staff performed Thermo Electron OIATM rapid CT and NG tests on the clinic group.

Results: Forty-four percent of women were screened in South Africa versus 93% in Brazil. Prevalence (by PCR) was higher in South Africa: 21 vs. 8% CT, 10 vs. 3% TV and 8 vs. 2% NG. The positive predictive value of the rapid TV test (compared to PCR) was 80% in South Africa, 72% in Brazil, 76% combined; for the CT test, 47% in Brazil, 33% in South Africa, 40% combined; NG results pending. Almost all women were able to perform the rapid TV test on their own at home and in the clinic in both countries. In South Africa, nurses who observed the procedure rated it as very easy or easy for 99% of women. In Brazil, 90% of women reported it was easy. The sensitivity and specificity of each rapid test, time to treatment for positive cases, and number of repeat or invalid tests will also be presented.

Conclusion: Rapid tests are acceptable and feasible for women to use alone at home and at the clinic. Depending on the prevalence and test performance, rapid tests could be important tools to improve STI diagnosis in resource poor settings.

SESSION: TP - C17 EPIDEMIOLOGY- MULTIPLE STI'S

TP-106 THE EPIDEMIOLOGY OF SEXUALLY TRANSMITTED INFECTIONS AND THEIR ASSOCIATION WITH HIV INFECTION AMONG FACTORY WORKERS IN ETHIOPIA

Y. Yared

EHNRI, Addis Ababa, Ethiopia

Objective: To determine the prevalence of sexually transmitted infections (STIs), and their association with HIV infection among factory workers at 2 sites in Ethiopia.

Method: Between February 1997 and December 2001, for a cohort of 1679 individuals, information on socio-demographics, sexual behavior, and reported sexually transmitted infections (STIs) was collected using a structured questionnaire. Serum samples were screened for antibodies against HIV, Treponema pallidum hemagglutination (TPHA), and herpes simplex virus type 2 (HSV-2). HSV-2 data were available only from one site.

Results: At enrollment, over 9% of the males and 16% of the females reported genital discharge in the past five years. The corresponding figures for genital ulcer were 2% in men and 4.8% in women. Syphilis was very common in this population, with 25.6% of the males and 25.5% of the females being positive for TPHA. Over 50% of the study populations (from one of the sites) were positive for HSV-2 antibodies. The overall baseline HIV prevalence was 9.4% (8.5% in males and 12.4% in females). For both sexes, after adjusting for several socio-demographic and behavioral variables, factors independently associated with an increased risk of HIV infection were having had antibodies against TPHA (Adjusted OR=3.4, for males; OR=3.0, for females) and HSV-2 (Adjusted OR=3.3, for males; OR=8.4, for females).

Conclusion: This study indicated that sexually transmitted infections are very common in the study population and also play major roles in the spread of HIV infection. Therefore, HIV prevention programs should intensify their focus on reducing the spread of STIs as well as urging early treatment of STIs to control the further spread of HIV infection in the population.

TP-107 THE INCIDENCE OF SEXUALLY TRANSMISSIBLE INFECTIONS AMONG FREQUENTLY SCREENED SEX WORKERS IN A DECRIMINALISED AND REGULATED SYSTEM IN MELBOURNE.

D.M. Lee¹, A. Binger², J. Hocking¹, C.K. Fairley¹

¹ *University of Melbourne, Faculty of Medi, Melbourne, Australia*

² *Melbourne Sexual Health Centre, Melbourne, Australia*

Objective: Our aim was to determine the incidence of sexually transmissible infections among decriminalised and regulated sex workers in Victoria.

Methods: The incidence of STIs was calculated for individuals who attended the MSHC on more than one occasion. Results of initial screen specimens were not included. Follow up time was calculated in person-months and used as the denominator with the number of 'specified' STIs diagnosed over the study period as the numerator. **Results:** Among 388 sex workers the incidence of Chlamydia, Trichomonas vaginalis, genital warts and herpes was 0.61, 0.11, 0.79, and 0.17 respectively per 100 person months of follow up. The mean number of sexual non-paying private partners in the last 3 months was significantly greater among those with Chlamydia (0.8 vs 1.5, $p < 0.01$) and any STI (0.7 vs 1.2, $p < 0.05$).

Discussion: The incidence of STIs was low among decriminalized and regulated sex work and most infections were related to partners outside of work. Frequent screening of sex workers will reduce the chance of workers passing on an STI but is expensive. However it may also discourage women from joining the sex work system and push them into an illegal system with a worse outcome.

TP-108 PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS AMONG DIFFERENT 'HIGH-RISK' POPULATIONS OF MANAGUA, TARGETED BY A HIV PREVENTION PROGRAMME USING A COMPETITIVE VOUCHER SCHEME

A.C. Gorter¹, Z.E. Segura², M.H.A. Hermans³, P.H.M. Savelkoul⁴, S.A. Morré⁵

¹ *Instituto CentroAmericano de la Salud, Roosendaal, Netherlands*

² *ICAS, MANAGUA, Nicaragua*

³ *MLMBD Jeroen Bosch Hospital, 's-Hertogenbosch, Netherlands*

⁴ *Medical Microbiology VU UMC, Amsterdam, Netherlands*

⁵ *Lab. of Immunogenetics VU UMC, Amsterdam, Netherlands*

Objectives: To assess prevalence levels of sexually transmitted infections (STIs) in 'high-risk' populations of Managua, Nicaragua, to improve STI/HIV programmes.

Methods: Since 1996 a HIV prevention programme has been operating in Managua, targeting STI/HIV services to sex workers (SW) and other 'high-risk' populations through a competitive voucher scheme. The voucher agency contracts providers (public, private), trains clinic staff and organises voucher distribution every four months (directly at prostitution sites, by SW to their partners/clients, through social organisations). Patients choose a provider; quality is monitored. Only the best providers are retained. The STI protocol combines presumptive treatment (chlamydia, gonorrhoea), laboratory testing (syphilis, trichomonas) with clinical diagnosis of other STIs. Between August and November 2003 urine was collected from all 717 patients redeeming a voucher and send to the Netherlands for chlamydia and gonorrhoea testing based on DNA amplification assays.

Results: Chlamydia is the most frequent STI. For each STI, prevalence is highest in young SW. Except for chlamydia, prevalence of STIs was highest where prices paid for vaginal sex are lowest, women poor and more vulnerable to client pressure and marginalized in terms of access to STI services. Chlamydia, by contrast had the highest prevalence at the expensive prostitution sites, where SW and clients have higher incomes and greater access to STI care.

Conclusions: Chlamydia seems to be in an earlier epidemic phase compared to the other STIs, where remaining infections, due to control measures, have moved into the poorest groups who sell/buy sex, but have low access to STI care – the 'core' groups. While chlamydia will need more generalised control measures (including training of medical doctors), the other STIs require highly targeted actions capable to reach these 'core' groups.

'High-risk' population	N	Chlamydia %	Gonorrhoea %	Syphilis %	Trichomonas %
Sex workers	338	13	7	2	8
<i>lowest-middle-highest prices for vaginal sex</i>	338	9-10-25	2-7-1	12-2-0	21-7-6
Age SW < 20 years	52	31	14	4	16
All men	379	4	2	2	-
Partners/clients SW	133	6	5	3	
<i>lowest-middle-highest prices for vaginal sex</i>	133	2-8-22	5-5-0	2-3-0	
Men who have sex with men	136	3	2	2	
Prisoners	110	4	1	0	

Table 1: Results

TP-109 THE BURDEN OF SEXUALLY TRANSMITTED INFECTIONS (STIS), OTHER THAN HIV, AND THE PROFILE OF STI-BEHAVIORAL INTERVENTIONS IN ILLICIT DRUG ABUSERS: A SYSTEMATIC AND GLOBAL REVIEW

S. Semaan¹, D. Des Jarlais², R. Malow³

¹ *Centers for Disease Control & Prevention, Atlanta, United States of America*

² *Beth Israel Medical Center, New York, United States of America*

³ *Florida International University, Miami, Florida, United States of America*

Objectives: To assess the burden of bacterial (syphilis, gonorrhoea, and chlamydia) and viral (HBV, HSV-2) STIs and the profile of behavioral interventions to reduce these STIs in illicit drug abusers.

Methods: We used multiple search engines and key terms and conducted automated and manual searches for the 1988 – 2004 published global STI literature for observational and intervention studies with illicit drug abusers.

Results: We identified over 200 articles; 95% reported on observational studies and less than 5% reported incidence rates. Rates of STIs differed by drug use patterns. Higher prevalence rates for syphilis were reported in crack users and higher HBV and HSV-2 rates were reported in injection drug users. Prevalence rates for syphilis were lower than 20%; for gonorrhoea or chlamydia lower than 10%; and for Hepatitis B or HSV-2 lower than 60%. Incidence

rates of < 3 per 100 person years were reported for HBV and less than 5% for gonorrhea and chlamydia. Variations in rates also existed by person-specific variables (e.g., injection history, drug treatment history, exchange of sex for drugs or money, incarceration history, and age). These variables explained the differential STI burden in the United States; in other industrialized countries; and in developing countries. Recent studies used biologic markers for STIs. Behavioral interventions focused on HIV and to a lesser extent on STIs. Less than 20% of drug users had received the HBV vaccine.

Conclusion: As the sexual route predominates over the drug injection route in accounting for new HIV infections in illicit drug abusers and their sex partners, it has become more urgent to develop innovative interventions for specific STIs, to use biologic markers for STIs, and to encourage vaccination for HBV.

TP-110 RECEIPT OF HIV AND STD SCREENING SERVICES BY COMMERCIALY INSURED PATIENTS AGED 11-64 YEARS REPORTING HIGH RISK SEXUAL BEHAVIORS

G. Tao, K. Irwin

CDC, Atlanta, United States of America

Objectives: Clinical practice guidelines in the US recommend HIV and STD screening for patients reporting high risk sexual behaviors (HRSB). Data on HIV and STD screening services received by commercially-insured patients with HRSB is very limited. The objective was to estimate screening rates for HIV and STDs among commercially-insured patients reporting HRSB, stratified by patient sex and visit type.

Methods: We analyzed medical claims data from 5 million commercially-insured enrollees in the US. V69.2, a health status code to describe HRSB that disease diagnoses are not noted during visits. Diagnosis (ICD-9) and procedure (CPT) codes were used to identify routine checkup visits; HIV, syphilis, Chlamydia, and gonorrhea testing; and HIV and STD diagnoses.

Results: Of 2080 visits coded as V69.2 for 591 male and 1489 female patients aged 11-64 years, 49 visits for male patients and 509 visits for female patients were classified as routine checkups. Male patients were significantly ($p < 0.05$) more likely than female patients to be tested for HIV (56% vs. 36%) and syphilis (32% vs. 27%). Female patients were significantly more likely than male patients to be tested for Chlamydia (42% vs. 23%) or gonorrhea (39% vs. 20%). HIV and STD testing were more common during routine checkups than during other visits. Among patients without diagnostic or testing claims for HIV, syphilis, CT, or GC during visits in which HRSB was coded, <10% had evidence for HIV and STD testing or diagnosis in 30 days before or after that visit.

Conclusions: From 20%-56% of commercially-insured patients with HRSB had claims for HIV and STDs, most commonly during routine checkups. Interventions to increase HIV and STD screening of patients reporting HRSB are needed to enhance guideline adherence.

TP-111 HIV/STD AMONG 1100 STUDENTS LIVING IN 22 DORMITORIES IN ST.PETERSBURG, RUSSIA

R.V. Dyatlov¹, A. Somla², S. Verevchkin¹, J. Granskaya¹, N. Abdala³, J. Kelly², M. Merson³, A. Kozlov¹

¹ The Biomedical Center, St.Petersburg, Russian Federation

² Medical College of Wisconsin, Milwaukee, United States of America

³ Yale University, New Haven, United States of America

Objective: As part of the NIMH Collaborative HIV/STD Prevention Trial, an epidemiological study was conducted to determine STD/HIV rates among sexually active youth ages 18-25. Participants were recruited from vocational trade school dormitory settings in St.Petersburg, Russia.

Methods: 1100 dormitory residents (50 per dormitory) were randomly recruited to participate. They voluntarily provided blood serum and urine (male) and vaginal swab (female) specimens for STD testing. HIV testing was performed using two different ELISAs then a Western Blot to confirm all positives. STD testing was also performed for syphilis, gonorrhea, Chlamydia, trichomonas and HSV-2. All participants were provided HIV/STD test results and post test counseling within two weeks of the initial visit. Persons with HIV were referred to local treatment center.

Results: Chlamydia was the most prevalent STD (7.9%). Almost twice as many females (n= 56) than males (n = 31) tested positive for Chlamydia. Similar results were obtained for herpes (6.1%) where females (n= 46) were twice as likely to test positive as males (n=21). Lower rates of positive results were obtained for gonorrhea (1%), trichomonas (0.2%) and syphilis (0.7%). 8 participants, all male, tested positive for HIV. Conclusions: 1. No previous STD/HIV studies have been conducted with this population. 2. Females twice as likely to be infected with Chlamydia and Herpes. 3. The findings from this preliminary study clearly indicate the need for testing and counseling, HIV prevention programs, targeting female students living in vocational trade school dormitories.

TP-112 STI PREVALENCES IN BRAZIL: DETERMINING A NATIONAL BASE LINE IN FACTORY WORKERS

F. Moherdau¹, A. Benzaken², R.R. Rodrigues³, M.G. Bandeira², L. Cromack⁴, L. Nolde⁵, I. Rios⁶, E. Onaga⁷, T. Martins⁸, C. Herlt⁹

¹ Ministry of Health - Brazil, BRASILIA, Brazil

² Alfredo da Matta Foundation, MANAUS, Brazil

³ Núcleo de Doenças Infecciosas, VITORIA, Brazil

⁴ State Health Secretary, RIO DE JANEIRO, Brazil

⁵ Centro de Estudos em DST/ Aids, PORTO ALEGRE, Brazil

⁶ Núcleo de Pesquisa-PUC, GOIÂNIA, Brazil

⁷ State Health Secretary-SP, SAO PAULO, Brazil

⁸ State Health Secretary-CE, FORTALEZA, Brazil

⁹ GTZ-Brazil, BRASILIA, Brazil

Objectives: to determine, in factory workers, the prevalences of syphilis, gonorrhea, chlamydia, hepatitis B virus (HBV) and herpes simplex 2 (HSV2), besides evaluating sexual behaviors.

Methods: cross-sectional and multicentric study, with descriptive and analytic components. N = 3.600, acceptable error 0,5%, confidence interval 95%. Tests in serum: syphilis (ELISA and VDRL); HSV2 (ELISA); HBV (HbsAg, anti-HbcIgM and anti-HBs). Tests in urine: gonorrhea and chlamydia (PCR)

Results: the average age was of 33,6 years. 71% declared to be living in stable relationship. 56% were afro-descendants. 1.5% declared to have had sexual intercourse with men in the last 12 months; of that, 49% used condoms. 38% declared to have had sex with more than one woman in the last 12 months. 71% declared to used condoms with eventual partners. 31% declared to have had, some time in their lives, signs or symptoms related to STI, as urethral discharge, genital warts, ulcers or vesicles. During the interview, 3% were with some of those symptoms. 3.6% declared that one of their partners have had symptoms related to STI. 1.1% declared to be injecting drug users (IDU), and 2.9% declared that one of their partners was IDU and 0.4% declared that one of their partners was HIV positive. The prevalences were: syphilis - 2,2%, HSV2 - 12,5%, hepatitis B virus (HBV) - 0,9%, Neisseria gonorrhoeae - 0,9%, Chlamydia trachomatis - 3,5%

Conclusion: the results indicate the need of immediate actions to control the STI that showed alarming prevalences. The establishment of these prevalence baselines will allow a monitoring and evaluating system that will guarantee an appropriate prevention and intervention planning. At the same time, the introduction of the best laboratory diagnose methods for STI in the world, qualified the public health laboratories and reference services in the country.

TP-113 MORE IN 2004 - THE SHIFT TO NAATS FOR CHLAMYDIA AND GONORRHEA TESTING IN UNITED STATES PUBLIC HEALTH LABORATORIES

L. Dicker¹, D. Mosure², R. Steece³

¹ Centers for Disease Control & Prevention, Sudbury, United States of America

² CDC, Atlanta, United States of America

³ APHL, Washington, United States of America

Objectives: To evaluate changes between 2000 and 2004 in types of chlamydia and gonorrhoea testing performed in public health laboratories in the United States

Methods: An on-line survey was provided to 144 APHL member laboratories to collect information about the volume and type of testing for chlamydia and gonorrhoea done in 2004. These data were compared to information collected from APHL member laboratories in a similar mail survey in 2000.

Results: Preliminary data from the 2004 survey indicated that the most frequently performed tests in 2004 were nucleic acid amplification tests (NAATs) (65.8% of chlamydia tests, 60.9% of gonorrhoea tests). In 2000, only 24.5% of all chlamydia tests and 11.7% of gonorrhoea tests performed in public health laboratories were NAATs. In contrast, the most frequently performed tests in 2000 were DNA probes (62.4% of chlamydia tests, 63.6% of gonorrhoea tests). While the overall proportion of public health laboratories that reported performing gonorrhoea cultures remained relatively stable (79% in 2000, 77% in 2004), the overall percent of all gonorrhoea tests that were cultures declined from 18% in 2000 to only 9.4% in 2004.

Conclusions: There has been a greater use of more sensitive and more expensive NAATs for chlamydia and gonorrhoea testing in public laboratories in the United States between 2000 and 2004. Use of culture to diagnose gonorrhoea continued to decline. It is important to monitor these trends and assess their effect on available resources for chlamydia and gonorrhoea screening and surveillance of antimicrobial resistance for gonorrhoea.

TP-114 PREVALENCE OF INFECTION WITH HIV, HERPES TYPE 2, AND SYPHILIS IN MALE PARTNERS OF PREGNANT WOMEN USING PRENATAL SERVICES IN FOUR COASTAL CITIES OF PERU

K.A.K. Konda¹, C. Munayco², J.D. Klausner³, M.C. Pun², A.G. Lescano⁴, P. Pajuelo⁴, L. Suarez², T.J. Coates¹, C.F. Caceres⁴

¹ University of California, Los Angeles, Los Angeles, CA, United States of America

² General Office of Epidemiology, Lima, Peru

³ San Francisco Dept. of Public Health, San Francisco, United States of America

⁴ University Cayetano Heredia, Lima, Peru

Objectives: To describe the sexual risk behaviors and prevalence of HIV, herpes simplex virus type 2 (HSV-2), and syphilis infections in sexually active male partners of pregnant women seeking public obstetric services in urban, coastal Peru.

Methods: Male partners of pregnant women visiting public obstetric facilities were administered a behavioral questionnaire and underwent serologic testing in four coastal cities of Peru. Using FDA-cleared commercial assays, sera were tested for HIV infection (EIA, Vironostika, USA and Biorad, USA) with Western blot confirmation (Biorad, USA), HSV-2 infection (HerpeSelect, Focus Technologies, USA), and syphilis RPR (RPRnosticon, Biomeriux, UK) with TPPA confirmation (Fujirebio, Japan).

Results: In a systematic sample of 1856 male partners of pregnant women, the mean age was 28.5 years (range 18 – 68). Most men, 93%, described the pregnant woman as their primary partner and 72% had been with her for two or more years. Condom use between the men and their pregnant partners was very low: prior to the pregnancy 6% reported consistent condom use and 70% reported never using a condom. Ever having sex with a sex worker was reported by 37% and ever having sex with a man was reported by 11% of the participants. HIV prevalence was 0.8% (95% CI, 0.5-1.3%), HSV-2 prevalence was 16.0% (95% CI, 14.3-17.7%), and the prevalence of syphilis was 1.5% (95% CI, 1.0-2.2).

Conclusions: These results are representative of the prevalence of HIV, HSV-2, and syphilis infection in sexually active male partners of pregnant women seeking public obstetric services in urban, coastal Peru. The moderate prevalence rates of STIs and low condom use between men and their partners represent a marker of for maternal acquisition and subsequent perinatal transmission of these STIs.

TP-115 STI AND HIV PREVALENCES IN BRAZIL: DETERMINING A NATIONAL BASE LINE IN PREGNANT WOMEN

F. Moherdau¹, A. Benzaken², C. Herlt³, E. Onaga⁴, I. Rios⁵, L. Cromack⁶, L. Nolde⁷, M.G. Bandeira², R.R. Rodrigues⁸, T. Martins⁹

¹ Ministry of Health - Brazil, Brasília, Brazil

² Alfredo da Matta Foundation, Manaus, Brazil

³ GTZ-Brazil, Brasília, Brazil

⁴ State Health Secretary-SP, Sao Paulo, Brazil

⁵ Núcleo de Pesquisa-PUC, Goiânia, Brazil

⁶ State Health Secretary, Rio De Janeiro, Brazil

⁷ Centro de Estudos em DST/Aids, Porto Alegre, Brazil

⁸ Núcleo de Doenças Infecciosas, Vitoria, Brazil

⁹ State Health Secretary-CE, Fortaleza, Brazil

Objectives: to determine, in pregnant women, the prevalences of syphilis, gonorrhea, chlamydia, HBV, HIV, HPV and HSV2, besides evaluating sexual behaviors.

Methods: cross-sectional and multicentric study, with descriptive and analytic components. N=3.600, acceptable error 0,5%, confidence interval 95%. Tests in serum: syphilis (ELISA and VDRL); HSV2 (ELISA); HBV (HbsAg, anti-HbcIgM and anti-HBs), HIV (ELISA and Western-Blot). Tests in cervical: gonorrhea, chlamydia and HPV (Hybrid Capture)

Results: the average age was 23,8 years. 73% declared to be living in stable relationship. 56% were afro-descendents. 16% declared to have had more than one sexual partner in the last 12 months, of that, 42% used condoms with eventual partners. 13% declared to have had, some time in their lifes, signs or symptoms related to STI, as genital warts, ulcers or vesicles (excluded the vaginal discharge, very common in pregnant women and, most of the time, not STI). 12% declared that one of their partners have had symptoms related to STI. 1.5% declared to be injecting drug users (IDU), 4% declared that one of their partners was IDU and 0.9% declared that one of them was HIV positive. During the examination, 73% of them presented vaginal discharge, 5.5% genital ulcers, 4.2% genital warts, 2.7% genital vesicles. The prevalences were: syphilis - 1.9%; HSV2 - 22.7%; HBV - 0,5%; HIV - 0.5%; Neisseria gonorrhoeae - 1.5%; Chlamydia trachomatis - 9.3%; HPV high risk - 33.4%

Conclusion: the results indicate the need of immediate actions to control the STI that showed alarming prevalences. The establishment of these prevalence baselines will allow a monitoring and evaluating system that will guarantee an appropriate prevention and intervention planning. At the same time, the introduction of the best laboratory diagnose methods for STI available in the world, qualified the public health laboratories and reference services in the country.

TP-116 SEXUALLY-TRANSMITTED INFECTION (STI) AMONG FEMALE SEX WORKERS (FSW) IN TASHKENT, UZBEKISTAN

C.S.T Todd¹, G. Alibaeva², M. Khakimov², B. Botros³, J.K. Carr⁴, J.L. Sanchez⁴, K.C. Earhart³

¹ University of California, San Diego, La Jolla, California, United States of America

² Ministry of Public Health, Tashkent, Uzbekistan

³ NAMRU-3, Cairo, Egypt

⁴ Henry M. Jackson Foundation, Rockville, Maryland, United States of America

Objective: To assess STI prevalence and correlates in a Tashkent, Uzbekistan FSW population.

Methods: Subjects in this cross-sectional study completed a self-administered questionnaire and pelvic examination. STI diagnosis was based on examination and microscopic findings, with N. gonorrhoea and C. trachomatis diagnosed by discretionary culture. **Results:** Of 337 subjects, 316 (93.8%) were diagnosed with at least one STI. Most (281, 83.4%) were symptomatic and 83 (24.6%) had signs of infection on examination. 53 (15.73%) had gonorrhea and 75 (22.26%) had chlamydia; 1 subject was co-infected. In univariate analysis, gonorrhea was associated with fewer clients daily (p=0.054; OR=0.672, 95% CI=0.448-1.01). In multivariate analysis, gonorrhea was less likely in those with greater number of STI treatments in the preceding three months (p=0.049; AOR=0.295, 95% CI=0.088-.994). Chlamydia was positively associated with longer sex work duration (p=0.013; OR=1.08, 95% CI=1.02-1.14), daily number of clients (p=0.026; OR=1.34, 95% CI=1.04-1.74), pregnancy (p=0.009; OR=5.61, 95% CI=1.54-20.43), street-based sex work (p=0.019; OR 1.88, 95% CI=1.11-3.17), and visible infection (p=0.034; OR=1.99, 95% CI=1.05-3.75). Phone referral sex work (p=0.018; OR=0.530, 95% CI=0.312-0.898) and HIV/STI transmission knowledge (p=0.007; OR=0.426, 95% CI=0.231-0.788) were associated with lower STI risk. Relationships persisting in multivariate analysis were pregnancy (p=0.048; AOR=5.60, 95% CI=1.01-30.94) and HIV/STI transmission knowledge (p=0.027; AOR=.447, 95% CI=0.219-.912). Consistent condom use, while not associated with infection, was uniformly low with clients (27.6%) and regular partners (23.1%).

Conclusions: A strong association between high-risk sexual exposures and chlamydial, but not gonococcal infection, was found among FSW in Tashkent. Selective screening practices may have decreased infection detection. High STI rates and inconsistent condom use represent barriers to effective control of STI in this population and support the need for comprehensive STI screening and prevention program interventions.

TP-117 RISKY BEHAVIORS, HIV AND SEXUALLY TRANSMITTED INFECTIONS IN HOMELESS WOMEN WHO TRADE SEX IN MOSCOW, RUSSIA: COMPARISON WITH FEMALE STREET SEX WORKERS WHO ARE NOT HOMELESS

A. Shakarishvili¹, L. Zohrabyan¹, L. Dubovskaya², J. St. Lawrence¹, S. Aral¹, L. Dugasheva¹, J. Lewis³, K. Parker¹, C. Ryan¹

¹ Centers for Disease Control (CDC), Atlanta, United States of America

² Russian Association 'Sanam', Moscow, Russian Federation

³ McKing Consulting Corp., Atlanta, United States of America

Objectives: To compare Moscow's homeless and non-homeless street sex workers' (SWs) socio-demographic and behavioral characteristics and the prevalence of HIV infection and STIs.

Methods: We conducted a cross-sectional study among detained homeless and non-homeless women aged 18-45 years from April through June 2001 and October 2001 through April 2002, respectively. We characterized and compared the women reporting sex trade within these groups.

Results: Of 106 homeless SWs and 160 non-homeless SWs, 34.3% and 61.6%, respectively, were aged ≤ 21 years ($p < 0.01$). Homeless SWs more frequently reported no condom use (21.3% vs. 6.1%; $p < 0.01$), drug use (9.7% vs. 3.8%; $p = 0.04$) and physical abuse (64.8% vs. 50.0%; $p < 0.01$) when having sex, receiving no health care (41.7% vs. 25.6%; $p < 0.01$), and injecting drugs (15.7% vs. 6.1%; $p < 0.01$) than non-homeless SWs. Approximately 3% in both groups were HIV seropositive. Approximately 53% of homeless SWs and 25.0% of non-homeless SWs had active syphilis (odds ratio [OR] = 3.4; 95% CI = 2.0-6.0). Among homeless and non-homeless SWs the prevalence rates were of Chlamydia trachomatis -18.6% and 26.8%, Neisseria gonorrhoeae - 25.8% and 31.6%, and Herpes Simplex Virus type 2 (HSV-2) - 35.8% and 26.1%, respectively (all $p > 0.05$). Approximately 10% of homeless SWs with syphilis injected drugs. Syphilis was associated with HSV-2 infection in homeless SWs (OR=4.0; CI=1.4-12.0) and age ≥ 25 years in both homeless (OR=2.9; CI=1.1-7.2) and non-homeless (OR=3.6; CI=1.5-9.1) SWs. One out of four and one out of seven HIV seropositive homeless and non-homeless SWs, respectively, injected drugs.

Conclusions: Homeless SWs in Moscow are even more vulnerable to STIs and HIV infection due to their riskier sexual and drug use behaviors and less access to health care than non-homeless SWs. Provision of health services and integration of STI and HIV prevention initiatives into community efforts serving homeless women assumes great importance.

TP-118 HIGH PREVALENCE OF HIV CO-INFECTION AMONG WOMEN WITH SYPHILIS GIVING BIRTH IN RUSSIA – RESULTS FROM A NEW ACTIVE CONGENITAL SYPHILIS SURVEILLANCE SYSTEM PILOTED IN SELECTED REGIONS

L. Zohrabyan, A. Shakarishvili, J. Heffelfinger, E. Safarova, L. Tikhonova, O. Loseva, A. Rubtsov, V. Letyagina, S. Hillis, C. Ryan
The Congenital Syphilis Project Team

Objectives: In Russia, the prevalence of HIV infection is increasing at an alarming rate and syphilis continues to be epidemic. Our objective was to assess the prevalence of HIV infection among women with syphilis who delivered in selected regions between June 2003 and May 2004.

Methods: We identified the women with positive syphilis serological tests during pregnancy who delivered at >20 weeks gestation through an active congenital syphilis surveillance system (CSSS) being piloted in three large cities and four semi-rural provinces. For these women, we determined the prevalence of and risk factors for HIV infection for which screening is routine in antenatal settings in Russia.

Results: Information on HIV status was available for 1305 (95.7%) of 1364 women. The overall HIV seroprevalence was 4.3% (site specific range 1.6-10.1%) in the seven sites, which is 43 times higher than the HIV seroprevalence (0.1%) currently reported for pregnant women in Russia. Compared with HIV-negative women, HIV-positive women were more likely to be younger (median age 23 years vs. 25 years), unmarried (71.4% vs. 43.3%), unemployed (85.7% vs. 67.9%), deliver in large cities (76.8% vs. 53.2%), have had no prenatal care (PNC) (53.6% vs. 30.8%), initiate PNC at a later stage of pregnancy (median gestational age 21 weeks vs. 16 weeks), and deliver infants with lower birth weight (median 2,670 grams vs. 3,140 grams) (all $p < 0.01$).

Conclusions: The HIV seroprevalence among women with syphilis infection who were identified by active CSSS was alarmingly high. The women that are young, unmarried, unemployed, and who either do not have access to or do not use PNC services are most vulnerable to HIV infection. More intensive efforts are needed to ensure early access to PNC and to prevent maternal syphilis and HIV and the transmission of these infections to infants.

TP-119 STIS, HIV INFECTION, DRUG USE AND UNSAFE SEXUAL BEHAVIOR AMONG FEMALE SEX WORKERS IN MOSCOW: HOW RISKY IS THE STREET SEX BUSINESS IN THE CAPITAL OF RUSSIA?

A. Gil¹, S. Dubovsky¹, E. Djigkaeva¹, M. Ausheva¹, L. Dugasheva¹, O. Karavaeva¹, L. Zohrabyan², K. Parker², A. Shakarishvili², LIBRA Project Team¹

¹ Russian Association SANAM, MOSCOW, Russian Federation

² Centers for Disease Control, ATLANTA, United States of America

Objectives: To assess the prevalence of STIs, HIV infection, drug use and unsafe sexual behaviors, and occupation related risk among 310 female street sex workers (SWs) who received free services at a new non-governmental STI clinic for SWs in Moscow between July 2004 and February 2005.

Methods: Outreach workers on staff referred SWs to the clinic for STI screening and treatment, HIV counseling and testing. At the initial clinic visit, we assessed SWs' self-reported sexual and drug use behavior, physical and sexual violence towards SWs, the prevalence of STIs and HIV infection.

Results: SWs were aged 15-34 (median 21) years, 67% had a high school or university education, 59% were from Russia and 41% were from neighboring countries. Mean duration of SW's involvement in the sex trade was 1.5 years. Mean number of male clients in the last month was 30; 89% of SWs used condom with the last client. Nearly 46% had a steady partner with whom only 43% used condom. Within the last month, 18% used non-injected illicit drugs and 1.3% injected drugs, 26% experienced sexual violence, and

26% acknowledged physical violence. At the last sexual encounter 67% consumed alcohol and 2.3% used drugs. Prevalence rates were of HIV, 2.9%; syphilis, 9.0%; chlamydia, 22%; gonorrhoea, 14%; trichomoniasis, 5.5%; bacterial vaginosis, 50%; and at least one STI, 69%.

Conclusions: Although SWs frequently reported condom use with clients, these women had high rates of STIs that along with their risky sexual and drug use behaviors are worrisome given the potential for HIV spread. In addition to STI/HIV risk, SWs frequently face physical and sexual violence. Because the size of the SW population in Moscow is significant (150,000), large scale STI screening and treatment, HIV testing, and risk reduction efforts are urgently needed for SWs.

TP-120 RECENT RESULTS OF STI SENTINEL SURVEILLANCE BY A NETWORK OF PHYSICIANS IN BELGIUM

A. Defraye, A. Sasse

Scientific Institute of Public Health, Brussel, Belgium

Objectives: To determine STI incidence trends in Belgium and to identify subpopulations at risk.

Methods: Network of gynaecologists, dermatologists, GP, urologists, STI clinics, student clinics and sexual education centres. Since 2000, STI patients have been registered each year during a 4-month period, from October until January. STI included in registration: chlamydia, gonorrhoea, trichomonas, herpes, syphilis, HPV, PID, pediculosis.

Results: Except for syphilis, there were no significant changes in the number of different STI between period 1 and 5. The number of syphilis diagnoses increased in men between period 1 and 3 ($p < 0.001$) and stabilised in period 4 and 5. In all periods, syphilis was mainly diagnosed in MSM (mean proportion: 85% of all syphilis diagnoses); the increase was attributed to an increase in this subgroup. Since the 2001-2002 period, more than half of MSM diagnosed with syphilis were co-infected with HIV; 71% of these co-infected patients were aware of their HIV status at the moment of STI diagnosis.

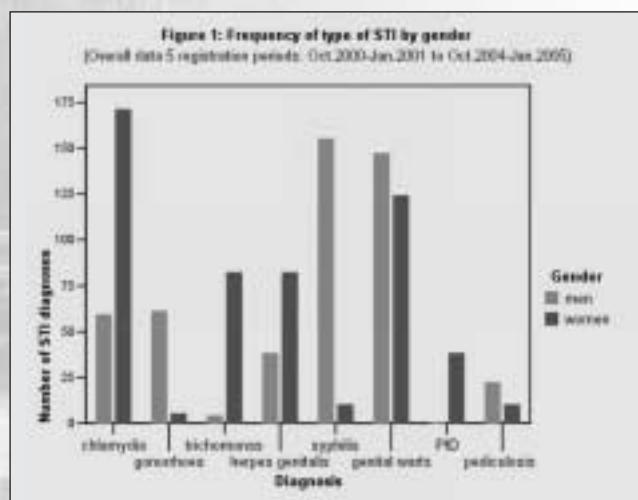


Figure 1:

The proportion of HIV positive STI patients increased from 4.3% in period 1 to 29.6% in period 3 ($p < 0.001$) and stabilised in period 4 and 5, as this increase in HIV positive patients was linked to the increase in MSM with syphilis. Overall, 62% of HIV positive patients were diagnosed with syphilis, 16% with gonorrhoea and 10% with chlamydia.

Since period 2, 20% to 25% of HIV positive patients discovered their HIV seropositivity as a result of the STI consultation. Between period 4 and 5, the proportion of STI patients for who a HIV test was not proposed by the physician, decreased ($p = 0.005$).

Conclusion: Syphilis reveals itself in MSM subgroups in Belgium; the high proportion of HIV co-infections is worrying. Focused prevention remains necessary. Proposing a HIV test in STI patients is essential; STI sentinel surveillance aims at sensitising physicians.

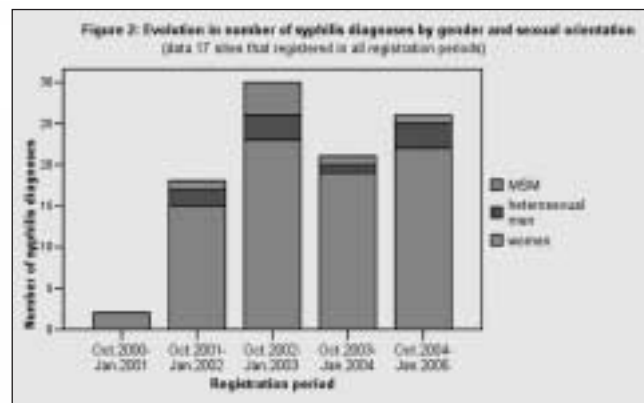


Figure 2:

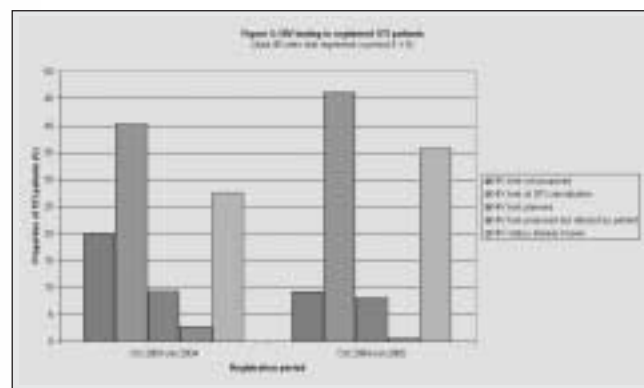


Figure 3:

TP-121 ANALYSIS OF RISK ASSESSMENT SURVEY AND STD SURVEILLANCE DATA: PREVENTION FAILURE AMONG CLIENTS AT HIGHEST RISK

A.F. McIntyre¹, G.D. Huhn², J.M. Broad³, S.W. Holmes⁴, A. Studzinski⁴, C. Rabins⁴, M.S. Dworkin⁴

¹ University of Illinois at Chicago SPH, Chicago, United States of America

² Rush University Medical Center, Chicago, United States of America

³ Chicago Dept. of Public Health, Chicago, United States of America

⁴ Illinois Dept. of Public Health, Springfield, United States of America

Objectives: Sexually transmitted diseases (STDs) among persons in high morbidity areas represent a failure of prevention efforts. For chlamydia, gonorrhoea, and syphilis, Illinois case rates consistently rank among the ten highest in the US. We analyzed behavioral, labo-

ratory, and surveillance data to develop a more comprehensive epidemiologic profile of STDs in Illinois.

Methods: During 2002, Risk Assessment Surveys (RAS) were administered to clients at 36 Illinois public STD clinics, 7 family planning clinics, 7 HIV clinics, and 2 jails. These data were merged with Illinois and Chicago Departments of Public Health 2002 STD surveillance databases including laboratory results for chlamydia, gonorrhea, and syphilis. Client encounters in Illinois during 2002 with RAS data and concomitant STD and HIV tests were evaluated. Multivariate analysis was performed to assess factors associated with laboratory-confirmed STDs.

Results: Among 27,609 client encounters (representing approximately 25,575 clients), 4,800 (17.4%) had one or more STDs. Compared to client encounters with no STDs, those with positive STD results were more likely to be aged <20 years (OR 1.5, 95% CI 1.3-1.6), male (OR 1.6, 95% CI 1.5-1.7), black (OR 2.3, 95% CI 2.1-2.5) or Hispanic (OR 1.5, 95% CI 1.3-1.7), and HIV-positive (OR 2.2, 95% CI 1.6-3.0). STD diagnoses were more likely to occur during encounters where clients reported multiple sexual partners in the past year (OR 1.5, 95% CI 1.4-1.6), previous STDs (OR 1.2, 95% CI 1.1-1.3), and seldom or never using condoms (OR 1.3, 95% CI 1.2-1.5).

Conclusions: Client encounters at Illinois STD clinics where young age, minority race/ethnicity, high-risk behaviors, and/or HIV infection were present increased the likelihood of STD diagnoses. Enhanced public health strategies are needed to strengthen prevention messages targeted to clients with these risk factors.

TP-122 INCIDENT SEXUALLY TRANSMITTED INFECTIONS AMONG HIV-INFECTED WOMEN IN UGANDA AND ZIMBABWE

C.S. Morrison¹, C. Kwok¹, B. Van Der Poel², A. Rinaldi¹, T. Chipato³, F. Mmiro⁴, R. Mugerwa⁴, C. Cohen⁵, R.A. Salata⁶

¹ Family Health International, Durham, United States of America

² IU School of Medicine, Indianapolis, United States of America

³ Univ of Zimbabwe, Harare, Zimbabwe

⁴ Makerere Univeristy, Kampala, Uganda

⁵ Univ. of California at SF, San Francisco, United States of America

⁶ Case Western Reserve Univ, Cleveland, United States of America

Objectives: To describe the incidence of sexually transmitted infections and associated factors among an incident cohort of HIV-infected women in Uganda and Zimbabwe.

Methods: We enrolled 225 women who HIV-1 seroconverted in the Hormonal Contraception and HIV Acquisition (HC-HIV) Study in Uganda (81 women) and Zimbabwe (144 women) into an incident HIV cohort. Participants are interviewed about contraceptive use and sexual behaviors; and undergo pelvic examinations, lymphocyte phenotyping, viral load testing, and STI screening every 3 months. We tested for *C. trachomatis* (CT) and *N. gonorrhoeae* (GC) by PCR and *T. vaginalis* (TV) by microscopy. Cox regression was used to model factors associated with time to incident STI.

Results: At entry, median age was 26 years. Median CD4 cell count and plasma viral load were 561 cells/mm³ and 4.4 log₁₀, respectively. Participants have been followed for a median of 9 visits for 25 months. The incidence of CT, GC and TV infection were 7.8 (33/423.7 years), 12.0 (51/423.7) and 14.2 (60/423.7) per 100 wy, respectively. In multivariable analysis, factors significantly associated with incident STIs include: a) CT: age < 22 years, having concur-

rent sex partners, >14 coital acts per month, and cervical ectopy; b) GC: age < 26 years, > 14 coital acts per month, having a sex partner with other partners, less time since HIV seroconversion, and the presence of cervical ectopy, bacterial vaginosis (Amsel) and genital ulceration; c) TV: less time since HIV seroconversion, having a sex partner with other partners, and friable cervix. Site, CD4 count, and condom use were not associated with incident STI. **Conclusions:** STI incidence is high in this HIV-1 incident cohort of African women. HIV-infected women continue to need counseling concerning condom use and limiting sexual partners to avoid STI acquisition as well as frequent STI screening and follow-up care.

	Chlamydia ¹		Gonorrhoea ²		Trichomonas ³	
	HR	95%CI	HR	95%CI	HR	95%CI
Site: Uganda	0.9	(0.4-2.0)	1.1	(0.6-2.0)	0.6	(0.3-1.2)
Age <22	2.7	(1.2-6.0)	-	-	-	-
Age <26	-	-	2.2	(1.1-4.2)	-	-
Participant had concurrent sex partners	5.7	(1.5-21.4)	-	-	-	-
Partner had other sex partners	-	-	2.8	(1.3-5.9)	1.8	(1.0-3.1)
> 14 coital acts per month	2.6	(1.3-5.5)	2.1	(1.1-4.0)	-	-
Cervical ectopy	3.2	(1.4-7.3)	2.5	(1.3-4.8)	-	-
BV (Amsel criteria)	-	-	2.1	(1.1-4.2)	-	-
Genital ulceration	-	-	3.0	(1.1-8.1)	-	-
Cervical friability	-	-	-	-	2.1	(1.0-4.4)
FU time since seroconversion (per month)	-	-	0.8	(0.7-0.9)	0.9	(0.3-1.6)

¹ 30 incident chlamydial infections from 1458 FU visits
² 44 incident gonococcal infections from 1452 FU visits
³ 55 incident trichomonas infections from 1538 FU visits

Table 1: Table for Incident STIs among HIV-infected Women

TP-123 GENITAL ULCER DISEASES AMONG HIV INFECTED FEMALE COMMERCIAL SEX WORKERS IN IBADAN, NIGERIA

S.A. Fayemiwo¹, R.A. Bakare², G.N. Odaibo², A.A. Ajayi², A.A. Oni², D.O. Olaleye²

¹ Ladoke Akintola University of Technology, Osogbo, Nigeria

² University College Hospital, Ibadan, Nigeria

Objectives: In this study, we evaluated the prevalence of Genital Ulcer Diseases (GUDs) and HIV -1 infection among female commercial sex workers (FCSWs) in Ibadan, Nigeria.

Methods: A total of two hundred and fifty (250) FCSWs from brothels in Ibadan, Nigeria were screened for presence of HIV antibody and serological evidence of syphilis. Pelvic examinations for signs of sexually transmitted infections were carried out. Endocervical and high vaginal swabs were collected from each of them to establish laboratory diagnosis of STDs.

Results: The age of the CSWs ranged from 15 to 55 years old (mean =25.8 yrs) Majority (98.4%) were Nigerians, while 1.6% were from other Countries. A total of 64 (25.6%) were positive for HIV-1 while 7 (2.8%) had dual HIV -1/2 infection. Analysis of the STDs showed that 49 (19.6%) of the CSWs had GUDs. Herpes genitalis was the commonest GUDs as it occurred in 10% of those screened. Other STDs were chancroid (5.6%), syphilis (4.0%) and lymphogranuloma venereum (LGV) (4%). There was no case of molluscum contagiosum. Sixteen (6.4%) of the CSWs with herpes genitalis had HIV - 1 infection (P=0.0001). The risk ratio of herpes genitalis for HIV acquisition was 3.0 (95% CI: 2.0 -4.4). Syphilis and chancroid were also found to be significantly associated with increased risk of HIV infection. (P =0.0001 and 0.002 respectively). However, only one (10%) of the CSWs with LGV had HIV - 1 infection (P=0.51). After multivariate

logistic regression analysis of the risk factors for HIV infection, adjusted odd ratios for herpes genitalis, chancroid, and syphilis were found to be 3.7, 19.8 and 19.1 respectively.

Conclusion: There is need to educate FCSWs to adopt safer sexual behavior, seek early diagnosis and treatment of genital ulcerative diseases to prevent continued spread of HIV .

TP-124 EPIDEMIOLOGY OF REPORTABLE BACTERIAL STI IN CANADA BETWEEN 1997 AND 2003: AN OVERVIEW OF TRENDS AND NATIONAL STI GOALS

*R.Y. Kropp, S. Shields, C. Bowman, J. Mann, T. Wong
Public Health Agency of Canada, Ottawa, Canada*

Objectives: To provide an overview of the epidemiology of reportable bacterial STI in Canada from 1997 to 2003, and to compare with national STI goals set in 1997.

Methods: Analysis of cases of chlamydia, gonorrhea, and infectious syphilis (primary, secondary, early latent) reported by all thirteen provinces/territories to the Public Health Agency of Canada between 1997 and 2003 (preliminary data).

Results: Since 1997, Canada has experienced significant increases in rates of chlamydia, gonorrhea, and infectious syphilis. Rates of chlamydia declined after 1992 reaching a low of 113.9/100,000 in 1997. A 64.6% increase since 1997 was observed in 2003 (187.5/100,000), far above the national goal of <50/100,000 by 2010. Gonorrhea rates had declined since 1981 reaching a low of 14.9/100,000 in 1997. Rates increased 73.2% to 25.8/100,000 in 2003 (79.2% increase for males, 65.0% for females), a significant diversion from the goal of eliminating domestically transmitted infection by 2010. Highest rates in 2003 were among 15-19 year old females (116.1/100,000) and 20-24 year old males (109.8/100,000). While national gonorrhea resistance to ciprofloxacin remained less than 3% in 2003, rates over 10% were reported from some provinces/territories, leading to modifications of the national recommended treatment. Infectious syphilis, declining since 1984, also reached its nadir in 1997 at 0.4/100,000 followed by a 575% increase to 2.7/100,000 in 2003, far above the national goal to maintain rates <0.5/100,000. While females had a 200% increase, males experienced a 1075% increase over this time period, with 25-29 and 30-39 year old males reporting the highest rates in 2003 (7.2 and 12.2/100,000 respectively).
Conclusions: Significant increases in all three reportable STI have been observed in Canada since 1997, making attainment of national goals set during that time unrealistic, and development of new goals required. New, innovative methods to prevent and control STI in Canada are needed.

TP-125 THE IMPACT OF DISCONTINUATION OF MALE STD SCREENING SERVICES AT A LARGE URBAN COUNTY JAIL – CHICAGO, 2002-2004

J.M. Broad¹, T. Cox¹, S. Rodriguez², M. Mansour², C. Mennella², D. Murphy², J. Raba², L. Branch¹, W. Wong¹

¹ *Chicago Department of Public Health, Chicago, United States of America*

² *Cermak Health Services, CHICAGO, United States of America*

Objective: STD screening programs in correctional settings are effective in identifying high numbers of infections among incarcerated persons. In April 2003, a voluntary universal gonorrhea

(GC) and chlamydia (CT) screening program for male detainees was discontinued at a large urban county jail. To evaluate the impact of this discontinuation on citywide STD morbidity we analyzed GC and CT case reports received from the jail before and after discontinuation of screening services.

Methods: Universal screening for GC and CT was offered to all male detainees prior to April 2003, after which services were limited to testing only symptomatic males. Morbidity data during this universal screening period (April 2002-March 2003) were compared to reports during symptomatic testing (April 2003-March 2004). We compared these results to overall City of Chicago reports to assess the impact of universal versus symptomatic screening for GC and CT at the county jail.

Results: From April 2002-March 2003, jail staff screened approximately 75,000 men for GC and CT and identified 3,832 CT cases and 1,423 GC cases. From the period before and after screening services discontinued, reported CT cases declined from the jail - 82.3% (3,832 to 677 cases) and male cases declined -91.7% (3,329 to 277 cases). Reported GC cases -70.9% (1,423 to 414 cases) and males declined -90.5% (1,133 to 108 cases). Citywide, reported CT cases declined -9.4% (24,885 to 22,552 cases) and males declined -33.6% (8,205 to 5,446 cases). Reported GC cases declined -12.6% (13,249 to 11,577 cases) and males declined -19.4% (6,940 to 5,594 cases).

Conclusions: We observe a decline in the number of cases before and after discontinuation of services and it may represent a lost opportunity to identify gonorrhea and chlamydia among a high-risk population for STDs.

TP-126 STI PREVALENCE IN HIGH RISK GROUPS: A COMPARISON OF ESTIMATES FROM TARGETED SURVEYS AND A GENERAL POPULATION SURVEY

C. Carcamo¹, P.E. Campos¹, P.J. Garcia¹, G.P. Garnett², C. Buendía¹, P. Segura¹, M.A. Chiappe¹, A. Buffard³, K.K. Holmes³

¹ *Universidad Peruana Cayetano Heredia, LIMA, Peru*

² *Imperial College, LONDON, United Kingdom*

³ *University of Washington, SEATTLE, WA, United States of America*

Objectives: To compare STD prevalences in high-risk groups assessed through targeted surveys, with STD prevalences for such groups identified in a general population survey (GPS).

Methods: Three cross-sectional surveys were carried out in 24 Peruvian cities in 2002: A Female Sex Workers (FSW) survey, a Clients of FSW survey and a household based GPS. The surveys collected risk behavior data as well as samples for STD screening. The first two surveys were carried out at sex work venues. FSW were defined as women offering sex services at those venues. Clients were defined as men exiting from sex work venues after receiving sex services. The GPS enrolled 18 to 29 year old male and female residents of the selected cities. Women involved in commercial sex (WICS) in the GPS were defined as women reporting paid sex with any of their last 3 sex partners. High risk clients of FSW in the GPS were defined as men reporting having recent (within 12 months) unprotected sex with female sex workers.

Results: 4528 FSW and 4621 clients of FSW were enrolled in the targeted surveys, while 233 WICS and 447 clients of FSW were identified in the GPS. Gonorrhea was more common among FSW

than among WICS (3.5% vs. 0.5%, $p=0.02$) while HIV infection was more common among WICS than among FSW (1.0% vs. 0.6%, $p=0.02$). Prevalences tended to be higher in FSW for syphilis, trichomoniasis and chlamydial infection. Only gonorrhoea prevalences were significantly higher for clients of FSW enrolled in the GPS than for those enrolled in the targeted survey (0.2% vs. 1%, $p=0.008$). STD prevalences were lower for low risk male and females in the GPS. Conclusion: General population surveys and targeted surveys can provide access to groups at similar risk for STI.

SESSION: TP - C17A - EPIDEMIOLOGY - MULTIPLE STI'S

TP-127 STI AND HEPATITIS C IN CANADIAN STREET YOUTH 1999-2003: WHAT ARE THE RATES IN THIS POPULATION?

M. Gully, S. Shields, C. Bowman, J. Phelan, T. Wong
Public Health Agency of Canada, Ottawa, Canada

Objectives: To report on the prevalence of STI and Hepatitis C (HCV) in Canadian Street Youth (SY) and examine trends over time in this population.

Methods: The Enhanced Surveillance of Canadian Street Youth (ESCSY) is a repeated cross-sectional survey carried out in 1999, 2001 and 2003. 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 in 7 cities across Canada. Questionnaires were administered and SY were invited to provide biological samples to test for various pathogens. Statistical analyses were carried out using SAS version 8.

Results: This analysis is based on 1645, 1427 and 1656 youth from 1999, 2001 and 2003 data collection years respectively, who provided blood and/or urine samples and responded to the questionnaire. Prevalence of chlamydia (CT) was 8.6%, 11.5% and 11.0% (1999, 2001 and 2003 respectively, trend $p=0.04$). Prevalence of gonorrhoea (GC) was 1.4% (1999 and 2001) and increased to 3.1% in 2003 (trend $p=0.001$). Prevalence of syphilis increased from 0.0% in 2001 to 0.7% in 2003 ($p=0.007$). HSV-2 prevalence increased between 2001 and 2003 (14.2% to 18.8% $p=0.004$) as did rates of HSV-1 (56.0% and 61.0%, 2001 and 2003 respectively, $p=0.02$). Rates of Hepatitis C (HCV) were 4.0%, 3.6% and 4.5% in 1999, 2001 and 2003 respectively. **Conclusions:** SY are at increasing risk for STI and other blood-borne pathogens, with substance use and high-risk behaviours acknowledged to be contributing factors. Further analysis examining associations between these infections and demographics, sexual behaviours and sex trade will help in targeting prevention and control measures in this population.

TP-128 EVALUATION OF RISK SCORE ALGORITHMS FOR DETECTION OF UNDIAGNOSED CHLAMYDIAL AND GONOCOCCAL INFECTIONS IN AN EMERGENCY DEPARTMENT SETTING

A. Al-Tayyib¹, W.C. Miller¹, R.E. Rothman², M.A. Villarroel³, S.M. Rogers³
¹ University of North Carolina Chapel Hill, Chapel Hill, United States of America
² Johns Hopkins School of Med, Baltimore, United States of America
³ RTI International, District Of Columbia, United States of America

Objective: Develop and evaluate risk score algorithm(s) to predict undiagnosed chlamydial (Ct) and gonococcal (GC) infection in an ED.

Methods: Patients ages 18-35 attending the Johns Hopkins Adult ED were screened for Ct and GC; participants provided urine specimens and self-administered vaginal swabs for PCR and LCR testing. Participants completed a brief ACASI questionnaire.

Results: Between November 2002 and December 2004, 5,219 eligible patients were screened for Ct and GC. Overall, 7.3% tested positive for Ct and 3.6% tested positive for GC. Detection of Ct was associated with age < 25 [OR=3.2, 95% CI:2.5, 4.1], having > 1 partner past 3 months [OR=1.5, 95% CI:1.2, 1.9], and having a partner with concurrent partners [OR= 1.5, 95%CI:1.1, 1.9]. Detection of Ct was not associated with gender, prior Ct/GC diagnosis, having a partner diagnosed with STD past 2 years, or prior symptoms.

Detection of GC was associated with female gender [OR= 2.6, 95% CI:1.8, 3.7], age < 25 [OR=2.2, 95% CI: 1.6, 3.2], >1 partner past 3 months [OR=1.7, 95% CI:1.2, 2.4], prior diagnosis of Ct/GC past 2 years [OR=1.8, 95% CI:1.2, 2.6], having a partner with concurrent partners [OR= 1.7, 95%CI:1.2, 2.5] and reporting prior symptoms [OR=2.8, 95% CI:1.8, 4.2]. Detection of GC was not associated with having a partner diagnosed with STD.

Using screening criteria of age <25, > 1 partner past 3 months, and having a partner with concurrent partners was 76% sensitive in detecting undiagnosed Ct and 70% sensitive in detecting GC in this population.

Conclusions: Risk score algorithm(s) could be useful in emergency departments with limited resources and moderate prevalence of Ct and GC to determine expected number of detected cases using differing screening criteria.

TP-129 SEXUALLY TRANSMITTED INFECTIONS (STIS) AMONG WOMEN ATTENDING PUBLIC STI CLINICS IN BANGKOK

L.J.M. Bollen¹, C. Sirinak², D. Suksripanich¹, P. Nhurod², R. Anekvorapong², P. Virapat¹, W. Aueaksorn¹, S. Supawitkul¹, W.C. Levine³, K.K. Fox⁴
¹ Thailand MOPH - US CDC Collaboration, Nonthaburi, Thailand
² Bangkok Metropolitan Administ, Bangkok, Thailand
³ Global AIDS Program (GAP), CDC, Atlanta, United States of America
⁴ Thai MOPH- US CDC; GAP, Bangkok, Thailand

Objectives: Reported rates of STIs decreased in Thailand following implementation of the 100% condom program. However, most settings do not screen for chlamydial infections. To enhance the detection of STIs, we supplemented routine screening with a test for chlamydial infection and a second test for gonorrhoea among women at public STI clinics in Bangkok.

Methods: All women attending three public STI clinics in Bangkok from May 2004 until January 2005 were asked about sexual behavior, including sex work, and STI-related symptoms. Routine screening tests for STIs (clinical examination for presence of genital ulcer, endocervical culture for gonorrhoea, wet mount for trichomoniasis, and serology for syphilis) were performed. In addition, endocervical specimens were tested by a nucleic-acid probe (Gen-Probe PACE 2C) for chlamydial infection and gonorrhoea. STI testing, treatment, counseling, and condoms were provided free of charge. **Results:** We screened 318 women, including 119 women who reported sex work. Routine screening showed an STI prevalence of 10.1% (37/318); 7 (2.2%) genital ulcers, 8 (2.5%) gonorrhoea, 22 (6.9%) trichomoniasis, and 2 (0.6%) syphilis, including two co-infections. Gen-Probe testing detected 32 (10.1%) chlamydial infections and 15 (4.7%) gonorrhoea cases, of which 7 were newly detected. Together, Gen-Probe and routine screening detected an overall STI prevalence of 22.3% (71/318), including 7 co-infections. Overall STI prevalence was similar among women reporting and not reporting sex work (22.7% vs. 22.1%; $p=0.9$) and was not significantly higher among women with symptoms compared to those without symptoms (25.0% vs. 17.3%; $p=0.1$).

Conclusion: Adding Gen-Probe testing to routine screening doubled the STI prevalence among women attending STI clinics in Bangkok. Chlamydial infection was common. These data indicate the need to maintain an effective STI control program in Bangkok and to develop strategies for using additional tests to optimize STI control.

TP-130 ESTIMATED HIV AND SYPHILIS CO-TRANSMISSION AMONG MEN WHO HAVE SEX WITH MEN DURING A SYPHILIS OUTBREAK

*R. Kerndt, L.V. Smith, G.M. Aynalem, K.M. Hawkins, E. Cordero, L. Borenstein, R. Kim-Farley, J.E. Fielding
Los Angeles County, Los Angeles, United States of America*

Objective: There is concern that an increased HIV incidence in Los Angeles County among men that have sex with men (MSM) may be occurring concurrent with an ongoing epidemic of syphilis. A study was conducted to determine the frequency of HIV infection contracted near the time of syphilis infection and to understand whether men infected with syphilis are acquiring HIV concurrently. **Methods:** Serum specimens with early syphilis infection were screened for HIV-1 antibodies using standard enzyme-linked immuno sorbent assay (EIA). A less sensitive (LS) second HIV-1 antibody test called the 'detuned HIV assay' was performed on the stored sera that were HIV-EIA positive. Associations of recent HIV infection and demographic and behavioral characteristics were assessed using Chi-square and logistic regression analysis.

Results: Of the 268 specimens banked from men with early syphilis, 90 were HIV positive by standard HIV EIA testing. Of these 90, 13 (14.4%) were recent HIV infections testing 'non-reactive' by the less-sensitive enzyme-linked immuno sorbent assay (LS-EIA) or detuned assay. Twelve (92.3%) of the recent infections were among men who have sex with men (MSM). One (7.6%) had primary syphilis, seven (53.8%) had secondary syphilis, and five (38.5%) had early latent syphilis. Nine (69.2%) reported sex with anonymous partners, ten (76.9%) reported having oral sex, ten (76.9%) reported having anal receptive sex, and three (23.1%) reported

using a condom. Four (30.8%) met their partner at bathhouses and sex clubs and two (15.4%) through the Internet. Logistic regression showed no significant association between recent HIV infection and demographic or behavioral characteristics.

Conclusion: The syphilis epidemic in Los Angeles County is contributing to increased HIV transmission among men. HIV sero-incidence estimates using the detuned assay method will increase our understanding of concurrent syphilis and HIV infection.

TP-131 SEXUALLY TRANSMITTED AND BLOOD-BORNE INFECTIONS AMONG WOMEN WITH DRUG AND ALCOHOL DEPENDENCIES

*B.P. Stoner, C.C. Meeks, A. Ben-Abdallah, J.L. Long, L.B. Cottler
Washington University, St Louis MO, United States of America*

Objectives: Individuals with drug, alcohol, and other substance dependencies constitute a high-risk population for sexually transmitted infections (STI) and blood-borne infections (BBI). However, infection prevalence rates in these groups are often not well-documented. We assessed STI and BBI prevalence in a community-based sample of out-of-treatment substance-abusing women in St. Louis, MO (USA).

Methods: Women with heavy alcohol use (AU) or illicit drug use (DU) were recruited for evaluation. AU was determined by individual self-reported behavior, while DU was determined by urine toxicology screening. Upon study enrollment, all participants were tested for *Neisseria gonorrhoeae* (GC) and *Chlamydia trachomatis* (CT) by amplified urine probe. Additionally, serologic tests for syphilis (RPR), HIV antibody, and hepatitis C virus (HCV) antibody were performed. **Results:** At total of 915 women were enrolled in the study (AU 368, DU 547). Most participants were African-American (82%) and over 30 years of age (74%). At enrollment screening, 21.4% of participants were found to have HCV antibody. Prevalence rates of other BBI and STI were as follows: CT 5.1%, syphilis 3.8%, GC 2.3%, HIV 1.6%. Rates of infection with GC, CT, and HIV were similar among AU and DU samples. However, compared to women with alcohol dependencies, those who were heavy drug users had higher rates HCV infection ($p < .001$) and syphilis ($p = .05$).

Conclusions: BBI and STI rates were elevated in a cohort women with alcohol and drug dependencies. Screening, treatment, and referral of substance-abusing individuals are important elements of community-level infection control, since most of these persons do not routinely seek medical care. Targeted outreach efforts for STI and BBI screening, including on-site community-based testing and treatment, are appropriate.

TP-132 ETIOLOGY OF GENITAL ULCERS IN KARNATAKA, INDIA

M. Becker¹, R. Washington², J. Stephen², I. Maclean¹, M. Alary³, J. Blanchard¹, S. Moses¹

¹ *University of Manitoba, Winnipeg, Canada*

² *St. John's Medical College, Bangalore, India*

³ *Laval University, Quebec City, Canada*

Objectives: Current sexually transmitted infection (STI) treatment algorithms in India are based on syndromic case management principles, but the etiology of genital ulcers in India has not been well studied. The objectives of this study are:

a) To determine the frequency of identification of Herpes simplex virus-type 2 (HSV-2), *Treponema pallidum* (Tp) and *Haemophilus ducreyi* (Hd) from genital ulcers of both male and female patients presenting to clinics.

b) To estimate HSV-2, syphilis and HIV antibody prevalence in the same population.

Methods: This study is being conducted in five STI/ gynecology clinics in different regions within the state of Karnataka, India. Subjects include men or women presenting to the clinics with the complaint of genital ulcers. A dry swab sample from the ulcer exudate is collected and tested for HSV-2, Tp and Hd using multiplex PCR. A sample of blood is collected and tested for HSV-2, syphilis and HIV antibodies.

Results: As of April 2005, 103 persons with genital ulcers have been enrolled, of which results are available for 63 men and 23 women. HSV-2 has been identified by mPCR in 22% of men and 17% of women, Tp in one male individual and no Hd has been identified to date. Forty-eight, 10 and 8% of men and 65, 17 and 9% of women were positive by serology for HSV-2, both RPR and TPHA, and TPHA alone respectively. HIV test results are pending.

Conclusions: Karnataka is one of the six high HIV prevalence states in India, with an estimated HIV prevalence in the adult population of 1.7 percent. This study on the etiology of genital ulcers will have important implications for the enhancement of syndromic case management guidelines for genital ulcer disease in India, which in turn will impact on HIV transmission.

TP-133 EPIDEMIOLOGY OF SEXUALLY TRANSMITTED INFECTIONS IN ISRAEL

D. Chemtob¹, D. Gandacu², J.M. Zenilman³, Z. Mor⁴, N. Bessudo-Manor⁴, A. Leventha⁵

¹ Ministry of Health, Jerusalem, Israel

² Dept. of Epidemiology, Moh, Jerusalem, Israel

³ Johns Hopkins SPH, Baltimore, United States of America

⁴ Dept. of Tuberculosis & Aids, Jerusalem, Israel

⁵ Public Health Services, Jerusalem, Israel

The rising trend of Sexually Transmitted Infections (STI) that occurred in several Western countries also affected Israel in the last few years.

Objectives: To review the current epidemiological data and to address additional issues for getting a more accurate overview towards a comprehensive evidence-based policy on STI prevention and treatment in Israel.

Methods: We analyzed all notified data to the MOH related to infectious syphilis, gonorrhoea and chlamydia trachomatis during the period 1998-2004, and each available report on STI in Israel, both in Hebrew and English.

Results: During the period 1998-2004, the trend of each disease had a unique pattern, probably influenced by different screening procedures, changes in case definition, different mix of population, and better access of care for high risk populations in designated walk-in clinics. Annual incidence rates for individuals aged 15-44, per 100,000 were as followed:

Notification year	Infectious syphilis	Gonorrhoea	Chlamydia trachomatis
1998	2.1	2.4	NA
1999	1.1	8.1	NA
2000	2.2	16.8	1.7
2001	0.6	30.3	2.6
2002	3.6	32.0	2.8
2003	1.8	20.8	3.9
2004	2.5	19.1	7.0

Table 1:

NA: Not Available. Concerning Male/Female ratio, incidence rates were higher among female for infectious syphilis, in contrast to those related to gonorrhoea and chlamydia (10-20 time fold higher for males and twice fold, respectively). In the presentation we will analyze the different issues and trends mentioned above.

Conclusions: Incidence rates of syphilis, gonorrhoea and chlamydia are still relatively low in Israel. Nevertheless, we hypothesize that under-reporting and other factors may have heavily bias these rates. Further surveys, including behavioral ones, are needed for a more comprehensive evidence-based policy on STI.

TP-134 HIV AND STI CO-INFECTIONS IN GERMANY: RESULTS OF THE SENTINEL SURVEILLANCE SYSTEM, 2004

V Bremer, U Marcus, A Hofmann, O. Hamouda

Robert Koch-Institut, BERLIN, Germany

Objectives: Sexually transmitted infections (STIs) increase the risk of transmission of HIV. The role of STI and HIV co-infection is unknown in Germany. Since 2002, a STI surveillance system is assessing occurrence and trends of STIs in Germany. The role of STI and HIV co-infection was investigated using sentinel data.

Methods: Data have been collected from 233 local health offices, hospital-based STI clinics and private practitioners. For every infection with HIV, N. gonorrhoea, Chlamydia trachomatis, syphilis or trichomonas, physicians complete a standardised questionnaire regarding diagnosis, symptoms, presumed mode of transmission and demographic information. Additionally, the patients complete an anonymous questionnaire about sexual risk behaviour and the likely route of transmission. The forms are matched using a unique identifier number. Data were analysed to detect STI trends and co-infections.

Results: Between January 2003 and December 2004, 3527 patients were reported through the sentinel system. 393 (11.1%) patients were diagnosed with >1 STI. 50.7% of the patients were male and of these, 60.9% men who have sex with men (MSM). Median age was 31 years. Among the reported STIs, there were 634 syphilis and 519 newly diagnosed HIV-infections. A known HIV-infection was present in 328 (9.3%) of all STI patients and 198 (31.2%) of all syphilis patients. Furthermore, 64 (10.1%) patients were simultaneously diagnosed with syphilis and HIV. Of these, all but one patient were male, 86% were MSM, 75% were of German origin and the median age was 36 years. The proportion of HIV+ was higher among syphilis patients than among other STI patients (OR 2.8; CI95% 2.3-3.3).

Conclusions: Co-infections, especially HIV and syphilis, are frequently observed in Germany. Syphilis patients are more frequently HIV+ than other STI patients. Thus, an HIV test should be routinely offered to STI patients a few weeks after their initial diagnosis.

TP-135 TWO YEARS OF STI SENTINEL SURVEILLANCE IN GERMANY: WHAT IS THE OUTCOME?

V. Bremer, U. Marcus, A. Hofmann, O. Hamouda
Robert Koch-Institut, Berlin, Germany

Objectives: As only syphilis and HIV are notifiable in Germany, a STI sentinel surveillance system was set up in Germany in late 2002. The results of the first two years of the sentinel are presented.

Methods: The nation-wide sentinel system collects data from local health offices, hospital-based STI clinics and private practitioners. For infection with HIV, N. gonorrhoea, Chlamydia trachomatis, syphilis or trichomonas, physicians complete a standardised questionnaire including diagnosis, presumed mode of transmission and demographic information. In addition, patients are asked to complete a questionnaire about sexual risk behaviour and the likely mode of transmission. The questionnaires are matched using a unique identifier. Data are checked for plausibility and analysed regularly.

Results: Between January 2003 and December 2004, a median of 19714 clients/quarter attended the sentinel sites. There were 869 cases of chlamydia, 596 gonorrhoea, 634 syphilis, 519 HIV and 162 trichomoniasis. 1787 (50.7%) patients were male. Median age was 31 years, female STI patients were younger than men (27 vs. 34 years; $p < 0.001$). Women were more often of foreign origin than men (68.2% vs. 26.4%, $p < 0.001$). Of the women, 647 (37.2%) originated from Eastern or Central Europe. For male STI patients, sex between men (MSM) was the most commonly reported mode of transmission (60.9%), whereas 63.2% of the women acquired STIs through sex work. 35.1% of the patients filled out the patient form. Of those, 22.0% of men and 42.5% of women reported 'always' using condoms with casual partners. Women and men reported a median of 2 (range 0-919) and 3 (0-180) partners within the last 6 months, respectively.

Conclusion: Although not representative, data show numerous cases of STIs in Germany, especially among MSM and sex workers. Condom use should be emphasised in all groups. Targeted prevention offers for migrant sex workers are needed.

TP-136 SCREENING FOR CHLAMYDIAL OR GONOCOCCAL INFECTIONS AMONG FAMILY PLANNING WOMEN IN MOZAMBIQUE

M. Westmark¹, L. Newman¹, I. Nhatave², E. Folgosa³, C. Taboy¹,
I. Benech¹, A. Vergara¹, R. Ballard⁴

¹Centers for Disease Control, Maputo, Mozambique

²Ministry of Health, Maputo, Mozambique

³Faculty of Medicine, UEM, Maputo, Mozambique

⁴Centers for Disease Control & Prevention, Atlanta, GE, United States of America

Objectives: To evaluate potential screening strategies for improving detection of Chlamydia trachomatis (CT) or Neisseria gonorrhoeae (NG) infections among women attending family planning clinics (FPCW) where laboratory testing is not available.

Methods: In 2003, 457 women were enrolled in a prevalence study of sexually transmitted infections among FPCW in four sites across Mozambique. CT and/or NG (CT/GC) infections were diagnosed by Roche polymerase chain reaction (PCR) in urine specimens and

confirmed by an in-house real-time multiplex PCR assay. Women presenting with symptoms of vaginal discharge or lower abdominal pain were treated according to local syndromic management guidelines. A strategy of screening for CT/GC infection among asymptomatic women by performing speculum exam was evaluated. The optimal strategy would maximize sensitivity and positive predictive value (PPV) (minimizing over-diagnosis).

Results: Among all FPCW, CT/GC prevalence was 12% (53/457). 93 women presenting with symptoms accounted for only 30% (16/53) of infections. CT/GC prevalence among women not presenting symptoms remained 10% (37/364). Screening of the remaining 364 women based on speculum exam findings of vaginal discharge or mucopurulent cervicitis identified an additional 29 women with CT/GC, with sensitivity of 78% (29/37) and a PPV of 16%. Overall, by combining the syndromic treatment of women with symptoms, with the screening of asymptomatic women, the overall sensitivity increased to 85% ((16+29)/53) and the PPV remained 16%.

Conclusions: This study highlights the need for on-site diagnostics to detect CT/GC among symptomatic and asymptomatic FPCW in Mozambique. However where this is not yet possible, a strategy involving syndromic management of symptomatic women combined with screening of asymptomatic women based on speculum exam findings would detect 85% of infections. Further analysis is necessary to assess the feasibility of speculum exams, the role of other vaginal etiologies, cost effectiveness, and inclusion of risk factors to improve accuracy.

TP-137 GENITAL WARTS AND GENITAL HERPES IN GERMANY – WHAT DO WE KNOW?

V. Bremer, U. Marcus, A. Hofmann, O. Hamouda
Robert Koch-Institut, BERLIN, Germany

Objectives: There is no recent information on the epidemiology of genital warts (HPV) and genital herpes (HSV) in Germany. A STI sentinel surveillance system was set up in Germany in late 2002 including HPV and HSV.

Methods: The nation-wide sentinel system collects data from 233 local health offices, hospital-based STI clinics and private practitioners. Case definitions of HPV and HSV were based on clinical diagnosis. Besides the number of visits, aggregated information was collected on HPV and HSV including age and sex distribution as well as type of sentinel site quarterly. Data were checked for plausibility and analysed regularly.

Results: Between January 2003 and December 2004, a median of 19,714 clients per quarter attended the sentinel sites. Within this period, a total of 3,671 HPV (1,889 as first episode) and 1,748 HSV (780 as first episode) were diagnosed compared to 1,893 diagnoses of chlamydia and 883 diagnoses of gonorrhoea. Age and sex distribution was available for 2,234 HPV and 1,011 HSV. 55.7% of HPV and 46.2% of HSV were male. More female than male HPV and HSV cases were below 25 years old (HPV: 42.5% vs. 26.8%; $p < 0.001$ and HSV: 46.1% vs. 23.8%; $p < 0.001$). 63.2% of HPV and 82.6% of HSV cases were reported by private practitioners. The median number of HPV and HSV cases per quarter was 226 and 120, respectively, with a peak of 500 cases and 165 cases between July and September 2003.

Conclusion: Although not representative, these data are currently the only epidemiological information on HPV and HSV in Germany. Among STIs, HPV and HSV are the most common. Most of HPV and HSV are diagnosed by private practitioners. Prevalence studies are urgently needed to further evaluate the role of HPV and HSV in Germany and identify risk groups and behaviour.

TP-138 FOLLOW-UP OF CHLAMYDIAL AND GONOCOCCAL INFECTIONS IDENTIFIED IN AN EMERGENCY DEPARTMENT SETTING

A. Al-Tayyib¹, M.A. Villarroe², N. Willard³, J.M. Ellen³, W.C Miller¹, S.M. Rogers²

¹ University of North Carolina Chapel Hill, Chapel Hill, United States of America

² RTI International, District Of Columbia, United States of America

³ Johns Hopkins University, Baltimore, United States of America

Objective: To identify characteristics associated with successful follow-up of chlamydial (Ct) and gonococcal (GC) infections identified in an Emergency Department (ED) setting.

Methods: Adult patients ages 18-35 attending the Johns Hopkins Adult ED were screened for Ct and GC; participants provided urine specimens and self-administered vaginal swabs for PCR and LCR testing. Positive participants were re-contacted and referred to the JHH General Clinical Research Center (GCRC) for examination, additional testing, and treatment. Patients treated in the ED or by another provider were not re-contacted. Partners of infected participants were contacted by Disease Intervention Specialists (DIS), referred to the GCRC, tested, and treated.

Results: Between November 2002 and December 2004, 579 patients (11%) of eligible patients screened in the ED tested positive for Ct and/or GC. Of those testing positive, 227 (39%) were contacted by DIS and returned to the GCRC for follow-up. Successful follow-up of index participants was associated with female gender [OR=2.0, 95% CI:1.5, 2.7], age less than 25 [OR=2.5, 95% CI:1.8, 3.4], having a partner who had concurrent partners [OR=1.7, 95% CI:1.2, 2.4], having more than 2 partners in the past 2 years [OR=1.5, 95% CI:1.1, 2.1], and antibiotic use in the past 3 months [OR=0.6, 95%CI: 0.4, 0.9]. Successful follow-up of index patients was not associated with type of insurance coverage or where they usually sought care. Participants named 246 partners, of which DIS successfully located 213 (87%). Of the partners notified, 150 were treated at the GCRC and 141 were enrolled. **Conclusions:** Provision of patient and partner notification services within an ED-based screening program can be an effective means of managing current undiagnosed Ct and GC. Demographic and behavioral characteristics could have effect on the success of these services.

TP-139 INCIDENCE RATES OF STD AMONG PROSPECTIVELY FOLLOWED STD CLINIC PATIENTS, UNITED STATES: A CASE FOR TARGETING SERVICES TO YOUTH

M.L. Kamb

Centers for Disease Control (CDC), Atlanta, GA, United States of America

Objectives: STD incidence is hard to obtain as long-term follow-up is unusual. We used prospective follow-up data to calculate age-specific annual incidence of gonorrhoea (GC), chlamydia (CT), syphilis (S), and trichomonas (TV) infection among a high-risk cohort.

Methods: Data were from a 1993-98 trial of counseling efficacy in HIV-negative, heterosexual patients >13 years from 5 urban STD clinics. Patients were followed every 3-months and had exams and STD testing at baseline, 6 and 12 months and at any interim visits. Laboratory testing was for GC (culture and PCR), CT (PCR), S (serology) and (women only) TV (wet prep and/or culture). Incidence was calculated per 100 person years (py) based on actual follow-up time.

Results: Of 3,384 (78%) patients with at least one follow-up exam, 718 (21%) contributed 992 new infections: GC=319, CT=357, S=31, TV=285. Overall STD incidence was 30.6 per 100 py and highest for CT (11.0 per 100 py), followed by GC (9.9 per 100 py), TV (8.8 per 100 py) and S (1.0 per 100 py). (See table). For women, CT incidence was higher than GC; for men GC and CT were roughly similar. By age-group, incidences of GC and CT were highest in youngest patients (< 20 years), dropping by age-group with lowest rates in oldest patients. TV and S rates were more similar across age-groups but highest in older patients. In women overall, TV incidence was higher than other STD; but CT was higher in the youngest age-group.

Conclusions: STD incidence was high, and GC and CT rates were much higher in adolescents than others. These data suggest programs targeting youth are critical, and that screening programs may be beneficial for men as well as women. For women, TV is a common STD regardless of age.

Incidence/100 py	GC	CT	Syph	T Vag	All STD (without TV)
Men (N = 1869)	11.43	10.20	1.23	--	22.9
14 – 19 yrs (n=230)	23.07	19.84	0	--	42.9
20 – 24 yrs (n=498)	13.87	15.60	0.65	--	30.2
25 – 29 yrs (n=375)	6.93	7.21	0.28	--	14.2
30+ yrs (n=834)	8.72	5.50	2.41	--	16.6
Women (N=1515)	6.44	12.05	0.62	19.62	20.6
14 – 19 yrs (n=330)	14.90	25.59	0	17.49	40.5
20 – 24 yrs (n=454)	8.34	11.82	0.70	15.06	20.9
25 – 29 yrs (n=271)	6.41	9.80	0.38	21.48	16.6
30+ yrs (n=460)	2.15	4.25	1.12	24.30	9.0

Table 1: STD incidence rates in men and women, by age-group

TP-140 ABERRATION DETECTION IN STD SURVEILLANCE

M.C. Samuel¹, J. Stover², C. Delcher², D. Gilson¹, J. Chase¹, T. Aragon³, G Bolan¹

¹ California Department of Health Services, Oakland, United States of America

² Virginia Department of Health, Richmond, United States of America

³ Center for Infec. Dis. Prepar, Berkeley, United States of America

Objectives: Systems to detect aberrations – unusual occurrences of events – are increasingly being developed and applied in public health surveillance, particularly related to bioterrorism. The concepts and tools are applicable to STD surveillance, but there are few examples in the literature. Aberration detection systems using automated analysis, reporting and notification technology may detect STD outbreaks, reporting problems, or other aberrations earlier than standards methods. We describe methodological issues and prototype systems developed in California and Virginia.

Methods: The California STD aberration detection system analyzes case-based surveillance data using algorithms including: CDC's 'historical limits', linear and Poisson regression, and cumulative sums. California's system uses R to produce automated web-based county-specific reports and e-mail alerts. Virginia's web-based Strategic Aberration Monitoring (S.A.M.) system analyses case-based surveillance data and identifies aberrations using the SAS procedure 'macontrol' algorithm. S.A.M. uses SAS, ACCESS, and Dreamweaver to produce maps/graphs, depicting geographic and temporal aberrations.

Results: Images depicting the California and Virginia systems are included as Figures. California's system includes time trends for local health jurisdictions and visual display and statistical alerting of current cases compared to historical values. Virginia's systems includes a 'clickable' map highlighting districts with aberrant rates, time trends with beyond-historical-limits bounds, and detailed current data for each district. Both States are enhancing the functionality of the systems and refining algorithms to improve the sensitivity and predicative value. Known outbreaks in both states would likely have been detected earlier had these systems been in place in prior years.

Conclusions: STD aberration detection systems are an important tool for early detection and control of STD outbreaks and reporting abnormalities. Widespread application of such systems will require development of analytic tools, and collaboration with local partners.

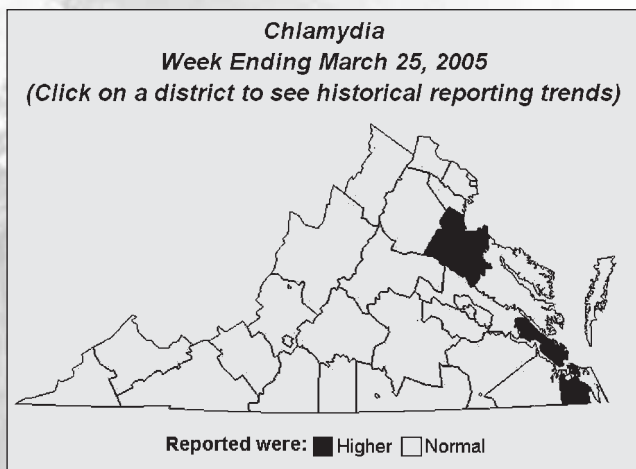


Table 1: Virginia S.A.M screenshot 1

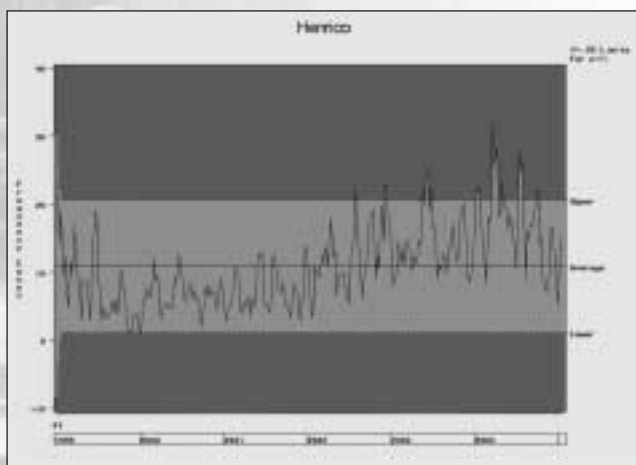


Table 2: Virginia S.A.M screenshot 2

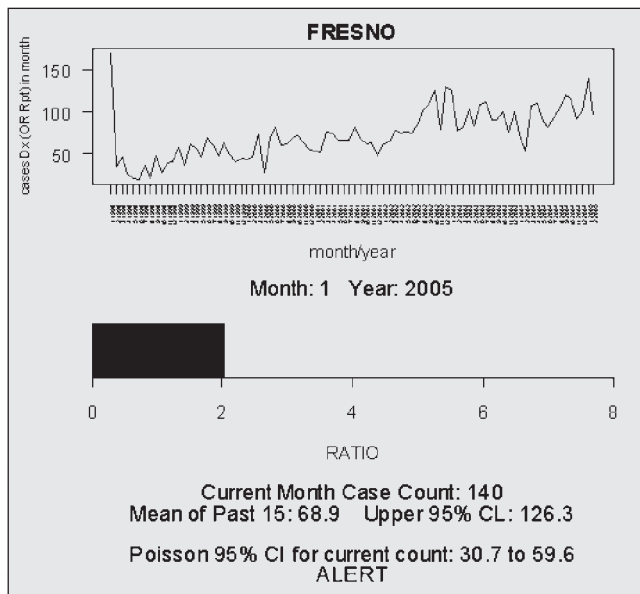


Table 3: California aberration detection system example 1

TP-141 A QUALITATIVE ANALYSIS OF GENDER DIFFERENCES FOR PARTNER TREATMENT OF URETHRITIS AND TRICHOMONIASIS TO SEX PARTNERS

P. Kissinger, N. Schmidt, H. Mohammed, G. Richardson-Alston, D. Rock, S. Calderon
Tulane University, New Orleans, United States of America

Objectives: To explore gender differences for partner treatment for women who have trichomonas vaginalis and men who have urethritis.

Methods: Men and women who previously enrolled in the RCT of patient delivered partner treatment versus booklet referral versus standard partner referral were asked to participate in semi-structured in-depth interviews at least thirty days after their initial diagnoses. All participants were probed regarding their clinic visits, communication with partners, treatment of partners, changes in partners' relationship status, and follow up visits. Data were analyzed using grounded theory methodology.

Results: Men (n=22) and women (n=20) reported little or no sexual encounters in the month after diagnoses with an STI. The majority of male participants said they ended sexual relationships with most of their female partners because they did not want to get re-infected or because she was only a casual partner. Women more often reported that they were in long term and monogamous relationships at the time of diagnosis and did not change their relationship status with these partners. Women more often described detailed verbal communication with their partners regarding the STI and active follow up in making certain partners were treated compared to male participants who described more passive disclosure with little follow up. Female participants reported more concern in verifying their infection was successfully treated and apprehension about the possibility of re-infection than male participants.

Conclusion: Motivations for disclosing and type of disclosure for an STI to a sex partner may be different for men and women. These differences should be further explored to ensure that sex partners are getting accurate information and treatment.

TP-142 RISE OF STI DIAGNOSES AMONG MEN WHO HAVE SEX WITH MEN (MSM) BUT NOT AMONG HETEROSEXUALS IN MADRID, SPAIN

J. del Romero¹, J. Ballesteros¹, P. Clavo¹, B. Menéndez¹, G. Moral¹, S. Guerras¹, D. Rojas², J. Castilla³, C. Rodríguez¹

¹ Centro Sanitario Sandoval (SMS), MADRID, Spain

² Universidad Autónoma, MADRID, Spain

³ Instituto de Salud Pública, NAVARRA, Spain

Objective: To detect recent changes in the incidence of sexually transmitted infections (STI) among men who have sex with men (MSM) and heterosexuals who have sexual risk behaviors.

Methods: We measured the number of microbiologic and/or serologic diagnoses of primary and secondary Syphilis, Gonorrhea, Chlamydia and HIV among patients attended in a STI/HIV clinic in Madrid between 2002 and 2004. A χ^2 test of linear trend was used to analyze changes in the frequency of STI diagnoses.

Results: Number of patients screened for STI increased from 4.022 in 2002 to 4.432 in 2004. The number of heterosexuals remained stable while the number of MSM increased. Indeed, MSM represented the 29.5% of patients in 2002 and the 37.3% in 2004. Among MSM, the frequency of recent syphilis diagnoses rose from 1.4% to 3.1% ($p=0.008$), and the diagnoses of gonorrhea also increased from 3.1% to 4.8% ($p=0.017$). The HIV prevalence ranged between 4.7% and 6%, and that of Chlamydia ranged between 2% and 2.3%. These changes did not reach statistical significance.

Among people with heterosexual risk practices, the HIV prevalence ranged between 1.4% and 1%, and the gonorrhea prevalence maintained around 0.4%. We did not find statistical differences through the time. In the other hand, the frequency of Chlamydia infections decreased from 6% to 4.3% ($p=0.0006$), and recent syphilis decreased from 0.4% to 0.04% ($p=0.009$).

Even if MSM only represent one third of patients attended in 2004, they account for the 98% of recent syphilis diagnoses, the 87% of Gonorrhea and the 72% of HIV infections.

Conclusions: We have found an increase in the number of syphilis and gonorrhea diagnoses in MSM but not in heterosexuals. Because of the consequences that an STI may have on the HIV transmission, changes in prevention efforts should be considered.

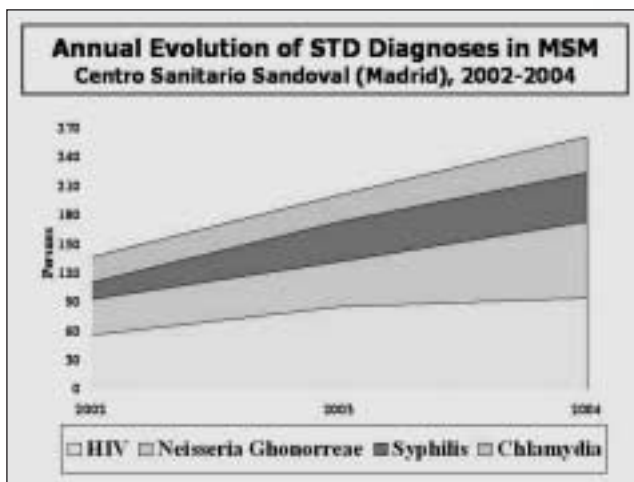


Table 1:

TP-143 SCREENING COLLEGE STUDENTS FOR ASYMPTOMATIC INFECTION WITH CHLAMYDIA AND GONORRHEA

J. Parham¹, L.A. Mena¹, O. Harper², T. Barnes³, N.L. McGloster³

¹ University of Mississippi Medical Center, Jackson, Mississippi, United States of America

² Jackson State University, Jackson, Mississippi, United States of America

³ Mississippi Dept. of Health, Jackson, Mississippi, United States of America

Objectives: Chlamydia trachomatis (CT) and Neisseria gonorrhoea (GC) continue to be a significant public health problem in the southeastern U.S. Urine-based testing allows the expansion of screening programs outside of clinical settings. We present here an assessment performed by the Mississippi Department of Health of the prevalence of asymptomatic CT and GC infection in a group of college students.

Methods: Male and female students were offered screening for CT and GC during routine physicals; first-void urine samples were tested using Gen-Probe Aptima[®] Combo 2. Demographic data was recorded; a short, self-administered questionnaire was also obtained to elicit sexual history, condom usage and perceived risk of infection. Students reporting no prior sexual intercourse were excluded from analysis.

Results: All 287 students approached provided urine and completed questionnaires. The mean age at time of testing was 20 (16 to 25); 91% of participants were African-American. Previous sexual intercourse was reported by 262 (91%) students; of these, 152 (58%) were males and 110 (42%) were females. Median age of sexual debut was 15 for males and 17 for females. Sex within the last 3 months was reported by 85% of sexually active students; consistent condom use was reported by 47%. CT and GC infection rates were 9.9% (26/262) and 0.8% (2/262) respectively. CT infection rate in males was 9.2% and 10.9% in females. Students' perceived risk or reported condom usage did not significantly affect rates of infection.

Conclusions: In this population, rates of asymptomatic infection are high and comparable to those in family planning clinics. Prevalence of infection in males did not differ significantly from that in females, underscoring the importance of expanding screening programs to target all individuals at risk.

TP-144 THE GAUTENG SEXUALLY TRANSMITTED INFECTIONS SENTINEL SURVEILLANCE PROGRAMME, SOUTH AFRICA: 2000-2004

C. Pillay¹, S. Tshelane¹, S. Odugwu¹, M. Malaza², D.A. Lewis¹

¹ National Institute Communicable Diseases, Sandringham, South Africa

² Reprod. Health Research Unit, Johannesburg, South Africa

Objectives: To determine the relative prevalence of STI syndromes in Gauteng Province over 2000-2004. To assess rates of syphilis screening, RPR positivity, contact slip issue and receipt at sentinel sites.

Methods: The Gauteng STI Sentinel Surveillance Programme consists of 21 randomly selected sentinel sites. Sites report monthly data on episodes of new STI syndromes, total RPR tests performed and numbers of contact slips issued and received. RPR tests should be performed for all STI episodes, unless performed in the preceding 3 months; all STI patients should receive a contact slip. Relative

prevalence rates for each STI syndrome by sex, syphilis screening, contact slip issue and receipt rates were calculated. RPR positivity rates were related to the number of RPR tests performed. The Chi-squared test was used to assess statistical significance.

Results: 250,425 new STI episodes were recorded over 2000-2004; 135,468 (54%) in females and 114,957 (46%) in males. There was a significant decline in the total number of new STI episodes over the 5 years ($p=0.006$). There were no significant changes in the relative prevalence of the major STI syndromes in men and women, the rates of syphilis screening, positive RPR results, contact slip issuing or return. Over the 5 years, the mean RPR screening rate was 51% (8.6% RPR positive) and contact slips were issued in 64% of STI episodes (26% returned).

Conclusion: Over the 5 years, there was a 28% decrease in the number of new STI episodes presenting to the sentinel sites. This may reflect a decline in STI rates in Gauteng as a result of continued syndromic management although our surveillance programme would not detect relative increases in STI episodes presenting elsewhere. Issuing of contact slip needs to be improved at the sentinel sites.

TP-145 A COMPARISON OF STANDARD PARTNER MANAGEMENT STRATEGIES WITH PATIENT-DELIVERED PARTNER THERAPY EMPLOYED BY PHYSICIANS AND MID-LEVEL PROVIDERS IN NEW YORK CITY

*M.E. Rogers, J.A. Schillinger, K.M. Opydyke, R. Recant, S. Blank
New York City Dohmh, New York, United States of America*

Objectives: Treating sex partners of STD-infected patients is critical to interrupting disease transmission and preventing reinfection. We measured the use of partner management (PM) practices among New York City (NYC) providers, including patient-delivered partner therapy (PDPT), whereby providers give patients medication for sex partners. National surveys estimate 11%-14% of physicians report using PDPT 'always' or 'usually.'

Methods: Using the American Medical Association's Masterfile provider list, we mailed surveys to a random sample of 2000 NYC providers, including physicians (MD/DOs), nurse practitioners, (NPs) and physician assistants (PAs). We examined PM practices among providers who diagnosed at least one case of Chlamydia (CT) or Gonorrhoea (GC) in the past year. Response categories for PM strategies were collapsed into 'frequent use' (always/usually) and 'infrequent use' (never/rarely/sometimes).

Results: Preliminary results are available for 336 providers (215 MD/DO, 57 NP, 64 PA). When assessing women with muco-purulent cervicitis, almost all providers frequently advised patients to inform their sex partners of infection and tell their partners to seek care (patient referral) (253/266; 95%). Of these providers, 24%(64/265) also report that their office frequently contacts partners of patients (provider referral) (18% Physician v. 32% Mid-level, $p=.01$). Of all providers, 27%(87/328) reported frequently using PDPT for partners of male or female patients with CT or GC. There were no differences in PDPT by provider type (MD/DO, NP, PA), physician specialty or physician practice setting (public v. private). Providers who practiced PDPT for GC were more likely to practice provider referral than those that did not practice PDPT ($p=.01$).

Conclusions: Preliminary data show that frequent use of PDPT

among NYC providers is higher than national estimates. While few providers practice provider referral, mid-level providers do so more often than physicians. Use of PDPT does not detract from providers' practice of other PM strategies.

TP-146 CHLAMYDIA AND GONORRHOEA AMONG YOUNG PEOPLE IN SOUTH AFRICA: IMPLICATIONS FOR PREVENTION PROGRAMS

A.E. Pettifor¹, H.R. Rees², C. MaPhail²

¹ *University of North Carolina Chapel Hill, Chapel Hill, United States of America*

² *RHRU/ Univ Witwatersrand, Johannesburg, South Africa*

Background: Given the high prevalence of HIV among the general population in South Africa and the strong link between HIV and STIs, a better understanding of the prevalence of STIs and associated factors is important to develop the most effective prevention programs.

Methods: A community based study was conducted in 33 peri-urban townships in all 9 provinces of South Africa in 2002. Youth aged 15-24 years living within a 2km radius of a health facility were asked to participate in a behavioral interview and were tested for HIV, N.gonorrhoeae (NG) and C.trachomatis (CT).The final sample included 8,735 youth.

Results: HIV prevalence was 7.5% among men and 20% among women. NG and CT prevalence were 1.9% and 6.0% among males and 3.5% and 9.8% among females. Unusual genital discharge in the past 12 months was reported by 11% of males and 26% of females; the correlation between NG/CT infection and genital discharge was poor in both directions. Consistent condom use was reported by 22% women and 32% men. Over 30% of youth reported not knowing any symptoms of STIs. About 60% of youth with an STI reported having been to a clinic in the past 12 months although only 4% reported to have sought STI care. In multivariate analyses, men who reported having sex ?5 times in the past month were more likely to be infected with NG [OR 2.5 (1.1-5.8)] or CT [OR 1.8 (1.1-3.0)].For women, those who reported inconsistent condom use were more likely to be infected with CT [OR 1.5 (1.1-2.0)].

Conclusion: Although all youth in this study lived within 2km of a clinic, few infected youth had sought STI care despite having attended a clinic for other reasons.Clinics must take advantage of youth attendance to educate them about STIs.Prevention programs must improve STI awareness and prompt treatment.

TP-147 INCIDENT AND REPEAT CHLAMYDIA AND GONORRHOEA INFECTION AMONG FEMALES SEEKING CARE IN A LARGE FAMILY PLANNING PROGRAM IN CALIFORNIA, 2003-2004

M. Chow¹, J. Guo¹, S. Barbosa², K. Mueller², K. Sisco², P. Blackburn³, J. Mikanda⁴, G Bolan¹

¹ *California Department of Health Services, Oakland, United States of America*

² *Quest Diagnostics, Tarzana, United States of America*

³ *Center for Health Training, Oakland, United States of America*

⁴ *CA DHS Office Family Planning, Sacramento, United States of America*

Objective: To estimate the proportion of female family planning clients that have incident and repeat chlamydia and gonorrhoea infections.

Methods: Chlamydia (CT) and gonorrhea (GC) test result data from a large commercial laboratory serving female clients in the California Family PACT program were used to estimate the proportion of incident and repeat infections among all patients with ≤ 6 months follow-up during the period 1/1/2003-6/30/04. Incident and repeat infections in 1- 6 months were described by age.

Results: There were 135,593 CT test results and a total of 137,684 GC tests available for 108,753 female clients. The CT prevalence was 3.6% for first CT test during the study period with higher prevalence among females age ≤ 20 (6.1%, $p < 0.0001$) than older females. Twenty-four percent of CT-positive clients were re-tested within 6 months and 12.0% had a repeat positive CT test. Seven percent of those with a negative result on the first CT test were re-tested within 6 months and 3.1% tested positive. Six percent of chlamydia positives were also GC positive; younger female CT cases were more likely to be co-infected (7.3%, $p = 0.037$) than older females. The prevalence was 0.36% for first GC test with the highest prevalence among females age ≤ 20 (0.75%, $p < 0.0001$) than older females; 26% of GC-positive clients were re-tested within 6 months and 7.0% had a repeat GC positive. Seven percent of those with a negative result on the first GC test were re-tested within 6 months and 0.55% were positive. Fifty-eight percent of GC positives were also CT positive.

Conclusions: CT and GC repeat infections are frequent among female family planning clients. Targeted CT and GC re-screening recommendations for female family planning clients are warranted to identify these infections and prevent further transmission.

TP-148 REVIEW OF HIV & STI SITUATION IN FIJI

K. Kishore

Fiji School of Medicine, Suva, Fiji

Objectives: A retrospective review of STI prevalence in Fiji has been done to assess the situation.

Methods: Statistics from the MOH, as well as clinician's observation at the STI clinic were reviewed to assess the current status. Three notifiable STIs in the country are Syphilis, gonorrhea, and HIV. A high number of cases are also presented at the clinics with genital herpes and warts, HIV being recognized as an important problem in the country.

Results: Annual reports indicate the incidence of Syphilis in the country averages around 800 cases and of Gonorrhoea over 1000 cases reported to MOH. Since March 1989 when first positive case was identified, there have been 179 positive HIV cases through December 2004. Seventy (63.6%) of the total 120 cases are males and 59 are females. Ethnic distribution of total HIV cases is approximately 79% ethnic Fijian and 14.5% Fiji-Indians, making HIV overwhelmingly a disease affecting indigenous Fijians. Heterosexual transmission accounts of about 85% of all HIV positive cases in Fiji, with few cases through homosexual and perinatal transmission. Approximately 53.6% of all cases were among people between the ages of 20 and 29 years, making it the most vulnerable age group. Through Global funds (GF ATM), initiative are underway to establish 'hub' of HIV care, providing confirmatory diagnostic as well as treatment monitoring facilities, ARV and treatment of opportunistic infections.

Conclusion(s): Fiji's population is largely rural, with increasing migration of youths to urban areas for education and employment. Prostitution is illegal in the country, still a large number of female and male commercial sex workers (CSWs) operates on the streets. Increasing unemployment, early dropouts, & fewer avenues of youth involvement in the income generating activities contributes to increasing numbers of these CSWs.

SESSION: TP - D17 PREVENTION STRATEGIES-MULTIPLE STI'S

TP-149 FELLATIO AS A ROUTE OF STI TRANSMISSION IN MOSCOW REGION

V.P. Kovalyk, M.A. Gomberg

CSRISVD, Moscow, Russian Federation

Objectives: To estimate the rate of condom use during different kinds of sexual intercourse.

Methods: A specially designed questionnaire was used to collect the information on condom use from 300 men, who visited a STD-clinic in Moscow. Standard questions concerning age, sexual debut, marital status and history of STDs, the lifetime number of sexual partners, preferable sexual practices and condom use from all patients were analyzed.

Results: Most of the respondents were heterosexuals (95,5%), and were highly educated (71,7%). More than half of them were unmarried (54,1%). Orogenital sex was practiced by 72,97% of the patients and only 17,23% practiced anal sex. In sexual intercourse with casual partners, consistent condom use was reported significantly more often during vaginal and anal intercourse (51,35% and 52,9% of respondents, respectively), than during fellatio - 22,69% (OR 0.291, 95% CI, 0.20-0.38).

Conclusions: Our data shows that among the male population in Moscow region the rate of consistent condom use during oral sex is low. This fact could explain the high rate of nonchlamydial non-gonococcal urethritis after fellatio in this population group.

TP-150 PREDICTION OF INCIDENT SEXUALLY TRANSMITTED DISEASES USING COUNSELORS' ASSESSMENTS' OF STUDY PARTICIPANTS' RISKS: EVIDENCE FROM RESPECT-2

A. Lindstrom, L. Tian, T.A. Peterman

Centers for Disease Control & Prevention, Atlanta, United States of America

Objectives: Determine whether counselors can predict who will acquire an incident sexually transmitted disease (STD).

Methods: Secondary analysis of a prevention trial, RESPECT-2, in which participants received baseline counseling and testing for HIV and STDs, chose a risk reduction plan, and were tested for STDs every three months during a 12 month follow-up period. After counseling, counselors assessed participants' future risk of STDs and behavior relapse, plan specificity, their commitment to the plan and concern about STDs, and 20 other items. We compared high vs. low scores from participants who completed the intervention, selected a plan, and had at least one follow-up visit using univariate analyses and logistic regression analyses to predict incident STDs (gonorrhea, chlamydia) during follow-up.

Results: The 2613 participants were mostly male (53%), with a median age of 25 years (range 15-39 yrs). Fifteen percent had at least one new STD during follow-up and counselors rated 35% as high risk for STDs. Participants were at increased risk for incident STD if: counselors rated them as high risk for STDs (OR=1.5, 95% CI=1.1 – 2.0), behavior relapse (OR= 1.5, 95% CI=1.1 -2.0), or as minimally committed to their plan (OR= 1.7, 95% CI= 1.2 -2.4). Participants were also at increased risk if they: had an STD at baseline (OR= 2.7, 95% CI= 2.1 – 3.5), or were aged \leq 25 (OR = 1.7, 95% CI= 1.4 – 2.2). Counselors' predictions remained significantly associated with subsequent incident infections after controlling for baseline STD status, age, and study site. Among participants both rated as high risk for STDs and who had a baseline STD, incidence was 26% (58 of 223).

Conclusions: Counselors' assessments were significant predictors of incident STDs. Counselors can help target those most at risk for STDs.

TP-151 INSPOT.ORG: INTERNET NOTIFICATION SERVICE FOR PARTNERS OR TRICKS, SAN FRANCISCO, 2005

J.D. Klausner¹, T. Kennedy², G. Nieri¹, D. Levine²

¹ San Francisco Dept. of Public Health, San Francisco, United States of America

² ISIS-Inc., San Francisco, United States of America

Objectives: Recent reports have documented the increasing use of the Internet to find sex partners and associated increases in the spread of sexually transmitted diseases (STDs), including HIV infection. In Fall 2004 we launched an innovative peer-to-peer online partner notification system whereby newly diagnosed STD cases could use the Internet to either confidentially or anonymously inform recent sex partners of their STD exposure using electronic (e-) cards.

Methods: We reviewed website use data from January thru mid-March 2005 including the number of website visits, persons sending e-cards, cards sent and type of e-card by disease. Additionally, during a single week in March we reviewed the frequency of persons coming in to the San Francisco municipal STD clinic whose reason for visit included e-card notification.

Results: 30,515 visitors viewed InSPOT.org during the evaluation period (2.5 months) for an average range by month of 239-774 views per day. A total of 2216 persons sent 3562 e-cards averaging 1.6 e-cards each. The most frequent e-cards were sent for gonorrhea, crabs, chlamydia and syphilis while e-cards for non-gonococcal urethritis, shigella, hepatitis A and molluscum contagiosum were uncommon. Of e-cards sent, most (69%) were sent anonymously. Between 32 and 41% of e-cards recipients clicked through the e-card for further information. During a 1-week evaluation at the municipal STD clinic at least 5 patients reported an e-card notification as a reason for visit.

Conclusions: InSPOT.org has provided an alternative means of partner notification for some individuals diagnosed with an STD in San Francisco. Use of the e-card appeared appropriate and resulted in persons seeking further STD evaluation. Continued evaluation is required and a comparative study would be needed to determine the benefit of e-card notification versus standard methods.

TP-152 TOPICAL MICROBICIDE DEVELOPMENT: RESULTS FROM MACAQUE SAFETY AND EFFICACY STUDIES OF C31G

D.L. Patton¹, Y.T. Cosgrove Sweeney¹, S.L. Hillier²

¹ University of Washington, Seattle, WA, United States of America

² Magee Womens Hospital, Pittsburgh, United States of America

Objectives: 1.0% C31G, a surfactant (Biosyn, Inc) was tested in macaque models for safety evaluation of vaginally and rectally applied topical microbicides and for efficacy in preventing *C. trachomatis* infection.

Methods: Each experiment was conducted with six test vs. six control animals. Safety measures included baseline, pre- and post-product application colposcopy, microbiology, pH, and/or rectal lavage. The efficacy study evaluated chlamydial infection (culture, NAAT, serum antibody) in animals challenged with *C. trachomatis* serovar E (5X105 IFU) 30-minutes after exposure to 1.0% C31G.

Results: Colposcopic observations of cervicovaginal tissues remained normal in all animals. One animal in the test group experienced transient mild erythema. Vaginal microbiology was transiently affected by 1.0% C31G use. Several organisms detected prior to product use were not detected in T-30 vaginal swabs and rebounded by 24 hours. Organisms affected in this manner included: viridans streptococci, *Gardnerella vaginalis*, diphtheroids, and anaerobic gram-negative rods. The advantageous H2O2 producing lactobacilli were largely unaffected by 1.0% C31G vaginal use. Similarly, rectal microbiological assessments revealed H2O2-producing lactobacilli remained equally constant after 1.0% C31G or no product use, and a transient decrease in anaerobic gram negative rods was detected after rectal use of the test product. A transient decrease in pH was noted after vaginal product use. Rectal use had no effect on pH or epithelial desquamation. Two of six test animals and four of six positive control animals developed cervical chlamydial infection. All but one infected animal developed Chlamydia trachomatis IgG serum antibody by day 35.

Conclusions: Repeated use of 1.0% C31G gel had transient effects on the cervicovaginal environment, and was well tolerated with rectal use. A single intravaginal application did appear to provide partial protection from chlamydial infection.

Studies funded by N01-AI-95388 and PO1 AI39061 and WaNPRC RR00166.

TP-153 EVALUATING A 'UNIVERSAL PLACEBO' FOR TOPICAL MICROBICIDE CLINICAL TRIALS

D.L. Patton, Y.T. Cosgrove Sweeney

University of Washington, SEATTLE, WA, United States of America

Objectives: The development of an inactive placebo gel suitable for use in multiple Phase III effectiveness trials of topical microbicide candidates has been a high scientific priority. To determine the appropriateness of available 'placebo' gels for microbicide trials, we conducted a safety study comparing two 'placebo' formulations to no product use in the macaque model.

Methods: Replens, a vaginal moisturizer available over-the-counter, was compared to a placebo formulation [HPTNgel developed by Tom Moench (Reprotect) and provided by NIH] being used in several ongoing safety and efficacy trials. Each product was also compared to no product use. A three-arm, cross-over design study

was conducted using six animals. Product safety was determined by daily colposcopy, and by vaginal microbiologic and pH measures prior to and 30-minutes after each of four daily product applications. Results: None of the animals demonstrated cervicovaginal irritation. H2O2-producing lactobacilli (LB+) increased with Replens use, and to a lesser degree with HPTNgel use. Populations of anaerobic gram negative rods decreased with Replens use. The pH of Replens measured 4.0, compared to 5.0 for the HPTNgel. Vaginal pH decreased (4.0 - 4.5) in all animals 30 minutes post-Replens. Vaginal pH was unaffected by the HPTNgel, comparing favorably with no product use. Both placebo formulations produced similar safety profiles, each comparable to no product use. Neither induced deleterious effects on the cervicovaginal environment as assessed in this study.

Conclusions: It is desirable that a universal placebo should cause little to no discernable variations in experimental measures, when compared to measures in the no product arm. None of the six animals developed abnormal findings during any part of this study. Based on the safety studies reported here, a recommendation of the HPTNgel as 'universal placebo' for use in clinical trials is warranted. Funding: N01-AI-95388 and WaNPRC RR00166

TP-154 PRECLINICAL SAFETY AND EFFICACY ASSESSMENTS OF A DENDRIMER BASED TOPICAL MICROBICIDE PRODUCT IN THE MACAQUE MODEL

Y.T. Cosgrove Sweeney¹, D.L. Patton¹, T.D. McCarthy², S.L. Hillier³

¹ University of Washington, SEATTLE, WA, United States of America

² Starpharma Pty Limited, MELBOURNE, VIC, Australia

³ Magee Womens Hospital, PITTSBURGH, United States of America

Objectives: In developing dendrimers as pharmaceuticals, Starpharma (Melbourne, Australia) has focused on the prevention of human immunodeficiency virus (HIV) and sexually transmitted infections (STIs) through the development of topical microbicide products. SPL7013, a dendrimer known to have anti-viral (HIV, HSV) activity, completed a range of preclinical tests in the macaque models for vaginally and rectally applied topical microbicide safety assessments, and anti-chlamydial efficacy with cervical challenge. Methods: Vaginal safety measures include colposcopic and microbiologic measurements. Rectal measures include microbiology and assessment of lavage samples. The efficacy study documents the product's ability to prevent chlamydial infection of the cervix, after a single intravaginal product application. Each study was conducted in 6 test vs 6 control animals. Infection was determined by C. trachomatis specific serum antibody (mIF), and by culture and NAATs of cervical swabs collected weekly for 5 weeks after challenge.

Results: A 3% SPL7013 formulation was found to have no deleterious effects after repeated daily vaginal or rectal applications. Vaginal colposcopy and microbiology measures assessed at 30-minutes and/or 24-hours after each of 4 daily product applications produced results similar to those noted for placebo-exposed animals. In the rectal study, repeated daily exposures resulted in similar findings for both the test and placebo animals. The incidence of successful chlamydial infection was slightly lower in the SPL7013 group, compared to that of the positive control animals (4 of 6 vs. 5 of 6).

Conclusions: This first generation dendrimer based product was shown to be safe to the vaginal and rectal microenvironments, with repeated daily use. Furthermore, a single intravaginal application of the dendrimer gel may have provided partial protection from acquiring cervical chlamydial infection. Studies funded by N01-AI-95388 and P01 AI39061 and WaNPRC RR00166.

TP-155 DISCLOSURE OF URETHRITIS AND TRICHOMONIASIS TO SEX PARTNERS

P. Kissinger¹, H. Mohammed¹, N. Schmidt¹, J.S. Leichter², G. Richardson-Alston¹

¹ Tulane University, NEW ORLEANS, United States of America

² C.D.C., ATLANTA, United States of America

Objectives: Recurrence of chlamydia, gonorrhea and trichomoniasis is common. Methods of assuring that partners are treated is integral to reducing recurrence of these infections. Disclosure by index cases to their sex partners can facilitate protected sex with and medical evaluation of those partners. This study examines factors associated with disclosure of urethritis and of Trichomoniasis.

Methods: Verbal and non-verbal disclosure to sex partners was assessed using secondary analyses from two studies: a randomized trial of men presenting with urethritis at a public STD clinic in New Orleans, LA and a randomized trial of women presenting with trichomoniasis at a public Family Planning clinic in New Orleans, LA. For each, crude and multivariable analyses were performed using generalized estimating equations regression to account for the clustering of partners within an index.

Results: Verbal disclosure occurred to 57.8% and 87.3% and non-verbal disclosure to 17.6% and 1.9% of the sex partners of men with urethritis and women with trichomoniasis respectively. Overall disclosure was 66.9% for men and 88.8% for women. Verbal disclosure of urethritis in males was found to be associated with older age, having only one sex partner, main (versus casual) partnerships, reinitiating sex with a partner during follow-up, and having been assigned patient delivered partner medication for their partners. A similar pattern was found for the trichomoniasis study, in that disclosure for trichomoniasis in females was associated with having only one sex partner, main partnerships and reinitiating sex with a partner during follow-up.

Conclusions: In this sample, men were less likely to disclose in general and a higher percentage chose a non-verbal method of disclosing. Informational booklets and patient-delivered partner treatment facilitated this disclosure.

TP-156 SEPARATING PREDICTORS OF CONDOM USE FROM PREDICTORS OF COITUS AMONG ADOLESCENT WOMEN

J.D. Fortenberry¹, M.A. Sayegh², D.P. Orr¹

¹ Indiana University School of Medicine, Indianapolis, United States of America

² Academic Edge, Inc., Bloomington IN, United States of America

Objective: To assess both direct and indirect predictors of condom use among adolescent women.

Methods: 232 women (ages 14 – 17 years) completed 12 weeks of daily diaries reporting coitus, condom use, and sexual interest. Predictors included average weekly levels of partner support,

marijuana use, feeling 'in love' and positive and negative mood. Analyses are reported as standardized beta coefficients, and used LISREL 8.54 (controlling for multiple within-person observations) to evaluate factors associated with condom use over 12 weeks.

Results: At Week 1, the average coital frequency was 0.05/week, and average proportion of condom protected events was .61. Over 12 weeks, average sexual interest (beta = 0.02) and coital frequency (beta = 0.04) increased, while average condom use decreased (beta = -0.02). Increased coital frequency decreased condom use over time (beta = -1.05). Condom use was directly decreased by increased feeling 'in love' (beta = -0.57) and indirectly decreased by increasing sexual interest (beta = 0.18) and coital frequency (beta = 0.51). Marijuana use indirectly affected condom use by reducing the frequency of coitus (beta = -0.55). Negative mood indirectly influenced condom use by increasing coital frequency (beta = 0.24). Positive mood, oral contraceptive pill use, and partner support were not related to coital frequency or to condom use.

Conclusions: Intra-individual factors (negative mood), behaviors (marijuana use) and inter-personal factors (feeling 'in love' with a partner) may affect condom use. However, only feeling 'in love' directly reduces the likelihood of condom use; marijuana use and negative mood indirectly affect condom use by effects on sexual interest and coital frequency. Preservation or enhancement of sexual relationships could be considered as a strategy for STI prevention by separating condom use from aspects of the sexual relationship.

TP-157 FACTORS ASSOCIATED WITH CONDOM BREAKAGE/SLIPPAGE AMONG ADOLESCENT WOMEN: A COITAL EVENT-LEVEL ANALYSIS

J.D. Fortenberry, M. Temkit, B.P. Katz, D.P. Orr

Indiana University School of Medicine, Indianapolis, United States of America

Objective: identify event-level factors associated with condom breakage/slippage among adolescent women.

Methods: 304 women (ages 14 – 17 years) were enrolled from primary care adolescent clinics. Subjects completed daily diaries reporting coital activity, condom use, and condom breakage/slippage. Other variables included time spent with the sex partner on the day of sex (coded as more than 5 hours or 5 hours or less), age at first sex, positive mood, negative mood, use of marijuana before sex, coital frequency in past 7 days, and age on the day of the coital event. Data analysis was conducted by multivariable logistic regression (using SAS Proc NLMIXED), with a random subject intercept to control for multiple within-person observations.

Results: Coitus was reported for 4,828/74,118 (6.1%) of diary days, with condom use at 2,371/4,749 (49.9%) of coital events (condom use data missing for 79 coital events). Condom breakage/slippage was reported for 180/2,371 (7.6%) coital events where condoms were used. Factors not associated with breakage/slippage included positive or negative mood, and age at first sex. Factors associated with breakage/slippage in the multivariable model included spending less than 5 hours with the partner on the day of coitus (beta = 0.38; p<0.08), marijuana use before sex (beta = 1.0; p<0.001), lower coital frequency in the previous week (beta = -0.14; p<0.07), and younger age on the day of coitus (beta = -0.22; p<0.06).

Conclusions: Condom breakage/slippage is a relatively rare but non-random event associated with developmental characteristics (age), coital frequency (which may reflect experience with condoms), and situational aspects of the coitus, i.e., marijuana use and time with partner. Situational factors may be appropriate targets for clinical interventions to improve effective condom use for STI prevention.

TP-158 SEX PARTNERS OF PATIENTS WITH SEXUALLY TRANSMITTED INFECTIONS (STI): CHARACTERISTICS, SYMPTOMS, AND DIAGNOSES

L.M. Niccolai¹, H.E. Brown¹, H. Jenkins², D.W. Dunne³, S. Green³

¹ Yale University, New Haven CT, United States of America

² CT Dept. Public Health, Hartford CT, United States of America

³ New Haven Health Dept., New Haven CT, United States of America

Background. Sex partners of patients with STI may have a high prevalence of STI due to their contact with infected persons. However, because they did not initiate a clinic visit on their own, they may also be asymptomatic and/or unsuspecting of their risk for infection. Methods. All patients seen at two public STI clinics during 2000-2002 were included in these analyses. Electronic medical record data included demographics, reason for visit, risk behaviors, STI history, symptoms, clinical and laboratory diagnoses. Statistical analyses included likelihood ratio chi-square tests and logistic regression.

Results. A total of 8,366 initial patient visits occurred during this time, including 1,630 (20%) visits by sex partners of infected patients and 6,736 (80%) visits by non-partner patients. Partners were more likely than other patients to be heterosexual, less than 25 years old, have no STI history, report inconsistent condom use, and be in monogamous relationships (p<0.01 for all). Partners were significantly less likely to have any self-reported STI symptoms (23% vs. 44%), yet they were also significantly more likely to be diagnosed with an STI (40% vs. 33%) (p<0.01 for both).

Conclusions. Sex partners of STI patients are often asymptomatic, and demographic factors (e.g. young age, lack of experience with previous STI) may make it difficult for them to seek treatment on their own. Infected patients should be strongly encouraged to refer all partners for treatment regardless of symptoms. Furthermore, innovative partner treatment strategies such as patient delivered therapy should be considered an important option to reach partners and reduce their high STI morbidity.

TP-159 HIGH INCIDENCE OF NEW ASYMPTOMATIC INFECTION FOLLOWING TREATMENT FOR CHLAMYDIA (CT), GONORRHEA (GC), OR TRICHOMONAS (TV)

T. Peterman¹, L. Tian¹, C.A. Metcalfe², C.K. Malotte³, S.M. Paul⁴,

J.M., Jr. Douglas¹

¹ CDC, Atlanta, United States of America

² Aurum Health Research, Cape Town, South Africa

³ Long Beach Department of Health, Long Beach, United States of America

⁴ New Jersey Department of Health, Trenton, United States of America

Objectives: Recommendations suggest women treated for CT should be re-screened in a few months because they often acquire new asymptomatic CT. We evaluated whether other infections should also be followed by re-screening.

Methods: We used data from an RCT of HIV counseling (RESPECT2). STD clinic patients from Newark, Denver, and Long Beach were tested, treated (if infected), and followed every 3 months (for a year) with questionnaires and testing for CT, GC, and TV. Univariate and multivariate analyses of baseline characteristics and follow-up behaviors identified factors associated with acquiring these infections.

Results: From February 1999 through December 2000, 2408 persons contributed 8074 3-month intervals. The highest adjusted odds ratio for new STD was for persons who had STD at baseline (2.4) after adjusting for age, sex, race, site, new partner and number of partners in the interval. Among persons with CT, GC, or TV at baseline, the percent returning within 3 months with a new infection was: CT 7.3, GC 6.4, or TV (women) 12.0, or any of these 17.9. The risk of new infection within 3 months was high regardless of type of baseline infection. Within 3 months, a new infection with CT, GC, or TV (women only) was diagnosed for 16% of women with CT at baseline, 21% of women with GC at baseline, 23% of women with TV at baseline, 7% of women with no infection at baseline; 13% of men with CT at baseline, and 22% of men with GC at baseline, and 4% of men with no infection at baseline. These risks declined somewhat at the 6, 9, and 12 month visits. 69% of new infections were asymptomatic.

Conclusion: Men and women with GC, CT, or TV should be re-screened in 3 months because they are at high risk for new asymptomatic infections.

TP-160 INTEGRATION OF STD CARE FOR HIGH-RISK POPULATION INTO COMMUNITY HEALTH SERVICES IN CITIES OF CHINA

L. Zhang¹, X. Wang¹, A. van der Bij², A. van den Hoek²

¹ NCAIDS Of China CDC, Beijing, China

² Municipal Health Service, Amsterdam, Netherlands

Background: STD and HIV are a serious threat to public health in China, but affordable, accessible and acceptable STD/HIV care is unavailable for most of the high-risk population. This 4-year project, which started in April 2002, implements syndromic care for STD by community health services (CHS) in order to provide low-threshold STD treatment in China.

Methodology: Eight project sites (20 CHS), some more developed than others, have been selected in the first project-year. All CHS have facilities for STD examination including wet mount, gram stain and RPR testing and have access to a referral center if needed. Initial stages of the project included: mapping to identify high-risk areas, training of project staff, and development of outreach material and treatment packages for urethritis, vaginitis and/or cervicitis and genital ulcer(s). At the second year all CHS started outreach activities, such as the distribution of leaflets, information cards and condoms at high-risk sites, and clinical care, which continued in the present (third) project-year.

Results: All CHS performed outreach activities and all but two (both in Jinan) treated clients (figure 1), 20% male. 3641 treatment packages, also for partners, were handed out. The majority were treated for vaginitis and/or cervicitis (figure 2). Main problems in implementation are 1) outreach methods used, previously unknown to health care workers in China, 2) opinions about the

syndromic approach, opposing the etiological approach previously used; clients value intravenous treatment to be more effective than single dose oral treatment and often do not want to be treated before a definite diagnosis is made.

Conclusion: Setting up a model to integrate STD/HIV care into the CHS general clinical service is effective. However, further work is needed to improve outreach and acceptability of the syndromic approach. In addition, surveillance should be performed to evaluate whether the recommended treatment is effective.

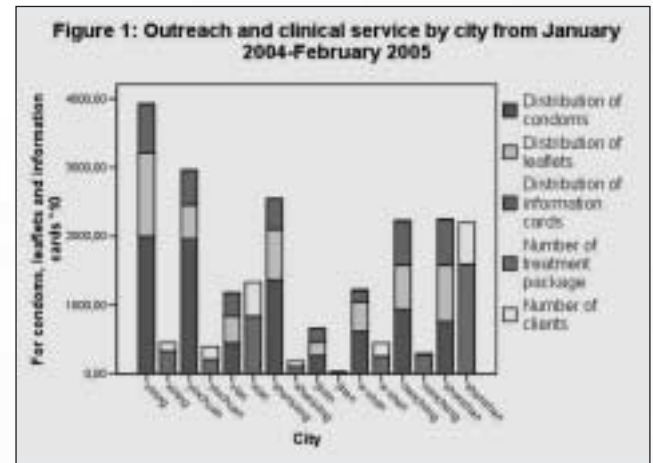


Figure 1:

TP-161 A DOSE OF PREVENTION IN SEXUALLY TRANSMITTED DISEASE CLINIC WAITING ROOMS: DESIGNING A THEORETICALLY GROUNDED AND EMPIRICALLY INFORMED BRIEF STRUCTURAL INTERVENTION

L.O. O'Donnell¹, C.R. Rietmeijer², G.L.G. Greenwood³, J.D.K. Klausner⁴, C.K.M. Malotte⁵, A.M. Myint-U¹, J.D.P. Patterson⁶, D.B.R. Richardson⁷, S.M.V. Vrungos⁸, D.L.W. Warner⁶

¹ Education Development Center, Inc, Newton, United States of America

² Denver Public Health, Denver, United States of America

³ UCSF/CAPS, San Francisco, United States of America

⁴ Department of Health, San Francisco, United States of America

⁵ California State University, Long Beach, United States of America

⁶ CDC, Atlanta, United States of America

⁷ Denver Public health, Denver, United States of America

⁸ Department of Health, Long Beach, United States of America

Objective: To design a brief structural intervention for use in STD clinic waiting rooms that motivates patients to adopt safer sex behaviors, including consistent condom use.

Methods: As part of the Safe City Project Study, a mixed methods approach, including focus groups and observations of STD clinic flow, was used to inform the development of a video-based intervention to increase condom use by addressing knowledge, attitudinal, and normative barriers. Data were collected from clinic attendees to inform key prevention messages and content of a video-based intervention, and delivery strategies for incorporating the intervention into routine clinic practice.

Findings: A 23-minute soap-opera style video was developed with community input; interwoven dramatic stories depicting different sexual risk situations were designed to capture the attention of patients in a busy waiting room. Characters were selected to

represent diverse clinic populations (e.g., gender, race/ethnicity, sexual orientation). Animation was used to provide basic condom education entertainingly, and posters were developed to provide visual reinforcement of video messages. Observations of clinic flow and interviews with clinic staff were used to determine how and when the video would be shown to maximize video viewing without impeding clinic routines. The intervention has been implemented successfully in three sites (Denver, San Francisco, and Long Beach), with >70% of patients sampled indicating they watched the video and retained one or more key messages. The intervention is being evaluated to determine whether it is effective in reducing high-risk sexual behaviors and incident STDs subsequent to the clinic visit.

Conclusion: Desirable features of this intervention include low intervention costs, high feasibility, minimal risk, and broad generalizability. This approach has the potential for reaching large numbers of at-risk men and women who may not be able or motivated to attend more intensive programs.

TP-163 EVALUATION OF DIAPHRAGM USE AMONG FEMALE SEX WORKERS IN MADAGASCAR TO PREVENT GONOCOCCAL AND CHLAMYDIAL INFECTIONS: THE NEED FOR MIXED METHODS FORMATIVE RESEARCH

F. Behets², N.R. Ravelomanana¹, K. Van Damme¹, L. Rabenja Ny¹, M.S.M. Raharinivo¹, T. Swezey², K. Zeller³, A. Norris Turner²

¹ University of North Carolina 'UNC-MAD', Antananarivo 101, Madagascar

² University of North Carolina, Chapel Hill, Madagascar

³ Clinton Foundation, Boston, United States of America

Objectives: To evaluate acceptability and feasibility of lubricant/spermicide-free, continuous diaphragm use among female sex workers (SWs) in Madagascar and to identify potential obstacles to researching the effectiveness of diaphragm use for prevention of gonococcal and chlamydial infections.

Methods: In a pilot study SWs were asked to use diaphragms continuously (removing once daily for cleaning) for eight weeks; SWs were interviewed and examined clinically during follow-up visits. Focus group discussions (FGDs) were conducted pre- and post-pilot study to capture knowledge and attitudes towards diaphragm use, STI and pregnancy risk, and potential obstacles for conduct of trial. Women were instructed to use male condoms for each sex act. Audiotaped FGDs were transcribed, translated, coded for emerging themes, and analyzed by three study team members.

Results: Ninety-three SWs participated in pre-pilot FGDs, 91 in pilot study, 82 in post-pilot FGDs. Formative research revealed that continuous diaphragm use was acceptable and feasible among impoverished, low-education SWs. However, SWs reported lower condom use in FGDs than during pilot study interviews. FGDs revealed that despite information provided by study staff, SWs believed the diaphragm protected effectively against pregnancy and STIs. FGDs showed that most participants used their diaphragms covertly with clients and boyfriends and that intravaginal hygiene practices may interfere with diaphragm use.

Conclusions: Combining quantitative and qualitative research was needed for a comprehensive understanding of diaphragm use acceptability and feasibility in this population. Findings have methodological and ethical implications and will affect the design and implementation of the planned trial. Based on these findings staff will not mention contraceptive qualities of the diaphragm and SWs will be offered hormonal contraceptives. To avoid barrier substitution staff will emphasize the continued need for condom use. SWs will receive specific instructions about intravaginal hygiene to avoid accidentally displacing the diaphragm and exposing the cervix to semen and STIs.

TP-164 COMMUNITY-WIDE IMPLEMENTATION OF EXPEDITED PARTNER THERAPY (EPT) FOR GONORRHEA AND CHLAMYDIAL INFECTION

M.R. Golden¹, D.D. Brewer², M. Hogben³, K.K. Holmes¹, H.H. Handsfield¹

¹ University of Washington, Seattle, WA, United States of America

² PHSKC, Seattle, United States of America

³ CDC, Atlanta, GA, United States of America

Objective: To describe and evaluate a population-based program that provides EPT to heterosexuals with gonorrhea or chlamydial infection.

Methods: Case report forms asked clinicians to request assistance with partner notification (PN) based on specified triage criteria, or to assume responsibility for PN themselves. Free medication was provided for patients to give to their partners (EPT) through a network of pharmacies and selected clinics. Persons for whom clinicians requested PN assistance were contacted by public health staff and offered EPT and assistance notifying partners they did not intend to contact themselves. A random sample of cases was interviewed to evaluate the triage system and the impact of PN assistance.

Results: Between April 2004 and February 2005, clinicians completed the PN section of the case report form for 3551 (81%) of 3728 cases, indicating that all partners had already been treated in 24%, that the provider would assure PN in 33%, and requesting health department PN assistance in 43%. At time of interview, >1 untreated partner was reported by 76% of persons for whom providers requested assistance, versus 37% of those for whom no assistance was requested ($p < 0.0001$). Eight percent of patients for whom PN assistance was requested had previously received EPT from their clinician versus 38% of those for whom no assistance was requested ($p < 0.0001$). Triage provision of PN assistance increased the proportion of partners treated among persons referred for assistance from approximately 35% to 60%, and increased the proportion of all partners treated in the population from approximately 50% to 60%. **Conclusion:** A community-wide PN program that employs case-report based triage and EPT successfully targeted public health services to those unlikely to independently arrange for partner treatment, and substantially increased the number of partners treated.

TP-165 EVALUATION OF PREVENTION MESSAGING GEARED AT MEN WHO HAVE SEX WITH MEN (MSM)

G.S. Ogilvie¹, P. Harris¹, T. Trussler², R. Marchand², L. Knowles¹, J. Maginley¹, J. Tiglechaar¹, D. Spencer¹, M.L. Rekart¹

¹ BC Centre for Disease Control, Vancouver, BC, Canada

² Community Based Research, Vancouver, Canada

Objective: Rising rates of HIV and STIs, including syphilis, in the MSM community in British Columbia prompted development of a messaging campaign to reinforce the community norm of safe sex and encourage safer sexual practices. Evaluation of the impact of this campaign is presented.

Method: The campaign received guidance from members of the MSM, aboriginal and public health community, and creative concepts were developed by an advertising agency. A series of both edgy and more conventionally themed ads were selected, and placed in gay bars, gay media and progressive newspapers in the province, particularly in the Lower Mainland of BC, for three months. To evaluate community response, intercept interviewing was conducted two weeks after the campaign ended. Participants were recruited from gay bars and gay friendly establishments in Vancouver. A series of demographic and declarative attitudinal statements were made and participants were asked to respond. Descriptive analysis is presented.

Results: Of the 188 individuals interviewed, 102 (54.3%) had seen either ad. All participants were male, with a mean age of 34.5. In those who had seen the advertising, more respondents recalled seeing the 'edgier' message compared to the conventional message (92.1% vs 63.7%). Restroom advertising provided the greatest exposure. Thirty five percent had discussed the messaging with someone. Seventy five percent received the message to 'play safe', and 86.3% felt the ads affirmed gay sexuality. Eighty five percent felt the ads were appealing, and 99.0% felt the message was very important. Less than five percent visited the campaign website.

Conclusion: Edgier message was more likely to be recalled by the target audience, and restroom advertising provided more exposure than gay newspapers. Few of the participants visited the campaign website. The majority of participants felt the message was both appealing and important

TP-166 THE AMREF MINE HEALTH PROJECT, TANZANIA: A PRIVATE/NGO/PUBLIC PARTNERSHIP FOR HIV & STI PREVENTION

A. Ngwalle¹, L. Ndeki¹, P. Bidwell¹, Z. Kanga¹, D. Watson-Jones², J. Changalucha³, D. Ross², A. Gavyole¹, S. Clift¹, M. DiCarlo¹

¹ AMREF, MWANZA, Tanzania

² LSHTM, LONDON, United Kingdom

³ NIMR, MWANZA, Tanzania

Objective: Large-scale gold mining commenced in Tanzania in 2000. The AMREF Mine Health Project (MHP), a private/NGO/research/public partnership, was established to address potential health consequences of this.

Methods: Geita Gold Mine (AngloGold/Ashanti and DTP Terrasment) and Bulyanhulu Mine (Kahama Mining Corporation Ltd.) provide funding. AMREF implements the MHP with technical input from the

London School of Hygiene & Tropical Medicine and the National Institute for Medical Research, Tanzania. Steering Committees guide project activities in the mine, neighbouring local communities and local health facilities. Stand-alone HIV information centres were established in partnership with district health authorities offering VCT and other sexual and reproductive health (SRH) services. Peer Health Educator (PHE) schemes, HIV/STI awareness workshops and condom promotion strategies are implemented with focused interventions including a life-skills programme for high-risk women.

Results: Baseline and interim surveys were conducted to monitor HIV/STI prevalence and risk behaviour at inception of and during the project. 90, 200 and 46 PHEs have been trained in the mine, in the community and high-risk women (barworkers, guesthouse workers etc.) respectively. The HIV centres see approximately 700 clients/month for all SRH services, 40% of whom request an HIV test, with 10% testing positive. HIV prevalence is stable and certain risk behaviours have changed since project inception. Attendance for VCT has increased from 200 clients/month in 2003 to 250 clients/month in 2004.

Conclusion: The MHP demonstrates an excellent example of a private/public/NGO/research partnership for HIV/STI prevention and services working beyond the traditional focus of the workforce to address the needs of surrounding communities. It is hoped that this example will become the pattern for the development of similar partnerships for community HIV/STI/malaria prevention programmes.

SESSION: TP - D17A PREVENTION STRATEGIES - MULTIPLE STI'S**TP-167 LACK OF INHIBITORY EFFECTS OF TENOFOVIR ON NUCLEIC ACID AMPLIFICATION TESTS FOR CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE**

B.J. Wood¹, P. Rizzo-Price¹, J. Holden¹, A. Hardick¹, P. Agreda¹, T.C. Quinn², C.A. Gaydos¹

¹ Johns Hopkins University, Baltimore, United States of America

² NIAID, NIH, Bethesda, MD, United States of America

Objective: To investigate the inhibitory effects of Tenofovir and placebo in the detection of Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (NG) using nucleic acid amplification tests (NAATs).

Methods: Simulated specimens were prepared in uninfected urine using serial dilutions of CT (105-0 inclusion forming units (IFU)/ml) and NG (105-0 colony forming units (CFU)/ml) cultures. Tenofovir and placebo were added to these specimens to achieve final product concentrations of 5%, 2%, 1%, 0.5%, 0.1% and 0%. Specimens were processed and tested in duplicate for CT and NG by Becton Dickinson ProbeTec (SDA), GenProbe Aptima Combo2 (Combo2), and Roche Amplicor (PCR) according to manufacturers' directions. **Results:** CHLAMYDIA: No inhibition was seen for all concentrations of Tenofovir and placebo with all concentrations of CT organism for all three NAATs. GONORRHEA: SDA: No inhibition was seen for all concentrations of Tenofovir and placebo for NG organism from 105-103 CFU/ml (limit of detection: this experiment). Combo2: No inhibition was seen for all concentrations of Tenofovir and placebo for NG organism from 105-102 CFU/ml. For 1% Tenofovir, one result was positive and the duplicate was equivocal for 101 CFU/ml. The

duplicate results were equivocal at 0.5% Tenofovir and positive at 0.1% Tenofovir. For placebo, at 101 CFU/ml, results fluctuated between negative, equivocal and positive (limit of detection). PCR: No inhibition was seen for all concentrations of Tenofovir and placebo for NG organism from 105-103 CFU/ml (limit of detection). Conclusion: At the level of detection for each assay, no inhibition was seen for Tenofovir or placebo in any of the three NAATs used to detect CT and NG. The level of detection of the three NAATs varied for NG.

TP-168 PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS AMONG AN URBAN INDIGENT POPULATION IN THE SOUTHERN USA

D. M. Grimley¹, L. Annang¹, E. W. Hook¹, I. Lewis¹, W. Smith¹, T. Hooks¹, I. Aban¹, S. Williams², J. S. St. Lawrence²

¹ *University of Alabama at Birmingham, Birmingham, United States of America*

² *CDC, Atlanta, GA, United States of America*

Objective: Persons receiving services from missions providing shelter or food for the hungry may be at risk for STIs and have limited options for health care. We evaluated the prevalence of chlamydia, gonorrhea, untreated syphilis, and HIV at three missions in Alabama, USA and compared these percentages of infection with the corresponding population percentages for all four STIs. **Methods:** A cross-sectional survey was administered to males and females between the ages of 19-45. Participants also provided urine specimens for chlamydia (CT) and gonorrhea (GC) testing, blood for serological testing for syphilis, and an oral sample for HIV testing.

Results: Out of 430 individuals approached, 14 refused to participate resulting in a sample size of 416 (96.7%). Most participants were male (63%); African American (78%); unmarried (89%); with no regular source of health care (64%). At the time of the assessment, 72% (n=296) of the total sample reported sexual activity in the last two months; 11.2% reported sex work, 79% and 62% used condoms inconsistently with their main and other partner(s), respectively. Overall, STI prevalence was 14.5%. The prevalence of infection was as follows: CT 10.8%; GC 4.1%; syphilis 1.0%; and HIV 0.7%. In addition to these new cases, an additional 3.8% had serologic evidence of prior syphilis and 3.7% were previously diagnosed HIV positive. STI sample proportions for CT (8.9% vs. 0.5%), GC (3.4% vs. 0.4%), syphilis (0.7% vs. 0.007%), and HIV (0.5% vs. 0.04%) were significantly higher than those found in the Alabama general population (all p-values<0.0001).

Conclusion: Individuals receiving services at missions represent a relatively high prevalence population. Additional outreach efforts are needed to counsel, screen, and treat this group of individuals with limited access to health care.

TP-169 PAPALOOZA: A COMMUNITY PAP SCREENING EVENT TARGETING VULNERABLE WOMEN IN VANCOUVER'S DOWNTOWN EASTSIDE

Y. Winsor, C. MacMillan, F. Gold, D. Taylor, Nurses STD/AIDS Control Outreach, G. Ogilvie

BC Centre for Disease Control, Vancouver, Canada

Objective: To describe a community based initiative developed by the Street Outreach Program (SNP) of the BC Centre for Disease Control (BCCDC) aimed at improving uptake of Pap screening and STI testing in marginalized women in Vancouver's downtown eastside (DTES). **Methods:** Three Papalooza events were conducted in April 2003, November 2003, and December 2004 at hotels, drop-in centres for sex workers, women-only shelters, drop-in centres and clinics. Pap smears, sexual health education, and STI/HIV screening were offered to street involved women in DTES in collaboration with community agencies. A questionnaire was completed. Outcome measures included number of pap tests, number of STI screening tests including HIV testing, and behavioural risk factors.

Results: A total of 234 women attended an event (55 in Apr 2003; 100 in Nov 2003; 72 in Dec 2004). The median age was 37 yrs (range: 16 – 74). Ninety-two (39.1%) were Caucasian, 5 (2.1%) were Black, 3 (1.3%) were Hispanic, 8 (3.4%) were Asian, and 100 (42.7%) women were First Nation/Inuit/Metis. Ethnicity was unknown for 27 (11.5%) women. Fifty-eight (24.7%) women self-reported being involved in sex work, 35 (15%) women reported current injection drug use and 30 (12.8%) women reported using inhaled drugs. A total of 148 pap tests, 70 HIV tests, 183 gonorrhea tests, 187 cervical chlamydia tests and 90 RPR tests were conducted resulting in 8 cases of chlamydia, 4 cases of gonorrhea, 2 cases of infectious syphilis, 1 newly positive case of HIV. **Conclusion:** Innovative initiatives, such as these Papalooza events may be a feasible method of increasing pap testing uptake among street involved women. They also provides opportunities for outreach nurses to improve the uptake of HIV/STI screening in high risk populations.

TP-170 DESIGNING THEORY AND EVIDENCE BASED INTERVENTIONS TO PROMOTE SAFE SEX FOR HETEROSEXUAL MIGRANT MEN.

M.E.G. Wolfers¹, C. van den Hoek¹, W. al Taqatqa¹, O. Fernandes de Brito¹, J. Brug², O. de Zwart¹

¹ *GGD Rotterdam e.o., Rotterdam, Netherlands*

² *Erasmus Medisch Centrum, Rotterdam, Netherlands*

Objective: The development of theory- and evidence-based interventions to promote safe sexual behaviour among heterosexual Caribbean, Moroccan and Turkish men living in Rotterdam, the Netherlands.

Methods: Following the steps of Intervention Mapping, a literature study and the collection of extra qualitative data through seven focus groups and six individual interviews (n=50) was the base of the needs assessment. We defined performance objectives, describing what behaviour and environmental conditions need to change to achieve the outcome of safer sexual behaviour. Subsequently we developed matrices of proximal program objectives and used theoretical methods to design plans for the intervention, and we produced and pretested materials.

Results: Outcomes of the needs assessment were that among our respondents practising safe sex is predominantly a non-verbal behaviour, not accompanied by much discussion with the female partner. The attitude towards condoms is fairly positive. On the other hand most men do not carry condoms with them, personal risk perception is low and skills for using condoms are not always present. There is social influence for not using condoms. As far as cultural factors are concerned, the female partners' virginity and machismo were important.

For the Caribbean men we developed a game using playing cards played between the health educator and one man, targeting attitude, knowledge and self-efficacy. This game can be played in a short time on outreach locations. For the Moroccan and Turkish men a small group intervention in two sessions is designed targeting determinants of social influence, self-efficacy, risk perception, attitude and knowledge. In a pilot the interventions will be tested in Rotterdam in May 2005.

Conclusion: By using the Intervention Mapping protocol we developed an intervention that has is more likely to be effective than the usual (not theory- and evidence-based) working method.

TP-171 LINKING MAILED RESCREENING FOR GONORRHEA AND CHLAMYDIAL INFECTION TO PARTNER NOTIFICATION

M.R. Golden¹, A. Clark², C. Malinski², A. Golding², H.H. Handsfield¹

¹ *University of Washington, Seattle, WA, United States of America*

² *PHSKC, Seattle, United States of America*

Objectives: To evaluate a program designed to retest persons receiving partner notification services for gonorrhea or chlamydial infection 3 months after their initial treatment.

Methods: Heterosexuals contacted by Public-Health Seattle & King County for purposes of partner notification between March, 2003 and November, 2004 were offered the options of receiving a letter reminding them to be retested for STD or having a rescreening kit mailed to them 3 months after their original treatment. We assessed the percentage of persons who accepted a mailed rescreening kit, the percentage who returned the kit, and the percentage testing positive.

Results: A total of 1537 people were offered rescreening options, including 1294 persons infected with chlamydial infection, 185 with gonorrhea, and 58 with both infections. Of these persons, 467 (30%) wanted a rescreening kit mailed to them, 287 (19%) requested a reminder letter, and 783 (51%) preferred not to receive a letter or a mailed rescreening kit. Acceptance of rescreening kits was higher among men and persons originally treated in an STD clinic ($p < 0.005$), but was not associated with initial STD diagnosis. A total of 181 (39%) of 467 mailed rescreening kits were returned, of which 17 (9%) tested positive. The prevalence of infection at follow-up was similar in the 57 men and 124 women rescreened (10.5% and 8.9%, respectively). Overall, only 12% of people offered mailed rescreening successfully returned a specimen for testing.

Conclusions: Rescreening reminders and mailed rescreening kits can be integrated into the partner notification process. Although the prevalence of infection in those tested via the mail is high, relatively few people agree to have a mailed rescreening kit sent to them and successfully return a specimen for testing.

TP-172 RECURRENT AND MULTIPLE SEXUALLY TRANSMITTED INFECTIONS AMONG PERFORMERS IN THE ADULT FILM INDUSTRY: A NEED FOR A MODEL INDUSTRY EXPOSURE CONTROL PLAN

*M. Aynalem, P.R. Kerndt, H. Rotblatt, J.A. Montoya, R. Kim-Farley, J.E. Fielding
Los Angeles County, Los Angeles, United States of America*

Objectives: To examine patterns of STD infection among performers in the adult film industry (AFI) and to present an industry model for an Exposure Control Plan (ECP) concurrent with the United States (US) Occupational Health and Safety Administration (OSHA) and the Blood-borne Pathogen Standard.

Methods: After an earlier HIV 'outbreak' in 1998 in the AFI in Los Angeles, a community based organization was established to provide HIV PCR pre-employment screening and later added other STD testing in an effort to detect HIV and other STDs. Approximately 1400 actors utilize this service and 400-500 actors are tested each month with an STD/HIV PCR screening panel. STD morbidity was reported to the health department. Descriptive statistics were used to analyze the data. A taskforce was convened to develop an ECP for the industry.

Results: Of approximately 1500 people tested between January 2003 and March 2005, approximately 8.4 percent had at least one disease. Nearly 48.1 percent tested positive for Chlamydia, and 23.6 percent for gonorrhea. During this period, approximately 976 individuals were reported with 1153 positive test results. Males comprised 33%, females 67%, whites 13%, African Americans 6.6%, Hispanics 2.4%, unknown race/ethnicity 76.6% and 40% were between 20 and 24 years of age. Of the 1153 positive test results 722 (62.6 %) were Chlamydia, 355 (30.8 %) were gonorrhea and 126 (10.9 %) were Chlamydia and gonorrhea co-infections. The taskforce developed an ECP for the industry to be implemented.

Conclusions: The occurrence of recurrent and multiple STD infections in this industry emphasizes the urgent need for a written worker health and safety plan emphasizing primary prevention by requiring barrier protection, appropriate immunizations, worker training, and medical surveillance, including HIV/STD screening and when possible STD treatment.

TP-173 PRESUMPTIVE TREATMENT FOR CERVICAL INFECTION AMONG FEMALE SEX WORKERS IN MYSORE, INDIA

*S. Moses¹, S. Reza Paul¹, R.G. Washington¹, B.M. Ramesh¹, M. Alary²,
J.F. Blanchard¹*

¹ *University of Manitoba, Winnipeg, Manitoba, Canada*

² *CHA Universitaire de Quebec, Quebec, Canada*

Background: Bacterial sexually transmitted infections (STIs) are common in female sex workers (FSWs) and are often asymptomatic. Antibiotic prophylaxis, provided as periodic presumptive treatment (PT), may treat bacterial STIs and also reduce subsequent risk for STI acquisition, thereby reducing risk for HIV infection as well. However, data supportive of this proposition are limited.

Methods: A program to reduce risk and vulnerability to STIs and HIV/AIDS among FSWs in Mysore, India, was initiated in early 2004, consisting of community outreach, peer education, and provision of services for STIs and other medical conditions at a program-linked clinic. STI services include periodic PT for *N. gonorrhoeae* (Ng)

and *C. trachomatis* (Ct) cervical infections (comprising cefixime 400 mg plus azithromycin 1 gram administered as stat doses) at regular intervals, generally 3-6 months, depending upon the frequency of follow-up. We undertook behavioural and STI surveillance among FSWs in Mysore in mid-2004, and used that opportunity to assess the early impact of the PT program.

Results: A representative sample of 429 sex workers participated in the surveillance activity, of whom 45% reported having visited a program clinic in the past few months and received one dose of presumptive treatment. The prevalence of Ct among women who had received PT was 5.7%, compared to 14.5% among women who had not (odds ratio 2.8, $P=0.005$). For Ng, the prevalences were 4.2% and 8.1% respectively (odds ratio 2.0, $P=0.1$). The prevalences of HIV and *T. vaginalis* infections were 25.8% and 32.1% respectively, and did not differ by whether PT had been received.

Conclusions: Presumptive therapy for Ng and Ct cervical infection for FSWs in this setting resulted in lower subsequent infection prevalences. Longer term evaluation is required to determine if the effect is sustained, and if so, what would be the optimal treatment schedule.

TP-174 PREVEN MOBILE TEAM: AN INNOVATIVE OUTREACH METHODOLOGY FOR STI SCREENING AND TREATMENT OF FEMALE SEX WORKERS (FSW) IN THE SAME SEX WORK VENUE

P.E. Campos¹, C. Buendia¹, C. Cárcamo¹, P. Garcia¹, K. Vidarte¹, M. Chiappe¹, J.L. Tataje¹, G. Garnett², A. Buffard³, K.K. Holmes³

¹ Cayetano Heredia University, LIMA, Peru

² Imperial College, LONDON, United Kingdom

³ CFAS-University of Washington, SEATTLE, United States of America

Objectives: A component of the Urban Community Randomization Trial of STI Prevention in Peru, the PREVEN Mobile Team (PMT) provides STI screening and treatment in sex work venue (SWV) to lower STI rates in this marginalized, high-risk population

Methods: Comprised of a health worker and a peer educator, the PMT visit all sex work venues, identified through an initial census, once every eight weeks in each of the 10 PREVEN intervention cities. Self-obtained vaginal swabs are collected for *C. trachomatis* and *N. gonorrhoeae* PCR, TV InPouch? cultures, and slides for Gram stain. Presumptive treatment with metronidazole is provided immediately for vaginal infections. Test results and additional treatment, along with promotion of condom use and use of clinical services, are delivered 7 days after sample collection.

Results: To date, ten eight-week cycles have been completed, with a total of 22,501 screenings performed. Over time, the number of participants has consistently increased from 1620 to 2572, with approximately 40% new participants each cycle. Acceptance of presumptive treatment with metronidazole has ranged from 69-77%, with over 80% of FSW receiving treatment for other infections. Overall prevalences of *C. trachomatis* and *T. vaginalis* have decreased from 15.4 to 11.4% and from 7.5 to 4.6% respectively, but the prevalence of *N. gonorrhoea* has remained unchanged at 5.5%. Declines in STI rates are more dramatic among FSW who have participated in 4 or more cycles, with drops of 50% for *C. trachomatis*, 45% for *T. vaginalis* and 40% for *N. gonorrhoeae*. Overall condom use has increase from 69 to 82%

Conclusions: The PMT approach is an effective method to reach high-risk FSWs at their SWVs to offer STI screening and treatment. After 18 months of intervention, significant reductions in STI prevalences and increases in condom use have been achieved

TP-175 HOW ACCEPTABLE AND FEASIBLE IS PATIENT-DELIVERED PARTNER MEDICATION COMPARED TO PATIENT-BASED PARTNER REFERRAL IN SOUTH AFRICA?

T.N. Young¹, L. Altin², A. de Kock², H. Jones³, T. Ferguson³, J. van de Wijgert⁴

¹ South African Cochrane Centre, Cape Town, South Africa

² University of Cape Town, Cape Town, South Africa

³ Population Council, New York, NY, United States of America

⁴ IATEC, Amsterdam, Netherlands

Objectives: To determine the acceptability and feasibility of patient-delivered partner medication (PDPM) compared to patient-based partner referral (PBPR) as a means of partner notification among those diagnosed with sexually transmitted infections (STIs) in a randomized trial of home-based self-sampling vs. clinic appointments for a community STI screening program.

Methods: A total of 626 women aged 14-25 from Gugulethu, Cape Town, South Africa were enrolled: 312 women were randomized to self-sampling at home and 314 women to clinic-based STI screening. Women in both groups who were diagnosed and treated for an STI were given a choice of two partner notification/treatment strategies: PDPM or PBPR. A follow-up interview was conducted at 6 weeks after enrolment to elicit participants' opinions and experiences with the two methods.

Results: Prevalence based on PCR was 21% chlamydia, 10% trichomonas and 8% gonorrhoea. Partner notification choices were recorded for 39 women (36%) in the home group and 69 (64%) in the clinic group. The majority of sexual partners were boyfriends; eight women in the clinic group had multiple partners. Most women chose PDPM (82% home vs 90% clinic). The main reasons stated were that the partner was working, was too busy, or would not come to the clinic, and to ensure treatment. Ninety percent were interviewed at the follow-up visit. Reported partner reactions ranged from relieved to worried and more than a third had no reaction. Nearly all partners (94% home vs 92% clinic) reportedly took the medication or went for treatment. Within the PDPM group, 86 to 90% of partners took the medication in front of the participant. Conclusions: PDPM could be used as a strategy in this community to improve STI treatment coverage, thus preventing re-infection and further spread of STIs.

TP-176 PREDICTORS OF STI VACCINE ACCEPTABILITY AMONG LATINO PARENTS FOR THEIR ADOLESCENT CHILDREN

M. Bair, B.E. Juliar, R.M. Mays, S.M. Perkins, L.A. Sturm, G.D. Zimet

Indiana University School of Medicine, Indianapolis, Indiana,

United States of America

Objective: To examine the acceptability to Latino parents of sexually transmitted infection (STI) vaccination for their adolescent children. Methods: Latino parents who accompanied their 12-17 year old children to medical appointments completed Audio Computer-Assisted Self-Interviews. A STI vaccine acceptability scale was created by summing across 3 items measuring acceptability of

gonorrhea, genital herpes, and HIV vaccines. For all items, a 5-point response format was used (1=strongly disagree to 5=strongly agree). Because the scale scores were very skewed, they were dichotomized to form two groups of low and high acceptors. Potential predictors of acceptability included parental health beliefs, parent and child age, and parental history of STI. Data were analyzed via logistic regression.

Results: 119 Latino parents (24-60 years old; 90% female) participated. The high acceptability group included 88 parents whose vaccine acceptability scores were 14 or 15. The low acceptability group included 31 parents whose scores ranged from 3 to 13. Logistic regression results indicated that anticipation that STI acquisition would lead the child to experience negative affect (odds ratio = 1.05, 95% CI = 1.01-1.10, $p = 0.019$) and perceived severity of STI (odds ratio = 1.26, 95% CI = 1.01-1.56, $p = 0.040$) were associated with greater vaccine acceptance.

Conclusions: Most Latino parents (74%) were in the high acceptability group, indicating very high levels of interest in STI vaccination for their children, which is consistent with a similar study in non-Latino parents. Even the low acceptability group included 19 parents with relatively high scores of 12 or 13 out of 15. Two potentially modifiable parental health beliefs were predictive of acceptability, which may have implications for successful implementation of future STI immunization programs.

TP-177 SAFE THOUGHTS: REDUCTION IN SEXUAL RISK BEHAVIOR IS RELATED TO INTERVENTION-ASSOCIATED INCREASES IN PSYCHOLOGICAL RESOURCES IN A CONTROLLED, RANDOMIZED TRIAL

E.C. Holden¹, R.N. Shain¹, W.B. Miller², S.T. Perdue¹, J.M. Piper¹, J.E. Korte¹, J.D. Champion¹

¹ *Univ Tx Health Science Ctr San Antonio, San Antonio, United States of America*

² *Transnational Fam Res Inst, APTOS, California, United States of America*

Objectives. A controlled, randomized trial of a cognitive/behavioral intervention for high-risk minority women significantly reduced STD reinfection at 6-, 12-, and 1-year cumulative follow-up (NEJM: 340:93,2002). We accomplished this by reducing high-risk sexual behaviors associated with STD acquisition among study participants (STD: 29:9,2002). In this study, we determined whether reduction in behavioral risk was accompanied by intervention-associated increases in psychosocial well-being measures in a sample of 477 women.

Methods. In multivariate analyses, we evaluated intervention effect on Self-Esteem, Self-Denigration, Locus of Control, and Generalized Efficacy at one-year cumulative follow-up, controlling for baseline values. Measures were assessed comparing subjects above the 75th percentile. We also determined the degree to which these effects were associated with changes in behavioral risks. Finally, we tested the potential mediating role of psychological resources on behavioral risk reduction in multivariate logistic regression analyses.

Results. Women in both the intervention and control groups showed significant increases beyond baseline values in Self-Esteem ($p=.016$) and Generalized Efficacy ($p=.048$). Additionally, intervention women increased more than controls in Esteem ($p=.022$), Denigration ($p=.107$), Locus of Control ($p=.02$), and Efficacy ($p=.040$). Significantly, increases in these measures were positively associated with reduction of three of five behaviors related to STD infection: mutual monogamy, safer sex practices, and taking three months or more between sex partners. There were more modest associations between psychological factors and compliance with treatment protocols for the initial infection and reduction of douching after sex. Intervention-prompted behavioral risk reduction was mediated by concurrent increases in psychological resources in logistic regression models of each behavior. Conclusion: Intervention-related change in sexual risk behaviors was associated in most cases with corresponding increases in measures of psychosocial well-being. The intervention was successful in synergistically increasing participants' psychological resources in a way that promoted positive behavioral change.

TP-178 SPREADING THE 'A-WORD': DELAYING SECONDARY PREVENTION OF SEXUALLY TRANSMITTED DISEASE AMONG PUBLIC SCHOOL ADOLESCENTS

*E.C. Holden, K.A. Plastino, R.S. Schenken, H.S. Patyrak
Univ. Tx Health Science Ctr San Antonio, San Antonio,
United States of America*

Objectives: Sexual activity is frequent among adolescents, with associated consequences such as sexually transmitted diseases and unintended pregnancy. We evaluated the efficacy of an abstinence-focused intervention on knowledge, attitudes, and behavioral intentions of 1,068 predominantly Mexican-American middle school adolescents aged 12 to 15 years (grades 6-8). We hypothesized increased knowledge about the potential consequences of sexual activity and simultaneous increased willingness to delay sexual activity until establishing a long-term relationship.

Methods: Students received 3-10 weekly sessions of approximately 45 minutes each, including information about the potential negative consequences of sexual activity, methods of preventing sexually transmitted diseases and pregnancy, and communication skills to negotiate lowest-risk relationships. Intervention efficacy was evaluated using t-tests and chi-square tests for nominal measures, and multivariate logistic regression analyses for nominal measures to control potential confounders as required.

Results: Students correctly answered 54% of knowledge questions at pretest, and 67% at post-test (effect-size 24%, $p<.01$). Similar shifts in attitudes were observed, including increased beliefs that sex is not a safe activity for teens (74% vs. 84%, $p<.01$) and that abstinence is a 100% effective means of preventing adverse consequences (68% vs. 78%, $p<.01$). Dramatically, 33% of participants believed that a person should wait until they are in a long-term relationship before engaging in sexual activity at pretest, and 49% at post-test ($p<.001$); this change was explained by observed increased knowledge and attitudes (multiple $r=0.72$, $p<.001$).

Conclusions: The intervention significantly increased middle school adolescent knowledge about the potential adverse consequences of sexual activity from pretest to post-test. Simultaneously, attitudes towards sexually activity changed, and intentions to abstain in sex increased significantly subsequent to intervention participation. Moreover, shifts in knowledge and attitudes were significantly associated with increased intentions to abstain from sex until the establishment of a long-term relationship.

TP-179 RISK FOR HAVING A STI AND REMAINING UNTREATED AMONG FSW PARTICIPANTS IN AN INNOVATIVE STI SCREENING AND TREATMENT PROGRAM: THE PREVEN MOBILE TEAM (PMT)

P. Segura

Asociacion Civil Impacta, Lima, Peru

Objectives: To identify predictor variables for testing positive for a STI and for remaining untreated one week after screening among FSW in urban Peru.

Methods: A cross-sectional survey was conducted among FSW receiving STI screening and treatment services from the PREVEN Mobile Team (PMT) in 6 Peruvian cities. FSWs who tested STI-positive and were not subsequently reached by the PMT to receive treatment were compared to those who tested positive and were reached for treatment.

Results: Ninety percent (2,189) of FSW participants in the PMT agreed to participate in the survey. The mean age was 26.5 years, 97% could read and write and most were not married. The most common sex work venues were night clubs (44.5%) and bars (23.9%); 23% had worked in other cities over the previous 6 months. While 64.7% reported condom use during their last sexual encounter, 46.5% did not have a condom 'on hand.' Gonorrhea prevalence was 4.3% and chlamydia prevalence was 13.4% by PCR test. We identified 136 (33.5 %) FSWs who did not receive treatment within one week of vaginal samples being collected. Predictor variables for those who were not treated included: work in Pucallpa or Cusco, age less than 25 years, work in bars, and infrequent sex work (working only 1 day during the last week or having fewer than 7 clients during the last week). In a multivariable logistic regression only work in Pucallpa (OR 9.6, 95% CI 4.77-19.25), work in Cusco (OR 10.4, 95% CI 1.32-4.42), and having less than 7 clients during the last week of sex work (OR 2.5, 95% CI 1.25-4.97) remained significant.

Conclusions: Risks associated with failure of FSW to receive STI treatment were not linked to sexual behavior, but to geographic location and fewer clients.

TP-180 TELEPHONE COUNSELING TO REDUCE BACTERIAL SEXUALLY TRANSMITTED INFECTION (STI) AMONG HIGH-RISK WOMEN

C.N.M. Kurth¹, A. Angulo², H. Hutchins¹, D. Richart³, V. Gonzales⁴, M.R. Golden¹

¹ *University of Washington, Seattle, WA, United States of America*

² *GroupHealth Com Foundation, Seattle, United States of America*

³ *Lifelong AIDS Alliance, Seattle, United States of America*

⁴ *Center for Health Educ Res, Seattle, United States of America*

Objectives: Pilot an intervention to reduce the risk of *C. trachomatis* (CT) and *N. gonorrhoeae* (NG) re-infection.

Methods: Conducted focus groups and intensive interviews in English and Spanish with high-risk young women and men (n = 28). Data were transcribed and coded using a conceptual framework. These data informed our motivational-interviewing counseling intervention: three phone sessions followed by a mailed written summary, with women ages 14 – 30 years who had ? two CT/NG infections in the last two years. At two months follow-up, women mailed a urine specimen for CT/NG re-screening, repeated a phone-based behavioral interview, an anonymous interactive voice response (IVR) questionnaire, and a qualitative acceptability interview.

Results: Formative data themes included STI risk misinformation and partner communication issues. English-speakers preferred an intervention delivered in an anonymous setting. Twenty-four of 50 women (48%) referred over a three-month period participated, of whom 19 (79%) completed all three phone sessions and five (21%) completed two sessions. All participants made a prevention plan: abstinence (38%), partner communication (25%), condoms (17%), mutual monogamy (17%). Twelve participants (52% of those completing all 3 sessions) mailed urine specimens for CT/NG re-screening; 22 (96%) completed the second behavioral interview. Seventeen women (74%) did the IVR survey, and 21 (91%) agreed to the qualitative acceptability interview. Intervention acceptability was high, with 88% saying they felt individuals would benefit from telephone-based STI prevention services.

Conclusions: Young women at high risk for bacterial STIs wanted didactic information, tailored messages, and sexual partner negotiation strategies. A telephone-delivered counseling intervention incorporating these elements was feasible and acceptable. Since delivered centrally using communication technology and a standardized protocol, this intervention may be scalable to public health practice level.



Figure 1: Project SHINE Phone Counseling

SESSION: TP - E17 BEHAVIORAL SCIENCE-MULTIPLE STI'S

TP-181 REASONS ADOLESCENTS GIVE FOR HAVING SEX: DO THEY RELATE TO PARTNER-SPECIFIC RISK?

N.C. Liddon, M. Hogben, E. Koumans

Centers for Disease Control & Prevention, Atlanta, United States of America

Objectives: Young women's motivations for having sex may inform the development and implementation of sexual-risk reduction interventions. This study looks at qualitative answers young women gave for having sex with a specific partner and how they relate to condom use with that partner.

Methods: Researchers recruited young women ages 13-19 years from a public adolescent health clinic in Atlanta, GA. Respondents (n=186) were asked about demographics, condom use, and three reasons why they had sex. Chi-squares and one-way ANOVAs tested differences in ever and consistent use of condoms in the previous 3 months and reasons for having sex.

Results: Open-ended response themes for reasons included: love (27.4%), wanting to (27.4%), physical attraction (26.3%), safety/trust (24.7%), personality (23.1%), feeling liked (10.2%), sense of knowing (9.7%), curiosity (7.5%), long relationship (6.5%), money/support (5.9%), partner pressure (5.4%), peer pressure (3.2%), and being drunk/high (2.7%). Adolescents were more likely to use a condom if they said they had sex because they felt liked (63% vs 42% of sex acts; $p=.02$) and received gifts or money (75% vs 48% of sex acts; $p=0.05$). Younger participants cited physical attraction ($p=.05$) and personality ($p=0.02$) more often, while older respondents listed wanting to have sex ($p=0.02$).

Conclusions: Contrary to common perceptions, female adolescents often cite adult-like emotions of love, trust, and knowing a partner as reasons for having sex with someone. Motivations are tied to condom use and change with age, perhaps as a result of developmental processes or sexual experiences. Intervention efforts to reduce sexual risk should focus on partner characteristics including reasons for having sex.

TP-182 WHAT ARE THEY REALLY DISCLOSING? STI AND HIV STATUS DISCLOSURE AMONG MSM WHO SEEK PARTNERS ON AND OFF THE INTERNET—QUALITATIVE AND QUANTITATIVE FINDINGS

R. Kachur¹, L. Lloyd², S. Bull³, C. Rietmeijer²

¹ Centers for Disease Control & Prevention, Atlanta, United States of America

² Denver Public Health, Denver, CO, United States of America

³ Univ. of Colorado Health Sci., Denver, CO, United States of America

Objectives: To investigate the consistency and type of disclosure of HIV/STI status among men who have sex with men.

Methods: Thirty-eight men (79% White, 71% gay-identified, mean age=34 years) were recruited from three Denver-based venues (STD clinic, bath houses, and online) to complete a quantitative survey and a qualitative, in-depth interview about sexual behaviors. The 38 men were a sub-sample of a larger survey (N=158). Men participating in both quantitative and qualitative surveys had higher levels of education than men who only participated in the quantitative survey.

Results: Only 8 (21%) of the men in our sub-sample responded that they discussed HIV/STI status with all sex partners. The majority (76%) discussed HIV/STI status with only some of their sex partners. Qualitative data analysis reveals that these discussions are broad and lacking important details. Conversations are often limited to one generalized question or statement such as 'Have you been tested?' or 'I've been tested and I'm ok.' without clarifying type of HIV/STI test or when testing occurred. Furthermore, qualitative data show that a discussion of status does not equate with safer sexual behaviors; rather, men who report discussing status are still engaging in risky sexual behaviors.

Conclusions: In light of the increasing STI incidence among MSM (particularly syphilis and gonorrhea), the re-emergence of certain STIs (lymphogranuloma venereum), as well as the potential for HIV super infection of those already infected with HIV, it is important to consider ways to improve the consistency and quality of HIV/STI disclosure among potential sex partners. Health education interventions need to promote more than just the disclosure of HIV/STI but should encourage the discussion of vital information such as STI type and dates of last tests.

TP-183 EARLY CONDOM USE BY ADOLESCENTS DOES NOT PREDICT INCREASED NUMBER OF SEX PARTNERS; IT DOES PREDICT LOWER RATES OF STIS: A LONGITUDINAL STUDY WITH BIOMARKERS

T. Shafii, K. Stovel, K.K. Holmes

University of Washington, Seattle, WA, United States of America

Objectives: Some policymakers have worried that early condom use by adolescents would encourage promiscuity. This study compares subsequent sexual behaviors and risk of sexually transmitted infections of those who did and did not use condoms at sexual debut.

Methods: A sample of 4,018 sexually active adolescents was followed over seven years by The National Longitudinal Study of Adolescent Health (1994-2002). During Wave III audio-computer-assisted self-interview was used to collect data on sexual behavior and urine specimens were collected for detection of sexually transmitted infections.

Results: Among adolescents interviewed on average 6.8 years after sexual debut, those reporting condom use at debut were more likely to report condom use at last sex and had only half the odds of testing positive for chlamydia or gonorrhea when compared to those who did not use condoms at sexual debut (adjusted OR 0.47 (95% CI 0.25, 0.89)). The reported lifetime number of sexual partners did not differ.

Conclusions: Adolescents who use condoms at sexual debut do not report increased numbers of sexual partners, and actually more often engage in subsequent protective behaviors and experience fewer STIs.

TP-184 PSYCHOLOGICAL DISTRESS AND STD HISTORY: A COMPARISON OF STD AND PRIMARY CARE CLINIC ATTENDEES

S. Leichter¹, G.D. Zimet², S.L. Rosenthal³, R. Brady⁴, K.H. Fife²

¹ Centers for Disease Control & Prevention, Atlanta, United States of America

² Indiana University School of Medicine, Indianapolis, United States of America

³ University of Texas, Galveston, United States of America

⁴ Cincinnati Children's Hospital, Cincinnati, United States of America

Objectives: High levels of depressive symptoms have been reported in STD clinic clients. This study examined levels of psychological distress and their relationship to STDs across different clinics.

Methods: 689 adult patients from one STD clinic and two primary care clinics in Indianapolis, IN participated in this study. General psychological functioning was assessed using Brief Symptom Inventory (BSI) scales and items on the SF-12. BSI scales measured anxiety, paranoid ideation, hostility, depression, and interpersonal

sensitivity ($\alpha = .80-.89$). Multiple linear and logistic regression models were used and included demographics as covariates.

Results: General psychological functioning did not differ by age, gender, race or type of clinic. 50% of participants reported almost no psychological distress in the past 7 days and only 3% had a great deal of distress. Gender and race were associated with measures of psychological adjustment and were controlled for in the multiple linear regression analyses. STD clinic clients had significantly higher specific distress than primary care clients as evidenced by lower levels of peacefulness ($R^2 = .032, p = .035$) and energy ($R^2 = .091, p = .003$) and higher levels of depression ($R^2 = .006, p = .042$). 40% of participants reported a history of ≥ 1 STD. STD history was associated with number of lifetime partners, race and clinic type. After controlling for these factors, those with higher levels of general psychological distress were more likely than those with lower distress to report a history of STDs ($OR = 1.45, 95\%CI = 1.12-1.89, p = .005$).

Conclusions: STD and primary care clinic attendees had similar levels of general psychological distress. However, consistent with previous research, STD clients had higher levels of depression than primary care clients. Across clinics, those with higher levels of distress were more likely to report a history of STDs.

TP-185 SPACES THAT MATTER: UNDERSTANDING SOCIAL NETWORK AND CONTEXTUAL INFLUENCES ON GAY MEN'S SEXUAL BEHAVIOUR

A.M.A. Smith¹, M. Pitts¹, J. Grierson¹, P. Pattison², G. Robins²

¹ La Trobe University, Melbourne, Australia

² The University of Melbourne, Melbourne, Australia

Objectives: To explore the ways in which social space, as reflected in the structure and composition of social networks, and physical space, as reflected in the settings in which sex takes place, interact to enable or constrain different forms of sexual activity.

Methods: This is a quantitative study of sexual practices and social networks of 202 gay and bisexual men in Melbourne, Australia.

Results: The men provided data on 790 sexual events. Just over half the events did not involve any anal intercourse and of those that did twice as many involved protected rather than unprotected anal intercourse. The type of sexual activity that took place was associated with the characteristics of study participant, the composition of their social network, the characteristics of the partner and the setting in which the encounter took place.

Conclusion: Factors associated with patterns of safe and potentially risky sexual practices exist at the level of the individual, the encounter and the setting in which the encounter takes place. This complexity suggests that targeting of single factors for intervention is unlikely to be effective.

TP-186 CENTERS FOR DISEASE CONTROL AND PREVENTION TREATMENT GUIDELINE DISSEMINATION AND USE BY PHYSICIANS

M. Hogben¹, Y.H. Wimberly², S. Moore²

¹ Centers for Disease Control & Prevention, Atlanta, United States of America

² Morehouse School of Medicine, Atlanta, United States of America

Objectives: We evaluated how the Centers for Disease Control's STD treatment guidelines were disseminated among physicians in a large Southeastern US metropolitan area with high STD rates.

Methods: A paper and pencil survey was distributed via priority mail to a random sample from a comprehensive list of Atlanta-area physicians, 416 (34%) of whom responded with complete data. Physicians were drawn from a variety of primary practice settings: 59% worked in physician-owned settings; 5% worked in managed care settings; and 26% worked in other clinic settings. Single-specialty settings (73%) were more common than multi-specialty settings (27%).

Results: Most physicians (84%) treated STD, with a further 10% referring cases. Of those treating STD, 56% owned a copy of the 2002 CDC treatment guidelines, and 26% knew how to access guidelines. Corresponding figures for physicians not treating STD were 25% and 30%, $p < .001$. Among physicians who had acquired a copy of the guidelines, 73 (39%) cited mail and 129 (52%) cited the internet as their means of acquisition. Other guideline sources (6%) and colleagues (3%) made up the bulk of remaining responses. Of the 73 who acquired guidelines via mail and the 129 who acquired guidelines via the internet, 24 (33%) and 12 (9%) mentioned CDC specifically. Having a copy or knowing how to access guidelines was associated with seeing fewer patients weekly, $p < .01$, and with primary specialty, with obstetrician/gynecologists (97%) being most likely and pediatricians (65%) being least likely, $p < .001$. Conclusions: The 2002 guidelines were the first to be readily available over the CDC website, and results suggest many physicians took advantage of this mode. Although only a small proportion mentioned the CDC website specifically, it is likely that many more accessed the CDC website.

TP-187 PREDICTORS OF PARTNER NOTIFICATION FOR C TRACHOMATIS AND N GONORRHOEA: AN EXAMINATION OF SOCIAL, COGNITIVE, AND PSYCHOLOGICAL FACTORS

R. Schwartz¹, E.S. Malka¹, J. Williams¹, A. Cintron¹, M. Hogben²,

N. Liddon², M. Augenbraun¹, S. Rubin³, W.M. McCormack¹, T. Wilson¹

¹ SUNY Downstate Medical Center, Brooklyn, United States of America

² Centers for Disease Control, Atlanta, United States of America

³ NYC DOH-Bureau of STD Control, New York, United States of America

Objectives: Patient-based referral is the most common means of notifying partners of their exposure to STD. This research examines whether notification self-efficacy, intention to notify, substance use, depression, and demographic characteristics predict whether patients notify their sexual partners about potential STD exposure within 1-month of an STD diagnosis.

Methods: Baseline and 1-month follow-up data were collected from consenting patients at clinics in low-income, urban communities in Brooklyn, New York who tested positive for C trachomatis or N gonorrhoeae. Patient referral was defined dichotomously as

those who did versus did not notify all eligible partners as per CDC treatment guidelines. A Generalized Estimating Equation model with repeated measures was used to analyze the data.

Results: 80% of participants indicated that they had notified all partners. Participants were more likely to have notified all partners if they had greater intention to notify at baseline (OR=3.5, 95% CI=1.2, 10.2), if they had only one partner (OR=3.5, 95% CI=1.3, 9.4), and if they did not drink alcohol regularly (OR=2.8, 95% CI=1.0, 7.9). Depression, marijuana use, notification self-efficacy, and demographics did not significantly contribute to the best fitting model. Rates of depressive symptoms were significantly higher for women than men and frequency of marijuana use and number of partners were significantly greater for men than women.

Conclusions: Although patient referral is typically construed as less effective than provider-assisted referral, results indicated that many participants were able to notify their partners on their own despite psychosocial barriers. Given the role that alcohol use plays in both risky sex (including putting someone at risk for having a greater number of partners) and decreased STD partner notification, alcohol use should be targeted in interventions aimed at improving partner notification.

TP-188 MEXICAN-AND AFRICAN-AMERICAN WOMEN WITH SEXUALLY TRANSMITTED INFECTIONS: RELATIONSHIP OF ABUSE AND RISK FOR PELVIC INFLAMMATORY DISEASE AND BACTERIAL VAGINOSIS

J.D.C. Dimmitt Champion, R.N. Shain, J.M. Piper, J.E. Korte, A.E.C. Holden, S. Perdue

University of Texas Health Sci Center SA, San Antonio, United States of America

Objective: To determine the relationship of sexual or physical abuse to the pathology of genitourinary symptoms that impact on diagnoses of STI, bacterial vaginosis (BV) and risk for PID among minority women with STI.

Methods: This study is part of a controlled randomized trial of effects of sex- and culture-specific behavioral interventions on STI recurrence. Principal outcome variable was subsequent chlamydial or gonorrheal infection, evaluated on an intention-to-treat basis by logistic-regression. Mexican- and African-American women (15-45 years) with current non-viral STIs were recruited from public-health clinics. Following enrollment, participants received targeted physical exams and interviews including assessments for sexual or physical abuse, genitourinary symptomatology, STI, BV and risk for PID. Self-report data assessing PID risk included age of first coitus, numbers of sex partners, recurrence of STI, and health seeking behaviors. Health care barriers were categorized as financial, logistic, affective and necessity.

Results: 862 Mexican- and African-American women were enrolled; 62% reported sexual or physical abuse. Abused women reported earlier first coitus, more partners per year sexual activity, more concurrent relationships and higher BV and STI re-infection rates than non-abused. Abused women waited longer to seek medical care, experienced more barriers to health care and more pathological genitourinary symptomatology and abnormal physical exams than nonabused. Clinicians were not more likely to report presumptive current diagnoses of PID for abused than non-abused women.

Conclusions: Findings differentiate abused women at high risk for STI reinfection, BV and PID. Due to its considerable impact on genitourinary symptomatology and risk for PID, abuse assessment is essential in clinical management of minority women with STI, BV and diagnosis of PID.

TP-189 TEMPORAL TRENDS IN SEXUAL BEHAVIORS AND STD HISTORY AMONG 18 – 39 YEAR OLD SEATTLE, U.S.A RESIDENTS: RESULTS OF RDD SURVEYS

O. Aral¹, D. Pate², K. Holmes³, B. Foxman²

¹ Centers for Disease Control (CDC), Atlanta, United States of America

² University of Michigan, Ann arbor, United States of America

³ University of Washington, Seattle, United States of America

Objectives: To describe sexual behaviors of Seattle residents in 2003-2004 and report changes since 1995.

Methods: We conducted a random digit dial survey among 18-39 year old men and women in 2003-2004. We compared the results to the results of a 1995 RDD Survey conducted in the same population. Questionnaire batteries and sampling methods were similar in the two surveys.

Results: Between 1995 and 2004, the median number of lifetime sex partners increased from 7 to 8. Vaginal douching declined from 70.6% to 25.9% (p=0.004) among African American women; from 8.3% to 5.9% (p<.05) among Asian American women; and from 15.5% to 2.4% (p<.05) overall. After adjustment, proportions of women who reported practicing vaginal douching (OR=0.13; 95% CI 0.7–0.22); proportion of respondents who reported history of any STD (OR=0.70; 95% CI 0.53–0.93); and history of gonorrhea (OR=0.48; 95% CI 0.25–0.89) declined between 1995 and 2004. Conversely, proportion of respondents who reported only same sex partners (OR=3.27; 95% CI 1.33–9.88); condom use at first sex with most recent sex partner (OR=1.38; 95% CI 1.06–1.78); and reported practice of anal sex (OR=2.01; 95% CI 1.21–3.48) increased between 1995 and 2004. Among African Americans proportions reporting an age difference of only two years with their partners declined from 64.3% to 25.9% (p<.05) indicating increased age mixing.

Conclusions: Some risk behaviors declined while others increased between 1995 and 2004; several trends were divergent between the general population and minority populations. Our data hint at an increasing divergence in risk behaviors and morbidity between minority populations and the general population. Also anal sex and number of sex partners have increased. These patterns have serious implications for the design, targeting and implementation of prevention programs.

TP-190 SELF-PERCEIVED RISK FOR ACQUIRING SEXUALLY TRANSMITTED INFECTIONS (STI) IN SEXUALLY ACTIVE MEN AND WOMEN AGED 15-30 IN BRITISH COLUMBIA, CANADA

V.P. Remple¹, J. Barnett¹, G.S. Ogilvie¹, L. Knowles¹, D. Taylor¹,

D.M. Patrick¹, R.C. Brunham², T.L. Kwindt¹, M.L. Rekart¹

¹ BC Centre for Disease Control, Vancouver, Canada

² UBC Centre for Disease Control, Vancouver, Canada

Objectives: To describe perceptions of risk for acquiring STI, and correlates of perceived high risk (HR) in a population sample.

Methods: Anonymous, self-completed questionnaires were mailed

to individuals randomly selected from the provincial medical services population registry, stratified by age and sex. Stepwise logistic regression modeled the association between HR and variables of interest and those achieving a significance level of 0.1 or greater in bivariate analyses (chi square test).

Results: Of the 1097 participants, 92 (8.4%) reported HR. There were no differences between HR and non-HR in age, ethnicity, urban/rural residence, or sex. HR was associated with living with parents (52% vs. 40%, $p < 0.05$), being under 17 at sexual debut (58% vs 41%, $p = 0.003$), 6+ lifetime sex partners (51% vs 33%, $p < 0.01$), 2+ sex partners in the past three months (30% vs 10%, $p < 0.01$), using drugs or alcohol prior to last sex (45% vs 22%, $p < 0.01$), having a current STI (18% vs. 1%, $p < 0.01$), and any genitourinary symptoms in the past three months (59% vs 39%, $p < 0.01$) and one week (26% vs 11%, $p < 0.01$). Of the 12 variables entered into the multivariate model, six were significantly associated with HR, including current STI (OR 15, 95%CI 6-37), symptoms in the past week (OR 2.7, 95%CI 1.4-5.1), 2+ sex partners in the past three months (OR 4.4, 95%CI 1.2-17), and using alcohol or drugs prior to last sex (OR 1.9, 95%CI 1.2-3.2). Living with a romantic partner was negatively associated (OR 0.4, 95%CI 0.2-0.8).

Conclusion(s): Individuals who engage in higher risk sexual activities or who have symptoms may understand themselves to be at greater risk for STI acquisition. This offers a window of opportunity for practitioners and educators to provide education and interventions to decrease STI risk in this population.

TP-191 INVOLVING MEN IN REPRODUCTIVE HEALTH CARE IN TETE, MOZAMBIQUE. A FIRST STEP TOWARDS IMPROVING STI SCREENING AND TREATMENT OF PREGNANT WOMEN WITH THE PARTNER METHOD

A. Mahomed¹, B. De Hulsters², J. Deblonde², B. Dos Santos³, W.P.W. Arrazola de Onate², M. Temmerman²

¹ Ministry of Health, MAPUTO, Mozambique

² International Centre for RH, GENT, Belgium

³ Red Cross Mozambique, MAPUTO, Mozambique

Objectives: To evaluate the feasibility of involving men in reproductive health care in Mozambique to improve STI screening and treatment of their pregnant wives.

Methods: Focus group discussions (FGD) informed us on the social habits and cultural beliefs related to sexual and reproductive health in the community of Tete and Moatize. Key informant interviews and triangulation validated our findings.

Results: Through 16 FGD's including 149 men and women on themes such as gender relations, beliefs, knowledge and attitudes about pregnancy, antenatal care, STI and treatment in the community and in health centers, were explored. Men are the decision makers also concerning women's reproductive health. They are aware they lack information but due to gender expectations they cannot share this with women. Men expressed interest for education on reproductive health issues and involvement of men in reproductive health care. Women are taught to be subordinate to men. They are expected to marry, serve their husband and his family, who paid her bride price and produce children to gain social status. Women affirmed the need to decrease gender barriers and promote communication on sexuality and reproductive health. Some basic knowledge on

STI exists, but intergender communication and access to reproductive health care for couples are missing. Health Centers do not stimulate men to participate in reproductive health care as nurses suffer the same gender roles as society, complicating intergender communication on sensitive issues as STI.

Conclusions: Insights in the existing cultural and social structures will be used to create community and service level interventions to decrease gender inequalities and to stimulate male involvement in reproductive health.

TP-192 DEVELOPMENT OF CULTURALLY COMPETENT, EVIDENCE-BASED COMMUNITY HEALTH INTERVENTIONS FOR VULNERABLE AT-RISK POPULATIONS

J.D.C. Dimmitt Champion, R.N. Shain, J.M. Piper, J.E. Korte, A.E.C. Holden, S. Perdue

¹ Univ. of Texas Health Sci Center SA, San Antonio, United States of America

Background: This study builds on behavioral interventions developed in the studies, 'Modifying STD Risk Behavior among Minority Women.' These studies are unique in that they designed and evaluated culturally relevant, minority-women-specific interventions based upon the AIDS Risk Reduction Model and were shown to be effective through controlled randomized trials. These interventions, grounded in knowledge of the target populations' behavior and culture, use STD and detailed measures of sexual behavior as primary outcome variables. Results of the first trial demonstrated participants receiving intervention were significantly less likely to be re-infected with STD. Although the intervention was successful with the sample as a whole, sexually abused adolescents were not helped. Subsequent studies indicated physically or sexually abused adolescents using drugs or alcohol had the highest STD and unintended pregnancy rates and were not benefiting from the intervention. This study focuses on reducing rates of abuse recurrence, STD/HIV and unintended pregnancy among these women by changing high-risk sexual behaviors, decreasing substance use and encouraging contraception.

Objective: Expand risk-reduction interventions created in previous studies to further increase intervention efficacy for this particularly vulnerable, high-risk group.

Methods: An adolescent intervention (n=70) was pilot-tested in developmental studies. A controlled randomized trial for Mexican-American and African-American adolescent women with STD and a history of abuse (n=600) is in progress.

Results: Preliminary findings indicate greater contraception and lower sexual risk behaviors, substance use, abuse recurrence, unintended pregnancy and STD rates than previous studies.

Conclusions: There is a need for community-based, culturally sensitive, cognitive-behavioral interventions to reduce sexual risk behavior among adolescent women for prevention of STD/HIV, unintended pregnancy and abuse.

TP-193 FACTORS ASSOCIATED WITH BEHAVIOUR CHANGE AND TIME TO INFECTION WITH NEISSERIA GONORRHOEAE AND CHLAMYDIA TRACHOMATIS IN AN OBSERVATIONAL COHORT OF SEX WORKERS IN NAIROBI, KENYA.

R. Nguti¹, N. Mugo¹, J. Kwatampora¹, P. Kimani², E. Muthama², C. Cohen³

¹ Nairobi University, Nairobi, Kenya

² Kenya Medical Research Inst., Nairobi, Kenya

³ University of California, San Francisco, United States of America

Objective: To determine the influence of change in sexual behaviour in an observational cohort of female sex workers (FSW), and how these changes might influence the risk of acquiring Neisseria gonorrhoeae (GC) and Chlamydia trachomatis (CT) infections.

Methods: FSWs were enrolled in an observational cohort. Every two months sociodemographic and sexual history information was updated, and cervical samples collected for N. gonorrhoeae and C. trachomatis molecular testing. HIV and syphilis serologies were performed biannually.

Results: Two hundred and ninety nine women were recruited and followed up for a total of 474.72 woman-years (mean 1.83 ± 1.03 years, range: 0.05 – 3.76). GC and/or CT were detected in 72 (24.1%) women for an incidence of 28.0 infections per 100 woman-years. The number of clients per week at baseline (7.9; 95% CI, 4.8-11.1) decreased by .22 clients (95% CI .09-.35) after every 2-months, while report of using a condom ? 75% of the time with clients increased by 18% (95% CI 8% -28%) over this same period. Furthermore, HIV-uninfected women were 51% (95% CI 8% - 112%) more likely to use condoms than HIV-infected women. The decline in the number of clients per week (HR = .97; 95% CI, .94 - .99) and increased reporting of ? 75% condom use with clients (HR = .58, 95% CI .35 - .97) corresponded to decreases in GC and/or CT incident infection.

Conclusions: FSWs enrolled in an observational cohort increased condom use and decreased their number of clients per week, both of which corresponded to a decline in the number of new GC and/or CT infections. However, it is important that condom promotion campaigns aimed at FSWs in Kenya, work to find ways to rapidly increase condom use among those who are HIV-infected.

TP-194 WHY DO MEN WHO HAVE SEX WITH MEN (MSM) HAVE SEXUAL RISK BEHAVIORS? A SPANISH PSYCHOSOCIAL STUDY

D. Rojas¹, M.J. Martín², J.M. Martínez², J. Ballesteros¹, S. García², J. Del Romero¹

¹ Centro Sanitario Sandoval (SMS), Madrid, Spain

² Universidad Autónoma, Madrid, Spain

Background: Recent literature shows an alarming increase in the prevalence of various sexually transmitted infections (STI), particularly affecting men who have sex with men (MSM).

Objective: The main goal of the present study was to determine which factors predict and explain the sexual risk behavior (unprotected anal intercourse) in MSM. Specifically, we verified statistically a theoretical model based in the Theory of Planned Behavior.

Methods: A survey was conducted in a sample of 220 subjects attending an STI/HIV clinic and a non governmental gay association in Madrid, Spain. The model considered all the variables that produced a statistically significant change in a logistic regression

analysis. Then, a structural equation model was used to assess the theoretical model proposed. Variables were selected in a prior qualitative study.

Results: We found no statistically differences between the theoretical and the empirical models (Chi square= 10,935, p= .535), which means that both fit. In addition, the model was capable of predict 72% of the Intention to have a sexual risk behavior in the next month and 64% of the Sexual risk behavior variance. Between the variables included in the model, 'Motivation to act against the way my father wants to', 'Probability of giving more sexual pleasure to my sexual partner', 'Probability that my sexual partner feels more engagement in the relationship', 'Attitude towards the sexual risk behavior' were the more impressive. Other variables regarded substances consumption, perceived social norm, or the positive valoration of 'feeling insecurity'.

Conclusions: MSM have a remarkable level of information about STI and HIV. STI/HIV prevention should consider not only informational objectives, but also psychosocial determinants of behaviors. It seems that the way the important persons to them value their sexual behavior and the desire of generate more intimacy in their relationships partially explains the assumption of risks.

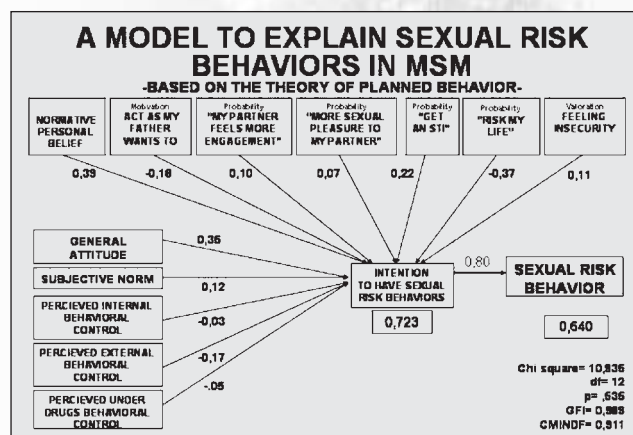


Figure 1:

TP-195 YOUNG AGE AND STI/HIV RISK AMONG WOMEN IN ZIMBABWE

M.S. Dunbar¹, M.J. Kang², A. Muchini², T Chipato², N.S. Padian¹

¹ University of California, SF, San Francisco, CA, United States of America

² UZ-UCSF Research Programme, Belgravia, Zimbabwe

Objective: To examine STI/HIV risk among young women in a longitudinal study of hormonal contraception and HIV/STI acquisition in Zimbabwe. **Methods:** 4492 women aged 18-35 were recruited from clinics surrounding Harare and screened for HIV; 2296 HIV-negative women enrolled. Demographic and behavioral data were collected, and PCR tests for Gonorrhoea (Gc) and Chlamydia (Ct), and wet mount for Trichomoniasis (Tv), were conducted at enrolment and quarterly for up to 24 months. Survey and HIV prevalence data were compared between younger (<20 years) and older (aged 21-35) women, using chi-square tests. Cox proportional hazards models examined associations between young age and incident Gc, Ct, or Tv. HIV incidence data are not yet available. **Results:** At screening, younger women (n=235) were less likely to be HIV-positive (18% vs 40%, p<0.01), more likely to be unmarried (6% vs 2%, p<0.01)

and initiated sex at an earlier age (16 vs 18, $p < 0.01$); there was no statistical difference for education, condom use or lifetime partners. Within the HIV-negative cohort, more young women always used condoms (32% vs 23%, $p = .01$) and non-hormonal contraception (41% vs 27%, $p < .01$). They had fewer lifetime pregnancies (1.1 vs 2.3, $p < 0.01$) but higher prevalence of Gc (14% vs 5%, $p < .001$), Ct (13% vs 6%, $p > .001$) and Tv (13% vs 8%, $p = .03$). In Cox modelling of longitudinal data, STI incidence was associated with younger age (HR 1.6, 95%CI 1.1-2.2) and multiple partners (HR 3.4, 95%CI 1.4-8.1); completing secondary school (HR 0.8, 95% CI 0.7-1.0) and pregnancy (HR 0.9, 95% CI 0.8-0.95) were protective. No association was found with marital status or condom use. Conclusions: Younger women had lower HIV prevalence but higher STI prevalence and incidence, suggesting that STI prevention should target younger women. Subsequent analyses will examine the relationship between young age and incident HIV.

TP-196 ORPHAN STATUS AND RISK AMONG ADOLESCENT GIRLS IN ZIMBABWE

M.J. Kang¹, M.S. Dunbar², N.P. Padian², S Laver¹

¹ UZ-UCSF Research Programme, Belgravia, Zimbabwe

² University of California, SF, San Francisco, CA, United States of America

Objectives: According to UNICEF, 1 in 5 children in Zimbabwe is orphaned. We examined the impact of loss of a parent on risk behaviors, pregnancy, HSV-2 and HIV prevalence in adolescent girls.

Methods: A convenience sample of 196 adolescent girls aged 16 to 19 was recruited from two peri-urban communities near Harare Zimbabwe. Information on demographics, sexual and romantic partnerships, sexual risk behaviors, alcohol and drug use, and reproductive health was collected through Audio Assisted Computerized Self Interview, and health history information was collected through a face-to-face interview. Participants were then tested for HIV, HSV-2 and pregnancy.

Results: Of participants, 29% had lost a father, 7% had lost a mother, and 20% had lost both parents. Participants who had lost a parent were more likely to be sexually active (40% vs 24%) and to be in a current sexual relationship (44% vs 19% of sexually active). Though not statistically significant, 12% who had lost a parent had drunk alcohol vs. 8% of those with both parents and 6% vs 1% had tried a drug. Participants who had lost a mother were at highest risk for both HIV (15% vs 3% with both parents and 4% for those who had lost a father, $p < 0.01$) and HIV-2 (15% vs 6% with both parents and 5% for those who had lost a father, $p = 0.03$). Participants who had lost either parent were more likely to ever have been pregnant: 23% with no parents, 15% who had lost a mother and 9% who had lost a father, compared to 5% who had not lost either parent ($p = 0.10$).

Conclusions: Adolescent girls who have lost a parent are at increased risk for STIs/HIV and pregnancy. Interventions should be developed to target these girls and young women, particularly those that have lost a mother.

TP-197 DRUGS, VIOLENCE, HOPELESSNESS AND DISEASE: SURVIVAL SEX IN A NONRANDOMIZED, UNCONTROLLED TRIAL

E.C. Holden

Univ. Tx Health Science Ctr San Antonio, San Antonio, United States of America

Objectives. STD interventions among commercial sex workers consider them a homogenous group regardless of whether they exchange sex for money or drugs. We previously reported an attempt by 19 women to exchange sex for money rather than drugs (Holden 2001; IJSTD & AIDS, 12(S2):179). Their failed attempt resulted in temporary reduction of STDs. Using detailed ethnographic information, we identified behavioral and psychological characteristics differentiating 'survival sex' from 'commercial sex' and rates of STDs. **Methods.** Ethnographic information obtained for 16 months was examined using qualitative data analysis software. Six salient themes emerged: drugs ('survival'), money, partners, condoms, violence, and hopelessness. We tabulated and compared them by the exchange of sex primarily for money ('Period 2'), to the exchange of sex primarily for drugs ('Period 1') using the Wilcoxon Signed-Rank Test. We determined factors associated with infection by Spearman Rank-Order Correlation Coefficients.

Results. Women reported a median=22 partners/month during the study. Less condom use and higher rates of STDs occurred when exchanging sex for drugs (Period 1; 2/19 'any use'; 12/19 STD) compared to sex for money (Period 2; 9/19 'any use'; 5/19 STD). Drug dependence was high in both periods (17/19 vs. 14/19), as was physical violence (14/19 vs. 12/19) and expressed hopelessness (14/19 vs. 12/19). Infection was negatively associated with sex for money ($r = .54$), but positively with drug dependence, condom use, violence, and expressions of hopelessness ($r = -.68, -.57, -.42, -.62$, respectively).

Conclusions. Sex for drugs is sex for survival, distinguishable from commercial sex, a form of monetary exchange. It is associated with drug dependence, violence, and hopelessness. Survival sex is not amenable to negotiation of condom use and lower rates of STDs. These differences should be considered when planning interventions for commercial sex workers.

SESSION: TP - B19 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- ANOGENITAL DERMATOLOGY

TP-198 ANAL SQUAMOUS INTRAEPITHELIAL LESIONS – AN UNDER-DIAGNOSED CONDITION

R.J. Hillman¹, A. Herat¹, M.J. Whitfeld², A. Meagher³

¹ STI Research Centre, Westmead, Australia

² Skin and Cancer Foundation, Darlinghurst, Sydney, Australia

³ St. Vincent's Hospital, Darlinghurst, Sydney, Australia

Objectives: Anal Squamous Intraepithelial Lesions (ASILs) are the suspected precursors of invasive anal carcinoma, the fourth most common malignancy among the HIV infected. Using the analogy of CIN (Cervical Intraepithelial Neoplasia), it has been suggested that early diagnosis and treatment of ASIL may reduce the incidence of anal cancer. Little is known about the epidemiology and clinical characteristics of ASIL. We therefore sought to investigate the characteristics of people presenting with ASILs.

Methods: The pathology database of the hospital was used to identify patients with a histological diagnosis of ASIL presenting between January 1994 and January 2004. A retrospective case note review was then performed to obtain information of the medical & demographic details, HIV status, CD4 counts, presenting symptoms, pre-biopsy diagnosis and histological appearances.

Results: Seventy seven patients were identified during the study period, 74 (96%) of whom were male. Fifty five (74%) of the males were known to be HIV infected, and none of the women. The number of cases presenting per year rose steadily over the study period from four per year in 1994, to 13 per year in 2003. Only 37% of patients had a pre-biopsy diagnosis of ASIL, with a wide range of alternative differential diagnoses initially considered. In particular, ASIL was frequently found in individuals with a pre-biopsy diagnosis of anal warts alone.

Conclusions: ASIL was significantly under-diagnosed prior to biopsy of the area. It was often asymptomatic and only detected coincidentally at biopsy. The rates of progression and regression of ASIL are currently poorly understood and its clinical significance is unclear. However, our study suggests that a high index of suspicion of ASIL should be maintained, especially in HIV positive gay men, particularly those with anal warts.



SESSION: WP - A8 BASIC SCIENCE- GONORRHOEA

WP-001 EMERGENCE OF HIGH LEVEL OF RESISTANCE TO AZITHROMYCIN IN NEISSERIA GONORRHOEAE STRAINS ISOLATED IN ARGENTINA

P. Galarza¹, B. Alcalá², L. Fernández Canigia³, L. Buscemi⁴, I. Pagano⁵, C. Oviedo⁵, J.A. Vazquez²

- ¹ INEI - ANLIS 'Dr. Carlos G. Malbrán', Buenos Aires, Argentina
- ² National Cent. for Microbiology, Majadahonda, Spain
- ³ Hospital Aleman, Buenos Aires, Argentina
- ⁴ Hospital Muñiz, Buenos Aires, Argentina
- ⁵ INEI - ANLIS 'Dr. Carlos G. Malbrán', Buenos Aires, Argentina

Several studies have shown that a single dose of azithromycin represent an alternative for treatment of gonorrhoeae and chlamydial infections. As part of the National Gonococcal Susceptibility Surveillance Program from the National Reference Center for STD in Argentina, two strains with high level of resistance to azithromycin were detected, the first one in November 2001 and the second one in May 2003, with MICs by Etest of >256 and 8 mg/l respectively. The MIC was determined independently in both Reference Laboratories from Argentina and Spain. The purpose of this study was then to characterize the mechanisms of resistance in these isolates. On the study design, three additional gonococcal strains isolated in Argentina, 2 with intermediate resistance to azithromycin and 1 susceptible isolate, were also included. Decreased susceptibility to azithromycin is mainly due to an overproduction of mtr (CDE)-encoded efflux pump determined by mtrR mutations. Although some specific mutations were observed in both highly resistant strains (Table 1), these changes do not explain the unusual pattern of resistance because they have been already described showing intermediate level of resistance. In addition, the analysis by PCR about the presence of the mef gene, erm methylase genes as well as the study of mutations in the petidyl transferase loop in domain V of 23S rRNA were negative for both resistant isolates. Further studies are now in progress to characterize the mechanisms for high level of resistance to azithromycin. The Auxotype/Serovar determination as well as the pattern profile by Pulse Field Gel Electrophoresis concluded that both resistant strains belong to two different clones that might have acquired the resistance in two independent genetic events. The finding of highly resistant strains proves the relevance of azithromycin susceptibility surveillance to define the real utility of this antibiotic for treatment of gonorrhoea in Argentina

Strain N°	MIC mg/L	Gly-45 → Asp-45	Deletion in 13 bp inverted repeat region	Additional Changes
1782	> 256	+	-	---
2498	8	-	-	Insertion of 2 T bases
2516	1	-	+	---
2518	1	-	+	---
3783	0.007	-	-	---

Table 1:

WP-002 NEISSERIA GONORRHOEAE ANTIMICROBIAL RESISTANCE IN EUROPE: ESSTI, THE FIRST EUROPEAN SURVEILLANCE DATA

I.M.C. Martin¹, S. Hoffmann², K.A. Fenton³, C.A. Ison¹

- ¹ Health Protection Agency, London, United Kingdom
- ² Statens Serum Institut, Copenhagen, Denmark
- ³ Centres for Disease Control, Atlanta, United States of America

Background: The first sentinel surveillance study for antimicrobial susceptibility of *Neisseria gonorrhoeae* across Western Europe was established in 2004 through ESSTI (European Surveillance of STIs). ESSTI is a European Union funded project to establish surveillance of STIs in Europe. Reference laboratories or specialist centres in 12 countries that are part of the ESSTI microbiology network participated in the surveillance study.

Methods: Consecutive isolates of *N. gonorrhoeae* from men and women were collected over a five month time period, up to a maximum of 100 isolates per country, from 12 European countries. Three countries had total coverage of all gonorrhoea diagnosed (Denmark, Scotland and Sweden), five had good regional coverage (Belgium, England and Wales, France, Greece, and Spain) and four had partial coverage in their country of all gonorrhoea (Austria, The Netherlands, Italy, Portugal). Susceptibility to penicillin, ciprofloxacin, ceftriaxone, azithromycin and tetracycline were determined in one of two testing laboratories by the agar dilution method. Results were compiled.

Results: 965 isolates, from 167 women, 779 men and 19 from whom the sex was unknown, were successfully retrieved and tested. Resistance to ciprofloxacin (MIC ?1mg/l) was above 5% in all countries (ranging from 53.1% to 7.6%). Resistance to azithromycin (MIC ?1mg/l), tetracycline and penicillin (chromosomal and plasmid mediated) were overall above 5%, with wide variation between countries.

Conclusion: This is the first surveillance data for *N. gonorrhoeae* antimicrobial susceptibility from the ESSTI microbiology network that is working towards a European GASP (Gonococcal Antimicrobial Susceptibility Programme). This data has highlighted very high levels of resistance to ciprofloxacin and penicillin in Western Europe. This has implications for treatment of gonorrhoea in each country and also for considering therapy for patients who have reported sexual contact abroad within Europe.

	QRNG	Reduced suscep. to ciprofloxacin	Penicillin PPNG	Penicillin CMRNG	Tetracycline TRNG	Azithromycin
Total Incidence	30.5%	2.3%	12.4%	7.7%	12.5%	8.6%
Countries with total coverage	41.3%	3.1%	15.0%	11.9%	19.8%	10.6%
Countries with good regional coverage	21.3	2.3%	7.6%	7.1%	10.6%	1.1%
Countries with partial coverage	34.3%	0.8%	15.3%	7.6%	8.9%	20.3%

Table 1: Results

WP-003 MOLECULAR EPIDEMIOLOGY OF CIPROFLOXACIN RESISTANT NEISSERIA GONORRHOEAE STRAINS ISOLATED IN ARGENTINA

P. Galarza¹, I. Pagano¹, C. Oviedo¹, L. Castro¹, J.A. Vazquez²
¹ INEI - ANLIS 'Dr. Carlos G. Malbrán', Buenos Aires, Argentina
² National Cent. for Microbiology, Majadahonda, Spain

Objective: Single 500 mg dose of ciprofloxacin (Cp) is the first line treatment for gonorrhoea in Argentina. 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 aim of this study was to characterize the strains exhibiting decreased susceptibility or resistance to ciprofloxacin isolated in Argentina over 1996 to 2004

Methods: MICs were determined by agar dilution method according to NCCLS; beta-lactamase production was detected using an iodometric method. Auxotype/Serovar were done by established procedures. In addition, plasmid profile by boiling method and Pulsed Field Gel Electrophoresis (PFGE) patterns using *NheI* and *SpeI* were determined

Results: Sixteen isolates were tested. All strains were susceptible to ceftriaxone and spectinomycin. By contrast, 15 isolates showed intermediate resistance to azithromycin (MICs 0,25-1 mg/L). Characteristics of the strains are showed in Table 1

Conclusions: It is interesting the low number of isolates with intermediate resistance (4) compared with those fully resistant (12). Therefore, a gradual increase of the level of resistance was not detected in this study

At least 7 QRNG clones might be circulating in Argentina according with the PFGE patterns profiles. One of these clonal lineages is expressing both IA or IB protein, probably because recombination events affecting to the corresponding gene. In our case the use of *SpeI* was irrelevant because it did not offer additional information to that was obtained with *NheI*. The next step will be to determine those mutations on the QRDR regions responsible for this resistance. Taking into account these findings, the monitoring of Cp resistance in Argentina takes special relevance.

A/S class	# Strain	Geographical origin/year	MIC (mg/l)			B-lactamase Plasmid	PFGE	
			Cip	Pe	Tc		NheI	SpeI
P/IBopt	1	Buenos Aires/96	0.125	0.5	2	-	S7	S4
P/IBlv	2	Cordoba/04	4	2	1	-	N1	S1
P/IBopt	1	Buenos Aires/04	4	0.25	1	-	N1	S1
F/IBopt	1	Buenos Aires/00	16	1	2	-	S2	S1
NR/IBopt	2	Santa Fe/00	2	0.25	2	-	S4	S1
NR/IBopt	1	Buenos Aires/01	16	64	2	3,05M4a	S5b	S2b
	1	Mendoza/01	16	64	2	3,05M4a	S5b	S2
NR/IBopt	1	Mendoza/01	8	64	2	3,05M4a	S5	S2
	1	Cordoba/04	4	0.125	0.25	-	S5	S2a
NR/IBast	1	Santa Fe/00	16	16	1	3,05M4a	S5c	S2a
NR/IBast	1	Mendoza/04	2	1	1	-	S5a	S2e
P/IBopt	1	Chaco/02	0.125	2	4	-	S3	S2d
NR/IBsty	1	San Juan/01	0.25	2	1	-	S6a	S3a
	1	Buenos Aires/01	0.25	2	1	-	S6	S3

Table 1:

WP-004 DEFINING BIOLOGICAL VARIATION IN COMPARATIVE GENOMIC MICROARRAY HYBRIDIZATION STUDIES OF NEISSERIA GONORRHOEAE

P.G. Backhouse, M.W. Gilmour, M.R. Graham, L-K. Ng
 National Microbiology Laboratory, Winnipeg, Canada

Objective: DNA microarray technology was used to conduct comparative genomic hybridizations (CGH) with wild type (strain FA1090) and clinically relevant auxotypes of *Neisseria gonorrhoeae*. Our goal was to develop a post-hybridization data normalization and analysis strategy that would identify divergent loci between strains while accounting for confounding technical contributions, such as spotting effect, dye effect, and slide-to-slide variation.

Methods: FA1090 and test DNA samples were differentially labelled and hybridized to a custom oligonucleotide microarray representing 2,184 FA1090 coding sequences (CDS), 8 plasmid CDS and 9 CDS belonging genetic island found preferentially in isolates causing disseminated infections. Mixed-effects Analysis of Variance (ANOVA) performed on Log2-transformed spot intensity values using Partek Pro™ statistical analysis software provided estimates for noise contributed by defined technical variables and enabled the statistical evaluation of non-technical (biological) variation of the hybridization intensities.

Results: These methods allowed us to determine the statistical significance of differential hybridization intensities between the test and reference strain for each CDS. After applying a false discovery rate of 5%, differential hybridization intensities were taken to represent putative sequence divergence. At this confidence level, our analysis scheme identified 32 FA1090 CDS that differ in strain FA19. We were also able to confirm the presence of all 9 island CDS in FA19.

Conclusions: PCR and sequence validation reveal that the described and analysis strategy provides accurate prediction of sequence divergence in *N. gonorrhoeae*. The same strategy could be extended to genomic comparisons in any other organism.

WP-005 COMPARISON OF RIBOTYPING, PULSE FIELD GEL ELECTROPHORESIS AND GENETIC TYPING TO DISCRIMINATE GONOCOCCAL STRAINS ASSOCIATED WITH EITHER OUTBREAK CLUSTERS OR RANDOM ISOLATES WITH IB-5 AND IB-7

M.L. Liao¹, H. Li², K. Bell¹, N.F. Eng², J.R. Dillon¹
¹ University of Saskatchewan, Saskatoon, Canada
² University of Ottawa, Ottawa, Canada

Objectives: To compare ribotyping, pulsed field gel electrophoresis (PFGE) and genetic typing methods to discriminate gonococcal isolates from outbreak clusters and from population studies.

Methods: The auxotype/serovar (A/S) types of 43 gonococcal isolates were determined previously: NR/IB-3 (12), NR/IB-5 (4), NR/IB-7 (6), P/IB-5 (6), P/IB-7 (5) and NR/IA-5 (10). NR/IA-5 isolates were associated with an outbreak in Toronto, and NR/IB-3 strains were identified from clusters in Ontario or Manitoba. The other isolates were randomly selected from those with similar A/S types derived from cross-Canada studies. Digestion of chromosomal DNA with *SmaI* was used for ribotyping and with *SpeI* for PFGE studies. For genetic typing, *porB*, *pilA* and *abcZ* genes of 38 isolates were PCR amplified, DNA sequences were determined analyzed.

Results: Isolates were grouped into 6 ribotyping profiles which were not correlated to A/S types. PFGE analysis produced 10-17 fragments per isolate (38 kb to 550 kb) that were resolved into 26 patterns. *porB* sequence analysis divided all isolates into two clusters containing a total of 25 distinguishable sequences. NR/IA-5 isolates were differentiated into 4 PFGE patterns and 4 *porB* sequences. The NR/IB-3 clusters comprised 5 PFGE groups and 5 *porB* sequences. The 17 isolates of serovars IB-5 or IB-7 were grouped into 11 PFGE patterns and 14 *porB* sequences. PFGE patterns were generally not correlated with *porB* types. Isolates were less well discriminated following *abcZ* or *pilA* sequencing, and *pilA* or *abcZ* groups were not correlated to serovar or PFGE pattern.

Conclusions: PFGE and *porB* analyses showed higher discrimination in distinguishing *N. gonorrhoeae* isolates as compared to ribotyping and DNA sequencing of *pilA* and *abcZ*. Both PFGE and *porB* typing distinguished outbreak clusters from strains derived from population studies, as well as differentiating isolates within a cluster.

SESSION: WP - B8 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- GONORRHOEA

WP-006 ANTIBACTERIAL ACTIVITY OF A CATIONIC PEPTIDE, HE2 ∞ , AGAINST NEISSERIA GONORRHOEAE, STAPHYLOCOCCUS AUREUS, AND ENTEROCOCCUS FAECALIS

M. Liao¹, P.S. Ruddock², A.S. Rizvi², S.H. Hall³, F.S. French³, J.R. Dillon¹

¹ University of Saskatchewan, Saskatoon, Canada

² University of Ottawa, Ottawa, Canada

³ University of North Carolina, Chapel Hill, NC, United States of America

Objectives: The HE2- protein is encoded in the male genitourinary tract. The protein and synthetic peptide derived from the C-terminus were active against *Escherichia coli*. In this study, we examined the antibacterial activity of the synthetic HE2- peptide against the human pathogens, *Neisseria gonorrhoeae*, *Enterococcus faecalis* and *Staphylococcus aureus*.

Methods: Six strains of *N. gonorrhoeae* with various antibiotic-susceptibility profiles were examined, together with one strain of *E. faecalis* and *S. aureus*. The antibacterial activity was ascertained in solution, 0.7% casamine acid (CAA) for *N. gonorrhoeae* or 10 mM phosphate buffer pH7.0 for *E. faecalis* and *S. aureus*. After treatment with 12.5-100 μ g/ml peptide for 5 to 60 minutes, cells were inoculated on GC medium containing 1% Kellogg's supplement or Mueller Hinton agar and incubated at an environment of 5-7% CO₂, 35°C for *N. gonorrhoeae*, or 37°C for *E. faecalis* and *S. aureus* for 20-24 hours. The viable cells were counted, and the colony forming unit was calculated. The experiment was done twice with duplicate. Results: The HE2- peptide exhibited potent time- and dose-dependent antibacterial effects against all strains tested. At high peptide concentration (50 or 100 μ g/ml), the cell viable counts of all strains were significantly reduced. With *N. gonorrhoeae*, the activity of the peptide exhibited some strain specificity which was not correlated to MICs. The *E. faecalis* and *S. aureus* strains were also susceptible to HE2-.

Conclusions: This study is the first report in the antibacterial activity of HE2- peptide against human pathogens. It is noticeable that the peptide is active against both antibiotic-susceptible and resistant

N. gonorrhoeae strains. Since this peptide is present in the male genitourinary tract and can be carried to the female genital tract on sperm, its potential as an antibacterial agent for STD pathogens warrants further investigation.

WP-007 ANTIMICROBIAL SUSCEPTIBILITY PATTERNS AND PLASMID PROFILES OF GONOCOCCAL ISOLATES IN THE PRETORIA REGION OF SOUTH AFRICA OVER A 20 YEAR PERIOD (1984-2004)

Y. Dangor¹, M. de Jongh¹, A. Adam², A.A. Hoosen¹

¹ University Limpopo - Medunsa Campus, Pretoria, South Africa

² General Practitioner, Pretoria, South Africa

Objectives: To perform antimicrobial susceptibility testing and determine plasmid profiles of isolates of *Neisseria gonorrhoeae* obtained from men attending primary health-care clinics and general practitioners in the Pretoria region of South Africa.

Methods: Penicillinase-producing *N. gonorrhoeae* strains (PPNG) were detected by the chromogenic cephalosporin method. Susceptibilities to penicillin, ceftriaxone, tetracycline and ciprofloxacin were determined using disc diffusion, agar dilutions and Etest methods. Plasmid DNA was obtained by the alkaline lysis method and profiles generated. Screening for high-level tetracycline resistance to *N. gonorrhoeae* (TRNG, ?16 μ /ml) was performed using a gonococcal sensitivity medium containing 10 μ l/ml of tetracycline. Results: The prevalence of PPNG strains increased from 4% in 1985 to 13% in 1991 to 16% in 2004. During the 20 year period all strains remained fully susceptible to ceftriaxone and ciprofloxacin. Varying levels of susceptibility was observed with tetracycline, including TRNG strains. All PPNG strains tested carried the 2.6 megadalton (MDa) cryptic plasmid and in addition 67% contained the 24.5 MDa conjugative plasmid; the 3.2 MDa African plasmids were the predominant PPNG plasmid. More than 50% of the isolates grew on tetracycline medium and all harboured the 25.2 MDa tetM determinant.

Conclusions: The gonococcal isolates in the Pretoria region remained fully susceptible to ciprofloxacin as well as to ceftriaxone during the 20 year surveillance period. There was good correlation between the different susceptibility methods used. The African PPNG plasmid remained the predominant type during the study period. Continuing monitoring of susceptibility profiles is essential for detecting changes in resistance.

WP-008 AN INCREASE IN FLUOROQUINOLONE-RESISTANT NEISSERIA GONORRHOEAE IN INDONESIA

E. Donegan¹, D.N. Wirawan², P. Muliawan², J. Schachter³, J. Moncada¹, J. Knapp⁴

¹ University of California, San Francisco, United States of America

² Kerti Praja Foundation, Denpasar, Bali, Indonesia

³ University of California, San Francisco, San Francisco, United States of America

⁴ Centers for Disease Control, Atlanta, United States of America

Objective: In the mid 1990s, fluoroquinolones were introduced in Indonesia for the management of gonorrhoea and are now part of the national recommended treatment guidelines. Recently, we documented the first fluoroquinolone-resistant *Neisseria gonorrhoeae*

(NG) strains in female sex workers (FSWs) in Timika, Indonesia. To assess the degree of this resistance, we performed MICs on NG isolates from FSWs seen in an STI clinic in Denpasar, Bali, Indonesia. Methods: From July to September 2004, FSWs in Denpasar were screened for NG by standard culture. NG endocervical isolates were then frozen in Microbank tubes and were sent to UCSF on dry ice. CDC performed antimicrobial susceptibility testing using an NCCLS-recommended agar dilution method. β -lactamase and resistance phenotypes were determined. Auxotype/serovar class, plasmid profiles and quinolone-resistance determining regions (QRDRs) of *gyrA* and *parC* will be reported later. Results for an additional 30 NG isolates will also follow.

Results: We evaluated 29 NG isolates. All isolates were highly resistant to tetracycline (MIC, ≥ 16 ug/ml; TRNG 4; PP/TR 25) and 86.2% (25/29) were β -lactamase positive. All strains were susceptible to ceftriaxone (MIC, ≤ 0.25 ug/ml), azithromycin (MIC, < 1.0 ug/ml), and spectinomycin (MIC < 256.0 ug/ml). We found 34.5% (10/29) of the NG isolates resistant to ciprofloxacin (MIC, ≥ 1.0 ug/ml) and ofloxacin (MIC, ≥ 2.0 ug/ml). Three of the isolates had high-level (≥ 4.0 ug/ml) resistance to ciprofloxacin.

Conclusions: NG isolates from Indonesian FSWs were broadly resistant to antibiotics. We found 34.5% of the strains were fluoroquinolone-resistant. Periodic monitoring of antimicrobial susceptibility of NG in high-risk populations gives essential clues about the rapidly changing pattern of drug resistance. With NG prevalence of 35% among FSWs at this clinic, ongoing MIC surveillance is required to guide selection of appropriate therapy for the disease.

WP-009 THE DIAGNOSIS OF GONOCOCCAL INFECTION IN HIGH RISK WOMEN USING RAPID TEST

A.S. Benzaken¹, J.C. Dutra Jr¹, S.C. Borborema¹, W. Antunes¹, M. Garcia¹, E.G. Galban², R. Peeling³

¹ Alfredo da Matta Foundation, Manaus/amazonas, Brazil

² Instituto de Gastroenterologia, Habana, Brazil

³ World Health Organization, Geneva, Switzerland

Introduction: The OMS recommends in cases of STI the use of syndromic management as the most efficient alternative for national programs in developing countries. However, the complaint of vaginal discharge is badly related to cervical infections. This focus habitually results in an important degree of treatment for *Neisseria gonorrhoeae* and *Chlamydia trachomatis*. However, it is necessary to find tests that are sensitive, efficient and easy to use, in order to diagnose these agents. Tests which do not require sophisticated laboratory equipment, inexistent in the majority of primary care health units. Objective: To determine the behavior of the NGThermo Biostar(GC OIA) for the diagnosis of gonococcal infection, compared with the modified Thayer Martin culture, as 'gold standard'. Also, to evaluate its acceptability by both patients and health professionals. During a consecutive study of 326 women referred by their sexual partners with urethral discharge who attended the STI Department at the Alfredo da Matta Foundation in Manaus, from January 2004 to January 2005. Results: The global prevalence of gonococcal infection involved in the study was 15% (50/236). In the asymptomatic subgroup the prevalence was 17.3% (25/141), more than those who had some symptoms that was 13.5% (25/185), however, no significant statistical differences were found ($p=0.3$). The

Sensitivity, Specificity, PPV and PPN values and IC 95% were respectively 60% (45.2-72.3); 91.3% (87.2-94.2); 55.6% (41.5-68.8); and 92.6% (88.7-95.3). In addition, 98.8% of the women were willing to wait for an hour or so for the test results, which was sufficient for these to be ready. Conclusion: In spite of the NGThermo Biostar(GC OIA) test gathering material for the test in the primary care health unit, the low values of sensitivity and VPP found in our group of women with a high prevalence of gonococcal infection did not allow us to advise its systematic use in the STI control programs.

WP-010 TARGETED CULTURE FOR N. GONORRHOEA FROM FVU INCREASES ISOLATE NUMBERS FOR GONOCOCCAL ANTIMICROBIAL SUSCEPTIBILITY MONITORING: IMPORTANCE OF TIME TO CULTURE AND FVU PHYSICAL CHARACTERISTICS

J.W. Tapsall, S. Ray, E.A. Limnios

Prince of Wales Hospital, Sydney, Australia

Objectives: NAAT is displacing traditional culture for diagnosing gonorrhoea. The number of gonococcal isolates available for monitoring antimicrobial resistance (AMR) may therefore decrease. Gonococci may be cultured at variable rates from first-void urine (FVU) samples. We investigated the use of targeted culture of FVU to increase the gonococcal isolate sample base and assessed (1) the capacity of FVU collected for NAAT to maintain gonococcal viability; (2) the characteristics of urine which affect this viability; and (3) the survival rate of different gonococcal subtypes in FVU. Methods: 87 male patients with positive gonococcal cultures from urethral discharges also had FVU collected for NAAT for Chlamydia. 5 ml aliquots of these FVU were stored at 4°C and sediments from centrifuged FVU aliquots inoculated onto GC agar at 24h intervals until sample extinction. The extended phenotype of all gonococcal isolates and the pH, osmolarity and antibacterial activity of the urine samples were determined and correlated with gonococcal growth.

Results: Gonococci were grown from 48/53 (90%) FVU inoculated within 24h of collection, 31/42 (74%) inoculated within 24-48h of FVU collection, 21/25 (84%) inoculated between 48 and 72h, 2/6 (33%) inoculated after 72 hours and, overall, 102/126 (80%). Inoculation after 24h storage of the FVU often resulted in growth of a few colonies only and this reduced growth also correlated with extremes of urinary pH and concentrated urine. Fourteen auxotype/serovar classes were identified. Some phenotypes may not survive as well as others.

Conclusions: Targeted culture of spun sediment of FVU positive for *N. gonorrhoea* by NAAT is a cost-effective means of obtaining isolates for AMR testing. Yields are greater when culture is initiated early, and is thus linked to turn-around-times for NAAT. Physical characteristics of urine rather than gonococcal strain subtype appeared to influence growth yields.

WP-011 LABORATORY DIAGNOSIS OF NEISSERIA GONORRHOEAE IN ST. PETERSBURG, RUSSIA – PERFORMANCE CHARACTERISTICS AND RECOMMENDED OPTIMISATIONS

L.E.M. Unemo¹, A. Savicheva², O. Budilovskaya², E. Sokolovsky³, M. Larsson¹, M. Domeika⁴

¹ Örebro University Hospital, Örebro, Sweden

² The DO Ott Research Institute, St. Petersburg, Russian Federation

³ Pavlov Medical University, St. Petersburg, Russian Federation

⁴ Uppsala University, Uppsala, Sweden

In the Russian city St. Petersburg and the surrounding region Leningradskaya Oblast, the gonorrhoea incidences were estimated to 53 and 34.4 cases per 100,000 inhabitants, respectively, in 2003. However, completely reliable incidence figures are still lacking mainly due to suboptimal diagnostics and incomplete case reporting. Only five laboratories in these regions are confirmed to perform culture diagnostics of *N. gonorrhoeae*.

Objectives: To survey the performance and quality assurance of the laboratory diagnostics of *N. gonorrhoeae*, with focus on the culturing, at five laboratories in St. Petersburg and Leningradskaya Oblast, Russia in 2004, and to determine the adherence of the observed laboratory diagnostics to international evidence-based recommendations.

Methods. Survey data were assessed by using questionnaire and subsequent site-visits. For evaluation of the culture media utilized at the laboratories, the growth abilities of diverse *N. gonorrhoeae* reference strains (n=29) were determined.

Results. In 2004, the total numbers of *N. gonorrhoeae* samples analysed at the laboratories by using solely direct microscopy and culturing were 330,879 (407 positive) and 38,020 (422 positive), respectively. Four of the laboratories used a Russian non-selective culture medium and one laboratory utilized Biocult-GC. Both these media were suboptimal. Only two laboratories used any species confirmative assay. Antibiotic susceptibility testing of *N. gonorrhoeae* was only performed at two of the laboratories and each year solely a few isolates were analysed. None of the surveyed laboratories comprised a complete, implemented laboratory quality assurance system.

Conclusions. According to international evidence-based recommendations, the diagnosis of *N. gonorrhoeae* in St. Petersburg and Leningradskaya Oblast, Russia is suboptimal. Most of the laboratory diagnostics was based only on direct microscopy of stained smears. The utilized culture diagnostics can also be optimised. For instance, a more nutritious and selective culture medium, and more frequent use of species confirmative assays and antibiotic susceptibility testing may certainly be considered.

WP-012 MICROBIOLOGICAL OUTCOME OF CEFODIZIME AGAINST URETHRITIS, CERVICITIS, AND PHARYNGEAL INFECTION CAUSED BY NEISSERIA GONORRHOEAE INCLUDING MULTI-DRUG RESISTANTS

Y. Yamada¹, T. Muratani¹, Y. Ando², S. Kawa³, S. Akasaka¹, T. Matsumoto¹

¹ Univ. of Occ. & Environmental Health, Kitakyushu, Japan

² Ando Yukiko Ladies Clinic, Kitakyushu, Japan

³ Kawai Urological Clinic, Kitakyushu, Japan

Objectives: We have reported the incidence of clinical failures in gonococcal urethritis treated with cefdinir and aztreonam. We have also reported that the gonococcal infection caused by the resistant isolates were prevalence in Japan. We studied microbiological outcome of cefodizime against urethritis, cervicitis, and pharyngeal infection caused by *N. gonorrhoeae* including these multi-drug resistant.

Methods: The patients studied were recruited at 9 hospitals in Japan. Patients were enrolled if *N. gonorrhoeae* were cultured from their urogenital or pharyngeal specimen. During February 2001 to April 2003, 99 patients were enrolled, and were treated cefodizime intravenously with 1 g. During January 2004 to August 2004, 11 patients with pharyngeal infection were enrolled, and were treated cefodizime intravenously with 2 g. Efficacy was evaluated only in the patients who returned for examination and culture for *N. gonorrhoeae* 3 to 14 days after treatment.

Results: Regarding cervicitis and urethritis, of the 99 patients treated with 1g of cefodizime, 21 (21 %) were found to be nonassessable. In 68 patients with cervicitis and 10 patients with urethritis (100%), the gonococcal cultures had become negative. Of 87 patients cultured pharynx specimen, 30 patients were detected *N. gonorrhoeae* isolates from pharynx. Regarding gonococcal pharyngeal infection, of 25 assessable patients, 16 patients (64%) were eradicated by 1g of cefodizime. Of 11 gonococcal pharyngeal infectious patients, 6 patients (55 %) were eradicated by 2 g of cefodizime. Five patients again had a positive pharyngeal *N. gonorrhoeae* culture at follow up. **Conclusion:** Single dose cefodizime treatment appears to be effective against patients with gonococcal cervicitis and urethritis. But even 2 g of cefodizime could not eradicate gonococci from pharynx enough.

WP-013 EVALUATION OF THE PATH GC-CHECK RAPID TEST FOR THE DETECTION OF GONOCOCCAL INFECTION AMONG FEMALE SEX WORKERS IN BENIN

M. Alary¹, G. Aïna², M. Ndour³, C. Gbenafa-Agossa², A.C. Labbé⁶, D. Fortin¹, M. Steele⁴, R.W. Peeling⁵

¹ Hôpital du St-Sacrement du CHA, Québec, Canada

² Dispensaire IST, Cotonou, Benin (Dahomey)

³ Projet Sida-3, Cotonou, Benin (Dahomey)

⁴ PATH, Seattle, United States of America

⁵ World Health Organization, Geneva, Switzerland

⁶ Hôpital Maisonneuve-Rosemont, Montreal, Canada

Objectives: To assess the validity of the PATH (Seattle, WA) GC-Check rapid test, a point-of-care immunochromatographic strip test, in the detection of gonococcal infection (GC) among female sex workers (FSWs) in Benin.

Methods: Women consulting consecutively at 2 FSW-dedicated clinics in Cotonou and Porto Novo (Benin) were recruited over 3 one-month periods between October 2003 and July 2004. After written informed consent, participants were administered a short interview and underwent a speculum examination where two cervical swabs were collected (in a subset of women, a vaginal swab was also collected). One cervical swab and the vaginal swab were immediately tested with the rapid test and the results interpreted by two independent readers. The other cervical swab was frozen at -20°C for at most 4 weeks and then transported to Quebec (Canada), where it was tested using the Roche Amplicor CT/NG PCR assay. GC-positive samples were confirmed using a 16SrRNA PCR assay. **Results:** 1084 FSWs (median age: 29 years) participated in the study, of whom 50 (4.6%) had a confirmed gonococcal infection. Inter-reader agreement for the rapid test was 99.8%. The sensitivity, specificity, positive and negative predictive values of the rapid test on cervical samples were 70.0% [95% Confidence Interval (95%CI): 55.4%-82.1%], 97.2% (95%CI: 96.0%-98.1%), 54.7% and 98.5%, respectively. The sensitivity of the rapid test on vaginal swabs among 759 women (37 GC-positives) was significantly lower than with the cervical swab (54.1%, p=0.008), whereas the specificity was comparable (98.2%, p=0.13).

Conclusions: The PATH GC-Check test using cervical samples may be as efficient as a gold standard test for treating GC when taking into account the proportion of women who do not return for their test results. In clinics serving populations with moderate GC prevalence and where speculum examination is possible, it could significantly reduce over-treatment compared to the syndromic approach.

WP-014 NUCLEIC ACID AMPLIFICATION TESTS FOR THE DIAGNOSIS NEISSERIA GONORRHOEAEE OROPHARYNGEAL INFECTIONS

L.H. Bachmann¹, R. Johnson², H. Cheng¹, L. Markowitz², J.R. Papp², E.W. Hook, III¹

¹ University of Alabama at Birmingham, Birmingham, United States of America
² Centers for Disease Control, Atlanta, United States of America

Objectives: Optimal methods for diagnosis of pharyngeal N. gonorrhoeae infection are unclear. In an ongoing study we sought to better define performance of culture and nucleic acid amplification tests (NAATS) for pharyngeal N. gonorrhoeae diagnosis.

Methods: Male and females >15 years old presenting to one of three Birmingham clinics who acknowledged fellatio or cunnilingus (prior 2 months) were approached for study enrollment. Four pharyngeal swab specimens were collected from each participant for gonorrhea culture, Gen-Probe TMA, Becton-Dickinson SDA and Roche PCR. Test performance was evaluated using a rotating standard of any 2 positive or 3 positive of the three tests that excludes the evaluated test.

Results: To date, 576 evaluable test sets have been collected (434 male and 142 female). Twenty-seven (4.69%) specimens were culture positive. Preliminary blinded analysis using a rotating standard for test comparison revealed: (Image 2 and 3)

Conclusions: While there is test-to-test variability in performance, this study suggests that currently available NAATs represent sensitive tests for detection of pharyngeal gonorrhea in at-risk patients.

No test, including culture, is 100% sensitive or specific and at least one NAAT appears to differ substantially in terms of specificity from culture and other NAATs.

Sensitivity of tests A-D by criteria for true + True positive		
	Any 2 Sensitivity (95% CI)	3 of 3 Sensitivity (95% CI)
A	94.4% (81.3-99.3)	95.2% (76.2-99.9)
B	92.9% (80.5-98.5)	100% (83.2-100)
C	83.3% (68.6-93.0)	100% (83.2-100)
D (culture)	51.1% (36.1-65.9)	64.5% (45.4-80.8)

Figure 1:

Specificity of tests A-D by criteria for true + True positive		
	Any 2 Specificity (95% CI)	3 of 3 Specificity (95% CI)
A	96.5% (94.6-97.9)	94.1% (91.8-95.9)
B	75.5% (71.6-79.1)	73.0% (69.1-76.7)
C	98.9% (97.6-99.6)	96.2% (94.3-97.6)
D (culture)	99.4% (98.4-99.9)	98.7% (97.4-99.5)

Figure 2:

WP-015 EVALUATION OF POR VARIABLE REGION (VR) TYPING USING PCR ELISA FOR THE DETERMINATION OF NEISSERIA GONORRHOEAEE STRAINS FROM MEN WHO HAVE SEX WITH MEN (MSM)

A.E. Ling¹, M.C. Bash², N. Lister³, S.M. Garland¹, C.K. Fairley³, S. Tabrizi¹

¹ The Royal Women's Hospital, Melbourne, Australia

² Food and Drug Administration, Maryland, United States of America

³ Melbourne Sexual Health Centre, Melbourne, Australia

Objectives: To determine whether a PCR ELISA methodology can accurately characterise gonococcal (GC) genotypes corresponding to several variable por VR types as compared to previously described checkerboard hybridization in samples collected from MSM.

Methods: Nested PCR amplification of the por gene fragment was performed using DNA extracted from a collection of 39 samples from 32 men (2 urine, 19 anal and 18 throat swabs) frequenting male-only saunas in Melbourne, Australia. A panel of biotin-labelled oligonucleotide probes was used to detect variations in the VRs of loops 1, 3, 5, 6 and 7 of the PIB allele. Typing of the PIB strains was performed using PCR ELISA and compared with typing results gained by a checkerboard hybridisation method. GC isolates that consisted of PIA strains were fully sequence characterised across the por gene as prior VR genotype information for these strains was unknown.

Results: Thirty-four samples were detected with a single PIB strain, 4 samples indicated the presence of a PIA strain, and 1 sample contained mixed PIA/PIB strains. Thirteen of the 34 PIB samples shared a single por VR type, and 21 samples were identified with one of 7 other por types. The VR types of individual samples were the same in 97% of cases comparing PCR ELISA and checkerboard hybridisation. No correlation was observed between VR type of the PIB allele strains and the anatomical sites where the samples were collected.

Conclusions: PCR ELISA can offer an accurate alternative molecular typing of N. gonorrhoeae. This study showed the VR types in 34 PIB

strains with 38% having the same VR type, with the other VR types prevalent between 3 and 21%. This indicates that there is little variation in GC strain type within this sub-group of MSM.

WP-016 RISING MULTI RESISTANT NEISSERIA GONORRHOEAE IN ENGLAND AND WALES FROM NATIONAL SURVEILLANCE, GRASP 2000 TO 2004

I.M.C. Martin¹, E.A. Rudd¹, V. Delpuch¹, K.A. Fenton², C.A. Ison¹

¹ Health Protection Agency, London, United Kingdom

² Centres for Disease Control, Atlanta, United States of America

Background: GRASP (Gonococcal Resistance to antimicrobials surveillance Programme) was established in 2000 and is a sentinel surveillance programme for *Neisseria gonorrhoeae* in England and Wales.

Methods: Isolates submitted from 26 laboratories, providing good regional coverage, during June, July and August each year from 2000 to 2004 were susceptibility tested against penicillin, ciprofloxacin, tetracycline, spectinomycin, azithromycin (from 2001), ceftriaxone (from 2002) and cefixime (from 2004). High level multi resistant isolates were determined and results compared. High level multi resistance is defined as: PPNG with TRNG and/or QRNG, CMRNG with QRNG or azithromycin resistance, azithromycin resistance with QRNG, PPNG or TRNG, spectinomycin with any other resistance.

Results: Multi resistant *N. gonorrhoeae* have increased from 3.6% in 2000 to 12.9% in 2004. The increase in 2004 was particularly marked. The increase in multi resistant *N. gonorrhoeae* over the past five years has occurred against a large increase in QRNG (from 1.8% to 13.3%).

Conclusion: Multi resistant *N. gonorrhoeae* have increased in England Wales over the first five years of national surveillance, particularly with combined resistance with ciprofloxacin. Gonococcal isolates with multi resistance provide a challenge for therapy, although no resistance to cephalosporins has been detected in England Wales. Determinants of multi resistant gonococci will be examined.

	2000	2001	2002	2003	2004
Total no. isolates	2362	2403	2204	1977	1939
PP/TRNG (%)	1.9	0.9	1.5	2.5	2.7
PP/QRNG (%)	0.5	0.5	1.5	1.2	3.0
TR/QRNG (%)	0.1	0.1	0.4	0.8	1.4
PP/TR/QRNG (%)	0.3	0.4	0.7	0.9	1.4
Azithro + any other resistance (%)	-	0.1	0.4	0.6	0.9
CMRNG + any other resistance (%)	0.7	0.8	0.8	0.9	3.4
Spectinomycin + any other resistance (%)	0	0	0	0	0.1
Total multi resistance (%)	3.6	2.8	5.2	6.8	12.9

Figure 2: Result

WP-017 EPIDEMIOLOGICAL CHARACTERISTICS AND FLUOROQUINOLONE SUSCEPTIBILITIES OF THE GONOCOCCI ISOLATED IN BILBAO FROM 2002 TO 2004

G. Ezpeleta, V. Esteban, M. Sota, R. Cisterna

Hospital de Basurto, Bilbao, Spain

Objectives: This study was performed to examine the increase in quinolone-resistant *Neisseria gonorrhoeae* (QRNG) observed in Bilbao (Spain).

Methods: The antimicrobial susceptibilities of 116 isolates of gonococci isolated in Bilbao from 2002 and 2004 were performed following the NCCLS disk diffusion methods. The quinolone-resistant subset of these isolates underwent mutation analysis of the quinolone resistance-determining regions (QRDRs) of *gyrA* and *parC*. *Por/opa* gene amplification and subsequent RFLP analysis was performed for the molecular epidemiological characterization of the quinolone resistant isolate subset and the results compared.

Results: Nearly the forty percent of the 116 gonococci tested displayed reduced susceptibility to ciprofloxacin. High-level QRNG isolated in Bilbao increased from 2,77% (1 of 36) in 2002 to 31,70% (13 of 41) in 2004 where the proportion of gonococci isolated in the same time increased only 10%. All the strains isolated during this time were not penicillin resistant. Strains with high-level ciprofloxacin resistance (ciprofloxacin MIC \geq 4 mg/L) contained a double amino acid alteration at the 91 and 95 positions in the QRDR of *GyrA* and a single alteration in *ParC*.

Conclusions: These results suggest that the observed increase in ciprofloxacin-resistant isolates is due to the mutation and spread of different multiclonal isolates. The increasing percent of gonococci exhibiting reduced susceptibility to quinolones isolated in the Bilbao area made us to discontinue the single-dose quinolone recommendation treatment to uncomplicated gonorrhoea.

WP-018 INCREASE IN PREVALENCE OF CIPROFLOXACIN RESISTANT N.GONORRHOEAE ISOLATES IN KWAZULU-NATAL

P. Moodley, T. Zimba, T. Appalata, A.W. Sturm

Nelson R. Mandela School of Medicine, Durban, South Africa

Objectives: The prevalence of ciprofloxacin resistant *Neisseria gonorrhoeae* in 2003 was reported as being 22% at the Prince Cyril Zulu Clinic in Durban, South Africa. The aim of the study was to determine the effect of the continuation of ciprofloxacin as first line treatment on the prevalence of resistance a year later at the same clinic.

Methods: Urethral specimens were collected from men presenting with urethritis syndrome (MUS) in January 2005 for the detection of *N.gonorrhoeae*. Isolates were tested using methodology advised by the National Committee for Clinical Laboratory Standards. The breakpoint for susceptibility is defined as < 0.06 mg/L, the intermediate category as > 0.06 and < 1 mg/L, and a minimum inhibitory concentration (MIC) of > 1 mg/L is defined as high level ciprofloxacin resistance.

Results: The prevalence of *N.gonorrhoeae* with a MIC of > 1 mg/L was 104/248 (42%). Only 5 (2%) isolates fell in the intermediate category. All isolates were susceptible to ceftriaxone and cefixime. High-level tetracycline resistance (MIC > 16 mg/L) was observed in all ciprofloxacin resistant isolates.

Conclusion: The increase in the prevalence of ciprofloxacin resistant *Neisseria gonorrhoeae* from 22% to 42% in 13 months may be largely attributed to the failure of a timely change from ciprofloxacin to ceftriaxone or an oral equivalent, as first line treatment for gonococcal infections. The distribution of the MIC's amongst the isolates suggests that this spread might be clonal.

WP-019 CHARACTERISATION OF CIPROFLOXACIN-RESISTANT GONOCOCCI ISOLATED IN GAUTENG PROVINCE

D A Lewis¹, E. Prentice¹, A.M. Smith¹, L Hijaz², L. Tsaagane¹, H.J. Koornhof¹

¹ National Institute for Communicable Dis., Sandringham, South Africa

² Sandiford Health Initiative, Glasgow, United Kingdom

Objectives: To characterise the mechanism of quinolone resistance among gonococci isolated in Gauteng Province, South Africa.

Methods: Gonococci were isolated from male urethral discharge specimens during 2004 were screened for ciprofloxacin resistance using the E-test. High-level quinolone resistance (QRNG) was defined as an MIC > 1 mg/l. Six ciprofloxacin resistant isolates were selected for DNA sequencing (*gyrA* and *parC* genes) in order to detect signature point mutations associated with QRNG. The same genetic regions were sequenced in DNA extracted from two QRNG obtained from men with gonorrhoea attending Johannesburg clinics in 2000 and 2003. Although all patients acquired their infection in South Africa, the 2000 strain was epidemiologically linked to the Far East. Results: 302 gonococcal isolates were screened for ciprofloxacin resistance. 31/302 exhibited high-level ciprofloxacin resistance; six of these were selected at random for genetic sequencing. All six possessed the same point mutations: (i) base 272 (C to T) and base 284 (A to G) in the *gyrA* gene and (ii) base 256 (G to A) in the *parC* gene. The same point mutations were found in the 2003 Johannesburg isolate. However, the Far East-acquired ciprofloxacin resistant strain possessed a different pattern of point mutations: (i) base 272 (C to T) and base 284 in the *gyrA* gene (A to C) and (ii) base 260 (G to A) and base 271 (G to A) in *parC* gene. All point mutations detected resulted in amino acid substitutions.

Conclusions: Although the number of isolates sequenced was small, it appears that QRNG strains circulating in Gauteng in 2003-2004 possess the same signature mutations in the *gyrA* and *parC* genes. The gonococcal strain linked to the Far East had different signature mutations in both genes.

WP-020 EVALUATION OF THE BD PROBEtec™ URINE PRESERVATIVE TRANSPORT (UPT) FOR USE WITH THE BD PROBEtec™ ET NEISSERIA GONORRHOEA AMPLIFIED DNA ASSAY

J. Lenderman¹, D. Fuller², J. Talbot², R. Buckner², B. van der Poel³, J. Williams³, C.L. Cammarata⁴, E.W. Hook¹

¹ University of Alabama at Birmingham, Birmingham, United States of America

² Wishard Health Services, Indianapolis, United States of America

³ Indiana U. School of Medicine, Indianapolis, United States of America

⁴ LSU Health Sciences Center, New Orleans, United States of America

Objectives: We examined the BD ProbeTec™ ET (ProbeTec) Urine Preservative Transport (UPT) for transport and storage of urine specimens prior to testing on the ProbeTec *Neisseria gonorrhoeae*

(GC) assay as compared to specimens processed for the same assay using the FDA cleared Urine Processing Pouch (UPP). We also examined the potential use of untreated, neat urine kept at ambient temperature without preservative (UNA) as an additional specimen type for the ProbeTec GC assay.

Methods: Urine specimens were collected from patients screened for STI infections. Each specimen was split into three aliquots: (1) UNA (2) UPT and (3) UPP. ProbeTec GC was performed according to manufacturer's instructions on the UNA and UPT samples and compared to the reference UPP sample. Test performance was evaluated on the basis of overall percent agreement (OPA), defined as the percent agreement between GC UPT or UNA results and the standard UPP comparator.

Results: A total of 960 UNA samples and 953 UPT samples were compared to the UPP reference yielding 99.3% (953/960) and 99.7% (950/953) OPAs, respectively. The UNA samples yielded an OPA of 99.8% (503/504) for asymptomatic patients and an OPA of 98.7% (450/456) for symptomatic patients. Likewise, the UPT samples yielded an OPA of 100% (498/498) for asymptomatic patients and an OPA of 99.3% (452/455) for symptomatic patients. Detailed OPA results by gender and site will be presented.

Conclusions: The ProbeTec UPT is a valuable aid for extended transport and storage of urine specimens prior to GC testing in the BD ProbeTec™ ET System. This study also demonstrates that neat urine is an acceptable alternate specimen for ProbeTec testing when time or temperature concerns are not an issue.

SESSION: WP - C8 EPIDEMIOLOGY- GONORRHOEA

WP-021 GONORRHEA RE-INFECTION AMONG STD CLINIC ATTENDEES IN BALTIMORE, MARYLAND

K.T. Bernstein¹, J.M. Zenilman¹, G. Olthoff², V.C. Marsiglia², E.J. Erbeling¹

¹ Johns Hopkins University, New York, NY, United States of America

² Baltimore City Health Department, Baltimore, United States of America

Objectives: To evaluate an active follow-up and repeat testing program for all Baltimore STD clinic patients diagnosed with gonorrhoea.

Methods: From September, 2003 to May, 2004 all clients with a treated gonorrhoea infection were advised to return three-months later for repeat testing. If clients did not return as scheduled, field outreach was attempted. At follow-up visits, urine was tested for gonorrhoea and consenting participants completed a behavioral survey. In addition, we reviewed morbidity records for any inter-current gonorrhoea infections reported during the project period.

Results: Of the 667 participants diagnosed with gonorrhoea at baseline, 54 had a gonorrhoea re-infection diagnosed for an incidence of 13.8 per 100 person-years. One-hundred seventy-eight (27%) either presented for a follow-up visit or were located through field efforts, and of these 5 (2.8%) had gonorrhoea detected on follow-up urine testing. Female gender (RR=1.43, 95% CI 0.76-2.70), white race (RR=2.50, 95% CI 0.89-7.04), and a history of syphilis (RR=2.93, 95% CI 1.04-8.19) were independently associated with re-infection with gonorrhoea.

Conclusions: Although re-infection rates were high, we found that field staff intervention to increase follow-up testing rates did not identify a significant amount of repeat infections compared to passive surveillance.

WP-022 A ONE-YEAR SURVEY OF NEISSERIA GONORRHOEAE IN SCOTLAND USING MOLECULAR SEQUENCE TYPING

H.M. Palmer, H. Young

Edinburgh Royal Infirmary, Edinburgh, United Kingdom

Objectives: To describe the epidemiology of gonorrhoea in Scotland using a highly discriminatory molecular typing method and determine the level of congruence with other microbiological and demographic data.

Methods: Isolates from every episode of gonococcal infection from April 2004 - March 2005 were typed using *Neisseria gonorrhoeae* Multi-Antigen Sequence Typing (NG-MAST). Serogrouping and antibiotic susceptibility testing (to azithromycin, cefixime, ceftriaxone, ciprofloxacin, penicillin, tetracycline and spectinomycin) were also performed.

Results: Of 661 isolates which were typed between April - December 2004, NG-MAST identified 59 clusters of 3-36 isolates, 22 pairs and 110 isolates of unique sequence types (ST). All clusters contained WI or WII/III isolates exclusively and, with the exception of three STs, all members of a sequence type shared the same antibiogram. There was geographical and temporal variation in the distribution of clusters. Of the ten largest clusters (containing 16-36 isolates), six were predominantly from male patients, and four were from both males and females. Three of the ten largest clusters were STs that had not previously been identified whilst seven had been previously seen in London. Two of the largest clusters of isolates were resistant to ciprofloxacin (ST147, 36 isolates and ST225, 17 isolates), one cluster demonstrated variation in resistance to Azithromycin (ST470), with MIC values 0.12- >256mg/L, and the remainder did not demonstrate antibiotic resistance. Data for the complete period (April 2004 - March 2005) will be presented.

Conclusions: The use of highly discriminatory NG-MAST identified a large number of different sequence types in a single year. The majority of isolates were not unique and clusters could be described by their demographic characteristics. Year on year use of this method will allow tracking of major ST clusters and help our understanding of transmission dynamics.

WP-023 SHARP INCREASE OF NEISSERIA GONORRHOEAE CIPROFLOXACIN RESISTANT STRAINS IN FRANCE IN 2001-2003P. Sednaoui¹, I. Martin², V. Goulet³, M. Herida³¹ Institut Alfred Fournier, PARIS, France² Health Protection Agency, LONDON, United Kingdom³ Institut de Veille Sanitaire, SAINT-MAURICE, France

Objective: Renago is a sentinel voluntary laboratory network implemented in France since 1986. The objectives of this network are to monitor trends in gonorrhoea and to assess antimicrobial resistance patterns of *Neisseria gonorrhoeae* (NG).

Methods: Renago Network: Each participating laboratory sent NG strains isolated to the National Reference Center where susceptibility to 6 antibiotics is tested. Resistance to ciprofloxacin is defined according to the US committee on Clinical Laboratory Standards for aerobic bacteria.

Strains genotyping: Resistant strains to ciprofloxacin was genotyping using the NG-MAST technic in which variable regions of two highly polymorphic antigen-encoding loci *por* and *tpbB* are sequenced.

Results: Antimicrobial susceptibility: A total of 473 strains were studied in 2001/2003. Reduced susceptibility or resistance to ciprofloxacin reached 14.7%. NG strains with MIC > 1mg/l accounted for 10%. By comparison, reduced susceptibility or resistance to ciprofloxacin among 558 strains analyzed in 1998/2000 was equal to 5.2%. There is no significant epidemiological difference between these strains and the susceptible ones. Genotyping testing: Among 46 resistant strains to ciprofloxacin isolated in 2002/2003, only 1 cluster of 6 isolates and 2 clusters of 2 isolates were observed.

Conclusion: From 2000 to 2003, NG resistance to ciprofloxacin has sharply increased in France. Epidemiological patterns of these strains are not significantly different of those of the susceptible ones. The genotyping study among a selected sample doesn't show any clone. These findings suggest a large dissemination of these resistant strains. Clinician should be aware of the increased proportion of NG ciprofloxacin resistance, especially in France where this antibiotic is widely used as a single-dose treatment.

WP-024 NEISSERIA GONORRHOEAE MULTIANTIAGEN SEQUENCE TYPING (NG-MAST): AN ALTERNATIVE TO AUXOTYPE/SEROTYPE (A/S) ANALYSIS FOR GONOCOCCAL TYPINGL. Trees¹, I. Martin², B. Spratt³, J. Mika¹, R.C. Ballard¹, C. Ison²¹ Centers for Disease Control & Prevention, Atlanta, Georgia, United States of America² HPA Centre for Infections, London, United Kingdom³ Imperial College, London, United Kingdom

Objectives: The loss of a number of the monoclonal antibodies used for the typing of *Neisseria gonorrhoeae* has hindered our ability to perform traditional auxotype/serotype (A/S) analysis. In this study, we have compared the association and discriminatory ability of serotyping with *por* sequence typing that constitutes an element of the NG-MAST genotyping system.

Methods: A total of 937 gonococcal isolates from the UK, USA, Thailand, and China that had been serotyped using the full panel of monoclonal antibodies as described by Tam et al. were genotyped by sequencing the *por* and *tpbB* genes as outlined by the NG-MAST genotyping system.

Results: Among the strains tested by both typing methods, 36 serotypes were identified (11 I-A, 25 I-B) while 228 *por* types were observed. Serotypes and *por* types were compared to determine their level of association and discriminatory ability. For example, of 189 IB-03 isolates examined, 46 separate *por* types were identified with 84 isolates (44%) belonging to three *por* types. In contrast, only 11 strains belonging to these *por* types were serotyped as non-IB-03 (7 IB-01, 2 IB-02, and 2 IB-06). A cluster of 11 fluoroquinolone-resistant IB-10 strains isolated in Thailand were identical *por* types while 5 *por* types were identified among 16 consecutive IB-03 isolates from China with one *por* type identified in 9 cases (56%). Both serotyping and *por* typing identified identical types in contact pairs and treatment failures.

Conclusions: Since the *por* gene encodes for porin, the variability of which is the basis for gonococcal serotyping, it is not surprising that a good correlation between the two typing systems exist. These results indicate that *por* typing is more discriminatory than serotyping and that together with *tpbB* gene sequencing, NG-MAST represents an appropriate, and more discriminatory, replacement for A/S analysis.

WP-025 RESISTANCE OF GONOCOCCI IN THE NETHERLANDS

M.J.W. van de Laar¹, K. Borgen¹, J. Spaargaren², I.H.M. van Loo²

¹ RIVM, Bilthoven, Netherlands

² Public Health Laboratory, Amsterdam, Netherlands

Introduction: A national surveillance programme of resistance of gonococci has been conducted in The Netherlands since 1976 due to the emergence of penicillin resistant gonococci. However, in 1999 the surveillance was ended and since then national insight in resistance of gonococci is lacking. Recent (inter)national reports suggest a rapid increase of resistance to quinolones.

Methods: A survey was carried out among 39 medical microbiology laboratories. With a questionnaire information was collected on current methods for diagnosis and susceptibility testing and on the number of isolates and their susceptibility pattern in 2002-2004.

Results: Thirty-two laboratories participated (32/39) in the survey. Thirteen laboratories used culture only and 19 laboratories used either culture or a molecular test. All laboratories that used culture for diagnosis performed susceptibility testing of the isolates. Sixteen of the participating laboratories tested susceptibility for β -lactam antibiotics (penicillin or amoxicillin), tetracyclines, quinolones and cephalosporines. The other laboratories tested various combinations of these antibiotics. In 2002, 2666 and in 2003 2190 gonorrhoea cases were diagnosed, with an incidence of 33.5 and 27.0 per 100,000 inhabitants, respectively. The prevalence of resistance to β -lactam antibiotics was 12.2% and 10.7% in 2002 and 2003. For tetracycline the prevalence of resistance was 18.5% and 20.6%, respectively. The prevalence of quinolone resistant strains increased from 6.6% in 2002 to 9.5% in 2003. Resistance to cephalosporines was low with 0.5% in 2002 and 1.2% in 2003. Furthermore, regional differences in the susceptibility patterns were suggested. Data from 2004 are currently collected; updated data will be presented.

Conclusion: Current trends demonstrate the importance of a surveillance of gonococcal antimicrobial resistance at a national level to monitor the changing epidemiology and to ensure treatment guidelines to respond adequately to changing epidemiology. A renewed national surveillance will be implemented in 2005/2006.

WP-026 TRENDS IN FLUOROQUINOLONE-RESISTANT NEISSERIA GONORRHOEA IN THE UNITED STATES, 2000-2004

J.G. Wright, A. Harvey, K. Park, H. Weinstock, GISP Investigators
Centers for Disease Control & Prevention, Atlanta, GA,
United States of America

Objectives: To describe trends in fluoroquinolone-resistant *Neisseria gonorrhoeae* (QRNG) since 2000.

Methods: The Gonococcal Isolate Surveillance Project (GISP) is a sentinel surveillance project involving STD clinics in 25-30 cities in the United States. Since 1986, these STD clinics have provided the first 25 male urethral gonococcal isolates each month for antimicrobial susceptibility testing. Additional clinical data are abstracted from medical records and provided for further analysis. Monitoring for QRNG (MIC $\geq 1.0 \mu\text{g/ml}$) in GISP began in 1990. Preliminary data are used for 2004.

Results: The first QRNG isolate was identified in Honolulu in 1991. In 2000, the prevalence of QRNG was 0.35%, with isolates identified in 6/25 GISP sites, all on the western coast of the US or in Hawaii.

By 2004 the prevalence of QRNG had increased to 5.4%, with isolates identified in 21/28 GISP sites spread across the US. The prevalence of QRNG among MSM has increased from 0.43% in 2000 to 18.0% in 2004, while the prevalence of QRNG among heterosexuals has increased from 0.37% in 2000 to 2.1% in 2004. Outside Hawaii, California and Washington, states where fluoroquinolones are no longer recommended for treatment of any gonococcal infection, the prevalence of QRNG in 2004 was 13.3% for MSM and 0.9% for heterosexuals.

Conclusions: QRNG has spread across the United States since first identified in Hawaii 14 years ago. Resistance to fluoroquinolones among *N. gonorrhoeae* isolates submitted to GISP has increased substantially since 2000, among both heterosexuals and MSM, but the increase has been the greatest among MSM. Due to the increasing prevalence of QRNG among MSM, CDC recommended in April 2004 that fluoroquinolones no longer be used in the treatment of *Neisseria gonorrhoeae* infections among MSM.

WP-027 HIGH LEVEL AZITHROMYCIN RESISTANT GONORRHOEA IN SCOTLAND IS LINKED TO NG-MAST TYPE ST470 WHICH CONTAINS BOTH SENSITIVE AND RESISTANT ISOLATES

A.J. Winter¹, M. Murchie¹, H.M. Palmer², H. Young²

¹ Sandyford Initiative, Glasgow, United Kingdom

² SNGRL, Edinburgh, United Kingdom

Objectives: To demonstrate the utility of NG-MAST typing in linking cases of azithromycin-resistant gonorrhoea in Scotland.

Methods: All gonococcal isolates in Scotland are routinely submitted to the Scottish *Neisseria gonorrhoeae* Reference Lab (SNGRL) for confirmation and typing. From 1 April 2004 NG-MAST became our routine typing method. NG-MAST is a recently published highly discriminatory method which generates a numerical sequence type (ST) based on the sequence variation observed in regions of two genes, *por* and *tbpB*. (see www.ng-mast.net). (1) We assessed azithromycin resistance by a standard agar dilution method using azithromycin concentrations from 0.015 mg/L to 2 mg/L. We used E Test to confirm resistance of isolates with an MIC of $> 2 \text{mg/L}$. Opa typing was also performed on all isolates.

Results: From 30/3/04 to 1/3/05 30 individuals yielded 32 genital isolates with NG-MAST type ST470. All 32 isolates were indistinguishable by opa typing. Greater Glasgow Health Board area accounted for 23/30 (77%) cases, with 7 cases from elsewhere in Scotland. Three ST-470 isolates had high level azithromycin resistance (MIC $> 256 \text{mg/L}$) (all in men). The other isolates had MICs $< 2 \text{mg/L}$ (range 0.125 to 2 mg/L). ST-470 affected men and women equally and no cases reported homosexual acquisition. Multiple non-traceable contacts hampered attempts to map sexual networks. We could not link the three resistant isolates epidemiologically to each other nor to any of the other ST470 isolates. Further case analysis will be presented.

Conclusions: NG-MAST typing has revealed a geographically localised outbreak of azithromycin-resistant gonorrhoea. NG-MAST typing complemented a traditional sexual network approach. ST-470 may be more susceptible than other NG-MAST types to development of azithromycin resistance.

WP-028 PREVALENCE AND CHARACTERISTICS OF NEISSERIA GONORRHOEAE INFECTION IN YOUNG ADULTS AGED 15-30 IN BRITISH COLUMBIA, CANADA

G.S. Ogilvie, V.P. Remple, J. Barnett, D.M. Patrick, R.C. Brunham, G. Stephens, L. Knowles, L. Kwindt, M.L. Rekart
BC Centre for Disease Control, Vancouver, BC, Canada

Objectives: To determine the prevalence of *Neisseria gonorrhoeae* in a population sample of 15-30 year olds, and to describe the characteristics of individuals who test positive for *N. gonorrhoeae*.

Methods: Urine testing kits and questionnaires were mailed to 15,493 individuals randomly selected from the provincial medical services population registry, stratified by age and sex. Urines were screened at the Provincial Laboratory using Roche Cobas Amplicor™. All positive *N. gonorrhoeae* were confirmed using 16s rRNA PCR.

Results: Of the 1511 samples received and tested for *N. gonorrhoeae*, 10 were positive on preliminary analysis. Six of the presumptive positives were negative on confirmatory testing. Thus, the prevalence of *N. gonorrhoeae* was 0.26% (95%CI 0.07-0.68), and the positive predictive value (PPV) for the Roche Amplicor was 40%. Three cases were female and one case was male, with a mean age of 24.2 (SD 5.5). Two cases were Caucasian and two were Asian. None of the female cases reported any current symptoms, but one reported abdominal pain in the last 3 months. The male case reported only dysuria. Three cases had one sexual partner in the past 3 months, and one case reported two partners in the past three months. None of the cases reported consistent condom use. No significant differences were found between cases and the remainder of the cohort for any factors. Too few events were available to conduct multivariable analysis.

Conclusions: The prevalence of *N. gonorrhoeae* in a Canadian province is 0.26%. Female cases with laboratory confirmed gonorrhoea did not report any current symptoms. Practitioners cannot rely on symptoms only to identify cases of gonorrhoea in women. The PPV of the NAAT was 40%, supporting the recommendation that positive tests in low prevalence populations need to be confirmed.

WP-029 THE SUSCEPTIBILITY OF GONOCOCCAL ISOLATES TO AZITHROMYCIN, CEFUROXIME, AND CEFOTAXIME IN ISTANBUL-TURKEY, 1992-1996

G. Aktaş, Ö. Anö
Istanbul University, Medical Faculty, Istanbul, Turkey

See page 318

WP-030 SPATIAL DISTRIBUTION OF GONORRHOEA IN GLASGOW - DEPRIVATION IS NOT THE WHOLE STORY

K. Abu-Rajab¹, G. Hart², A. Scoular³, A. Winter¹, P. Barton⁴
¹ The Sandyford Initiative, Glasgow, United Kingdom
² Medical Research Council, Glasgow, United Kingdom
³ Centre for Population Health, Glasgow, United Kingdom
⁴ Greater Glasgow NHS Board, Glasgow, United Kingdom

Objectives: Gonococcal infection in Glasgow, the largest city in Scotland, UK increased by 250% between 1994 and 2000. We established a social network study to generate a greater understanding

of this observation. Here we present the spatial distribution of gonorrhoea in Glasgow and its association with deprivation and antimicrobial resistance.

Methods: Clinical and demographic data were collected on all cases of culture positive *Neisseria gonorrhoeae* infection diagnosed in Glasgow's main bacteriology laboratory. Greater Glasgow NHS Board (GGNHSB) residents were assigned a Carstairs 2001 deprivation category based on their residential postcode sector. Denominator population estimates were derived from the 2001 UK census. Natsal 2000 was used to estimate the proportion of gay men in the population (2.1%). All isolates were typed at the Scottish *N.gonorrhoeae* Reference Laboratory.

Results: 231 gonorrhoea episodes occurred in 226 individuals. 170 (75%) were GGNHSB residents, mean age 24; 159 (93.5%) were white, 144 (84.7%) male and 95 (55.9%) infections were heterosexually acquired. The cumulative incidence of diagnosed infections in females and cases overall was significantly higher in deprived areas in Glasgow than in more affluent areas (see table). In contrast, cumulative incidence among heterosexual and homosexual men showed no significant association with residence in a deprived area. Twenty-four (14.1%) isolates displayed ciprofloxacin resistance. Ciprofloxacin resistance was no more likely in cases resident in deprived areas. Maps of the spatial distribution of gonorrhoea will be presented.

Conclusion: Our study of the spatial epidemiology of gonorrhoea in Glasgow, contrasts with that of other regions, where deprivation and minority ethnic groups are independent risk factors for infection. Our observations also suggest substantial underdiagnosis in heterosexual women. These findings have important implications for design of future health promotion initiatives; women should be targeted and current prevention strategies targeting areas of high deprivation reappraised.

Deprivation Group	Cumulative Incidence / 100 000 population			p-value
	1 and 2 (affluent)	3,4,5 (middle)	6 and 7 (deprived)	
Heterosexual Males (n=69)	41	22	39	NS
Homosexual Males (n=75)	867	1467	2106	NS
Females (n=26)	3	5	19	0.007
All Cases (n=170)	30	28	49	0.003
All Males (n=144)	58	53	83	0.04

Figure 1:

WP-031 THE RECENT RISE OF GONORRHEA INCIDENCE AND EMERGENCE OF FLUOROQUINOLONE-RESISTANCE IN ISRAEL – ARE WE BEYOND THE PEAK?

M.I. Dan¹, S. Gottlieb¹, D. Gandacu², B. Sheinberg³
¹ E. Wolfson Hospital, Holon, Israel
² Ministry of Health, Jerusalem, Israel
³ Maccabi Health Services, Rehovot, Israel

Objective: Since the late '90s a sharp increase was observed in the incidence of gonorrhoea in Israel coupled with the emergence of resistance to fluoroquinolones. Between 1997 and 2001, the disease incidence rose from 0.7 cases per 100,000 population to 13.7/100,000.

A study of the antimicrobial susceptibility of gonococcal strains isolated in 2000 revealed a 61% resistance to ciprofloxacin. In the present study we examined the susceptibility of randomly obtained strains isolated in 2002 and 2003.

Methods: MICs of penicillin, tetracycline, ceftriaxone, spectinomycin, erythromycin, and ciprofloxacin were determined by the Etest method (AB Biodisk, Solna, Sweden) for gonococcal isolates from 104 patients attending clinics in the Tel Aviv area, Israel, during 2002-2003. The data on gonorrhoea incidence were based on weekly reports to the Israeli Ministry of Health's department of epidemiology. The population denominators were based on mid-year estimations produced by the Israel Central Bureau of Statistics.

Results: No penicillinase producing strains were detected. All isolates were susceptible to ceftriaxone and spectinomycin. The rates of resistance to ciprofloxacin were 23.6% in 2002 and 17% in 2003. The MIC₉₀ and MIC_{max} of ciprofloxacin were 4 mcg/ml and >32 mcg/ml in 2002, and 1 mcg/ml and 4 mcg/ml in 2003, respectively. Similarly, a decrease in the resistance rates to penicillin, tetracycline and azithromycin were observed between 2002 and 2003. The reported incidence of gonorrhoea in Israel peaked in 2002 (15.9/100,000), and decreased thereafter to 10.2/100,000 in 2003, and 9.1/100,000 in 2004. Approximately 84% of the patients were 15-44 years of age.

Conclusion: We have no explanation for the recent decrease of gonorrhoea incidence and gonococcal resistance in Israel, although the reduction in trafficked prostitutes operating in the country, and the opening of free-access STI clinics might have contributed to this change.

WP-032 RISK FACTORS FOR NEISSERIA GONORRHOEAE IN A PROSPECTIVE COHORT OF KENYAN FEMALE SEX WORKERS

W.G. Harrison¹, T. Kinyari², A. Meier³, R. Brunham⁴, R. Nguni², N. Mugo⁵, CR Cohen⁶

¹ University of California, Berkeley, USA, Berkeley, CA, United States of America

² University of Nairobi, Nairobi, Kenya

³ University of Washington, Seattle, United States of America

⁴ University of British Columbia, Vancouver, Canada

⁵ Kenyatta National Hospital, Nairobi, Kenya

⁶ University California, San Francisco, United States of America

Introduction: Chlamydia trachomatis (CT) and other sexually transmitted infections (STI) have been associated with risk of Neisseria gonorrhoeae (GC) infection. The purpose of this investigation was to determine whether STI and other factors were associated with the risk of GC infection in a highly exposed female cohort.

Methods: 299 sex workers in Nairobi, Kenya, 18-35 years of age were enrolled. Subjects were followed a median of 14 months (IQR: 6-24 months) until time of GC infection or censoring. At the initial visit and subsequent visits every two months, cervical samples were collected for GC and CT testing by PCR.

Results: At baseline, 18 (6%) of the 299 women had prevalent GC infection. Throughout the study, there were 31 incident cases from 30 participants giving an incidence of 9.1 GC infections per 100 women-years. Incident CT (HR=7.3, 95% CI 3.0-17.8) was positively correlated with risk of GC. Of the 9 subjects infected with GC and CT at some time during follow-up, 5 (56%) were coinfectd. Abnormal

cervical mucous and/or friability (HR=3.1, 95% CI 1.2-8.4), and douching with soap (HR=3.8, 95% CI 1.3-11.0) were also associated with an increased risk of GC. Frequent (75% or greater) condom use (HR=.38, 95% CI .59-3.2) and HIV-infection (HR=1.4, 95% CI .64-3.0) were not associated with an altered risk of GC. After controlling for age, HIV-serostatus and significant univariate variables, incident CT (Adjusted (A)HR = 5.9, 95% CI 2.2-15.8), and abnormal cervical mucous and/or friability (AHR=3.1, 95% CI 1.1-8.6) remained risk markers for incident GC.

Conclusions: After controlling for potential confounders, GC remained highly correlated with CT infection. Furthermore, the temporality of this relationship supports a possible direct role in one altering the risk of infection to the other.

WP-033 SOCIOECONOMIC STATUS AS A RISK FACTOR FOR GONOCOCCAL INFECTIONS

A. Ault, M. Groff, L. Einwalter, M. Huang, B. Zimmerman, E. Smith
University of Iowa Hospitals and Clinics, Iowa City IA,
United States of America

Objectives -Gonorrhoea rates are higher for African-Americans in the United States and African-Caribbeans in the United Kingdom. Although this is a consistent finding in the epidemiology of gonorrhoea, there is no biological basis for racial differences in prevalence of this infection. Many recent studies have emphasized socioeconomic variables in the analysis of gonorrhoea rates. We hypothesize that socioeconomic variables may be useful in predicting the risk of gonococcal infections in young women.

Methods -A data set from the state of Missouri was provided by the Region VII Infertility Prevention Project, a subset of that data was evaluated. Our evaluation included subjects that were females aged 15-24 attending family planning clinics who were not pregnant and received the Gen-Probe APTIMA assay for Neisseria gonorrhoeae. Socioeconomic data from the 2000 census were used and based on the subjects' zip code of residence. We examined income, education and household status.

Results-In our multivariate analysis the following items were found to be significant: black race OR = 4.558 (95% CI = 3.321-6.256), co-infection with Chlamydia OR = 9.129 (95% CI = 6.797-12.261), multiple partner risk OR = 1.876 (95% CI = 1.377-2.556), patient request for an STD screen OR = 1.518 (95% CI = 1.121-2.057), clinical signs of infection OR = 1.705 (95% CI = 1.179-2.464), and residents of the zip code with female householders above the median rate OR = 1.568 (95% CI = 1.109-2.216). Other socioeconomic variables such as education and income were not useful in predicting gonococcal infection.

Conclusions: Residence in an area with a high rate of female headed households is a risk factor for gonococcal infection in young women in Missouri. Screening and interventions for this infection should consider this socioeconomic variable.

WP-034 GLOBAL TRANSMISSION OF PROLYLIMINOPEPTIDASE (PIP)-NEGATIVE NEISSERIA GONORRHOEAE STRAINS - IMPLICATIONS FOR CHANGES IN DIAGNOSTIC STRATEGIES?

L.E.M. Unemo¹, H.M. Palmer², T. Blackmore³, G. Herrera³, H. Fredlund¹, E. Limnios⁴, N. Nguyen⁴, J. Tapsall⁴

¹ Örebro University Hospital, Örebro, Sweden

² Royal Infirmary of Edinburgh, Edinburgh, Scotland, United Kingdom

³ Molecular Diagnostic Lab., Wellington, New Zealand

⁴ The Prince of Wales Hospital, Sydney, Australia

Species confirmation of *Neisseria gonorrhoeae* is commonly performed with commercial kits including API NH, RapID NH, *Neisseria* PET, and Gonochek II, which among other reactions rely on demonstration of activity of the enzyme prolyliminopeptidase (PIP, hydroxyprolyliminopeptidase). However, a nearly indistinguishable serovar IB-4 PIP-negative strain has been transmitted in United Kingdom (UK) (2000-2002) and Denmark (2002-2003), and the number of PIP-negative isolates has increased in Australia and New Zealand in the same period.

Objectives: To characterize and compare PIP-negative *Neisseria gonorrhoeae* isolates from the UK, Danish, Australian and New Zealand outbreaks.

Methods. PIP-negative *N. gonorrhoeae* isolates (n=31), cultured in 2001 to 2004 from different patients in Australia (n=27) and New Zealand (n=4), were characterized with antibiograms, serovar determination, pulsed-field gel electrophoresis (PFGE) (Spel and BgIII), *porB* gene sequencing, and *N. gonorrhoeae* multi-antigen sequence typing (NG-MAST) and compared with profiles obtained previously on PIP-negative *N. gonorrhoeae* isolates from the UK and Denmark.

Results. Most of the Australian isolates (n=20) and all the New Zealand isolates (n=4) were serovar IB-4. All the IB-4 PIP-negative isolates transmitted in Australia and New Zealand were highly similar to those from UK and Denmark, with similar antibiograms, indistinguishable or related PFGE fingerprints, nearly identical *porB* gene sequences (0 to 3 nucleotides difference), and were assigned identical (ST210) or closely related (ST292, which only differ from ST210 by one nucleotide in the *porB* gene segment) NG-MAST sequence types (STs).

Conclusions. A thorough phenotypic and genetic characterisation indicates a worldwide circulation of at least one *N. gonorrhoeae* PIP-negative strain. Minor changes in the genome of some isolates of the strain have occurred, which probably reflect ongoing evolution only. An increased awareness of PIP-negative *N. gonorrhoeae* strains is crucial and, in several geographic areas worldwide, alterations in the diagnostic strategies may need to be considered.

WP-035 NEISSERIA GONORRHOEAE WITH INCREASING CEFTRIAXON MIC IN DENMARK IN 2004: SEROTYPING, BI-LOCUS SEQUENCE TYPING, AND SEXUAL PREFERENCE

SH Hoffmann, L. Lambertsen, L. Berthelsen, S. Cowan

Statens Serum Institut, Copenhagen, Denmark

Background: During 2004, the minimum inhibitory concentration (MIC) of ceftriaxon in Danish strains of *Neisseria gonorrhoeae* (NG) gradually increased. From January through March, 99% of strains had a low ceftriaxon MIC (LCM) at ≤ 0.016 microg/ml. From

April through December, 23% had a higher ceftriaxon MIC (HCM) at 0.023 to 0.094 microg/ml.

Methods: Virtually all NG strains from Denmark are submitted to the reference laboratory. The MIC of penicillin, ciprofloxacin, and ceftriaxon is determined with the Etest method (AB BioDisk, Solna, Sweden) on chocolate agar plates. In this study monoclonal antibodies (Phadebact GC Serovar Test; Boule, Huddinge, Sweden) were used for serotyping of 145 strains (73 LCM and 72 HCM). Bi-locus sequence typing (*por* and *tbpB*) was performed for 59 of these strains (28 LCM and 31 HCM). For some patients information about sexual preference was available from clinical reporting forms submitted to the Department of Epidemiology.

Results: Among all 434 cases of gonorrhoea, 81 were caused by NG with HCM. A total of 29 serotype patterns was found. The most prevalent one was Bo,p,r,s,t,y (45/145; 31%). This and five other patterns were found exclusively in 51 strains that all had HCM. Another seventeen different patterns were found exclusively in 56 strains with LCM, while six different patterns were found in 38 strains that had either LCM or HCM. A preliminary analysis indicated that strains with HCM had similar sequence types. Men-who-have-sex-with-men (MSM) constituted 63% of cases where serotyping was done, but MSM formed 85% of the cases with serotypes exclusively associated with HCM. Among strains with LCM, 45% (129/286) were from MSM, while 84% (53/63) of strains with HCM were from MSM.

Conclusion: These preliminary findings suggest a correlation between ceftriaxon MIC at 0.023 to 0.094 microg/ml, serotype, bi-locus sequence type, and MSM.

WP-036 TRENDS IN GONOCOCCAL ANTIMICROBIAL IN ENGLAND AND WALES: 2000 TO 2004: DATA FROM THE NATIONAL GONOCOCCAL RESISTANCE TO ANTIMICROBIALS SURVEILLANCE PROGRAMME (GRASP)

E.A. Rudd¹, I.M.C. Martin¹, V. Delphech¹, K.A. Fenton², C.A. Ison¹

¹ Health Protection Agency, London, United Kingdom

² CDC Division of STD Prevention, Atlanta, United States of America

Objectives: To describe recent trends in antimicrobial resistance in *Neisseria gonorrhoeae* in England and Wales.

Methods: GRASP was established in 2000 to monitor antimicrobial resistant *Neisseria gonorrhoeae* in England and Wales. Between June and August each year, gonococcal isolates from 26 sentinel GUM clinics were collected for antimicrobial susceptibility testing. The minimum inhibitory concentration (MICs) of penicillin, tetracycline, ciprofloxacin, spectinomycin, ceftriaxone, cefixime and azithromycin, were determined. Clinical, demographic and behavioural data were collected from the patient records. We present here antimicrobial resistance prevalence estimates for 2004 and provide trend data for the years 2000- 2004.

Results: A total of 1760 GUM isolates were collected in 2004. Prevalence estimates for resistance were: penicillin (MIC ≥ 1 mg/l or β -lactamase positive), 11.3% (vs. 9.7% in 2003), tetracycline (MIC ≥ 2 mg/l) 27.4% (vs. 38.2% in 2003), ciprofloxacin (MIC ≥ 1 mg/l) 14.1% (vs. 9.0% in 2003), azithromycin (MIC ≥ 1 mg/l), 1.7% (vs. 0.9% in 2003). Three isolates were spectinomycin resistant (0.2%), whilst no isolates have yet shown any decreased susceptibility to ceftriaxone (MIC ≥ 0.25 mg/l) or cefixime (MIC ≥ 0.5 mg/l). The estimated

prevalences of penicillin and tetracycline resistance types over time (2000-2004) were relatively stable, whilst azithromycin and ciprofloxacin resistance increased significantly ($p < 0.0005$). In 2004 ciprofloxacin resistance remained at $>5\%$ in all GRASP regions, ranging from 6% in Yorkshire & Humberside region to 35% in the North East region. The prevalence of ciprofloxacin resistance remained stable amongst females and heterosexual males in 2004 at 5.0% and 10.0% respectively, whilst a rapid increase in the prevalence amongst MSM was observed (27.4% vs. 10.7% in 2003). Conclusions: GRASP provides comprehensive prevalence estimates of antimicrobial resistance in England and Wales over time. These estimates guide local and national prescribing policies. In addition, demographic and behavioural risk factors identified can better inform local treatment and control strategies.

WP-037 EPIDEMIOLOGICAL CORRELATES OF ASYMPTOMATIC GONORRHOEA

I.B. Bozicevic¹, I.B. Bozicevic¹, K.A. Fenton², C.A. Ison³, I.M.C. Martin³, E.A. Rudd³, K. Nanchahal¹, K. Wellings¹

¹ LSHTM, London, United Kingdom

² HIV and STI Department, CDSC, London, United Kingdom

³ Health Protection Agency, London, United Kingdom

Objectives: To explore the correlates of asymptomatic gonorrhoea among patients participating in the Gonococcal Resistance to Antimicrobials Surveillance Programme (GRASP) in England and Wales. **Methods:** Logistic regression was carried out to compare the likelihood of asymptomatic gonorrhoea across demographic (age, ethnicity, London residence), behavioural (number of partners and sex abroad in the past three months) and clinical categories (previously diagnosed gonorrhoea, concurrent diagnosis with chlamydia, syphilis, warts, herpes and other STIs).

Results: We examined 5799 GRASP isolates and patients for the years 2001 to 2003. 1649 (28.4%) were women, 2668 (46.0%) heterosexual and 1482 (25.6%) homosexual men. Asymptomatic gonococcal infection was diagnosed in 40.1% women, 8.6% heterosexual and 26.2% of homosexual men. In multivariate analysis, the decreased likelihood of asymptomatic gonorrhoea was found in women who had gonorrhoea previously (adjusted OR=0.6, 95% CI=0.5-0.8) and were coinfecting with any other STI except chlamydia, syphilis, warts and herpes (adjusted OR=0.5, 95% CI 0.4-0.7). After adjusting for other variables, having coinfection with *C. trachomatis* remained the only variable significantly associated with increased likelihood of asymptomatic gonorrhoea (adjusted OR=2.5, 95% CI 1.9-3.4) in heterosexual men. In homosexual men, not having gonorrhoea previously (adjusted OR=0.7, 95% CI 0.5-0.9) and having coinfection with syphilis (adjusted OR=2.4, 95% CI 1.1-5.4) and warts (adjusted OR=2.4, 95% CI 1.2-4.8) were found to increase likelihood of asymptomatic gonorrhoea.

Conclusions: Our findings highlight the importance that infection with *C. trachomatis* might have in asymptomatic gonorrhoea in heterosexual men but not in women and homosexual men. This emphasises the importance of strengthening contact tracing and raising awareness of STI screening in the GUM setting among men at high risk, particularly at younger ages.

WP-038 LARGE-SCALE IMPLEMENTATION OF MULTI-ANTIGEN SEQUENCE TYPING TO ANALYSE GONORRHOEA CLUSTERS WITHIN LONDON

B. Choudhury¹, C.J. Bishop¹, C.L. Risley¹, A.C. Ghani¹, K. Fenton², H. Ward¹, C.A. Ison³, B.G. Spratt¹

¹ Imperial College London, London, United Kingdom

² Centre for Disease Control, Atlanta, United States of America

³ Health Protection Agency, London, United Kingdom

Objectives: To assess the efficacy of the molecular typing scheme *N. gonorrhoeae* multi antigen sequence typing (NG-MAST) in identifying linked cases of gonorrhoea in London.

Methods: Between 1st June 2004 - 30th November 2004, 2891 gonorrhoea isolates were collected from 13 GUM clinics across London. After culture and confirmation of *N. gonorrhoeae*, isolates were characterised by NG-MAST and each isolate was assigned a sequence type (ST) based on the sequences of *por* and *tbpB* genes. Clusters of identical isolates were identified and the congruence between the ST clusters, demographic and behavioural data were examined.

Results: Over 80% (2345) of isolates were successfully recovered and assigned a ST. The frequency distribution of STs was highly skewed, with 260 STs (15%) being observed once only. The six most prevalent STs included approximately 25% of all isolates. The hypothesis that these large ST clusters identify individuals within major sexual networks in London is strongly supported by the concordance between the demographic and behavioural data for individuals sharing the same ST. Four of the six major clusters are predominantly MSM, the other two are almost exclusively heterosexual. The individuals within the MSM clusters have 24-31% HIV-positivity and are mainly white, whereas those in the heterosexual clusters are mainly non-white and have very low HIV-positivity, but high rates of the other STIs.

Conclusion: NG-MAST can be applied in a timely fashion to all gonococcal isolates recovered in London and has identified, among a diverse population, a small number of large clusters of individuals who share the same ST and very similar demographic and behavioural features. NG-MAST therefore appears to be able to identify individuals within major sexual networks in London in the absence of any contact tracing data.

Properties of individuals infected with the six most prevalent STs. Those in bold are heterosexual clusters: the others are MSM clusters.						
ST	N ISOLATES	% MALE	% MSM	% WHITE	% HIV +	% WITH OTHER STIs
225	120	98	88	73	24	15
2	81	57	4	33	1	42
210	80	100	89	69	24	12
40	58	98	79	76	29	15
147	48	100	81	67	31	15
51	48	58	0	12	0	40

Figure 1

WP-039 PREVALENCE AND ASSOCIATED RISK FACTORS OF FLUOROQUINOLONE-RESISTANT NEISSERIA GONORRHOEAE IN CALIFORNIA, 1999-2003

H.M.B. Bauer¹, M. Samuel¹, K. Mark², S. Wang³, R. Gunn⁴, J. Klausner⁵, C. Ried⁶, N DeAugustine⁷, G. Bolan¹

¹ California Department of Health Services, Oakland, United States of America

² Dept Medicine, U Washington, Seattle, United States of America

³ Centers for Disease Control, Atlanta, United States of America

⁴ San Diego Health Dept, San Diego, United States of America

⁵ San Francisco Health Dept, San Francisco, United States of America

⁶ Orange County Health Dept, Anaheim, United States of America

⁷ Long Beach Health Dept, Long Beach, United States of America

Objectives: Rates of fluoroquinolone-resistant *Neisseria gonorrhoeae* (QRNG) are increasing worldwide. We sought to better understand the epidemiology of the QRNG increases in California.

Methods: The Gonococcal Isolate Surveillance Project (GISP) is the U.S. national surveillance system that monitors gonococcal resistance. As part of GISP, sentinel site STD clinics in California submit up to 25 gonococcal isolates each month from male urethral culture specimens. Antimicrobial susceptibility testing is performed using standard agar dilution methods. GISP data were used to calculate QRNG prevalence among risk groups over time.

Results: The rate of QRNG in the California STD clinics increased steadily from less than 1% in 1999 to over 20% in 2004. The proportion of QRNG in California STD clinics over time varied by sexual orientation and geographic location. In the second half of 2001, men who have sex with men (MSM) in southern California experienced an increase in QRNG and had the highest rate (23.7%) in 2003. In 2002, QRNG among MSM in San Francisco and men who have sex with women (MSW) in southern California increased. In 2003, QRNG prevalence was 20.8% among MSM in San Francisco and 16.1% among MSW in southern California. MSW in San Francisco had steady rates over 5% in 2001 and 2002 then increased to 16.5% in 2003.

Conclusions: The emergence and spread of QRNG in California appeared to evolve from sporadic importation to endemic transmission among both MSM and MSW. Monitoring both prevalence of and risk factors for QRNG infections is critical for making treatment recommendations and developing interventions to interrupt transmission.

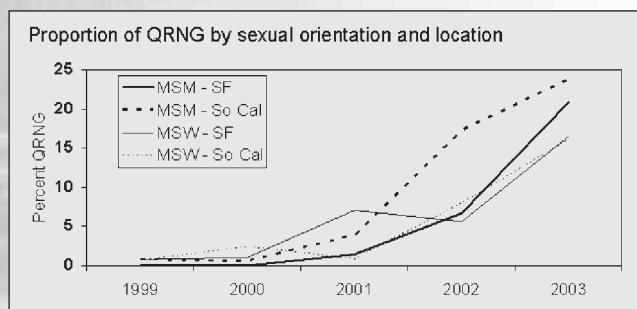


Figure 1

WP-040 TIME SERIES ANALYSIS OF GONORRHEA MORBIDITY

A. Zaidi

Centers for Disease Control & Prevention, Atlanta, Georgia, United States of America

Objectives: Time series models were built to understand the dynamic relationship between male and female gonorrhea morbidity, and applied to predict future gonorrhea incidence.

Methods: We used reported gonorrhea morbidity among men and women in the United States by quarter from 1975-2002 to build sex-specific time series models. In the model building process, we studied the behavior of each series separately and identified consistent patterns. Based on these patterns, we built time series models relating present observations as a function of past data.

We also studied cross-correlations between male and female gonorrhea morbidity and based on these observations we formulated multivariate time series model between two series. In these models, present observation of one series is represented as a function of the present and previous observations of the corresponding series.

Results: Both male and female quarterly gonorrhea morbidity are highly seasonal with a seasonality of four quarters, third quarter being the highest and first quarter the lowest. In men third quarter cases are about 9% higher and first quarter cases about 8.7% lower than the yearly average of gonorrhea cases. In women, these figures are 5.5% and 6% respectively. In the univariate models of both sexes, present value of the observation is a function of the previous observation and the observation four quarters earlier. Multivariate model showed that there is an instantaneous effect of change in one series on to the other, i.e., an increase in gonorrhea incidence among men is associated with increased incidence among women during the same period.

Conclusions: Time series models provide an understanding of how male and female gonorrhea morbidity interacts with each other. These models can be used to estimate the impact of disease interventions and evaluate STD prevention efforts at the state and local public health level.

WP-041 EVALUATION OF TAIWAN NATIONAL GONORRHEA NOTIFIABLE DISEASE SYSTEM BY A PHYSICIAN BASED SENTINEL SURVEILLANCE ON NEISSERIA GONORRHOEAE INFECTION

Y-H Hsieh¹, M-J Kuo², C-W Lin²

¹ Johns Hopkins Univ. School of Medicine, Baltimore, Maryland, United States of America

² National Cheng Kung University, Tainan City, Taiwan (China)

Objectives: Gonorrhea is a notifiable disease in Taiwan that requires laboratory confirmation, almost all by culture. Underreporting is always suspected with only hundreds of cases reported each year in a country of 23 million people. Therefore, we conduct a study 1) To establish a physician-based sentinel surveillance on *Neisseria gonorrhoeae* (GC) infection, 2) To evaluate underreporting of national gonorrhea notifiable disease system (NGNDS), 3) To understand reasons of underreporting through a physician survey

Methods: A surveillance was formed by six specialty clinics of urology, gynecology, internal medicine, or family medicine in Tainan City, Taiwan. Patients diagnosed with urethritis, cervicitis, or gonorrhea during October 2003 and May 2004 were eligible. First-void urine specimens were provided by patients and tested

for GC infection by PCR. A questionnaire to understand factors affecting the reporting was mailed to physicians who see patients with urogenital symptoms.

Results: Overall, 317 patients were enrolled. 54 (17%) of participants were GC positive. During the same study period, 67 cases were reported to NGNDS in the study area while all 48 GC positive participants living in the same area were not notified, indicating 41% underestimation of GC epidemic here. Among 84 questionnaires from physicians, majority (82%) have not seen a gonorrhoea patient in the past 3 months. 60% (9/15) physicians who have seen one in the past 3 months have reported cases to the NGNDS. 'Not collecting patient's specimen' (14%), and 'unaware that gonorrhoea is a notifiable disease' (14%) were main reasons not to notify gonorrhoea, if they have seen cases before (n=43).

Conclusions: A syndromic-based sentinel surveillance utilizing urine-based PCR is effective to detect a hidden epidemic of gonorrhoea. An improved NGNDS that employs non-invasive NAA assay as well as educates physicians is warranted in Taiwan.

WP-042 HOMOGENEITY OF FLUOROQUINOLONE RESISTANT GONOCOCCI IN THREE UNITED STATES CITIES

O.O. Soge¹, J.S. Knapp², D.L. Trees², M.C. Roberts¹, W.L.H. Whittington¹

¹ University of Washington, Seattle, United States of America

² Centers for Disease Control, Atlanta, GA, United States of America

Objective: Determine the diversity of fluoroquinolone resistant gonococci recovered in San Francisco, Portland, and Seattle, USA from January 2001 through June 2004.

Methods: Isolates were obtained from persons attending STD clinics (Gonorrhoea Isolate Surveillance Project) and other clinical facilities. The identity of gonococcal isolates was confirmed by biochemical methods. Antimicrobial susceptibilities were determined (n=3600) by agar dilution using the NCCLS recommended method. A random time-weighted sample of fluoroquinolone resistant isolates for each city (Seattle, n=11, Portland, n=4, San Francisco, n=16) were characterized by PFGE using *NheI* and *SpeI*. Isolates differing by <3 bands were considered highly related. Mutations in *gyrA* and *parC* of selected strains (n=10) were determined by PCR and sequencing. Results: Prevalence of gonococcal fluoroquinolone resistance (median MIC 8 mg/L) increased in all three cities from <2% in 2001 to >10% in 2004. All isolates had double *gyrA* and single *parC* mutations. Based on the random samples, a single genotype (type A) was identified in all three cities: Seattle-55%, Portland-100%, and San Francisco-75% of resistant strains. Three additional genotypes each were identified in Seattle and San Francisco. The type A strain was first identified in May 2002 in both San Francisco and Portland and subsequently in Seattle (November 2002). Type A strains were also resistant to penicillin G, tetracycline HCl, and erythromycin (mtr phenotype) and continued to be identified in all three cities through June 2004.

Conclusion: A single genotype accounted for the majority of infections caused by fluoroquinolone resistant gonococci in three cities separated by as much as 1100 kilometers. The same genotype persisted for at least 25 months. Understanding the travel patterns and sexual behaviors of persons with gonococcal infection is required for effective regional disease control.

WP-043 STRAIN DIFFERENTIATION OF NEISSERIA GONORRHOEA ISOLATES FROM IDENTIFIED SEX NETWORKS IN SHANGHAI BY GENETIC TYPING

M.L. Liao¹, K. Bell¹, Y. Yang², N.F. Eng³, W.M. Gu², Y. Chen³, A.M. Jolly³, J.R. Dillon¹

¹ University of Saskatchewan, Saskatoon, Canada

² Shanghai Skin Dis.&STDs Hospit, Shanghai 200050, China

³ University of Ottawa, Ottawa, Canada

Objectives: To determine the relatedness of *N. gonorrhoeae* strains circulating in sex networks in Shanghai, China by gene sequencing analysis of *porB*, *pilA* and *abcZ*.

Methods: Thirty male patients and 5 sexual contact females with gonorrhoea were recruited at the STD Clinic of the Shanghai Skin Diseases & STDs Hospital in November and December 2004. A structured questionnaire was administered to each study participant, and their recent sexual contacts were also studied. *N. gonorrhoeae* was identified and isolated in Shanghai. Chromosomal DNA from the isolates was prepared; *porB*, *pilA* and *abcZ* genes were amplified by PCR; and DNA sequences were determined. Sequences were aligned using the program CLUSTAL W and phylogenetic trees were constructed using Jalview Alignment Editor (<http://www.ebi.ac.uk/clustalw/>).

Results: Thirty-five gonococcal strains were collected, comprising 30 from index male patients and 5 from sexual contact female patients. Two distinct circulating clusters were identified based on *porB* sequence analysis; one comprised 7 isolates and was further divided into 4 subgroups, while the other cluster exhibited diverse *porB* sequences grouped into 20 types. The *porB* sequences of sexual contacts were identical except for one pair. There were 5 pairs of identical *porB* sequences in the male index patients. There were 12 different sequences for *pilA* and 7 for *abcZ* sequences. The *pilA* or *abcZ* sequences for the 5 sexual contacts were identical. Conclusions: Sequence analysis of the *porB* gene differentiated circulating gonococcal strains and identified 4 of 5 known sexual contacts. *porB* typing is useful in identifying prevalent strains in a community and in tracking strain transmission. The analysis of *pilA* or *abcZ* differentiated the strains less well.

WP-044 HIGH MUTATION RATES IN QUINOLONE RESISTANCE-DETERMINING REGION AND HIGH ANTIMICROBIAL RESISTANCE PROFILE IN NEISSERIA GONORRHOEA IN SOUTHERN TAIWAN

Y-H Hsieh¹, C-W Lin², T.C. Hsieh², M-J Kuo², L.J. Wang², W.C. Ko²

¹ Johns Hopkins Univ. School of Medicine, Baltimore, Maryland, United States of America

² National Cheng Kung University, Tainan City, Taiwan (China)

Objectives: A physician-based sentinel surveillance on *Neisseria gonorrhoeae* (GC) infection has identified hidden epidemic of gonorrhoea in a southern Taiwan city, where there is no national treatment guideline as well as no antimicrobial resistance pattern available. Therefore, we conducted a study (1) to determine quinolone resistance in GC positive urine specimens from the surveillance by molecular techniques; and (2) to determine the antimicrobial resistance profiles in GC isolates from a medical center in the same city. Methods: Quinolone resistance-determining region (QRDR) of *gyrA*

and parC were amplified by PCR on 72 GC-positive urine specimens from the surveillance during 2003.11 to 2004 and 39 isolates from the medical center during 1999-2004. Then, the amplicons were sequenced directly. Sequences of QRDR were compared to published mutations associated with decreased susceptibility or resistance to fluoroquinolones in GC. Novel mutations were identified by comparing sequences in published literature and GenBank. Antimicrobial resistance profiles (penicillin, tetracycline, ofloxacin, norfloxacin, erythromycin, azithromycin, ceftriaxone, cefixime, and trimethoprim/sulphamethoxazole) of GC isolates were performed by Etest.

Results: Overall, 89.2%(99/111) specimens had known mutations in QRDR with decreased susceptibility or resistance to fluoroquinolones. Majority(59/99) of them possessed mutations in both genes. Noticeably, two amino acid mutations were identified for the first time from two patients(gyrA:[Ser91Leu], parC:[Ser87Cys]). The antimicrobial resistance profiles available on 19 isolates so far, all were resistant to trimethoprim/sulphamethoxazole, followed by tetracycline(95%), fluoroquinolone(84%), penicillin (84%), and erythromycin (50%). All isolates were susceptible to third-generation of cephalosporins and azithromycin.

Conclusions: High mutation rates in QRDR coupling with low susceptibility rates to commonly used prescribed antimicrobials for treatment of gonorrhoea in this southern Taiwan city indicate that an urgent need for a national treatment guideline and an effective molecular epidemiologic surveillance on GC infection and resistance patterns is warranty before the hidden epidemic becomes out of control.

WP-045 CIPROFLOXACIN RESISTANCE IN NEISSERIA GONORRHOEA IN CHINA BETWEEN 1995 AND 2003

X. Su¹, S. Ye²

¹ Nat. Centre for STD & Leprosy Control, Nanjing, China

² National Centre for STD Control, Nanjing, China

Introduction: Surveillance of susceptibility to ciprofloxacin in *Neisseria gonorrhoeae* in China was started in 1995. The prevalence of *Neisseria gonorrhoeae* showing reduced susceptibility or resistance to ciprofloxacin increased year by year. Here we report the results from 1995 to 2003.

Materials and Methods: Gonococcal isolates were collected from patients with gonorrhoea in 10 STD clinics. Minimum inhibitory concentrations(MICs) for ciprofloxacin were determined by an agar plate dilution method. Strains for which the MICs of ciprofloxacin were 0.03 mg/ml or less, 0.06 -0.5mg/ml, and 1 mg/ml or more were designated susceptible, less susceptible and resistant, respectively Results: The number of gonococcal strains examined annually from 1995 to 2003 was 394, 340, 903, 912, 783, 1007, 1078, 1249, and 1444 respectively. The number of surveillance centers with quinolone resistant *Neisseria gonorrhoeae*(QRNG) and the number of QRNG in each centers have increased since 1995. The rate of ciprofloxacin resistant strains was 15.48% in 1995, 13.53% in 1996, 28.5% in 1997, 34.25% in 1998, 78.2% in 1999, 85.2% in 2000, 89.8% in 2001, 92.47% in 2002, and 93.98% in 2003.

Conclusions: Fluoroquinolone resistance in *Neisseria gonorrhoeae* has become widespread in China. Hence, fluoroquinolone is no longer a useful drug for treatment of gonorrhoea in China.

SESSION: WP - D8 PREVENTION STRATEGIES-GONORRHOEA

WP-046 COST-EFFECTIVENESS ANALYSIS (CEA) OF SCREENING GUIDELINES FOR GONORRHOEA AMONG FEMALES IN PRIVATE SECTOR CARE

K.T. Bernstein¹, S.D. Mehta², A.M. Rompalo¹, E.J. Erbedding¹

¹ Johns Hopkins University, New York, NY, United States of America

² Boston University School of Medicine, Boston, United States of America

Objectives: To perform a CEA of screening algorithms for gonorrhoea (GC) infection among females seeking care in the private sector.

Methods: We compared six strategies using decision analysis for urine NAAT GC testing in a theoretical cohort of 10,000 female patients aged 15+: (1) screen women < 25 years (2) screen women < 30 years; (3) screen women < 25 years who report any risk (pregnant, drug use, new sex partner < 30 days); (4) screen women < 30 years who report any risk; (5) screen women < 25 years OR those who report any risk; and (6) screen women < 30 years OR those who report any risk. Infection prevalence and sensitivity and specificity were determined by direct observation from a retrospective cohort of females attending the Baltimore City STD Clinics between 1999 and 2002. Sequelae rates and costs were derived from published literature. Main outcome measures were untreated GC cases and their sequelae, transmission to a partner, congenital outcomes, and cost to prevent a case. The societal perspective analysis included medical care costs expressed in U.S. \$2003, discounted at an annual rate of 3% in the baseline model.

Results: Prevalence of GC was 4.5%. Strategy (1) would detect 72.9% of NAAT-detected infections, resulting in 253 untreated cases. Strategy (6) treatment would result in the least cases of untreated infection (196). Screening women age <30 OR by risk was the most effective strategy, and saved \$2,661 per additional case detected and treated over Strategy (1), the most selective strategy. Under worst case conditions, the Strategy 6 remained optimal. Results were robust to multiway parameter variation.

Conclusions: Screening women < 30 OR by risk factor would be the most effective strategy for reducing GC in a cohort of 10,000 women seeking private sector care.

SESSION: WP - E8 BEHAVIORAL SCIENCE-GONORRHOEA

WP-047 THE ASSOCIATION BETWEEN HIV/AIDS BURNOUT AND RECTAL GONORRHOEA AMONG HIV-INFECTED HOMOSEXUAL MEN IN AMSTERDAM IS MEDIATED BY SEXUAL RISK BEHAVIOUR

I.G. Stolte¹, J.B.F. de Wit², M. Kolader¹, H.S.A. Fennema¹, R.A. Coutinho³, N.H.T.M. Dukers¹

¹ Municipal Health Service Amsterdam, Amsterdam, Netherlands

² University of Utrecht, Utrecht, Netherlands

³ Nat. Inst. for Health & the Environment, Bilthoven, Netherlands

Objective: To examine demographic and behavioural characteristics, and STI rates among homosexual men with a different HIV status, and to investigate whether unprotected anal intercourse (UAI) is a mediator of a possible association between HAART-related beliefs, HIV/AIDS burnout, sexual sensation seeking and rectal gonorrhoea (RG) among homosexual men.

Methods: A cross sectional survey between January 2002 and September 2003 among homosexual visitors of the Amsterdam clinic for sexually transmitted diseases. In total 1568 homosexual visitors of the Amsterdam STD clinic received and answered a written questionnaire about UAI, HAART-related beliefs, HIV/AIDS burnout and sexual sensation seeking. Associations between the variables of interest were determined using logistic regression, corrected for repeated measurements.

Results: Infection rates of syphilis and RG were especially high among HIV-infected homosexual men (respectively 10% and 16%). Furthermore, HIV-infected homosexual men perceived less HIV/AIDS threat, less need for safe sex, and higher levels of HIV/AIDS burnout and sexual sensation seeking than men with a negative or unknown HIV status. Homosexual men younger than 30 years were at high risk for infection with RG, independent of their HIV status. HIV-infected homosexual men who reported higher levels of HIV/AIDS burnout were more likely to be infected with RG than men who reported lower levels of HIV/AIDS burnout. The association between HIV/AIDS burnout and RG was mediated by UAI with casual partners. **Conclusion:** With infection rates of RG being high among HIV-infected homosexual men and homosexual men younger than 30 years, it is important to pay special attention to these men when they visit the STI clinic. As HIV/AIDS burnout is associated with both UAI with casual partners and with RG among HIV-infected homosexual men, it could be important to develop innovative programs that focus on preventing or lowering the levels of HIV/AIDS burnout among these men.

WP-048 BEHAVIORAL CHARACTERISTICS OF GONORRHEA MORBIDITY: SELECTED FINDINGS FROM THE OASIS ENHANCED SURVEILLANCE PROJECT IN WASHINGTON STATE

M.R. Stenger, T. Rime, M. Aubin

Washington State Dept. of Health, Olympia, WA, United States of America

Objectives: While *Neisseria gonorrhoeae* (GC) morbidity in Washington State recently reached a plateau, significant increases in rates since 2000 highlight the need for additional information to appropriately prioritize resources for disease control interventions. Variations in GC morbidity among gay/bisexual men may have a significant impact on morbidity; gender of sex partners is not routinely ascertained in most jurisdictions. Behavioral risk among incident gonorrhea cases in three higher morbidity suburban jurisdictions in Washington State was investigated.

Methods: Incident gonorrhea cases were interviewed using enhanced behavioral/partner management instruments. Completed interviews were obtained for 638 GC cases reported in three higher-morbidity counties between January 2003 and December 2004 representing 37% of incident cases. Adjusted odds ratios were calculated for significant behavioral characteristics.

Results: 26% of male cases reported sex with males in the previous 12 months. Males (OR 2.2, 95% CI 1.5 – 3.1, $p < .001$) and persons identifying as gay/bisexual (OR 1.7, 95% CI 1.1 – 2.8, $p = .02$) were significantly more likely to report multiple sex partners in the previous three months. Persons identifying as gay/bisexual (OR 2.3, 95% CI 1.3 – 4.0, $p = .03$) and those 30 and older (OR 2.1, 95% CI 1.1 – 3.9 $p < .05$) were more likely to report anonymous partners in the

previous 3 months. Condom use with most recent partner was found to decrease with increasing age and to increase with increasing number of period partners reported.

Conclusions: This study suggests that older males and gay/bisexual men are likely to be engaging in higher-risk behaviors, should be prioritized for intensified partner management and may have protective behaviors that can be productively reinforced with behavioral interventions.

SESSION: WP - A9 BASIC SCIENCE- SYPHILIS

WP-049 WHO SEEKS CARE FOR GENITAL ULCERS IN MADAGASCAR?

K. van Damme¹, Wilfrieda Behets², M. Cohen², E. Hook³, N. Ravalomanana¹, N. Ranaivo¹, V. Ramaniraka¹

¹ *University of North Carolina/Madagascar, Antananarivo, Madagascar*

² *University of North Carolina, Chapel Hill, Madagascar*

³ *University of Alabama, Birmingham, Madagascar*

Objectives: To describe patients seeking care for genital ulcers (GU) in Madagascar. **Methods:** In the context of an ongoing, multicenter randomized clinical trial (RCT) that evaluates treatment of early syphilis, patients with GU in Antananarivo, Toamasina and Mahajanga, Madagascar were encouraged through community outreach to seek evaluation. GU were assessed clinically and using darkfield microscopy; sera were tested using RPR and TPHA. Eligibility of patients with proven primary syphilis and reactive RPR and TPHA was assessed for inclusion in the RCT. Patients who used antibiotics active against *T. pallidum* within 30 days, were pregnant or lactating, or <18 or >55 years old were ineligible. Consenting eligible patients were tested for HIV antibodies using EIA.

Results: 1287/4580 (28.1%) women and 2649/5596 (47.4%) men seeking care had clinically confirmed GU; 355/1287 (7.8%) women and 616/2649 (11%) men had genital herpes clinically. 116/935 (12.4%) women and 390/1933 (20.2%) men had GU and reactive RPR; 55/935 (5.9%) women and 159/1933 (8.2%) men with GU had darkfield positive lesions. Spirochetes were detected by darkfield microscopy in 34/116 (29.3%) women and 115/390 (29.5%) men with GU and reactive RPR. Of 34 women with positive RPR and darkfield 14 (41.2%) were recruited in the RCT compared with 90 of 115 (78.3%) men; none had HIV antibodies. 19/149 (12.7%) patients were ineligible because of self-medication; 8 (5.4%) because of age, 6 (4.0%) were judged unlikely to adhere to study procedures, 4 (2.7%) did not consent; 7 of 34 (20.6%) women were pregnant or lactated.

Conclusion: Genital ulcers and primary syphilis remain common in Madagascar and not associated with HIV. Clinically evaluated herpes prevalence did not increase much among GU patients since 1997 but this needs laboratory confirmation. Despite community-based education GU patients continue to self medicate. Antenatal syphilis screening and treatment should be prioritized.

WP-050 IMMUNITY IN EARLY SYPHILIS: PATHWAY TO HIV CO-INFECTION

J.C. Salazar¹, A. Cruz², L. Valderrama², C. Pope¹, R. Trujillo², A. Sombredero², A.M. Obando², N. Saravia², J.D. Radolf¹

¹ University of Connecticut Health Center, Farmington, United States of America

² CIDEIM, Cali, Colombia

Objectives: Syphilis is a risk factor for the transmission of HIV. To understand the immunologic underpinnings of this interaction we analyzed leukocyte surface antigens associated with HIV acquisition and/or disease progression in peripheral blood (PB) and secondary syphilis dermal lesions.

Methods: Five healthy controls and nineteen HIV-negative adults with untreated secondary syphilis were enrolled in the study. To determine the cutaneous effect of syphilis we utilized the epidermal suction blister technique, a method that employs gentle suction to raise acantholytic blisters at a site of cutaneous inflammation. Dermal immune cells obtained from blister fluid (BF) and PB were analyzed by flow cytometry.

Results: There were no differences in circulating neutrophils, CD4+ and CD8+ T-cells, B cells or monocytes between patients and controls. Syphilis dermal infiltrates were enriched in activated monocytes and both monocytoid (CD11c+) and plasmacytoid (CD11c-) dendritic cells (DCs). Syphilis patients surface expression of DC-SIGN and CCR5, key HIV co-receptors, was increased on circulating CD11c+ DCs. DC-SIGN expression was also increased in CD11c- DCs, a subset associated with HIV disease progression. We also noted a robust increase in surface expression of DC-SIGN, CCR5 and HLA-DR in both DC subsets in BF. Circulating CD4+ T-cells displayed increased percentages of memory (CD45RO+/CD27+) and memory/effector (CD45RO+/CD27-) subpopulations. CD8+ T-cells also displayed increased percentages in the memory/effector (CD45RO+/CD27-) and effector (CD45RO-/CD27-) subpopulations. Most dermal CD4+ and CD8+ T-cells expressed high levels of CD45RO.

Conclusions: Our findings show that *T. pallidum* enhances expression of key HIV-coreceptors within the cutaneous microenvironment. They also provide preliminary evidence that in the course of secondary syphilis, *T. pallidum* induces a potent innate and adaptive immune response in peripheral blood. These changes are potentially conducive to HIV infection and dissemination.

Methods: Study group. 1800 unselected samples submitted to the Microbiology Laboratory of the St.Orsola Hospital in Bologna for routine screening for syphilis were evaluated. Commercial serologic tests. The following tests were used: Syphilis Screening Recombinant EIA, (Radim, Italy), and TPHA (Alfa Wasserman, Italy). All the specimens showing an equivocal result 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. LIAISON? Treponema Screen. LIAISON? Treponema Screen (DiaSorin, Italy) is a qualitative fully automated method for determination of specific antibodies to *T. pallidum* in human serum or plasma. This new method is a one step sandwich chemiluminescence immunoassay (CLIA).

Results: 82 samples out of this group of sera were positive and one was equivocal when tested by LIAISON Treponema Screen. Considering WB as the 'gold standard', the sensitivity and specificity of CLIA were 97.6% and 100%, respectively, whereas the agreement was 99.9%. Compared to EIA, the values of sensitivity and specificity of LIAISON Treponema Screen were 97.5% and 99.8% respectively, being the agreement 98.7%. Finally, compared to TPHA, CLIA performed with a sensitivity of 97.3% and a specificity of 99.4%, and the resulting agreement was 99.3%.

Conclusions. The LIAISON? Treponema Screen assay showed to be a very sensitive and specific method for the laboratory diagnosis of syphilis and it can be considered a good alternative to the traditional treponemal tests.

		EIA		WB positive
		Positive	Negative	
CLIA	Positive	78	4	↖
	Equivocal	1	0	
	Negative	1	1716	
WB positive				

Figure 1: Comparison of CLIA and EIA reactivities

SESSION: WP - B9 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- SYPHILIS

WP-051 EVALUATION OF LIAISON® TREPONEMA SCREEN, A NEW RECOMBINANT CHEMILUMINESCENCE IMMUNOASSAY FOR THE DIAGNOSIS OF SYPHILIS

V. Sambri¹, A. Marangoni¹, S. Accardo², F. Cavrini¹, E. Della Bella¹, A. Moroni¹, E. Stormi¹, R. Cevenini¹

¹ Section Microbiology - St-Orsola Hosp., Bologna, Italy

² St-Orsola Hospital, Bologna, Italy

Objectives: The serological detection of specific antibodies to *Treponema pallidum* is of particular importance in the diagnosis of syphilis. The purpose of this prospective study was to evaluate diagnostic performances of LIAISON? Treponema Screen, a new automated immunoassay based on the chemiluminescent technology (CLIA) in comparison with EIA, WB and TPHA.

WP-052 DETECTION OF TREPONEMA PALLIDUM BY POLYMERASE CHAIN REACTION IN THE CSF OF SYPHILIS PATIENTS

R.C. Castro¹, E.S. Prieto¹, I. Santo², J. Azevedo², I. Aldir³, M.J. Aguas⁴, M.J. Manata⁴, M.J. Aleixo⁴, J. Botas⁴, F. Exposto¹

¹ Instituto de Higiene e Medicina Tropical, Lisbon, Portugal

² Centro de Saúde da Lapa, Lisbon, Portugal

³ Hospital Egas Moniz, Lisbon, Portugal

⁴ Hospital Garcia Orta, Lisbon, Portugal

Neurosyphilis may be symptomatic or asymptomatic, although if this last one is left untreated, it will progress to symptomatic. Diagnosis of neurosyphilis, specially when asymptomatic, is difficult: culture 'in vitro' is not available, serology cannot be used alone and no definitive criteria is established for the other CSF parameters. We

evaluated the usefulness of three PCR techniques (47-PCR, *poA*-PCR and M-PCR) in the diagnosis of neurosyphilis. CSF (124) from patients with syphilis, who were being investigated for neurosyphilis and 37 from individuals with no known history of syphilis and non-reactive serology were studied. White cell count (WCC), VDRL, FTA-Abs and all three PCR techniques were performed in every sample. Definitive diagnosis of neurosyphilis was based on the presence of the first three of these parameters. *T. pallidum* DNA was not amplified in any of the 37 samples with non reactive serology. In 85 CSF samples *T. pallidum* was not detected by any PCR technique, although two of these had VDRL and FTA-Abs reactive tests and one also had increased cell count. Identification of *T. pallidum* DNA with at least two PCR techniques was obtained in 29 CSF samples. Seventeen were VDRL reactive, from which 15 had all criteria for the diagnosis of neurosyphilis, and two were FTA-Abs reactive and presented normal WCC. In 12 VDRL was non-reactive, from which three had all other criteria, in three only the FTA-Abs test was reactive, in other three only the cell count was increased and in three none of the criteria used for the diagnosis of neurosyphilis was found. In conclusion, it seems that PCR could be a useful tool in the diagnosis of neurosyphilis. However, more studies should be performed in view of clarifying the meaning of the presence of *T. pallidum* DNA in the CSF.

WP-053 IDENTIFICATION OF *TREPONEMA PALLIDUM* DNA IN LATENT SYPHILIS

R.C. Castro¹, E.S. Prieto¹, I. Santo², J. Azevedo², M.J. Aguas³, M.J. Manata³, M.J. Aleixo³, J. Botas³, F. Exposto¹

¹ Instituto de Higiene e Medicina Tropical, Lisbon, Portugal

² Centro de Saúde da Lapa, Lisbon, Portugal

³ Hospital Garcia Orta, Lisbon, Portugal

Culture of *Treponema pallidum* cannot be performed in artificial medium. Therefore, the laboratory diagnosis of syphilis relies mainly on serological tests. PCR techniques have been used to detect *Treponema pallidum* DNA in clinical samples, but they have only shown high sensitivity and specificity in genital ulcers and skin lesions. The objectives of this study were: a) to define the most adequate sample and PCR technique for the diagnosis of latent syphilis b) to confirm the presence of *Treponema pallidum* in the blood of patients with latent syphilis. We have studied 84 sera, 69 plasma, 69 whole blood and 29 ear scraping specimens from patients with latent syphilis. Detection of *Treponema pallidum* DNA was performed using a 47-PCR, *poA*-PCR and M-PCR assays. The 47-PCR assay presented the higher number of positives – 16/29 (55,2%) in ear scrapings, followed by *poA*-PCR - 15/ 29 (51,7%) and M-PCR - 14/69 (48,3%). In relation to the type of specimens and after the ear scrapings, as previously referred, plasma samples presented the highest number of positives with the 47-PCR technique - 31/69 (44,9%), followed by whole blood - 27/69 (39,1%) and sera – 19/84 (22,6%). In conclusion, we confirm that *Treponema pallidum* can be found in blood of patients with latent syphilis. It also seems that the best PCR technique and specimen for identification of circulating *Treponema pallidum* DNA is 47-PCR and ear scrapings, respectively.

WP-054 THE SEARCH FOR NON-LIPOPROTEIN ANTIGENS FOR USE IN SPECIFIC SEROLOGICAL TESTS FOR SYPHILIS THAT COULD DIFFERENTIATE BETWEEN ACTIVE AND PREVIOUSLY TREATED DISEASE

R.W. George¹, V. Pope¹, S. Harris¹, P. Ocampo², B. Steiner¹, R.C. Ballard³

¹ Centers for Disease Control, Atlanta, United States of America

² Emory University, Atlanta, United States of America

³ Centers for Disease Control & Prevention, Atlanta, Georgia, United States of America

Objectives: Development of a treponemal antigen based test for syphilis that will differentiate between past and current infection. Existing treponemal based tests depend on major membrane lipoproteins, antigens that are probably responsible for persistence of treponemal antibody titers in infected and treated individuals.

Methods: A selection of genes [Tp0026-28, Tp0057, Tp0400, Tp0433 (*arp*), Tp0434, Tp0566, Tp0619, Tp0620, Tp0621, Tp0651, Tp0835 & Tp1037] coding for non-lipoproteins were cloned into an expression vector (pBAD/thio-TOPO). Tp0435 and Tp0574, acting as lipoprotein controls, were also cloned. Two gene products (*arp* & Tp0620) have been tested by Western blotting and/or ELISA for reactivity to sera collected from treated and untreated rabbits infected with *T. pallidum* (Nichols strain) over a time course of one year.

Results: ELISA testing of the recombinant encoded by the *arp* gene indicated a rising titer of specific antibody post infection. This titer dropped over time in all rabbits that had been treated and in some untreated animals.

Conclusions: Selection of candidate treponemal recombinant proteins by deducing information of structure and function from their genetic code may result in identification of candidate antigens that could be used in tests that appropriately follow the course of infection.

WP-055 USE OF RAPID *TREPONEMA* SPECIFIC TESTS FOR SYPHILIS DIAGNOSIS IN INDIGENOUS POPULATIONS IN THE UPPER NEGRO RIVER, AMAZONAS, BRAZIL

A.S. Benzaken¹, M.C. Lavagnole², D.C. Range², G.S. Perez², J.L.L. Paes², Y.M. Mundo², E.G. Galban³, R. Peeling⁴

¹ Alfredo da Matta Foundation, Manaus/Amazonas, Brazil

² Fed Org Indígenas Rio Negro, São Gabriel Da Cachoeira, Brazil

³ Instituto de Gastroenterologia, Habana, Brazil

⁴ World Health Organization, Geneva, Switzerland

Introduction: Approximately 21,000 indigenous peoples live in the Upper Negro River region, in north Brazil. They are distributed in 22 different ethnic groups, amongst which are the Hüpda, semi-nomadic, hunters, and harvesters with a population of 1438 people distributed in 25 communities. They do not speak Portuguese and are resistant to the 'white man's medicine'. In July 2003, two cases of congenital syphilis were detected in one of their groups. These findings were followed by a tracing process among four Hüpda communities between November and December of 2003 using rapid tests.

Objective: Trace syphilis cases through the use of rapid treponema-specific tests in areas of difficult access in the Amazon Region.

Method: Descriptive and quantitative field study with data obtained using 'Syphicheck-WB' rapid tests for syphilis in full blood tests in indigenous group.

Results: 479 individuals from 4 different communities, 282(58.8%) agreed to carry out the test. Out of these, 19(6.7%), were positive and received immediate treatment (including 2 of the congenital syphilis cases). The total prevalence was 6.7 %(19/282) and in the 4 communities varied between 0% and 12.7 %(where the initial cases were detected, which motivated this study).

Discussion: Tracing Syphilis in populations with difficult access, is extremely difficult when using conventional laboratory techniques. In addition, cultural and logistical difficulties must be taken into account. In this Hüpda study these complications were shown to be minimal when rapid tests were used, without loss of sensitivity and specificity.

Conclusions: The suspect of two congenital syphilis cases and the rapid realization of control activities confirmed the suspected cases and also diagnosis 17 other cases of these 4 communities. The results obtained allow us to suspect that Syphilis prevalence in this population is high. Therefore we recommend a prevalence study within this population to serve as a base study for a control program with possibilities of syphilis eradication within the Hüpda.

WP-056 VALIDITY OF RAPID TEST RESULTS FOR THE DIAGNOSIS OF SYPHILIS IN THE CLINIC SETTING

M. Changalucha¹, K. Mugeye², M.M. Temu¹, D. Everett³, R. Balira¹, J. Marealle⁴, D.W. Mabey³, R.W. Peeling⁵

¹ National Institute for Medical Research, Mwanza, Tanzania

² Health Department, Mwanza City, Mwanza, Tanzania

³ LSHTM, London, United Kingdom

⁴ Health department, Mwanza City, Mwanza, Tanzania

⁵ STD Diagnostic Initiative, WHO, Geneva, Switzerland

Objectives: To determine: 1) the validity of syphilis diagnosis using 4 rapid treponemal tests, 2) the comparability of rapid test results between whole blood and serum, and performed at the laboratory or clinic.

Methods: Blood was collected from 528 pregnant women attending Makongoro clinic for antenatal care for the evaluation of Determine, VISITECT tests, and from 585 pregnant women for the evaluation of the Syphichek-WB and SD Bioline tests. Serum specimens were tested by RPR at the clinic, and by RPR, rapid tests and TPPA in the reference laboratory. Whole blood specimens were tested at the clinic and reference laboratory using the four rapid tests.

Results: The sensitivity and specificity of the rapid tests using whole blood compared to TPPA ranged from 70% (Determine) to 86% (SD Bioline), and from 97.6% (SD Bioline) to 99.6% (Determine) respectively at the clinic, and from 81% (VISITECT) to 91% (SD Bioline), and from 96% (SD Bioline) to 99.6% (VISITECT) respectively in the laboratory. The sensitivity and specificity on serum ranged from 82.5% (VISITECT) to 93% (Determine), and from 95% (SD Bioline) to 99% (Syphichek/VISITECT) respectively. Agreement between whole blood and serum results ranged from 98.1% (K= 0.9216) to 98.9% (K= 0.9337), and from 97% (K= 0.8608) to 99% (K= 0.9313) between clinic and reference laboratory results on whole blood

Conclusion: There was excellent agreement between whole blood and serum, and clinic and laboratory results by all four tests. The performance of all four tests were good and can therefore be used at the point of care, especially in areas where electricity supply

and refrigeration is unavailable. The use of whole blood could facilitate not only a quick turn around of results for immediate treatment, but also integration of syphilis screening into VCT and PMTCT programmes for HIV.

WP-057 DOXYCYCLINE COMPARED TO BENZATHINE PENICILLIN FOR THE TREATMENT OF EARLY SYPHILIS

K.G. Ghanem¹, E.J. Erbeling¹, W.W. Cheng², J.M. Zenilman¹, A.M. Rompalo¹

¹ Johns Hopkins University, Baltimore, Maryland, United States of America

² Stanford University, Palo Alto, California, United States of America

Objective: Doxycycline (DOXY) is the recommended second-line agent for the treatment of syphilis though efficacy data are limited. Using a large clinic database, we compared the serological responses of patients with early syphilis treated with DOXY to those treated with benzathine penicillin G (BPG).

Methods: All patients diagnosed with early syphilis attending two public STD clinics in Baltimore, Maryland treated with DOXY (100mg orally twice daily x 14 days) between 1/1/1992 and 10/23/2000 were eligible. Age-matched controls treated with BPG 2.4 million units intramuscularly were selected from the same population. Inclusion criteria included a clinician-recorded diagnosis of primary, secondary, or early latent syphilis with reactive serology at the time of diagnosis (reactive RPR with reported titer, reactive confirmatory FTA-Abs), and at least one follow-up serological test titer within 400 days. Serological failure was defined as lack of a four-fold drop in RPR titer at 400 days post-treatment, or a four-fold increased titer between 30 and 400 days after therapy. The period of observation was truncated at 400 days.

Results: During the study period, 2664 patients were treated for early syphilis and 106 received DOXY. Of those treated with DOXY, 34 met the inclusion criteria. 73 controls treated with BPG were randomly selected. There were 5 serological failures in the BPG group and 0 failures in the DOXY group (p=0.2). The median times to successful serological responses in the DOXY and BPG groups were 106 days (95% CI 75-149) and 137 days (95% CI 111-172), respectively (p=0.6). In a multivariable Poisson regression model adjusting for age, sex, HIV status, and baseline RPR titer, previous history of syphilis was marginally associated with an increased risk of serological failure (IRR 3.9, p=0.09).

Conclusion: DOXY appears to be an effective agent for the treatment of early syphilis.

WP-058 EVALUATION OF TREP-CHEK, A RECOMBINANT BASED EIA FOR SYPHILIS

R.H. Notenboom¹, K. Nagy², B. Kemeny³

¹ Phoenix Bio-Tech Corp, Mississauga, Canada

² Med. Microbiol Semmelweis Univ., Budapest, Hungary

³ Nat. Inst. Dermato-Venerology, Budapest, Hungary

The availability of recombinant treponemal antigens, ending the dependence on in vivo grown *T.pallidum*, provides the opportunity to re-evaluate current syphilis testing. In this study we compared TrepChek(T/C; Phoenix BioTech Corp, Mississauga, Canada) with a standard testing algorithm for syphilis. Various groups of patients (serologically defined; dark field positives; blood donors; Syphilis and HIV co-infected and MSM) were tested by RPR(R), TPHA(T)

and TrepChek. Sera with discordant results were tested with a line immuno assay (LIA; Innogenetics; Belgium). All sera were tested and recorded according to manufacturers package inserts. The overall agreement between the combined results of RPR and TPHA (R+/T+ plus R-/T-) and T/C was 98%. The agreement between the two treponemal tests was 95%. Out of 32 sera from darkfield positive patients 2 were negative by all serological tests; the sensitivities for R, T and T/C were 81, 72 and 78%, respectively. Three of these sera (R-/T-) were positive by T/C. Two out of the remaining 519 sera were false positive by R and T, while 13 were true positive by T/C only. Out of 17 sera with nonspecific agglutinations 6 were confirmed positive by T/C. Attempts to increase the sensitivity of R resulted in 31 true and 62 false positives. Similarly, 8/14 sera with low (<1/80) titers by TPHA tested RPR positive. In contrast, the cut off value of T/C is determined by the seroprevalence of the population and thus can be altered to increase the sensitivity without compromising the specificity. In addition to the benefits of automation T/C provides greater sensitivity in the detection of 'active' disease.

WP-059 RPR ALONE IS INSUFFICIENT TO DETECT PRIMARY SYPHILIS CASES

T. Wong¹, A. Singh², R. Sutherland², G. Jayaraman¹

¹ Public Health Agency of Canada, Ottawa, Canada

² Alberta Health & Wellness, Edmonton, Canada

Objectives: To assess the effectiveness of rapid plasma reagin (RPR) screening in detecting primary syphilis cases and to determine the characteristics of cases that were non-reactive on initial RPR testing. **Methods:** We reviewed the charts of all primary syphilis cases that were reported to STD Services, Alberta, Canada between 1980-2001 and extracted RPR results and epidemiologic information for these cases. We determined the proportion of cases that remained non-reactive by RPR testing and examined differences between non-reactive and reactive RPR cases using the c2 test and, where appropriate, Fisher's exact test. Logistic regression was used to further define independent factors associated with non-reactive RPR results.

Results: 863 primary syphilis cases were reported during the study period. Of these, 224 (26%) were non-reactive on initial RPR testing (NR) and were compared to 639 cases with reactive initial RPR (R). Using univariate analysis, primary syphilis with non-reactive initial RPR test was more likely to occur during a syphilis outbreak between 1983-1985 (29.8% vs. 18.9% in the other years, $p < 0.0001$), in males (29.4% vs. 13.9% among females, $p < 0.0001$), in non-Aboriginals (30.5% vs. 14.7% among Aboriginals, $p < 0.0001$); and among older individuals (NR mean age = 35.7 years vs. R 31.2 years, $p < 0.0001$). Using multivariate analysis, non-reactive initial RPR result in primary syphilis patients was associated with the 1983-1985 Alberta syphilis outbreak (adj. OR=2.1, 95%CI=1.3-3.1), being non-Aboriginal (adj. OR =2.4, 95%CI=1.5-3.7), and being older (adj. OR=1.03, 95%CI=1.01-1.04). **Conclusions:** Our data suggest that the RPR test alone is insufficient to diagnose primary syphilis infections, especially during a syphilis outbreak, among non-Aboriginals in Canada and in older individuals.

WP-060 ROLE OF TPPA IN THE DIAGNOSIS OF EARLY SYPHILIS AMONG MEN WHO HAVE SEX WITH MEN IN KING COUNTY, WASHINGTON

T. Shafii¹, R. Keran², K.K. Holmes¹, H.H. Handsfield¹, M.R. Golden¹

¹ University of Washington, Seattle, WA, United States of America

² Public Health Seattle, King Co, Seattle, United States of America

Objectives: To determine the utility of routinely testing high-risk persons for syphilis using TPPA and RPR. In King County, Washington, USA, most cases of syphilis occur in men who have sex with men (MSM).

Methods: Between March 1, 2004 and January 14, 2005, all MSM in clinic were screened for syphilis with rapid plasma regain (RPR) and *Treponema pallidum* particle agglutination (TPPA) tests. We reviewed the medical records of men with positive TPPAs.

Results: Among 1292 MSM, TPPA was reactive in 162 men (12.5%). Of these, the RPR was positive in 95 men (59%). Of the 67 men with nonreactive RPR, 49 (73%) had documented histories of syphilis. Of the remaining 18 RPR-negative men, 7 (39%) were eventually diagnosed with primary syphilis and 5 (28%) were known contacts to syphilis. One man each had incubating syphilis, prozone phenomenon, false positive test, and late latent disease; 2 cases were undeterminable. Of the seven with primary syphilis, 5 were initially treated for genital herpes only. These five and the incubating case were retested and subsequently all had reactive RPRs. Seven (58%) of 12 men with primary syphilis had reactive TPPA and negative RPR results. Among 128 known syphilis contacts, 19 (15%) had a reactive RPR and TPPA, and 5 (4%) had a reactive TPPA and negative RPR. Thus, routine screening with TPPA increased the number of infectious syphilis cases diagnosed in MSM by 17% compared with RPR testing alone.

Conclusions: TPPA appears to add little to RPR as a routine screening test for syphilis. However, routine *T. pallidum*-specific testing is clinically useful in evaluating sex partners of persons with syphilis and persons at high risk for syphilis who present with genital ulcer disease.

WP-061 COMPARISON OF AN TREPONEMAL IGG EIA ASSAY VERSUS CONVENTIONAL RPR TESTING IN PATIENT SCREENING FOR THE DIAGNOSIS OF TREPONEMA PALLIDUM INFECTION

J.F.T. Toney¹, R.L. Oehler¹, S.M. Mastorides¹, S.G. Gompf¹, J.T. Sinnott²

¹ James A. Haley VA Medical Center, Tampa, Florida, United States of America

² University of South Florida, Tampa, Florida, United States of America

Objectives: Traditional screening for the diagnosis of syphilis exposure is conducted using the rapid plasma reagin (RPR) test. This test is labor intensive and operator dependent. As a non-treponemal test, the RPR may be subject to false positive and false negative results. Traditional treponemal testing such as the fluorescent treponemal antibody absorption (FTA-abs) assay is considered to be the gold standard and detects treponemal antigens directly but is more expensive and not quantitative. We compared the use of a treponemal IgG EIA (TREP-CHEK Anti-Treponema EIA, Phoenix Bio-Tech Corp., Mississauga, Ontario, CA) assay with traditional RPR analysis in the screening of patients for *Treponema pallidum* exposure.

Methods: We prospectively studied 541 consecutive patients who underwent screening for syphilis exposure. All serum samples were tested using the treponemal IgG and quantitative RPR assays. Samples with a positive qualitative RPR were re-tested to determine the quantitative titer. A total of thirteen out of 541 patients in whom there was either a positive treponemal IgG test and/or a positive RPR titer were also submitted for FTA-abs testing. Results from both the treponemal IgG assay and the RPR test were compared against the FTA-abs test utilizing a chi-square analysis.

Results: Using FTA-abs results as the gold standard, prevalence, sensitivity, specificity, and positive and negative predictive values were determined. Results appear in the table.

Conclusion: The treponemal IgG test was a more sensitive and accurate method for determining exposure to *Treponema pallidum* than RPR. Treponemal IgG assay screening shows promise as an alternative to the use of the RPR in the routine screening of patients for exposure to *Treponema pallidum*.

Test	Prevalence (%)	Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)
Treponemal IgG	1.66	75	100	100	99.4
RPR (quant)	1.29	58	99.3	88	99.1

P < .001 N=541

Table 1:

WP-062 VALIDATION OF FOUR RAPID TREPONEMA-SPECIFIC TESTS FOR THE DIAGNOSIS OF SYPHILIS IN A POPULATION WITH HIGH PREVALENCE IN MANAUS, AMAZON, BRAZIL

A. Benzaken¹, W. Saleh¹, J.C. Dutra¹, S.C. Borborema¹, E.G. Galban¹, R.W. Peeling²

¹ Fundacao Alfredo da Matta, Manaus, Brazil

² World Health Organization, Geneva, Switzerland

Introduction: WHO, through the STD Diagnostics Initiative (SDI), has been searching for more appropriate syphilis diagnostic tests for developing country settings. This study was conducted in one of 8 world wide clinic-based settings to validate 4 different rapid tests. **Objectives:** To determine the performance of four rapid tests compared to FTA-Abs, in a clinic-based setting and to assess their operational characteristics and acceptability for patients and health care providers.

Methods: A comparative study was carried out to validate the sensitivity, specificity, positive predictive value (PPV) of four rapid treponema-specific tests (Syphicheck-WB, Qualpro Diagnostics, India; SD Bioline Syphilis3.0, Standard Diagnostics, Korea; Visi-Tect Syphilis, Omega Diagnostics, Scotland and Determine Syphilis TP, Abbott, USA). that had been previously compared to TPHA/TPPA in the WHO laboratory-based evaluation (www.who.int/std_diagnostics). The tests were performed independently by both clinic and laboratory staff and the agreement between their results were compared. The ease of use and of interpretation of test results, and the acceptability of the tests to providers and patients were also assessed.

Results: Sensitivity, specificity and PPV of the 4 tests in high prevalence syphilis populations (9% and 20%) from a STI clinic in Brazil,

were satisfactory in obtaining values for sensitivity (84% to 96%), specificity superior to 98% in all tests, and PPV>90. The agreement (Global concordance level and Kappa Index) was 97% and 0.94 respectively between results obtained by clinic and laboratory staff. Results were obtained in 15-20 minutes. More than 90% of the patients agreed to wait up to 2 hours for their results.

Conclusions: The four rapid tests have the necessary requirements to be used in syphilis control programs, as they have performance characteristics similar to laboratory-based treponemal tests. In the future, when rapid tests are implemented routinely in field settings, administration of treatment would be possible at the same patient visit.

WP-063 CLINIC-BASED EVALUATION OF 4 RAPID SYPHILIS DIAGNOSTICS RESULTS FROM CHINA

H.Y. Zheng¹, L.N. Wang¹, J. Li¹, T. Feng¹, R.W. Peeling²

¹ Peking Union Medical College Hospital, Beijing, China

² World Health Organization, Geneva, Switzerland

Introduction: Syphilis is a serious public health problem in China, especially among migrant workers who are often marginalised from health care services. Rapid syphilis tests may be useful for this population but the performance of these tests has not been widely evaluated.

Objectives: To compare the performance of rapid treponemal tests against the *Treponema pallidum* haemagglutination assay (TPHA) and to assess their operational characteristics.

Methods: Informed consent was obtained from patients presenting at the PUMCH STD clinic. Venous blood was collected from each patient and aliquoted for evaluating 4 rapid treponemal tests by clinic staff using whole blood, and by laboratory technicians (rapid tests using whole blood and serum, and TPHA using serum). Laboratory staff was blinded to the results obtained at the clinic. Clinic and laboratory staff were blinded to each other's results. They were also asked to score each rapid test on ease of use and interpretation of results.

Results: A total of 860 patients were recruited for this study, 605 men and 255 women. The prevalence of syphilis was 20%. The performance of the 4 rapid tests are in Table 1 as follows: All 4 rapid tests were easy to use requiring no equipment. Results were easy to interpret and available in 15-20 minutes.

Conclusions: These 4 syphilis rapid tests have higher sensitivities in serum than in whole blood. Based on their performance and operational characteristics, they are suitable for use in STD clinic settings for the diagnosis of syphilis.

Rapid test	Determine (Abbott USA)	BIOLINE (Standard Korea)	VISITECT (Omega UK)	Syphicheck WB (Qualpro India)
Sensitivity:				
Serum (lab)	100%	95.5%	94.0%	67.4%
Whole blood (clinic)	81.9%	87.6%	73.5%	64.0%
Whole blood (lab)	77.1%	87.6%	77.9%	70.8%
Specificity:				
Serum (lab)	98.9%	97.9%	98.1%	98.8%
Whole blood (clinic)	99.4%	99.4%	99.7%	99.7%
Whole blood (lab)	100%	99.4%	100%	99.7%

Table 1:

SESSION: WP - C9 EPIDEMIOLOGY- SYPHILIS**WP-064 THE ROLE OF ORAL SEX IN THE TRANSMISSION OF SYPHILIS, CHICAGO, 2000-2003**

C. Ciesielski, I. Tabidze

Chicago Department of Public Health, Chicago, United States of America

Objectives: Unprotected oral sex may result in transmission of syphilis and HIV, and is a common activity, especially among men who have sex with men (MSM). Our objective was to assess the role of oral sex in transmission of primary & secondary (P&S) syphilis in Chicago.

Methods: During interviews with persons with P&S, Chicago Department of Public Health (CDPH) staff determined if oral sex was the only sexual exposure during the period they acquired syphilis. CDPH syphilis surveillance and interview data from 2000 - 2003 were analyzed by univariate and logistic regression analysis, using SAS version 8.2.

Results: Of 1,229 P&S cases, data were available for 856 (70%), including 487 MSM, 198 heterosexual men, and 171 females. Oral sex was the only sexual exposure during the period of syphilis acquisition for 111 (12.9%), including 87 (17.8%) MSM, 13 (6.6%) heterosexual men, and 11 (6.4%) females ($p < 0.001$). MSM were 3x more likely to report only oral sex during the period of syphilis acquisition than heterosexual men and females. Of 85 HIV-negative MSM, 11.8% reported only oral sex during this period, compared to 18.8% (45/239) of HIV-infected MSM ($p < 0.01$). Logistic regression models including HIV status, race/ethnicity, age, gender and sexual orientation showed that only MSM was a significant predictor for acquisition of syphilis through oral sex (adjusted Odds Ratio 3.08; 95% CI 1.68 - 5.64).

Conclusions: These data suggest that a significant proportion of P&S cases in Chicago were transmitted through oral sex, particularly among MSM. Furthermore, these data likely represent an underestimate of the role of oral sex in syphilis transmission as most persons with P&S engaged in anal and vaginal sex as well as oral sex.

WP-065 CLASSIFICATION OF NEUROSYPHILIS IN A SYPHILIS AND REACTOR REGISTRY IN NYC, 2000-2004R. Hennessy¹, E.J. Klingler², S. Blank¹, S. Rubin¹, D. Cordova¹, S.M. Wright², J.A. Schillinger¹¹ Centers for Disease Control & Prevention, New York, NY, United States of America² NYC Dept. of Health and Mental Hygiene, New York, NY, United States of America

Objectives: HIV-infected people are at risk for developing neurosyphilis (NS) during early stages of syphilis infection. In New York City (NYC) early syphilis rates have increased among men who have sex with men, many of whom are HIV-infected. This study was conducted to determine whether NS was correctly classified in the NYC Syphilis and Reactor Registry (SRR) and properly reported to the National Notifiable Disease Surveillance System (NNDSS).

Methods: The NYC SRR contains reports from providers and laboratories. Potential NS cases reported January 2000 - June 2004 were identified as any entry with: NS diagnosis code, or laboratory

report of cerebrospinal fluid (CSF)VDRL/FTA, or treatment consistent with a NS diagnosis, or NS diagnosis resulting from a syphilis case investigation by public health staff. We then assessed which of these potential cases were reported from NYC to the NNDSS.

Results: 265 potential NS cases were identified: 56 (21%) were coded as NS and reported to NNDSS, including 10 (18%) with positive CSF-VDRL/FTA. Of the remaining 209, 156(75%) were reported as syphilis cases other than NS, including 10(6%) with positive CSF-VDRL/FTA; and 53(25%) were neither classified as syphilis nor reported, including 10(40%) with positive CSF-VDRL/FTA.

Conclusions: Preliminary analysis indicates that likely NS cases were neither properly classified nor reported. Classifying the 10 unreported cases with positive CSF-VDRL/FTA as NS would increase the case reporting of NS by 18%. Our findings led to a revision of surveillance and case investigation protocols, and additional training for public health surveillance and investigation staff. Concurrently, CDC modified widely used surveillance software (STD*MIS) to permit syphilis reporting with or without neurologic symptoms. Since, local problems of disease burden measurement are reflected in national estimates of disease, it is likely that NS is underestimated in national US surveillance data.

WP-066 CONGENITAL SYPHILIS SURVEILLANCEV. Sambri¹, E. Tridapalli², M.G. Capretti², A. Marangoni¹, A. Moroni¹, S. Accardo³, A. D'Antuono⁴, E. Mazzoni², G. Faldella²¹ Section Microbiology - St-Orsola Hosp., Bologna, Italy² Dip. Sc. Ost. Gin.Ped., Bologna, Italy³ St-Orsola Hospital, Bologna, Italy⁴ DMCSS- Dermatology, Bologna, Italy

Objectives: A prospective surveillance study was carried out at St. Orsola Hospital in Bologna, Italy, from November 2000 to December 2004, in order to evaluate the incidence of congenital syphilis in a low-risk area.

Methods: In 2000 a prospective database of all maternal syphilis cases was established in our Hospital. Data collected included demographics and codiagnosis. Management of these pregnancies and neonatal outcomes were accurately monitored.

Results: 14964 women gave birth to 15228 infants between November 2000 and December 2004. There were 65 pregnancies in 63 women with serological evidence of syphilis. Overall prevalence was 0.42%. 10 women (15.9%) were Italian, 32 were from Eastern Europe (50.8%), 12 from America (19.0%), 6 from Africa (9.5%) and, finally, 3 from Asia (4.8%). 8 women (12.7%: 1 from Cuba and 7 from Eastern Europe) had no previous documentation of treatment. There were 69 live-births; all infants born were assessed and managed according to maternal treatment history. All the babies were evaluated for congenital syphilis with a routine physical examination as well as serological tests; nobody presented classic symptoms of congenital disease. The 8 infants born from women with a syphilis diagnosis at the delivery were also evaluated with a long bone x-ray of the knee and lumbar puncture for cerebral fluid syphilis serological tests (by VDRL and Western Blot). 5 babies out of this group of 8 were considered as infants with highly probable disease, since their serum samples were IgM Western Blot positive. 2 infants were ELBW (extremely low birth weight). The mean gestational

age at birth of probable cases and noncases differed significantly (32.8 vs. 38.4, $p < 0.0001$), as well as did the mean birth weight (2040 vs. 3192, $p < 0.0001$).

Conclusion: Syphilis should continue to be included in routine antenatal serological tests, since strong surveillance can avoid the problem of congenital syphilis.

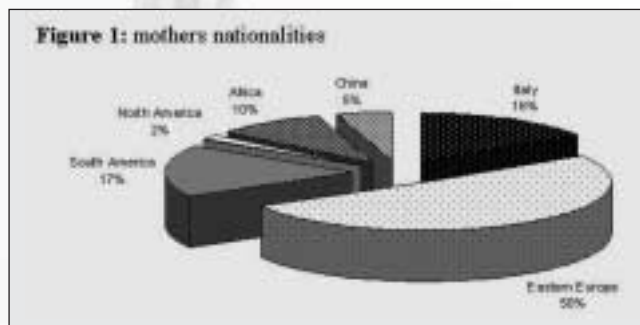


Table 1:

Newborns	Cases (n)	GA (weeks)	BW (gr)	Neonatal serum IgM WB result	Therapy
Highly probable congenital syphilis	5 (7%)	32.8±7.5	2040±1429	+	Parenteral G Penicillin (50,000 U.I./kg/dose every 8-12 h for 10-14 days)
Asymptomatic infants born to mothers inadequately treated	3 (4%)	39.0±1.0	3133±255	-	Benzathine Penicillin im single dose (50,000 U.I./kg)*
Asymptomatic infants born to mothers adequately treated but follow up uncertain	7 (10%)	32.4±1.0	3032±473	-	Benzathine Penicillin im single dose (50,000 U.I./kg)
Asymptomatic infants born to mothers adequately treated with positive non treponemal tests at birth	4 (6%)	37.2±1.9	3072±604	-	Benzathine Penicillin im single dose (50,000 U.I./kg)
Asymptomatic infants born to mothers adequately treated	50 (72%)	38.5±1.7	3229±544	-	No therapy, only follow up

* after exclusion of neurosyphilis with CSF examination

Table 2:

WP-067 BACK TO THE FUTURE: HETEROSEXUAL TRANSMISSION OF PRIMARY AND SECONDARY SYPHILIS (P&S) IN FEMALES, CHICAGO, IL, 1998-2004

I. Tabidze¹, J. Broad¹, C. Ciesielski²

¹ Chicago Department of Public Health, Chicago, United States of America

² Centers for Disease Control, Atlanta, United States of America

Objective: During the 1990's, virtually all cases of P&S in Chicago were among heterosexuals, with women accounting for 50% of cases. Between 2001-2003, female cases declined, as men who have sex with men (MSM) comprised over 60% of P&S cases. Our objectives were to describe changes in the epidemiology of P&S syphilis among females in Chicago.

Methods: Surveillance and interview data for P&S cases reported in Chicago between 1998-2004 were analyzed using SAS version 8(2). Rates were calculated as cases/100,000 population using 1990 and 2000 census data. Data for 2004 are provisional.

Results: In 1998, 47% (158/338) P&S cases were female. By 2003, females comprised only 11.2% of cases. During this time, rates in females fell by 78% (from 9.15 to 2.01). However, between 2003 and 2004, female P&S cases increased by 53% (from 30 to 46). The median age for females in 2004 was 22, 7 years younger than the

median age of 29 in 1998. Interview data was available for 212 (68%) of 312 females with P&S reported during 2000-2004; (92%) were single, and 3.6% identified as bisexuals. Between 2000 and 2003 exchange of sex for money or drugs were reported by 28% (48/171) of females, and only 9.7% (4/41) in 2004. From 2000 -2003 19.2% (33/171) of females had anonymous sex partners and only 9.7% (4/41) in 2004. Almost 6% (12) of females were pregnant at the time of P&S diagnosis.

Conclusion: The abrupt increase of P&S syphilis cases among females is concerning and may herald increases in congenital syphilis. Factors causing this increase in females need to be investigated. These data suggest that while recent syphilis prevention efforts have been directed at MSM, activities targeting heterosexuals, especially females, must also be enhanced.

WP-068 INCREASE IN DISCRIMINATORY ABILITY OF THE EXISTING TREPONEMA PALLIDUM TYPING SYSTEM BY THE ADDITION OF SEQUENCE-BASED SUBTYPING TARGETING A HOMONUCLEOTIDE TANDEM REPEAT WITHIN THE RPSA GENE

A Pillay¹, R. George², K. Smith³, T. Slezak³, M.G. Morshed⁴, H. Jones⁴, R.C. Ballard²

¹ CDC/NCHSTP, Atlanta, United States of America

² CDC, Atlanta, United States of America

³ LLNL, Livermore, United States of America

⁴ British Columbia CDC & UBC, Vancouver, Canada

Objectives: To determine whether the prevalent strain type of T. pallidum can be further characterized in order to improve the existing PCR-based typing system.

Methods: 20 specimens, which were previously characterized as strain type 14d were selected from among 55 T. pallidum-positive specimens from patients with syphilis in Cape Town, South Africa and 35 T. pallidum-positive DNA samples from Canada displaying 8 types (13d, 14a, 14d, 14e, 14f, 14n, 15d, 15e) were obtained during a syphilis outbreak that occurred in Vancouver and Alberta, Canada, between 2000 and 2003. DNA samples were subtyped by amplifying a 201-bp region of the ribosomal protein S1 gene (rpsA) of T. pallidum, which includes a homonucleotide 'G' tandem repeat. The amplicons were sequenced using the Beckman CEQ 8000 instrument.

Results: Of the 20 specimens with strain type 14d from Cape Town, South Africa, 4 tandem repeat patterns were identified. Two strains (10%) had 11G's, 11 (55%) had 10G's, 6 (30%) had 9G's, and 1 (5%) had 8G's. Thirty-one of the 35 DNA samples from Canada were sequenced revealing 4 subtypes. Two (6.5%) strains each had 11 and 10G's, 22 (70.9%) strains had 9G's, and 5 (16.1%) strains had 8G's. All specimens with the 14d strain pattern collected between January 2000 and February 2002 in Canada had 9G's, except one specimen with 8G's, which was obtained in December 2000. The non-14d strains from Canada had varying numbers of tandem repeats: Two each had 11; 10; and 9G's, respectively and 1 strain had 8G's.

Conclusions: These findings confirm that the discriminatory ability of the existing typing system can be enhanced by subtyping. A diversity of 14d subtypes was detected in Cape Town (where syphilis is endemic), while the outbreak in Canada initially appears clonal.

WP-069 INCREASES IN PRIMARY AND SECONDARY SYPHILIS AMONG MEN WHO HAVE SEX WITH MEN, UNITED STATES, 2000-2004

H. Weinstock, J. Heffelfinger, T. Peterman, S. Berman, K. Fenton
Centers for Disease Control, Atlanta, GA, United States of America

Objectives: To describe increases in primary and secondary syphilis observed in the United States among men who have sex with men (MSM) since 2000.

Methods: We reviewed national notifiable disease surveillance data for cases of primary and secondary syphilis from 2000-2004. Since sex of sex partner is not reportable, we compared trends for men and women separately and calculated an annual male:female case ratio from which we inferred changes in disease among MSM. Data for 2004 are preliminary.

Results: After an 89% decline in syphilis from 1990-2000 when the syphilis rate reached its lowest point since reporting began in 1941, primary and secondary syphilis rates have increased each year among men while continuing to decline among women. Among men, cases have increased from 3,535 in 2000 to 6,657 in 2004, an 88% increase. For women, cases have decreased from 2,445 in 2000 to 1,225 in 2004, a 50% decrease. Correspondingly, the male to female case ratio has increased from 1.4 to 5.3. There were eleven cities that reported an increase of more than 50 cases between 2000 and 2004. These geographically diverse cities accounted for 13% of all cases reported in 2000 and 33% of cases reported in 2004. During 2000-2004 there were substantial and approximately synchronous increases in cases among men in the eleven cities; the overall male-female case ratio increased from 3.5 to 11.8.

Conclusions: Increases in primary and secondary syphilis among MSM in the U.S. are part of a national and international epidemic that is currently obscuring dramatic declines in disease among women and heterosexual men. These increases, along with the re-emergence of other STDs in MSM, raise concerns about high risk sexual behaviors among some MSM.

WP-070 COMPARISON OF SOCIAL AND BEHAVIORAL RISKS AMONG MEN WITH EARLY SYPHILIS AND GONORRHEA

K.T. Bernstein¹, J. Scott¹, C. Wylie¹, L. Borkovic², A.M. Rompalo¹

¹ Johns Hopkins University, NY, United States of America

² Baltimore City Health Department, Baltimore, United States of America

Objectives: A priori hypotheses exist regarding the risk behaviors among patients with early syphilis and gonorrhea, however little data exist to test these hypotheses. We compared gonorrhea and syphilis case-patients identified through a social network study and compared their behavioral and social characteristics.

Methods: 203 males were recruited to participate in a STD social network study. 101 of these males had early syphilis, while the remaining 102 were diagnosed with gonorrhea. All participants had face-to-face interviews to assess demographic, social, and behavioral characteristics. Characteristics of early syphilis and gonorrhea cases were compared using Pearson's Chi-Square for categorical variables, t-tests and Wilcoxon rank-sum tests for continuous variables. Multivariate logistic regression was used to examine independent factors that discriminate between gonorrhea and early syphilis patients.

Results: Compared to males with gonorrhea, males with early syphilis were more likely to be African-American ($p=0.008$), not single ($p=0.037$), report receiving public assistance ($p=0.066$) or food stamps ($p=0.038$), report sex with a man (MSM) ($p<0.0001$) and being homeless in the past 10 years ($p=0.022$). Gonorrhea cases were more likely to have been arrested in the year prior ($p=0.042$). Early syphilis cases were significantly more likely to report being forced to have sex ($p=0.017$). After adjustment for injecting drug use, independent discriminating factors for having gonorrhea compared to early syphilis were younger age (OR=0.92), a history of mental illness (OR=4.09), MSM (OR=0.09), and history of forced sex (OR=0.23). **Conclusion:** Compared to males with gonorrhea, men with early syphilis report experiences with sexual abuse, homelessness, and a lack of economic stability. Issues beyond drug use may need to be addressed to intervene among this high risk group.

WP-071 THE TRUE MAGNITUDE OF THE CONGENITAL SYPHILIS (CS) PROBLEM IN RUSSIA – RESULTS FROM A COMPARATIVE EVALUATION OF THE NATIONAL AND NEWLY PILOTED CS SURVEILLANCE SYSTEMS (CSSS) IN SELECTED REGIONS

S. Zohrabyan¹, E. Safarova², L. Tikhonova², O. Loseva², A. Rubtsov², V. Letyagina³, S. Hillis¹, J. Heffelfinger¹, A. Shkarishvili¹

¹ Centers for Disease Control & Prevention, Atlanta, United States of America

² Cent. Institute Skin & Venereal Dis., Moscow, Russian Federation

³ Russian Open Health Institute, Moscow, Russian Federation

Objectives: To compare case reporting by the current CSSS with the active CSSS being piloted in seven regions, and to characterize the population of mothers and infants identified by active CSSS.

Methods: We compared case reports from current and active CSSS in these regions. Case reporting with the current CSSS is based upon clinical and laboratory manifestations. For active CSSS, we defined cases as infants born to women with a positive syphilis serology during pregnancy who delivered at > 20 weeks gestation between June 2003 and May 2004.

Results: Within the selected period, the current CSSS registered 56 CS cases whereas the active CSSS reported 913 CS cases (1,530% increase) that included 69 cases of clinically manifested or latent CS (23% increase), 17 cases of syphilitic stillbirths, and 827 cases of presumptive CS (defined as infants, whether or not they were symptomatic, born to mothers with inadequately treated or untreated syphilis). Approximately half of the mothers of infants with CS reported by active CSSS were aged 18-24 years and were not married, 73% were unemployed, 20% were non-residents, 13% were non-citizens, 38% had no prenatal care (PNC), 5% had primary or secondary syphilis, and 78% had early latent syphilis. For 374 women syphilis was diagnosed before pregnancy (1.1% of whom received no treatment), 326 during pregnancy (0.3% of whom received no treatment before labor), and 194 following delivery. Over 5% of infants with clinical CS and 31% of infants with presumptive CS did not receive treatment.

Conclusion(s): The active CSSS identified many more infants with CS than the current CSSS and likely better reflects the true magnitude of the problem. A substantial proportion of infants reported with CS by active CSSS were born to young and unemployed women with no PNC. Plans are being developed to implement active CSSS nationwide.

WP-072 CONGENITAL SYPHILIS: A SUBSTANTIAL HEALTH DISPARITY FOR YOUNG, BLACK, SINGLE, URBAN WOMEN

A.F. McIntyre¹, R.N. Plotinsky², I.L. Tabidze³, A. Studzinski⁴, J.M. Broad², C. Rabins⁴, T.R. Zajdowicz³, M.S. Dworkin⁴

¹ University of Illinois at Chicago SPH, Chicago, United States of America

² Rush University Medical Center, CHICAGO, United States of America

³ Chicago Dept of Public Health, CHICAGO, United States of America

⁴ Illinois Dept of Public Health, SPRINGFIELD, United States of America

Objectives: Congenital syphilis represents a failure to prevent and effectively treat syphilis in pregnant women. During 1994-2002, Illinois congenital syphilis rates consistently ranked among the ten highest in the US. To assist prevention efforts, Illinois cases were analyzed to determine characteristics associated with infant mortality.

Methods: Possible congenital syphilis cases were reported to local health departments based on the characteristics/test results of the infant/mother. Health departments further investigated the reports to verify case classification according to the CDC case definition. The Illinois and Chicago Departments of Public Health 1994-2002 congenital syphilis surveillance databases were merged. Multivariate analysis was performed to assess factors associated with congenital syphilis mortality.

Results: Of the 2,650 reports, 901 (34.0%) were identified as cases and 1,749 (66.0%) were not cases. Of the 901 cases, one (0.1%) was confirmed, 820 (91.0%) were probable, and 80 (8.9%) were syphilitic stillbirths. Cases declined from 253 in 1994 to 41 in 2002 ($p < 0.001$), but mortality remained stable. The median annual mortality (fetal and neonatal) was 12.3% (range, 10.1%-17.5%). Of the mothers, 777 (86.2%) were black, 606 (67.3%) were single, and 245 (27.2%) did not have prenatal care. No prenatal care (OR 1.8, 95%CI 1.1-3.3) was significantly associated with fetal/infant mortality. Geographically, 745 (82.7%) cases were concentrated in Cook County (Chicago/surrounding area). Of the 150 reported zip codes of residence, only 10% (13/15 in Chicago) accounted for 503 (55.8%) cases.

Conclusions: In Illinois, congenital syphilis exemplifies a health disparity with a predominance of diagnoses documented in infants born to young, black, single, urban women. Prevention of congenital syphilis should focus on geographic areas with the highest prevalence to enhance access to and utilization of prenatal care.

WP-073 SYPHILIS IN THE UNITED KINGDOM: A CRITICAL EVALUATION OF SURVEILLANCE RESULTS

A.A. Righarts¹, C Lowndes¹, H Ward¹, L Wallace², R Gorton³, I Oliver⁴, M. Ashton⁵, K. Ponnusamy⁶

¹ HPA Centre for Infections, London, United Kingdom

² Health Protection Scotland, Glasgow, United Kingdom

³ HPA North East, Newcastle Upon Tyne, United Kingdom

⁴ HPA South West, Gloucester, United Kingdom

⁵ HPA North West, Liverpool, United Kingdom

⁶ Nottingham City Hospital, Nottingham, United Kingdom

Objectives: a) Critically appraise the quality of the enhanced surveillance syphilis data. b) Summarise main features of the UK syphilis outbreaks.

Methods: The quality of enhanced surveillance data was assessed in terms of completeness and timeliness against aggregate routine reporting of data (KC60). Major features from the UK outbreaks were summarised. An assessment of the overall UK situation took into account data quality issues.

Results: Comparison of the 2003 data with KC60 syphilis diagnoses revealed that enhanced surveillance reporting was 68% complete for the London, Brighton and Nottingham outbreaks. There were significant differences in completeness between men who have sex with men (MSM) and heterosexual males and females (94% and 46% respectively, $P < 0.0001$). The average delay from diagnosis to entry into the database was 79 days (range: 0-380 days). There was a significant difference between MSM and Heterosexual males and females (16 days, $P = 0.0075$), and between London and the two other outbreak sites (25 days, $P = 0.0020$). Table 1 shows the outbreak characteristics obtained from this reporting system. The outbreaks are mainly in MSM, with London and Manchester the most sizeable outbreaks to date. The most striking features of the outbreaks are the high proportions of HIV positive MSM (56% in London) and the association between heterosexual diagnoses and infection abroad.

Conclusions: Preliminary analysis of enhanced surveillance data has revealed substantial under-reporting of heterosexual cases, and an excess delay in those that are reported. However, reporting of MSM is close to complete. The outbreak characteristics reported will therefore be highly robust for MSM, but should be interpreted with caution in heterosexuals. The extent of the UK syphilis problem in heterosexuals is underestimated by enhanced surveillance.

Table 1: comparison of outbreak characteristics

Location	Sexual orientation	Cases (n)	Median age (range)	% HIV positive (n/N)	% acquired abroad (n/N)
Bristol 1997	MSM	0	-	-	-
	Male hetero	19	N/A	0 (0/0)	0 (0/0)
	Female Hetero	26	N/A	0 (0/0)	0 (0/0)
Manchester January 1999	MSM	630	32 (16-80)	37 (188/515)	6 (16/258)
	Male hetero	66	33 (17-62)	12 (6/49)	34 (11/32)
	Female Hetero	50	24 (17-53)	13 (4/32)	53 (9/17)
Brighton 1999	MSM	198	36 (18-75)	45 (84/186)	4 (8/196)
	Male hetero	8	32 (24-58)	0 (0/7)	14 (1/7)
	Female Hetero	4	41 (28-52)	0 (0/4)	25 (1/4)
Peterborough 2000	Male hetero	4	N/A	0 (0/0)	25 (1/4)
	Female Hetero	6	N/A	0 (0/0)	0 (0)
London April 2001	MSM	1452	35 (17-78)	54 (635/1165)	10 (137/1326)
	Male hetero	441	35 (17-92)	8 (22/266)	19 (74/395)
	Female Hetero	271	28 (15-64)	6 (12/185)	25 (61/242)
Newcastle-upon-Tyne January 2002	MSM	170	37 (18-63)	17 (23/132)	8 (13/170)
	Male hetero	37	37 (16-62)	3 (1/29)	38 (14/37)
	Female Hetero	12	33 (22-59)	0 (0/11)	58 (7/12)
Walsall 2003	MSM	12	41(25-54)	17 (2/12)	0 (0/12)
	Male hetero	13	34 (20-66)	0 (0/13)	8 (1/13)
	Female Hetero	7	32 (26-47)	29 (2/7)	43 (3/7)
Nottingham 2003	MSM	13	36 (22-50)	0 (0/11)	0 (0/9)
	Male hetero	43	35 (17-60)	0 (0/32)	3 (1/38)
	Female Hetero	28	25 (17-53)	0 (0/21)	10 (2/20)

Table 1

WP-074 USE OF MATERNAL SYPHILIS SEROPREVALENCE DATA TO ESTIMATE THE GLOBAL MORBIDITY OF CONGENITAL SYPHILISB P Stoner¹, G. Schmid², M. Guraib², T. Adam², N. Broutet²¹ Washington University, St Louis MO, United States of America² World Health Organization, Geneva, Switzerland

Objective: Accurate estimation of congenital syphilis (CS) epidemiology is difficult, owing to lack of access to antenatal care (ANC), serologic testing, and ability to identify infected neonates in resource-poor settings. We used published and unpublished maternal syphilis seroprevalence data to estimate the annual number of cases of CS worldwide.

Methods: Data were abstracted from published and unpublished reports of serologically confirmed syphilis seroprevalence among ANC populations sampled between 1997 and 2003. World Health Organization (WHO) regional and subregional seroprevalence rates were used to estimate seroprevalence in countries lacking data. The number of pregnancies occurring in women with positive serology was calculated using United Nations population data. Using estimations of the proportion of women with a positive serology have syphilis and of those, the proportion who will have an affected fetus, we estimated the annual number of CS cases globally.

Results: Seroprevalence data were available for >320,000 women from 34 countries. The seroprevalence among all pregnant women was 2.3%. Using subregional estimates for missing data, we calculated a global number of 2,750,000 pregnant women annually with positive syphilis serology (95% C.I. 2,047,000–3,458,000). Among these women, adjusting for previously treated syphilis (5%), high-titre syphilis [RPR_{1:8}] (73%), and including only adverse outcomes among those (49%), we conservatively estimate that 696,000 to 1,175,000 cases of CS occur annually. Additional analyses examine the utility of a neighboring-country approach to estimating maternal syphilis, and using ANC HIV data in such estimations.

Conclusions: Confirmed seroprevalence data in ANC attendees provide a foundation for estimating the global burden of maternal syphilis and CS. Since prevention of CS is highly cost-effective, this effort is an important component of the WHO Initiative to Eliminate CS, and serves to catalyze prevention activities.

WP-075 A COMPARISON OF THE ASSOCIATION OF CRYSTAL METHAMPHETAMINE AND CRACK USE WITH SYPHILIS INFECTIONL.A. Rusch¹, K. Shannon², C. Lai², T. Ishida², D. Patrick¹, M. Tyndall¹¹ University of British Columbia, Vancouver, Canada² BC Centre for Excellence HIV, Vancouver, Canada

Objective: Compare crystal methamphetamine use to crack use with respect to prevalence of syphilis among women in a high-risk neighbourhood.

Methods: The Community Health And Safety Evaluation (CHASE) surveyed a population-based sample from Vancouver's Downtown Eastside (N=913 women). Retrospective linkage to the BC CDC provided information on syphilis testing from 2001-04. Due to increased reports of crystal methamphetamine use, its association with syphilis infection was examined, including mode of administration (smoking versus injection) and frequency (daily versus less than daily), and compared to associations with crack use. Models controlled for age and ethnicity.

Results: Of 913 women, 54 (5.8%) indicated use of crystal. Daily use was reported by 21 (38%) women. One-third of daily users reported both injection and smoking. Crack use was much higher (53% of women), although proportion of daily users was lower (5% vs. 38%, $p < 0.001$). In univariate analyses, injection and smoking of crystal were both associated with syphilis (OR: 3.9, 95% CI: 0.77-20; OR: 3.3, 95% CI: 0.62-18, respectively), as was crack use (OR: 8.2; 95% CI: 1.04-65). Daily use of crystal was strongly associated with syphilis [OR(95%CI): injection, 16(3.0-87); non-injection, 14(2.8-79)]. Daily use of crystal (injection or smoking) remained associated with syphilis when controlling for crack use (OR: 16; 95% CI: 1.7-150). Crack use remained marginally associated (OR: 6.0; 95% CI: 0.74-50).

Conclusion: Use of crystal methamphetamine was not high. Crystal users were more likely to use daily when compared to crack users. Daily use of crystal was strongly associated with syphilis infection, perhaps due to a sub-network of overlapping drug using and sexual networks. Crack use remains an important factor for STI transmission given the high number of users.

WP-076 RISK FACTORS FOR SYPHILIS AND HIV IN NORTH CAROLINA JAIL DETAINEESL.A. Sampson¹, P.A. Leone², W.C. Miller², R.B. Hedenquist¹¹ State of North Carolina, DHHS, Raleigh, NC, United States of America² University of North Carolina, Chapel Hill, North Carolina, United States of America

Objectives: North Carolina (NC) has more counties (n=6) involved in the nationwide Syphilis Elimination Project (SEP) than any state in the US. Enhanced surveillance under SEP includes jail screening for syphilis (n=7 jails) and HIV (n=2 jails). Our objective was to describe syphilis and HIV cases and risk factors in this population. **Methods:** In this ongoing program, screening personnel in the 7 jails provide STI counseling, draw blood for screening, and collect risk factor information. These data are forwarded to the NC State Health Department. We determined the prevalence of syphilis and HIV among those screened and identified bivariate associations. We present results from Feb, 2002 through Dec, 2004.

Results: Among 20624 jail detainees screened for syphilis, 17.5% were female and 121 (0.59%) new cases were detected (54 PSEL syphilis). The program also screened 3757 inmates for HIV (19.1% female) and 45 were positive (23 new cases, 0.61%). Female inmates were more likely than males to have any new syphilis infection (OR=1.92, 95%CI 1.30-2.86) or a new PSEL case (OR=2.78 95%CI 1.60-4.84). Among women, age \geq 30 (OR=2.38 95%CI 1.03-5.46), multiple sexual partners (OR=2.19 95%CI 1.03-4.65), and use of crack cocaine (OR=2.41 95%CI 1.11-5.24) were predictors of new syphilis infection. Among men, STI history (OR=4.41 95%CI 2.04-9.51) and crack cocaine use (OR=2.69 95%CI 1.20-6.04) were associated with new PSEL syphilis infections. HIV infection was associated with black race (OR=2.69 95%CI 1.20-6.03) and history of STIs (OR=2.66 95%CI 1.03-6.90). MSM was strongly associated with HIV infection among the male inmates (OR=19.82 95%CI 5.11-76.88).

Conclusions: We identified a substantial number of persons with unreported syphilis and HIV infection by screening jail inmates in urban and rural NC counties. Understanding the risk factors associated with infection will help focus ongoing screening efforts.

WP-077 VALIDATION OF THE PERFORMANCE OF THE ABBOTT DETERMINE SYPHILIS TP RAPID TEST FOR SYPHILIS DIAGNOSIS AMONG PREGNANT WOMEN IN BOLIVIA

F.T. Tinajeros¹, M. Steele², R. Revollo¹, S.G. Garcia¹, D. Grossman¹, C. Diaz-Olavarrieta¹, L. Zegarra³

¹ Population Council, La Paz, Bolivia

² PATH, Seattle, United States of America

³ INLASA, Ministry of Health, La Paz, Bolivia

Objective: To determine the performance of the Abbott Determine Syphilis TP rapid test for syphilis diagnosis among pregnant women attending antenatal clinics in the four largest maternity hospitals in Bolivia.

Methods: As part of a larger study exploring the feasibility and acceptability of the introduction of rapid syphilis tests in Bolivia, from January to December 2004, we tested 6,372 pregnant women for syphilis using the Abbott Determine Syphilis TP rapid tests, and by confirmatory methods, in maternity hospitals in four urban areas of Bolivia (La Paz, El Alto, Santa Cruz, and Cochabamba). We obtained a finger stick blood sample for the rapid test and a venous blood sample for RPR. We conducted TPPA as a confirmatory test for all samples positive by RPR. Rapid testing was conducted at the point-of-care, and RPR and confirmatory TPPA were conducted at the Bolivia National Reference Laboratory by a single laboratory technician. We calculated sensitivity, specificity, and positive and negative predictive values.

Results: By RPR and confirmatory TPPA, we found 240 cases (3.7% prevalence) of syphilis in this population. The sensitivity, specificity, negative predictive value, and positive predictive value of the Abbott Determine test were 92.9 (95% CI: 89.7-96.2), 98.7 (98.4-99.0), 74.1, and 99.7% respectively.

Conclusions: The Abbott Determine Syphilis TP rapid test proved to be highly sensitive and specific, when compared to the current gold standard in clinical settings in Bolivia. Rapid testing may be an efficient and simple way to accurately ascertain syphilis status among pregnant women in remote areas or in clinics without laboratory infrastructure.

The test was accepted by clinicians and laboratory technicians as it reduced the time and effort needed for sample collection and processing, and they can carry out testing with high quality.

WP-078 CONGENITAL SYPHILIS IN BOLIVIA

R. Revollo¹, F. Tinajeros¹, C. Hilar², S.G. Garcia¹, L. Zegarra³

¹ Population Council, La Paz, Bolivia

² Save the Children, La Paz, Bolivia

³ INLASA, Ministry of Health, La Paz, Bolivia

Objective: To determine the prevalence of post-partum congenital syphilis and mother-to-child transmission in Bolivia.

Methods: 1636 post-partum women were tested between May and September 2004 with

the Abbott TP Determine Syphilis rapid test and quantitative RPR in six urban hospitals in Bolivia. Eligibility criteria for participation were not to have had previous RPR during this pregnancy. Western Blot IgM p47, ELISA IgM, and RPR were performed on newborns born to mothers with positive rapid tests. Serologic tests were conducted at the Bolivian National Reference Laboratory by a single laboratory technician.

Results: The prevalence of syphilis among pregnant women was 9.2%, 95% C.I. (8.74-9.66), with a mother-to-child transmission rate of 16%, 95% C.I. (14.4-17.6). The prevalence of congenital syphilis was 1.2%. The RPR cut-off score was >1:8 among 94% of newborns with syphilis. No apparent clinical signs were observed among 95% of newborns positive for syphilis. 12% (2) of the newborns died. Of the live newborns, 94% completed the syphilis treatment: 73 % with ambulatory treatment, 20 % with hospitalized treatment, and in 6 % (1) the newborn's mother rejected treatment and received only a single dose of Benzathine penicillin.

Conclusions: The prevalence of maternal syphilis during the post partum period is high. The mother-to-child transmission rate detected in this study indicated that there are 12 cases of congenital syphilis per 1000 live births in Bolivia. A neonatal RPR cut-off score >1:8 as confirmed by WB IgM p47 can indicate treatment for newborns. It is important to strengthen early detection and treatment of syphilis in Bolivia, incorporating rapid-tests in a national strategy to eliminate congenital syphilis.

WP-079 DOMESTIC VIOLENCE AMONG PREGNANT WOMEN WITH SYPHILIS IN BOLIVIA

C. Diaz Olavarrieta, S. Garcia, R. Revollo, D. Tarqui, F. Tinajeros, D. Grossman

Population Council, Mexico City, Mexico

Objective: Determine the prevalence of domestic violence (DV) among pregnant women positive for syphilis in four provinces in Bolivia and compare them to women without syphilis.

Methods: Between July 2004-February 2005, we administered an anonymous questionnaire in Spanish and local dialects to 4,854 women participating in a maternal syphilis study measuring physical and/or sexual violence. Those able to read, answered the survey themselves, otherwise a trained counselor read it in a private area. We calculated prevalence of DV and possible associations between DV and syphilis diagnosis. Women suffering current abuse were compared with non victims using a logistic regression analysis. **Results:** Physical and/or sexual abuse in the previous year was reported by 1,029 (21%, 95% C.I. 20-22%) women. Abuse was rated as severe (frequent slapping, kicking, hitting, hair pulling) by 72% of victims. Prevalence of abuse during childhood was reported by 1,038 women (21%, 95% C.I. 20-23%). The prevalence of physical abuse during the current pregnancy was 5.4% (95% C.I. 4.8-6.0%). Logistic regression identified the following risk factors to be associated with physical and/or sexual abuse ($p < 0.5$): positive diagnosis for syphilis (OR=1.91, 95% CI 1.44-2.53), grade school education only in women (OR=1.78, 95% CI 1.30-2.44), having three or more pregnancies (OR=1.34, 95% CI 1.12-1.61), and being between 12-16 years (OR=1.57, 95% CI 1.12-2.02). Of the women suffering current abuse, 8.2% had syphilis compared to 4% of women not currently experiencing abuse ($p=0.001$).

Conclusions: DV is a significant problem among pregnant women in Bolivia. A positive diagnosis for syphilis constitutes another source of vulnerability among women with history of current abuse and may put them at greater risk for abuse during pregnancy. Universal screening for STIs and DV among women attending prenatal care should be implemented in low resource settings.

WP-080 INTRODUCING RAPID STRIP TESTS FOR THE DIAGNOSIS OF MATERNAL SYPHILIS AMONG BOLIVIAN WOMEN: EFFECTIVENESS, ACCEPTABILITY, AND FEASIBILITY

G. Garcia¹, F. Tinajeros², R. Revollo², C. Diaz-Olavarrieta³, D. Grossman³, C. Levin⁴, M. Steele⁴

¹ Population Council Regional Office, Mexico City, Mexico

² Population Council, La Paz, Bolivia

³ Population Council Regional Of, Mexico City, Mexico

⁴ PATH, Seattle, WA, United States of America

Objective: Since 1998, syphilis diagnosis and treatment has been a part of government-funded antenatal care services in Bolivia. Yet, despite wide-scale introduction of RPR services in urban health facilities, only 19.7% of women received syphilis testing during antenatal care in 2002. Our study assessed whether rapid syphilis strip tests could improve diagnosis and treatment among pregnant women.

Methods: In 2004, we introduced the Abbott Determine Syphilis TP rapid strip test in 37 rural health centers where no syphilis testing was occurring, and in four maternity hospitals where standard tests (RPR) were routinely performed. Pregnant women were invited to undergo: 1) rapid syphilis strip testing using a finger-stick, 2) treatment based on rapid test results, 3) additional testing by standard RPR (and confirmatory TPPA) in urban settings, 4) respond to a feasibility and acceptability questionnaire, and 5) invite partners for treatment if necessary.

Results: 9098 women invited to participate and 40 (0.4%) declined. 9058 women received the rapid test, and 436 (4.8%) syphilis cases were identified. Of the 5829 (64.4%) participating women who had had a previous pregnancy, only 261 (4.5%) recalled being tested for syphilis before. Of the women with positive syphilis strip tests, 372 (85.3%) received at least one dose of penicillin, while 332 (76.1%) completed all three doses. Among male partners, 261 received at least one dose. Most participants (n=8337, 92.0%) experienced no discomfort after the finger-stick. 422 (96.8%) strip test positive and 8426 (97.7%) strip test negative women felt there was a benefit to the test, and 9008 (99.4%) agreed that the rapid syphilis strip test should be offered routinely at the health facility they attended.

Conclusion: Participating women found the finger-stick and testing method acceptable. Our study suggests that the introduction of these rapid tests could result in expanded coverage of maternal syphilis diagnosis and treatment.

SESSION: WP - D9 PREVENTION STRATEGIES- SYPHILIS

WP-081 PARTNER NOTIFICATION AT A COMMUNITY HEALTH CENTER: ALTERNATIVE STRATEGIES FOR DISEASE INTERVENTION

B. Gratzner¹, C. Ciesielski², I. Tabidze³

¹ Howard Brown Health Center, Chicago, United States of America

² Centers for Disease Control, Atlanta, United States of America

³ Chicago Department of Public Health, Chicago, United States of America

Objectives: In 2003, 43/267 (16%) of all primary and secondary syphilis (P&S) cases in Chicago were diagnosed at Howard Brown Health Center (HBHC), a lesbian, gay, bisexual and transgender (LGBT) community health center. In 6/2002, the Chicago Department of Public Health (CDPH) began a program whereby a HBHC employee

served as a Disease Intervention Specialist (DIS) to conduct case management of all syphilis cases treated at HBHC. Our objectives were to evaluate the efficacy of this program.

Methods: A retrospective case audit compared outcomes of HBHC DIS-managed cases with those managed by CDPH DIS, who provided case management of HBHC syphilis cases before 6/2002. Cases of early syphilis diagnosed and treated at HBHC between 1/2000 – 12/2003 were analyzed.

Results: Of 232 cases reviewed, HBHC conducted 124 (53.4%) investigations; 108 (46.6%) were conducted by CDPH. Of CDPH managed cases, 43 (39.8%) were lost to follow-up, compared to 6 (4.8%) of HBHC cases (p<0.01). Of the remaining 183 cases, the mean number of days between treatment and interview was 28.9 for CDPH and 7.7 for HBHC. There were 191 sex partners elicited; 50 (26.2%) were elicited by CDPH DIS and 141 (73.8%) by HBHC; partner index (elicited partners/cases interviewed) was 0.463 for CDPH and 1.14 for HBHC. There were 13 infected sex partners treated, two (15.4%) by CDPH and 11 (84.6%) by HBHC; and 63 sex partners still in the incubation period who received preventive treatment, nine (14.3%) by CDPH and 54 (85.7%) by HBHC.

Conclusions: The productiveness of the HBHC DIS suggests that collaborations between community health centers and health departments can provide an effective alternative to traditional syphilis case investigation and partner notification. Whether the success is related to more timely interventions or culturally appropriate interviewing techniques should be further studied.

WP-083 SHORT-TERM IMPACT EVALUATION OF A SYPHILIS SOCIAL MARKETING CAMPAIGN

S. Biersteker¹, W.W. Darrow¹, J.B. Miner¹, Y. Marrero¹, S. Thacker¹, J. Moreiras¹, T. Barraclough¹, S.P. Montes¹, J. Bailey¹, K. Schmitt²

¹ Florida International Univ. North Miami, Florida, United States of America

² Florida Department of Health, Tallahassee, Florida, United States of America

Objectives: In response to reports of increases in Infectious syphilis cases among Florida men from 199 in 1999 to 586 in 2003, a social marketing campaign was implemented in 2004 to increase awareness and knowledge of syphilis, promote protective and reduce risky sexual practices, and encourage testing and treatment. To assess the immediate impact of the campaign on men who have sex with men (MSM), we conducted baseline and follow-up surveys in Broward and Miami-Dade counties, Florida.

Methods: Anonymous, 12-page, self-administered questionnaires were distributed to >400 MSM recruited from ten diverse central locations of south Florida in February-March and >400 MSM again in October 2004. Cross-tabulations of dichotomous variables were tested for statistical significance using Pearson's Chi-square. Procedures were approved by a university Institutional Review Board.

Results: Sociodemographic characteristics of the two samples were similar, but more Florida residents (91.9% of 445) were enrolled at follow up than at baseline (79.8% of 406). Exposure to campaign materials increased from 17.5% at baseline to 37% at follow up for Broward County residents and from 25% at baseline to 44% at follow up for Miami-Dade County residents. More MSM reported visiting a clinic (25% in February-March and 30% in October) and

receiving treatment for syphilis (7 men compared with 22 men) at follow up, but no significant increases were found with respect to knowledge about syphilis, safer sexual practices, or testing.

Conclusions: After six months of implementation, none of the social marketing campaign objectives was fully met. Awareness of the problem increased, but there was no evidence of increased knowledge, decreases in risky sexual practices, or increases in testing for syphilis. We recommend that the results of this impact evaluation be combined with process evaluation findings to focus future interventions.

WP-084 MODELLING THE COST-EFFECTIVENESS OF INTRODUCING RAPID SYPHILIS TESTS INTO A CONGENITAL SYPHILIS SCREENING PROGRAMME IN TANZANIA

P.T. Vickerman¹, F. Terris-Prestholt¹, J. Chagalucha², D. Watson-Jones¹, R. Peeling³, D. Mabey¹, L. Kumaranyake¹, C. Watts¹

¹ LSHTM, London, United Kingdom

² Nat Inst for Med Research, Mwanza, Tanzania

³ SDI/TDR, WHO, Geneva, Switzerland

Background: A previous study found screening (with RPR) and treating pregnant women for congenital syphilis was cost-effective in Mwanza, Tanzania. Recently, a number of rapid syphilis tests have been evaluated in Mwanza, and were found to have reasonable results on serum/blood compared to TPPA tests. These tests generally require less training, are easier to read, and do not require refrigeration. However, in some ways these tests have similar characteristics to TPHA/TPPA tests - although highly specific, once an individual is positive they remain so. This analysis estimates the cost-effectiveness of using these rapid tests, instead of RPR, for the antenatal syphilis screening in Mwanza.

Methods: Empirical cost and epidemiological data were used to model the potential benefit of using other rapid syphilis tests instead of RPR. The reduction in costs relating to training, supplies, personnel and equipment were estimated. The change in impact was estimated by accounting for their different sensitivity, and their failure to distinguish between past and present infections. Additional modeling was undertaken to explore how the results vary with underlying prevalence of past infection, and mis-classified RPR results.

Results: The relative cost-effectiveness per DALY saved of using a different syphilis rapid test is mainly dependent on the test's cost and sensitivity. Other savings such as for training, personnel and equipment are relatively small. Thresholds for the required cost of these rapid tests, dependent on their sensitivity with serum and blood, are determined. Unless there are problems with mis-classified RPR results, the findings suggest the cost of available rapid tests has to be reduced to result in the same cost-effectiveness as RPR. Discussion: Although the price of other rapid tests need to be reduced to make them as cost-effective as RPR, their ease of use and limited requirements for electricity/equipment make them important scaling-up antenatal syphilis screening.

WP-085 COST ANALYSIS OF A SYPHILIS RAPID IMMUNO-CHROMATOGRAPHIC STRIP (ICS) TEST IN TWO CENTRAL PROVINCES OF MOZAMBIQUE

C. Levin, D. Atherly

PATH, Seattle, WA, United States of America

Objectives: To compare the costs of syphilis testing with the Standard Diagnostics Immunochromatographic strip test (ICS) and with the rapid plasmin reagin (RPR) tests, in health facilities with laboratories. To determine the costs of introducing rapid syphilis tests (ICS) in health facilities without laboratories where testing is currently not performed.

Methods: An economic evaluation was conducted alongside a project to introduce and evaluate the ICS test into more than 100 prenatal care clinics in Manica and Sofala provinces of Mozambique. Cost data were collected from 15 participating study clinics. Start-up costs, equipment, labor, supplies, and medications were the major cost categories included in the analysis. Routine data on the utilization of syphilis screening services (e.g. number of women screened, number of women treated) were used in this evaluation. Results: In clinics with laboratories, the average cost per woman screened was \$0.85 USD using the RPR test and \$0.98 using the ICS rapid test. For the RPR test, the cost per woman screened and treated ranged from \$10.58 to \$15.36. For the ICS rapid test, the cost per woman screened and treated ranged from \$13.40 to \$13.54. In clinics without laboratories, the cost per woman screened using the ICS test, was \$0.96 in both provinces. The average cost per woman screened and treated was slightly higher, ranging from \$17.12 to \$13.59.

Discussion: Introduction of the ICS test into rural clinics without laboratory facilities can avert significant disease burden for a cost of less than \$1 per woman screened and approximately \$15 per woman treated. In areas where RPR testing is available, the ICS test is a cost-comparable alternative to the RPR.

WP-086 CONTROVERSY AND PUBLICITY IN THE U.S. BROADCAST MEDIA OVER A SYPHILIS PREVENTION TELEVISION AD CAMPAIGN

H.R. Rotblatt¹, K.L. Mall², G. Kenslea², L.G. Pappas³, J.A. Montoya¹, P.R. Kerndt¹

¹ Los Angeles County DHS, Los Angeles, United States of America

² AIDS Healthcare Foundation, Los Angeles, United States of America

³ Better World Advertising, San Francisco, United States of America

Objectives: The Stop the Sores social marketing campaign was initiated in June 2002 in Los Angeles County to address an ongoing outbreak of syphilis among men who have sex with men. Focus groups in 2004 suggested that use of a cable television ad campaign could improve success of Stop the Sores. A 30-second television ad was subsequently run on two cable networks in 2004. Perceived benefits of this medium included 1) expanded campaign reach, 2) increased impact through a live-action ad, and 3) extended use potential, e.g., on the campaign website. This campaign strategy was subsequently expanded to include purchase of at least one high-profile primetime ad on broadcast television. The objective was to extend further the reach of the campaign, and to use the high profile ad placement to generate additional publicity.

Methods: Two U.S. national television network affiliates refused to air the ad, claiming it was inappropriate or not sufficiently 'serious'; other stations would air the ad only in undesirable late night time slots. Refusal of TV stations to air the ad underscores the difficulty of addressing certain populations or health topics with controversial associations. A media event was held November 30 to publicize the refusal of stations to air the ad.

Results: The media event generated news coverage in the Los Angeles Times and two wire services, with subsequent national and international coverage. December visits to the campaign website (www.stopthesores.org) increased more than 1,300% over the monthly average, to 50,792 sessions, exceeding total combined sessions for all previous months in 2004.

Conclusions: Censorship in broadcast television in the U.S. poses an ongoing obstacle to reaching gay men about sexual health. However, such censorship is also capable of generating substantial media coverage, which can be used to compensate for lack of access to broadcast media.

WP-087 RISING RATES OF SYPHILIS IN THE ERA OF SYPHILIS ELIMINATION IN THE U.S.

R. Kerani¹, H.H. Handsfield², M. Stenger³, T. Shafir⁴, E. Zick¹, M.R. Golden¹

¹ Public Health - Seattle&King Co. STD, Seattle, WA, United States of America

² CDC, ATLANTA, United States of America

³ Washington State Dept. Health, Olympia, United States of America

⁴ University of Washington, Seattle, United States of America

Objectives: To evaluate trends in rates of early syphilis in King County, WA, USA, and to assess the efficacy of ongoing syphilis control strategies.

Methods: We calculated rates of early (primary, secondary, early latent) syphilis from laboratory and provider reporting from 1998-2004, and examined trends in persons tested and diagnosed through screening and partner notification (PN) during this time.

Results: Following rapid increases in 1998, syphilis rates among MSM, the predominant group affected by syphilis locally, were stable at highly epidemic rates from 1998 to 2003 (HIV positive MSM=817 per 100,000; HIV negative MSM=46.8 per 100,000). Rates dramatically increased in 2004, to 1,788 and 152 per 100,000 among HIV positive and negative MSM, respectively, with the percent of MSM cases occurring among HIV negative MSM rising from 31% in 1998-2002 to 44% in 2003-2004. In 2004, syphilis reemerged in heterosexuals, increasing from 6 cases in 2003 to 27 in 2004. Since 1998, 75% of cases have been identified after presenting with symptoms, 12% through screening, and 7% via contact tracing. The number of screening tests performed by our health department increased 37%, from 5,214 (1998) to 7,167 (2004). Screening yield was low and varied by venue: STD Clinic 0.47%, bathhouses 0.14%, community-based organizations 0%, jail 0.22%, and public health outreach 0%. The number of sex partners identified per case fell from 1.12 in 1998 to 0.76 in 1999, then increased gradually to 2.70 in 2004. Similarly, the proportion of cases diagnosed through PN fell from 10% to 5.7% in 1998-1999, and increased to 13% in 2004.

Conclusions: Despite ongoing and recently intensified case-finding and public education efforts, the syphilis epidemic in King County accelerated in 2004. New, non-traditional approaches to syphilis control are needed.

SESSION: WP - E9 BEHAVIORAL SCIENCE- SYPHILIS

WP-088 BARRIERS TO PRENATAL CARE FOR WOMEN WITH AND WITHOUT SYPHILIS IN RUSSIA - RESULTS FROM A QUALITATIVE STUDY

Y. Pervysheva¹, O. Dudchenko², A. Mytil², V. Letyagina³, E. Salakhov⁴, L. Tikhonova⁴, S. Hillis⁵, L. Zohrabyan⁵, A. Shakarishvili⁵, Congen. Syphilis Project Team⁴

¹ Moscow State University, Moscow, Russian Federation

² Institute of Sociology, Moscow, Russian Federation

³ Open Health Institute, Moscow, Russian Federation

⁴ Centr Instit Skin & Vener Dis, Moscow, Russian Federation

⁵ Centers for Disease Control, Atlanta, United States of America

Objectives: To identify existing barriers preventing pregnant women with and without syphilis from receiving prenatal care (PNC) in two big metropolitan cities (Moscow, St. Petersburg) and a provincial capital (Perm).

Methods: From March through October 2003, in each city we conducted: a) 8 focus groups with new mothers without syphilis with or without PNC; b) in-depth interviews with 15 new mothers with a history of syphilis during or before the last pregnancy, physicians specializing in dermato-venereology (DV) and obstetrics-gynecology (five each), and 10 DV and maternity clinic directors.

Results: Barriers most frequently cited by women without syphilis included previous negative experience with an obstetrician-gynecologist, uncomplicated pregnancy, lack of mandatory health insurance, refusal to provide care (to non-residents), low quality of services, long lines and lack of confidentiality at clinics, mistrust of doctors, doctors' inadequate attitude towards patients and frequent insistence to abort in case of any pregnancy related complication or infection occurs. Women with syphilis most frequently noted stigma surrounding syphilis and fear of divulging, perceived lack of need in PNC, lack of confidentiality at clinics, fear of hospitalization, mistrust of doctors and their insistence on abortion. The physicians did not perceive congenital syphilis to be a big problem. Stigma, using coercion and fear of the disease to manipulate women's PNC seeking behavior, and the support of mandatory PNC screening, abortion and refusal in free care to non-residents were evident on the part of many doctors and administrators.

Conclusions: Barriers to seeking, access to and provision of PNC are significant for women with and without syphilis in Russia and need to be addressed by health care and other programs. Strategies to improve PNC utilization are essential to prevent perinatal transmission of syphilis and HIV infection.

WP-089 SEXUAL BEHAVIORS THROUGH SYPHILIS SURVEILLANCE SYSTEM, FRANCE, 2000-2004

O. Michel¹, M. Herida¹, N. Dupin², M. Janier³, C. Semaille¹

¹ Institut de Veille Sanitaire, St Maurice Cedex, France

² Hopital Cochin-Tarnier, Paris, France

³ Hopital Saint-Louis, Paris, France

Objectives: In November 2000, after the resurgence of infectious syphilis in Paris, a voluntary surveillance system was set up to describe syphilis trends, patients characteristics and sexual behaviors.

Methods: A short anonymous self-administered questionnaire was offered to each patient diagnosed with an infectious syphilis in the voluntary settings. Questions focused on the number of sexual partners, condom use, the knowledge of the partner source of infection and the likely route of transmission.

Results: During 2000-2004, in settings where self-administered questionnaire were available, the questionnaire was offered to 950 patients. Of them, 564 (59%) accepted to fulfill it. Respondents were mainly men (96%), reported having had sex with men (86%), and 44 % were HIV positive MSM reported a higher number of partners than heterosexuals in the last 12 months (median=10 vs. 2). Among MSM, 66 % reported never having used condom for fellatio whereas 6% reported never having used condom for anal intercourse. The source of infection was the regular or casual partner for 32% and an anonymous one for 68%. The route of syphilis transmission was fellatio for 52%. Among heterosexuals, 71% and 29% never used condom for fellatio and vaginal intercourse respectively. The source of infection was the regular or casual partner for 56 % and an anonymous one for 44%. The route of syphilis transmission was vaginal intercourse for 31%.

Conclusions: Collecting behavioral data through STI surveillance system highlights risky sexual behaviors among patients attending STI clinics. The likely route of syphilis transmission was fellatio for MSM, and should be reminded in MSM prevention programs.

SESSION: WP - A10 BASIC SCIENCE- HAEMOPHILUS DUCREYI (CHANCROID)

WP-090 MOLECULAR CHARACTERIZATION OF HAEMOPHILUS DUCREYI ISOLATES FROM DIFFERENT GEOGRAPHIC LOCATIONS

J. Mbwana

Goteborg University, Goteborg, Sweden

Background: *Haemophilus ducreyi* is a fastidious Gram-negative coccobacillus that causes chancroid, a sexually transmitted disease characterised by ulcers on the external genitalia. In endemic countries, chancroid represents a risk factor for the spread of human immunodeficiency virus through sexual contact. The epidemiology of *H. ducreyi* is not well known and is hampered by lack of relevant strain typing methods.

Aim: To develop a rapid amplified polymorphic DNA finger typing (RAPD-PCR), to characterize isolates of *Haemophilus ducreyi* from different countries representing Africa, Europe, North America and Asia and, in addition, to investigate phenotypic characteristics such as lipooligosaccharide immunoblotting patterns and presence of cytolethal distending toxin genes.

Method: Forty-three isolates from different geographical locations were characterised using RAPD-PCR. LOS structure of 23 isolates was studied by SDS-PAGE and immunoblotting with monoclonal antibody MAHD6. Presence of cytolethal distending toxin genes *CdtA*, *CdtB* and *CdtC* on twenty-three isolates, was analysed using PCR.

Results: The RAPD-PCR method differentiated *H. ducreyi* into nine RAPD types, with clustering of majority of isolates into two major banding profiles. Greater diversity was observed in isolates from Thailand. The LOS migration on SDS-PAGE revealed only two patterns, which indicated long and short forms of LOS whereas

absence of *CdtABC* genes was observed in 4 of 23 isolates analysed. **Conclusion:** Our results show limited genotypic and phenotypic variations of *H. ducreyi* strains, as supported by identical RAPD profiles and LOS characteristics manifested by a majority of strains. However, the RAPD method can identify differences between strains including those from different geographic areas, indicating a potential as an epidemiological tool for typing of *H. ducreyi* isolates in countries, where chancroid is endemic.

WP-091 INVESTIGATION OF THE MOLECULAR BASIS FOR THE REGULATION OF EXPRESSION OF THE LSPA1, LSPA2, AND LSPB PROTEINS OF HAEMOPHILUS DUCREYI

J.R. Mock, J.L. Latimer, E.J. Hansen

UT Southwestern Medical School, Dallas, United States of America

The LspA proteins have previously been shown to be essential for allowing *H. ducreyi* to resist phagocytosis. Furthermore, we previously established that inactivation of the *LspA1* gene resulted in a significant increase in the amount of LspA2 protein present in *H. ducreyi* culture supernatant fluid. Several additional lines of evidence have been obtained for up-regulation of expression of the *LspB-LspA2* operon in a *LspA1* mutant background, and we have identified several genes which may encode relevant regulatory factors. Utilizing *H. ducreyi* 35000HP DNA microarrays, we have performed preliminary analysis of the transcriptomes from the wild-type parent strain 35000HP and the *LspA1* mutant grown in vitro, and found that *LspB* transcripts were much more abundant in the *LspA1* mutant. We also constructed a *LspB-gfp* reporter that was used to electroporate both the wild-type strain and the *LspA1 LspA2* mutant. The level of GFP expressed by this reporter in the wild-type parent strain was five-fold lower than that expressed in the *LspA1 LspA2* mutant. This finding suggested that the *LspA1* mutation caused an increase in transcription from the *LspB* promoter. We subjected both strains to transposon mutagenesis with Tn916. Tetracycline-resistant colonies were screened for an increase or decrease in fluorescence relative to the immediate parent strain. Several different transposon insertion mutants were shown to have altered fluorescence. One mutant had decreased fluorescence relative to its parent strain (*LspA1 LspA2* mutant) and its transposon was found within a gene with homology to *sspA* from *Pasteurella multocida*. *SspA* is a transcriptional activator and has been shown to affect expression of virulence factors of other pathogens. Construction of an isogenic *H. ducreyi sspA* mutant will be used to confirm the involvement of this gene product in regulation of the *LspA* and *LspB* genes.

WP-092 AN ATTENUATED CYTOLETHAL DISTENDING TOXIN (CDTABC) DEFICIENT STRAIN OF HAEMOPHILUS DUCREYI ELICITS A DISTINCT CYTOKINE EXPRESSION PATTERN IN IMMUNE CELLS CULTURED IN VITRO

R.A. Fulcher¹, E.J. Hansen², T.H. Kawula¹

¹ Univ. of North Carolina Sch. of Medicine, Chapel Hill, United States of America

² Univ. of Texas-SW Med. Ctr., DALLAS, United States of America

Natural *H. ducreyi* infection in the human host does not appear to elicit protective immunity to subsequent infection. Most clinical isolates of *H. ducreyi* harbor the *cdtABC* locus encoding cytolethal distending toxin (CDT), a secreted heterotrimeric protein complex that kills a broad range of eukaryotic cell types. We hypothesized that CDT may function to inhibit development of immunity to *H. ducreyi*. Unlike wild type *H. ducreyi* strain 35000, a mutant strain lacking the entire *cdtABC* locus (35000*cdtABC*) was attenuated in pigs and impaired in the ability to form lesions upon second inoculation. Although 35000*cdtABC* was cleared faster than wild type 35000, pigs repeatedly inoculated with the mutant developed levels of *H. ducreyi*-specific serum IgG, IgM, and complement-mediated serum bactericidal activity similar to those elicited by a parallel wild type inoculation series. To assess the mechanism by which CDT affects host immunity we measured cytokine expression by mixed primary human peripheral blood mononuclear cells (PBMC) co-cultured with *H. ducreyi* 35000 or 35000*cdtABC*. PBMC stimulated with concanavalin A expressed similar levels of TNF- and IL-6 in response to either strain. In contrast, expression of IL-2 and IL-10 was elevated in response to 35000*cdtABC* but not to 35000. Furthermore, phorbol ester-differentiated THP-1 cells (a human peripheral blood monocyte line) expressed higher levels of IL-6, IL-10, and TNF- when cultured with 35000*cdtABC* than with 35000. The pig infection data in light of the impact of CDT on cytokine expression by activated cells suggests that this toxin plays an important role in modulating the host immune response to *H. ducreyi*.

WP-093 GLYCOSPHINGOLIPID RECOGNITION BY HAEMOPHILUS DUCREYI

M. Pantzar, S. Teneberg, T. Lagergård

Göteborg University, Göteborg, Sweden

Background: Since bacterial attachment to host tissues is essential to establish an infection it is important to elucidate microbial binding mechanisms and potential host receptors, of which a majority appears to be glycoconjugates.

The sexually transmitted disease chancroid is caused by *Haemophilus ducreyi* and generates slowly healing ulcers on the external genitals. *H. ducreyi* attach to the epithelium at the initial stage of infection and the bacteria penetrates through keratinized epithelium to under laying tissues. Although binding of *H. ducreyi* to different cells in vivo and in vitro has been investigated it is still unclear which bacterial structures that are adhesins. Nor have any receptor structures of the host cells been identified.

Aims: 1. To study binding of *H. ducreyi* to a variety of glycosphingolipids in order to identify putative host receptors for the bacteria. 2. To study whether *H. ducreyi*-heat shock protein (HdHSP) is involved in glycosphingolipid binding.

Methods: A panel of 32 glycosphingolipids from a variety of sources was used to study binding of *H. ducreyi*. Glycosphingolipids were separated on aluminium-backed silica gel thin layer chromatography (TLC)-plates, in a solvent system of chloroform, methanol and water. The TLC-plates were subsequently incubated with 35S-methionine-labelled *H. ducreyi* or with purified 125I-labelled HdHSP. The chromatograms were finally exposed to Biomax film overnight. Bacterial binding to the glycosphingolipids was identified as staining patterns on the film.

Results: The results showed that *H. ducreyi* binds to some neutral glycolipids, with preference to gangliotriosylceramid, gangliotetraosylceramid and sulfatides. A similar binding pattern was seen for HdHSP. Binding to gangliotriosylceramid and gangliotetraosylceramid is documented for other bacteria but its pathogenic importance is not known.

Conclusions: *H. ducreyi* binds to glycosphingolipids and one structure recognising neutral glycosphingolipids is the 58.5 kDa HdHSP.

WP-094 IDENTIFICATION OF A NOVEL SIALIC ACID TRANSPORTER IN HAEMOPHILUS DUCREYI

R.S. Munson¹, D.M.B. Post², R. Mungur¹, B.W. Gibson³

¹ Columbus Children's Research Institute, Columbus, OH, United States of America

² Buck Institute for Age Research, Novato, CA, United States of America

³ Buck Institute, University of California, Novato/San Francisco, CA, United States of America

Sialic acids are acidic sugars found in complex glycoconjugates produced by vertebrates. Numerous bacterial species also have sialic acids on their surfaces. It has been suggested that bacterial pathogens may avoid an immune response by molecular mimicry. *Haemophilus ducreyi*, the causative agent of chancroid, produces a lipooligosaccharide (LOS, endotoxin) which terminates in N-acetylglucosamine. This glycoform can be further extended by the addition of a single sialic acid to the terminal galactose residue. *H. ducreyi* does not make sialic acid; thus, sialic acid must be acquired from the host during infection or from the culture medium when grown in vitro. Previously, we had identified and characterized the genes encoding the CMP-sialic acid synthetase and the LOS-sialyltransferase. However, *H. ducreyi* does not have genes that are homologous to the genes encoding known bacterial sialic acid transporters. Thus, we identified the sialic acid transporter by screening for strains in a library of random transposon mutants for those mutants that were unable to add sialic acid to N-acetylglucosamine-containing LOS. These mutants were then tested for reactivity with the monoclonal antibody 3F11, which recognizes the terminal lactosamine structure of the LOS. Mutants that produced a complete core LOS but were unable to transfer sialic acid to this glycolipid were further characterized to demonstrate that they produced a N-acetylglucosamine-containing LOS by silver stained SDS-PAGE and mass spectrometric analyses. The genes interrupted in these mutants were mapped to a four-gene cluster encoding a bacterial ABC transporter. Uptake assays using radiolabeled sialic acid confirmed that the mutants were unable to transport sialic acid. This study is the first report of bacteria using an ABC transporter for sialic acid transport.

WP-095 EVALUATION OF AN OMPP2A OMPP2B DOUBLE MUTANT OF HAEMOPHILUS DUCREYI IN THE HUMAN CHALLENGE MODEL

M. Janowicz¹, D.T. Prather², K.R. Fortney¹, B.P. Katz¹, S.M. Spinola¹, A.A. Campagnari²

¹ Indiana University, School of Medicine, Indianapolis, United States of America

² State University of New York, Buffalo, United States of America

Haemophilus ducreyi expresses two proteins, OmpP2A and OmpP2B, whose genes are independently transcribed. OmpP2A and OmpP2B exhibit porin activity and are the first porins described for H. ducreyi. A double OmpP2A OmpP2B mutant, 35000HPompP2A/2B, was constructed. Except for expression of the proteins of interest, 35000HP and 35000HPompP2A/2B had similar outer membrane protein (OMP) and lipooligosaccharide (LOS) profiles and growth rates. To test whether expression of OmpP2A and OmpP2B was necessary for virulence in humans, eight volunteers were experimentally infected. Each volunteer was inoculated with three doses (ranging from 82 to 168 CFU) of the parent (35000HP) in one arm and three doses (ranging from 50 to 576 CFU) of the mutant (35000HPompP2A/2B) in the other arm. The papule formation rates were 91.7% (95% confidence interval [95% CI], 76.4% to 99.9%) at 24 parent sites and 91.7% (95% CI, 81.7% to 99.9%) at 24 mutant sites ($P=1.0$). The pustule formation rates were 58.3% (95% CI, 33.2% to 83.5%) at 24 parent sites and 41.7% (95% CI, 19.3% to 64.0%) at 24 mutant sites ($P=0.25$). Biopsy of 35000HP and 35000HPompP2A/2B infected sites yielded similar amounts of bacteria in quantitative culture. These results indicate that expression of OmpP2A and OmpP2B is not necessary to initiate disease or to progress to pustule formation in humans.

WP-096 HAEMOPHILUS DUCREYI GENE EXPRESSION IN THE HUMAN MODEL OF EXPERIMENTAL INFECTION

M.E. Bauer¹, K.R. Fortney¹, A. Harrison², R.S. Jr. Munson², S.M. Spinola¹

¹ Indiana University School of Medicine, Indianapolis, United States of America

² The Ohio State University, Columbus, United States of America

Little is known about genes required for virulence of Haemophilus ducreyi in vivo. To identify H. ducreyi genes that are upregulated in vivo, we used selective capture of transcribed sequences (SCOTS) with RNA isolated from three volunteers in the human model of H. ducreyi infection. With SCOTS, subtractive hybridization of tissue-derived and broth-derived sequences identified genes upregulated in biopsied pustules from the clinical end point of experimental human infection. Among the three tissue specimens, we identified 506 genes putatively upregulated in vivo. Interestingly, only 28 genes were identified in all three tissues, and 111 genes were identified in exactly two of three tissues, suggesting that host-specific factors may influence the genetic response of H. ducreyi in the human model. Southern blot analysis of 60 genes from each tissue confirmed that 87% of the identified genes were upregulated in tissue compared with broth culture. Identified genes fell into several functional categories, including biosynthesis and metabolism, regulation, iron uptake, and cellular processes such as transcription, translation, cell division, DNA replication and repair, and transport. Roughly 25% of the identified genes were of unknown function.

Several putative virulence factors were also identified, including LspA2, two subunits of cytolethal distending toxin, TadA, and MOMP. Of these, the LspA genes and the operon containing TadA are both required for full virulence of H. ducreyi in the human model of infection. This study suggests that H. ducreyi exerts a global genetic response to the milieu of the human host during the pustular stage of disease compared with in vitro broth culture.

WP-097 EXPERIMENTAL INFECTION WITH HAEMOPHILUS DUCREYI IN PERSONS WHO ARE HIV INFECTED

M. Janowicz, T.L. Humphreys, C.T. Schnizlein-Bick, K.R. Fortney,

B.W. Zwickl, B.P. Katz, S.M. Spinola

Indiana University, School of Medicine, Indianapolis, United States of America

No longitudinal data address how infection with Haemophilus ducreyi affects HIV replication in co-infected patients. We hypothesized that local infection with H. ducreyi would be safe and not affect viral replication or CD4+ cell counts in the systemic compartment. We experimentally infected the upper arms of seven HIV-seropositive subjects receiving HAART and four HIV-seropositive subjects not receiving HAART who were clinically stable and had CD4+ cell counts > 350 cells/ μ l with H. ducreyi. Papules and pustules were clinically similar to those observed in HIV-seronegative subjects. The overall papule formation rate was 96.7% (95% confidence interval (CI), 90.5% to 99.9%) and the overall pustule formation rate was 50.0% (95% CI, 23.5% to 76.5%), which were similar to the papule and pustule formation rates for a dose- and gender-matched HIV-seronegative historical control cohort. CD4+ cell counts and HIV RNA levels were measured prior to study entry, at clinical endpoint and at day 28 and/or day 42. No subject experienced a sustained change in either CD4+ cell count or HIV RNA level. Flow cytometry of biopsies obtained from HIV-seropositive subjects and HIV-seronegative controls did not differ in the percent of leukocytes ($P=0.37$), neutrophils ($P=0.57$), macrophages ($P=0.066$) and T cells ($P=0.52$). The ratio of CD4:CD8 cells in the biopsies obtained from HIV-seropositive subjects was 1:2.5, the inverse of the ratio (2.9:1) that is seen in HIV-seronegatives ($P<0.0001$). We conclude that experimental infection in HIV-seropositive subjects is safe and clinical outcomes are similar to dose- and gender-matched HIV-seronegative subjects. Studies that focus on lesional HIV transcript quantification and localization and the basis for the unique CD4:CD8 ratio seen in the biopsies of HIV seropositives are in progress.

WP-098 IMMUNIZATION WITH HAEMOPHILUS DUCREYI HEMOGLOBIN RECEPTOR PROTECTS AGAINST AN INFECTION IN THE SWINE MODEL OF CHANCROID

G.B. Afonina¹, I. Leduc¹, I. Neplouev¹, P. Routh², P. Orndorf², M. Hobbs¹,

G. Almond¹, C. Elkins³

¹ University of North Carolina at Chapel, Chapel Hill, United States of America

² College of Veterinary Medicine, Raleigh, United States of America

³ Univ. of North Carolina, Chapel Hill, Chapel Hill, United States of America

Haemophilus ducreyi, the etiologic agent of chancroid, has an obligate requirement for heme. To acquire heme, H. ducreyi can use one of two TonB-dependent receptors: TdhA, exclusive for heme, or the hemoglobin-specific receptor, HgbA. HgbA is a 100-kDa outer membrane protein necessary to initiate disease in human model of chancroid.

Objective: We evaluated the efficacy of HgbA as a subunit vaccine in the swine model of chancroid. **Method –** The outcome of the vaccination was evaluated using several parameters: histological examination of lesions, bacterial count from cultured lesions, bactericidal activity of the anti-HgbA sera and the ability of antisera to block binding of hemoglobin to HgbA. **Results -** In the HgbA-vaccinated animals, histological sections of the lesions lacked typical microscopic features of chancroid, while those from mock-immunized animals demonstrated chancroidal pathology. Similarly, lesions in HgbA-vaccinated animals were free of *H. ducreyi* bacteria, whereas lesions from mock-immunized swine yielded viable *H. ducreyi*. Consistent with these results, anti-HgbA sera bound to whole cells of both homologous and heterologous strains, but not an isogenic hgbA mutant of 35000HP, and initiated antibody-dependent bactericidal activity. Furthermore, IgG purified from HgbA-vaccinated animal sera blocked hemoglobin binding to hemoglobin receptor. **Conclusion -** These data suggest the potential for HgbA protein as a subunit vaccine to prevent chancroid.

WP-099 DIFFERENT POPULATIONS OF HAEMOPHILUS DUCREYI STRAINS EXHIBIT DIFFERENT GROWTH AND ANTIBIOTIC RESISTANCE CHARACTERISTICS

I.L. Leduc, C.D. White, C. Elkins

Univ. of North Carolina at Chapel Hill, Chapel Hill, United States of America

The sexually transmitted ulcer disease chancroid is caused by the gram-negative bacterium *Haemophilus ducreyi*. *H. ducreyi* strains appear to exist in at least 2 distinct populations, termed class I and class II, that express variant forms of outer membrane proteins (OMP) and lipooligosaccharides.

Objective: Determine if strains from both classes of *H. ducreyi* strains have similar growth patterns, as well as antibiotic and serum resistance characteristics.

Methods: The growth of ten temporally and geographically isolated *H. ducreyi* strains, 5 from class I and 5 from class II, was evaluated on both solid and liquid media, and in the absence or presence of fetal bovine serum (FBS). Growth curves were prepared from optical density readings in liquid culture, while colony size was assessed on solid media. Minimum inhibitory concentration (MIC) of vancomycin and serum resistance in 50% normal human serum (NHS) was determined for all ten strains.

Results: Although all strains grew well in both liquid and solid media, class II strains formed smaller colonies on solid media. Two class II strains also grew poorly in the absence of FBS. Four out of five class II strains were susceptible to vancomycin; they exhibited an MIC less than those of class I strains. All strains tested were equally resistant to 50% NHS.

Conclusion: Although all *H. ducreyi* strains studied were serum resistant, class II strains formed smaller colonies on solid media and had increased susceptibility to vancomycin.

WP-100 CHARACTERIZATION OF HAEMOPHILUS DUCREYI INFECTION IN PIGTAILED MACAQUES

P.A. Totten, L.A. Houston, G.E. Wood

University of Washington, Seattle, WA, United States of America

Objectives: The immunopathogenesis of chancroid, a genital ulcer disease caused by *Haemophilus ducreyi* (HD), is poorly understood. We have developed a pigtailed macaque (*Macaca nemestrina*) model for HD infection to explore the pathogenesis of chancroid in an animal and anatomical site most similar to human infection.

Methods: The lesion-inducing dose of HD was determined by inoculating 15 macaques at two sites on their foreskins with two identical dilutions (108, 107, or 106 cfu's) of HD strain 35000. The host response to HD infection was analyzed by characterization of the cellular infiltration in infected lesions using confocal microscopy and by the induction of HD antibodies using ELISA and Western blot analysis. **Results:** Pustules or ulcers were induced in 8/10, 10/10, and 3/10 inoculations and viable organisms were recovered from 7/10, 4/10, and 2/10 lesions inoculated with 108, 107, and 106 cfu, respectively. HD was cultured up to 21-24 days post inoculation from three primates inoculated with 108 cfu. No pustules or ulcers developed in three primates pretreated with ceftriaxone before inoculation of 108 cfu, indicating that viable organisms are required for lesion development. Chancroidal lesions were characterized by infiltration of PMNs, degraded or absent fibroblasts and epithelial cells, and infiltration of B and T cells and. Primates also mounted a humoral IgG response to HD, measured both by immunoblots and EIA assays. Lesions were induced on primate backs at doses comparable to those required for foreskin inoculations, yet back lesions were most often characterized by eschars rather than ulcers.

Conclusions: The primate model for chancroid provides an opportunity to study the immunopathogenesis of chancroid and is suitable for the evaluation of bacterial and host factors that affect survival and clearance of this organism in host tissue.

WP-101 THE HAEMOPHILUS DUCREYI CYTOLETHAL DISTENDING TOXIN: INTERNALIZATION AND NOVEL SIGNALLING PATHWAY

T. Frisan¹, L. Guerra¹, K. Teter², B.N. Lilley³, B. Stenerlöv⁴, A. Schmidt⁵, R.K. Holmes⁶, H.L. Ploegh³, A. Hall⁶, K. Sandvig⁷, M. Thelestam¹

¹ *Karolinska Institutet, Stockholm, Sweden*

² *University of Central Florida, Orlando, United States of America*

³ *Harvard Medical School, Boston, United States of America*

⁴ *Uppsala University, Uppsala, Sweden*

⁵ *University College, London, United Kingdom*

⁶ *Uv. of Colorado Health Sc C., Denver, United States of America*

⁷ *The Norwegian Radium Hospital, Oslo, Norway*

The cytolethal distending toxins (CDTs) are unique in their ability to induce DNA damage, activate checkpoint responses, and cause cell cycle arrest or apoptosis in intoxicated cells. However, little is known about their cellular internalisation pathway. We demonstrate that binding of the *Haemophilus ducreyi* CDT (HdCDT) on the plasma membrane of sensitive cells was abolished by cholesterol extraction with methyl- β -cyclodextrin. The toxin was internalised via the Golgi complex, and retrogradely transported to the endoplasmic reticulum (ER), as assessed by N-linked glycosylation. Further translocation from the ER did not require the ER-associated degradation

(ERAD) pathway, and was Derlin-1 independent. The genotoxic activity of HdCDT was dependent on its internalisation and its DNase activity, since induction of DNA double strand breaks (DSBs) was prevented in BFA-treated cells and in cells exposed to a catalytically inactive holotoxin. One of the consequences of the CDT-induced DNA damage is the activation of the small GTPase RhoA, leading to induction of actin stress fibers and prolonged cell survival. We have further analysed how this stress signal is transduced from the damaged DNA in the nucleus to RhoA in the cytoplasm, in an ATM-dependent manner. Our data contribute to a better understanding of the CDT mode of action and highlight several important aspects of the biology of this bacterial toxin family: i) HdCDT translocation from the ER to the nucleus does not involve the classical pathways followed by other retrogradely transported toxins; ii) toxin internalisation is crucial for execution of its genotoxic activity; iii) we are further characterizing a novel signalling pathway leading to cell survival upon induction of DNA damage.

SESSION: WP - A11 BASIC SCIENCE- GENITAL MYCOPLASMAS

WP-102 NEW ANTIBIOTIC SUSCEPTIBILITY TEST OF MYCOPLASMA GENITALIUM BY USING REAL-TIME PCR

R. Hamasuna¹, Y. Osada¹, J.S. Jensen²

¹ Miyazaki Medical College, Miyazaki, Japan

² Statens Serum Institut, Copenhagen, Denmark

Mycoplasma genitalium is an important pathogen in male non-gonococcal urethritis (NGU). Isolation of *M. genitalium* from clinical specimens by axenic culture is very difficult and time consuming and very few strains are available for antibiotic susceptibility testing. Primary isolation of *M. genitalium* by co-culture with Vero-cells improves the isolation rate significantly. However, some strains can not be adapted to axenic culture. In this study, we determined the antibiotic susceptibility of *M. genitalium* strains grown in Vero-cell culture with dilutions of antibiotics. Growth of *M. genitalium* was monitored by a quantitative PCR assay detecting a single copy region of the MgPa adhesin gene. Growth inhibition in the presence of antibiotics was expressed as a percentage of the DNA load of controls grown in the absence of antibiotics. Eighteen strains were examined including 6 new strains isolated from urethral swab specimens and 4 new strains isolated from urine specimens collected from Japanese men. Eight strains adapted to axenic culture were also tested by the conventional broth-dilution method. The two methods had an acceptable correlation. Azithromycin was the most active drug against *M. genitalium*. Among the fluoroquinolones, moxifloxacin had the highest activity with MICs ranging from 0.03 – 0.5 mg/l whereas ciprofloxacin and levofloxacin were considerably less active with MICs ranging from 0.5 – 16 mg/l and 0.25 – 4 mg/l, respectively. MICs for tetracycline ranged from 0.125 – 4 mg/l. This new method could increase the number of *M. genitalium* strains available for antibiotic susceptibility testing and significantly shorten the time from sampling to MIC results.

WP-103 THE USE OF PARTIAL REPEAT COPIES OF THE MGPB GENE AS TARGETS FOR A MYCOPLASMA GENITALIUM PCR ASSAY

S.G. Astete, C.F. Bertucci, L.E. Manhart, P.A. Totten

University of Washington, Seattle, United States of America

Objectives: The development of PCR assays for the culturally intractable *Mycoplasma genitalium* (MG), has allowed its association with idiopathic cases of urethritis, cervicitis, endometritis, and PID. Because all currently employed PCR assays target single copy genes, we developed a multi-target PCR assay to potentially increase analytical and clinical sensitivity.

Methods: We aligned the mgpB gene, encoding the MgPa adhesin protein, with nine homologous MgPa partially repeated (MgPAR) sequences and identified PCR targets that were present in six copies in the MG G37 genome. Analytical sensitivity was determined using sixteen replicates of serial 2-fold dilutions (16 to 0.5 genome copies) of genomic DNA. The clinical sensitivity and specificity were evaluated using 62 male urethral (23 positive and 39 negative) and 30 female urine (8 positive and 22 negative) specimens, determined by their reactivity with our single target MgPa-IMW PCR (Dutro et al, 2003). Infected patients were also identified by their MG positivity at other specimen sites (urine for men, vaginal and cervical for women), using the MgPa-IMW assay.

Results: The MgPAR PCR assay detected *M. genitalium* in 9 (56%) and 14 (88%) of 16 replicates containing 0.5 and 1 genome copies respectively, and was not reactive with *Mycoplasma pneumoniae*'s DNA. This assay detected 23 (100%) of 23 urethral-positive infected patients, 1 (33%) of 3 urethral-negative infected patients, and none of 36 non-infected male patients. In females, the MgPAR assay detected 8 (100%) of 8 urine-positive infected patients, 3 (33%) of 9 urine-negative infected patients, and none of 13 non-infected patients.

Conclusions: The multitarget MgPAR PCR assay has the potential to increase the sensitivity of MG detection, important in cases where the amount of patient specimen is limited and/or the organism load is low.

SESSION: WP - B11 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- GENITAL MYCOPLASMAS

WP-104 EVALUATION OF POTENTIAL MYCOPLASMA GENITALIUM TARGETS FOR REAL-TIME PCR TESTING USING URINE SPECIMENS

C. Chen, B. Steiner, K.-H. Chi, R.C. Ballard

Centers for Disease Control & Prevention, Atlanta, Georgia, United States of America

Objectives: Five genes [adhesion (MG191), DNA polymerase I (MG262), dihydrolipoamide dehydrogenase (MG271), glyceraldehyde-3-phosphate dehydrogenase (MG301), and lactate dehydrogenase (MG460)] from *Mycoplasma genitalium* were evaluated as potential diagnostic and confirmatory targets in simplex and multiplex real-time PCR assays.

Methods: Primers and probes for a TaqMan assay were designed using the gene region where only limited sequence homology exists between *M. genitalium* and other *Mycoplasma* spp., and/or sequence homology was not found in the genus *Ureaplasma*. All real-time PCR assays were performed using the Rotor-Gene 3000 real-time PCR instrument (Corbett Research, Australia).

Results: When performed as a real-time simplex PCR test, all 5 individual targets were specific for *M. genitalium*, without cross-reactions to other mycoplasmas and ureaplasma. Each simplex PCR assay had a similar analytical sensitivity of 5-50 genome copies; however, MG271 and MG262 yielded higher fluorescence signal than other targets. The performance of real-time simplex PCR using MG191, 262, and 271 was subsequently compared using urine specimens obtained from 35 male patients with NGU. Both simplex PCR assays using MG191 and 271 detected *M. genitalium* DNA from the same 18 specimens while using MG262 one positive was not detected. By incorporating all three MG targets in a triplex real-time PCR format, the detection limit for *M. genitalium* DNA using MG271 remained at 5-50 copies, however, the analytical sensitivity for MG262 and MG191 detection decreased significantly.

Conclusions: Both MG271 and MG191 can be used for the primary detection of *M. genitalium* in a simplex PCR format using urine specimens, however, when combining two or more targets in a multiplex format for confirmation and re-test purposes, optimization of the multiplex PCR assay is required.

WP-105 CHRONIC REACTIVE ARTHRITIS: ARE GENITAL MYCOPLASMAS AND CHLAMYDIA TRACHOMATIS PLAYING ANY ROLE?

D.D. Domingues¹, R. Castro¹, F. Nogueira¹, P. Araújo², R. Barros², J. Branco², F. Exposto¹

¹ Instituto de Higiene e Medicina Tropical, Lisboa, Portugal

² Serv. Reumatol, H Egas Moniz, Lisboa, Portugal

The etiologic diagnosis of Chronic Reactive Arthritis (CRA) is still difficult to establish, although some STI agents, such as Chlamydia trachomatis and genital mycoplasmas have been implicated. The main objective of this study was to evaluate the presence of genital mycoplasmas (*Mycoplasma hominis*, *Mycoplasma genitalium* and *Ureaplasma* sp) and Chlamydia trachomatis in the urine of patients with CRA. Twenty-eight patients with CRA were included in the study, 22 women and 6 men. Five of the patients with genital mycoplasmas and/or *C. trachomatis* identified, were followed-up after appropriate therapy. Urine was collected from each patient for PCR identification of genital mycoplasmas and *C. trachomatis* and for culture of genital mycoplasmas. Genital mycoplasmas and/or *C. trachomatis* were identified in 13/28 (46%), in which 14/28 (50%) were *Ureaplasma* sp, 8/28 (28%) *C. trachomatis* and 2/28 (7%) *M. hominis*. Mixed infections were detected in 7/28 (25%) of the patients: 5/28 (18%) were *Ureaplasma* sp and *C. trachomatis* and 2/28 (7%) were *Ureaplasma* sp and *M. hominis*. *Ureaplasma parvum* was identified in 11/14 (79%) and *Ureaplasma urealyticum* in 3/14 (21%) of the patients with *Ureaplasma* sp. In conclusion, the prevalence of mycoplasmas and/or Chlamydia trachomatis found in urine of patients with CRA was high. The relative frequency of the two *Ureaplasma* sp was similar to that found in other studies. The fact that the prevalence of the microorganisms studied in urine was high and that the 5 patients who were treated showed improvement of their clinical status and had no microorganisms identified afterwards, could indicate a role for these agents in CRA.

WP-106 COMPARISON BETWEEN A TMA ASSAY AND A REAL-TIME MULTI-LOCUS PCR ASSAY FOR THE DETECTION OF MYCOPLASMA GENITALIUM (MG)

J.P.H. Hardick¹, A.J.H. Hardick¹, B.J.W. Wood¹, T.C.Q. Quinn², C.A.G. Gaydos¹

¹ Johns Hopkins University, Baltimore, United States of America

² NIAID, NIH, Bethesda, United States of America

Objectives: MG is a cause of nongonococcal urethritis and has been linked to cervicitis. This study compared two assays for MG detection, a transcription-mediated amplification (TMA) assay-MG, research use only) and a research multi-locus real-time PCR assay (MGml-PCR) for the 16S rRNA and MgPA genes.

Methods: Duplicate male urine samples and female vaginal swabs were obtained from men (N=290) and women (N=325) were screened in STD clinics. Processing and testing for TMA-MG was done following the procedures for Gen-Probe's APTIMA products. MGml-PCR samples were extracted using the Roche MagNAPure_LC robot and screened by MGml-PCR. Sensitivity and specificity were calculated for the TMA-MG test against a defined gold standard of any PCR amplification from either the 16S rRNA or MgPA gene. Results: 611 had matching samples for analysis (288 men, 323 women). Three male urines and 1 vaginal swab specimen were equivocal on several repeats for both assays and may represent samples close to the limit of detection for both tests. These 4 were removed from analysis. Of 607 analyzed, the overall TMA-MG sensitivity was 98.2% (110/112) and the overall specificity was 98.2% (486/495) with a prevalence of 18.1%. For male urines, the sensitivity and specificity for the TMA-MG were 100% (45/45) and 97.9% (236/241), respectively. The prevalence in males was 15.7%. For female vaginal swabs, the sensitivity and specificity for the TMA-MG were 97.0% (65/67) and 98.4% (250/254), respectively. The prevalence in females was 20.2%.

Conclusions: The prevalence of MG in patients attending STD clinics was high. The research TMA-MG assay had excellent sensitivity and specificity when compared to a research multi-locus real-time MG-PCR assay as a gold standard

WP-107 A RANDOMIZED COMPARISON OF AZITHROMYCIN AND DOXYCYCLINE FOR THE TREATMENT OF MYCOPLASMA GENITALIUM (MG) POSITIVE URETHRITIS IN MEN.

T.F. Mroczkowski¹, L. Mena², M. Nsuami¹, D.H. Martin¹

¹ LSU Health Sciences Center, New Orleans LA, United States of America

² U. of Mississippi Med. School, Jackson, MS, United States of America

Objectives: Several small uncontrolled studies have suggested that doxycycline may not be effective for Mg infections. In this study we compared the efficacy of single dose azithromycin vs. a 7 day course of doxycycline for the treatment of Mg associated urethritis.

Methods: Men with urethral symptoms attending the New Orleans STD clinic who met clinical criteria for nongonococcal urethritis were enrolled into the study. Patients were tested for Mg and other STIs by nucleic acid amplification methods. They were then randomized to receive either doxycycline 100 mg P.O. twice daily for 7 days or azithromycin 1 gm. P.O. as a single dose. Follow-up visits were scheduled 10-17 and 31-48 days after enrollment.

Results: Of 398 men enrolled, 197 were randomized to azithromycin and 201 to doxycycline. Thirty-six (18.3%) and 42 (20.9%) of these 2 groups respectively were Mg infected. Twenty-five azithromycin and 31 doxycycline treated Mg infected cases returned for at least one follow-up evaluation. There were 4 (16%) bacteriologic failures in the former group and 20 (64%) in the latter ($P < 0.001$). There were 3 Mg associated clinical failures among the azithromycin treated men compared to 11 among those randomized to doxycycline ($P < 0.05$). Interestingly, 8/14 Mg associated clinical failures were asymptomatic at the time of their first follow-up evaluation and then developed symptoms over the following 2 to 4 weeks.

Conclusions: A single 1 gram dose of azithromycin appears to be more effective than multi dose doxycycline for the treatment of Mg associated urethritis in men. These data should be corroborated by a larger double-blinded trial. Bacteriologic failures are detected early following treatment of this disease while many clinical failures occur relatively late.

SESSION: WP - C11 EPIDEMIOLOGY- GENITAL MYCOPLASMAS

WP-108 MYCOPLASMA GENITALIUM IN HIV INFECTED WOMEN: EPIDEMIOLOGY AND ASSOCIATION WITH VAGINAL HIV-1 RNA SHEDDING

D.H. Martin¹, K. Theall², P. Kissinger², A. Amedee¹, R.A. Clark¹,
J. Dumestre¹

¹ LSU Health Sciences Center, New Orleans, United States of America

² Tulane School of Public Health, New Orleans, LA, United States of America

Objective: To examine the epidemiology of *Mycoplasma genitalium* (Mg) among HIV-1 infected women and the relationship of Mg to vaginal HIV-1 RNA shedding.

Methods: Subjects were HIV-1 infected adult women attending an HIV primary care clinic in New Orleans between 6/2002 and 10/2004. Subjects were examined and interviewed. Mg was detected by a DNA amplification method in urine, vaginal and endocervical specimens. HIV-1 viral loads were measured using the Amplicor HIV-1 Monitor Test. Mg-infected women ($n=24$) were matched 1:1 to a random sample of non-Mg infected controls on antiretroviral therapy (ART) and the diagnosis of trichomoniasis.

Results: The prevalence of Mg in the larger sample of 385 women was 8.1% ($n=31$), with 24 having available information on vaginal viral load, ART, and trichomoniasis. The majority of women were African American (85.4%). The following results were based on the matched control analysis. Mg-infected women were younger than controls (median age=31 vs. 38, $p < 0.05$). Compared to non-infected women Mg-infected women were more likely to be single (79.2% vs. 54.2%, $p < 0.10$), to report having ? two sex partners in the last month (8.3% vs. 0.0%, $p < 0.05$), to have gonorrhea (8.3% vs. 0.0%, $p < 0.05$), to have a chlamydial infection (25.0% vs. 4.0%, $p < 0.05$), and to have vaginal candidiasis (17.7% vs. 12.9%, $p < 0.05$). There was a trend for cases to have lower CD4 cell counts but vaginal and plasma HIV-1 RNA levels did not differ between the two groups.

Conclusions: In our population of HIV-1 positive women there is a strong relationship between Mg and STI risk factors including other STIs. Mg infection does not appear to influence vaginal HIV-1 RNA shedding.

WP-109 MYCOPLASMA GENITALIUM INFECTION WITHIN SEXUAL PARTNERSHIPS

B. Van Der Pol, J.A. Williams, B.P. Katz, B.E. Batteiger, D.P. Orr,
J.D. Fortenberry

Indiana University, Indianapolis, United States of America

Objectives: To determine the prevalence of *M. genitalium* (MG) in STD clinic attendees and the concordance of infection within sexual partnerships.

Methods: Patients who were positive for chlamydial (CT) infection, and their sexual partners, were enrolled into a study of transmission within sexual dyads. Multiple samples were collected from each participant. In addition to CT, all samples were tested for *N. gonorrhoeae* (GC), *T. vaginalis* (TV) and MG DNA using PCR. Participants with any positive result that was reproducible on repeat testing were classified as MG infected. McNemar's χ^2 was used for prevalence comparisons and the $\hat{\kappa}$ measure was used for evaluation of MG concordance within dyads.

Results: Samples from 77 dyads were available for analysis. Three men and 4 women contributed to more than 1 dyad; therefore 7 dyads were excluded from analysis. The prevalence of GC was 17.1 and 21.4% while TV was identified in 4.3 and 18.6% of men and women, respectively. The prevalence of MG was 15.7% (11/70) in both women and men. The prevalence of GC in men and women and of TV in women was similar to MG (all $p > .5$). MG was more prevalent in men than TV ($p = .021$).

Although the number of infected participants was the same for both genders, only 4 dyads were concordantly MG positive. Although the overall agreement within dyads was significant at 80.0% ($\hat{\kappa} = .245$, $p = .040$), it was less than the agreement for *N. gonorrhoeae* (90.0%, $\hat{\kappa} = .680$) or *T. vaginalis* (85.7%, $\hat{\kappa} = .328$) in this cohort.

Conclusions: In these CT-positive dyads, the prevalence of MG was similar to that of other STI. However, the concordance of MG infection appears to be lower than the concordance seen for GC or TV.

WP-110 THE NATURAL HISTORY OF MYCOPLASMA GENITALIUM INFECTION IN A LONGITUDINAL COHORT OF ADOLESCENT WOMEN IN THE YOUNG WOMEN'S PROJECT

J. Williams, B. Van Der Pol, B.E. Batteiger, D.P. Orr, J.D. Fortenberry
Indiana University School of Medicine, Indianapolis, Indiana, United
States of America

Objectives: To study the duration of infection with *Mycoplasma genitalium* (MG) in young women.

Methods: Vaginal swabs were collected from women at quarterly clinic visits and during home collection periods of up to 12 weeks following every other quarterly visit. Testing for MG was performed using quarterly samples and if positive, subsequent weekly swabs were also tested. MG was detected by PCR. Episodes of infection were defined as beginning at the quarterly visit and ending when more than 2 consecutive samples were negative. Antibiotic treatment for chlamydia infection was assessed for effect on MG duration.

Results: Twenty-three patients were MG positive at quarterly visits and had subsequent weekly samples for analysis; three women were MG positive at the beginning of multiple 12-week collection periods. In 19 (67.9%) collection periods, only 1 episode of MG

occurred. Three patients were treated with azithromycin for chlamydial infection identified at the quarterly visit; 2 were negative for MG the following week while the remaining patient was positive throughout the remainder of the 12-week period. Excluding untreated patients, infection lasted 1-12 weeks with a median duration of 5.5 weeks. Four participants were MG positive at a quarterly visit immediately prior to or following the ones associated with a weekly collection period suggesting infection for as long as 23-40 weeks. Conclusions: MG infection is detectable for periods of up to 12 weeks or more. Multiple episodes of infection may occur in approximately one-third of the patients. Limitations to the current study include missing data points and potential false-negative results where MG was present below the level of detection of the assay. Therefore, interpretation of multiple episodes is unclear and future studies are needed.

WP-111 IS MYCOPLASMA GENITALIUM ASSOCIATED WITH INCREASED SHEDDING OF HIV-1 DNA?

*L.E. Manhart, S.B. Mostad, S.G. Astete, P.A. Totten
University of Washington, Seattle, WA, United States of America*

Objectives: Female reproductive tract infections (RTI) are associated with increased CD4 lymphocytes in the genital mucosa and, among HIV-positive women, increased viral load and viral shedding. Because *Mycoplasma genitalium* has been associated with cervicitis, we examined its association with HIV shedding.

Methods: Cervical swab samples from 303 HIV-1 positive women attending a municipal STD clinic in Mombasa, Kenya between December, 1994 and April, 1996 were tested for *M. genitalium* (MG) using PCR (Dutro, STD, 2003), and for *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (GC) using the Roche AMPLICOR CT/NG assay. HIV viral shedding was previously determined by PCR amplification of gag DNA sequences.

Results: MG, detected in 44 (14.5%) of 303 women, was more prevalent than either GC (9.9%) or CT (6.9%). Median CD4 count did not significantly differ between MG-positive and MG-negative women (449/ÅL vs. 416/ÅL), but PMNL counts were slightly higher in women with MG (median vaginal 7.8 vs. 5.3; cervical 26.3 vs. 22.7). In multivariate logistic regression analyses, adjusting for age and factors previously associated with HIV shedding in these women (hormonal contraception, CD4 count), there was a trend toward increased risk for cervical HIV DNA shedding among MG-positive women (OR 1.8; 95% CI 0.8-3.7), comparable to the association between GC (detected by PCR) and HIV shedding (OR 1.9; 95% CI 0.8-4.4). MG was similarly associated with vaginal HIV-1 DNA shedding (ORadj 1.9; 95% CI 0.7-4.9).

Conclusion: The association between MG and HIV-1 DNA shedding was virtually the same as that observed for GC when determined by PCR (elevated but non-significant). In previous analyses, GC detected by culture was significantly associated with HIV-1 DNA shedding, suggesting that sensitive DNA amplification assays may detect asymptomatic RTI not associated with inflammation and HIV-1 shedding.

WP-112 MYCOPLASMA GENITALIUM IN YOUNG ADULTS IN THE UNITED STATES: AN EMERGING STD MORE COMMON THAN GONORRHEA

*L.E. Manhart, P.A. Totten, L.S. Houston, K.K. Holmes
University of Washington, Seattle, WA, United States of America*

Objectives: *Mycoplasma genitalium* (MG) has been associated with NGU in men and cervicitis, PID, and tubal infertility in women in specialized populations, yet to date no U.S. general population-based data exist.

Methods: In a randomized quota sample of Wave III National Longitudinal Study of Adolescent Health respondents, urine specimens from 1,816 women and 1,287 men aged 18-27 years were selected and tested for MG using an in-house PCR assay (Dutro, STD 2003). Post-stratification sampling weights generated nationally representative estimates.

Results: MG was detected in 36 of 3,103 respondents for a weighted prevalence of 1.0 % (95% CI 0.5%-1.4%). Prevalence was highest among African Americans (2.6%), somewhat higher in men than in women (1.4% vs. 1.0%, NS), and higher in the youngest (age 18-19) and oldest (age 24-25) respondents (1.6% and 1.8% respectively) than among 20-24 year olds (<1.0%). Almost all MG-positive persons (99%) reported having had vaginal sex, as compared to only 88% of MG-negative respondents ($p < 0.001$). No MG-positive individuals reported current symptoms of vaginal or urethral discharge. In multivariate analyses, risk for MG was seven-fold higher for African Americans (OR 7.1; 95% CI 2.34-21.42), and increased by 10% with each additional vaginal sex partner in the past year (OR 1.1; 95% CI 1.02-1.24). Risk for MG was decreased by 30% among those currently working (OR 0.3; 95% CI 0.09-0.87), and by 20% for each additional year of education (OR 0.8; 95% CI 0.64-0.97). There was no association with correct and consistent condom use.

Conclusion: The prevalence of *M. genitalium* in this general population sample was higher than *N. gonorrhoeae* (0.4%), but lower than *C. trachomatis* (4.2%) (Miller, JAMA, 2004). MG infection was strongly associated with sexual activity in this predominantly asymptomatic population.

SESSION: WP - B12 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- BACTERIAL VAGINOSIS

WP-115 WHICH IS THE BEST APPROACH ON BACTERIAL VAGINOSIS? RESULTS OF AN EVALUATION IN A PORTUGUESE POPULATION

*S.J. Viegas, A. Paulino, M.A. Ferreira, C. Florindo, J.P. Gomes, M.J. Borrego
Instituto Nacional de Saúde, Lisbon, Portugal*

Objective: This work aims to evaluate 3 different approaches, Nugent method, Amsel's criteria and Gardnerella vaginalis (GV) overgrowth, to the laboratory diagnose of bacterial vaginosis (BV). **Methods:** Vaginal swabs were collected from 1365 women (aged 14-66 years) attending to general practice (GP) or family planning (FP) clinics of the Lisbon area during 2004. The laboratory diagnose of BV was performed in the Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA), Lisbon, according to the Nugent method, Amsel's criteria and GV overgrowth. The GV presumptive identification was achieved through culture in GV agar (bioMérieux), Gram staining and the sulphonamide resistance/metronidazole sensibility character

of isolates. *Trichomonas vaginalis* (TV) was screened using wet mount microscopy and culture (Roiron media). A total of 371 women were further evaluated for urogenital mycoplasmas using Mycoplasma-IST2 kit (bioMérieux) and A6 agar culture.

Results: 14.7% women were BV positive by Nugent method, 1.8% by Amsel's criteria and 5.1% were GV positive. 2.3% were TV positive. Fourteen BV positive women according to Amsel's had a GV positive culture that could also be obtained from 56 Nugent's BV positive. Thirteen Nugent's and Amsel's BV positive women had concomitantly GV. Eleven Nugent's BV positive were infected by TV. Two Amsel's BV positive women were infected by TV. Three GV positive women were also TV positive. All BV positive women screened for urogenital mycoplasmas revealed infected.

Conclusions: BV cases could be detected more easily by the Nugent method than by the Amsel's criteria or the GV overgrowth. TV changes vaginal pH and favours the unbalance of vaginal ecosystem related to BV, leading to a pathogenic overgrowth of urogenital mycoplasmas. In our population TV was a BV cofactor (17/31 positive cases, 54.8%), urogenital mycoplasma infection was present and, as described in literature, *Mycoplasma hominis* was the most frequent (47.8%).

WP-116 DOES CLINICAL RESEARCH IMPROVE CLINICAL PRACTICE?

A.N. Morton¹, C.S. Bradshaw², C.K. Fairley²

¹ Melbourne Sexual Health Centre, Melbourne, Australia

² School of Population Health, Melbourne, Carlton, Australia

Objective: It has become standard practice to offer patients attending public Sexual Health Clinics in Australia participation in research studies. Potential participants are told that research will lead to improvements in diagnosis and treatment. We investigated the affect of the introduction of a large clinical trial on clinic practice by performing audits.

Method: We conducted two audits of one hundred consecutive files of women attending Melbourne Sexual Health Centre with the diagnosis of Bacterial Vaginosis (BV). The first audit was conducted prior to commencement of a cross-sectional study of BV and the second was conducted following completion of enrolment. The audits recorded clinicians' diagnostic criteria and treatment prescribed. The study used the Amsel and Nugent methods for the diagnosis of BV and treatment with seven days of oral metronidazole. Recruitment ran for fourteen months. All medical staff were instructed both individually, at staff meetings and received regular emails regarding the diagnostic criteria and treatment guidelines for BV.

Results: Improvements were found in both the use of the diagnostic criteria and the treatment prescribed following the study period. While the use of Amsel's criteria for the diagnosis of BV rose from 52% to 64% of consultations, this did not reach statistical significance ($p=0.09$). However the use of pH paper in the diagnosis of BV by clinicians was statistically significant, rising from 16% to 31% of consultations ($p=0.01$). Treatment changes were highly statistically significant, with the use of 5-7 days of metronidazole rising from 13% to 67% ($p<0.01$) compared with other treatments.

Conclusion: Introduction of clinical research substantially improved clinical practice. This paper will present the audit findings and discuss further improvements in diagnosis.

WP-118 BACTERICIDAL EFFECT OF A MICROBICIDE ON PENILE MICRO FLORA AMONG UNCIRCUMCISED MALES

J.N.M. Mwangi¹, S. Jensen², E.A. Bukusi³, C.R. Cohen⁴, R. Coombs², K. Holmes²

¹ Kenya Medical Research Institute, Nairobi, Kenya

² University of Washington, Washington, United States of America

³ University of Nairobi, Nairobi, Kenya

⁴ Univ. of California, San Francisco, California, United States of America

Objectives: Male genitalia may harbor bacterial vaginosis (BV) associated organisms, which might be re-transmitted to female partners during unprotected sexual intercourse. We sought to determine the penile micro-flora of men whose female partners tested positive for BV and to evaluate the microbicidal effect of an ethanol based emollient gel on these bacteria.

Methods: We recruited willing uncircumcised men, who were at least 18 years of age and whose female partners with whom they had sexual intercourse in the last 24 hours were BV positive. Enrollees were requested to abstain from both bathing and sexual intercourse for 24 hours. Sub-prepuce and shaft swabs were collected from these men initially and one, thirty minutes and 24 hours after application of the microbicide. Swabs were placed in transport media and delivered to the laboratory for processing. The isolates were identified semi quantitatively.

Results: BV associated anaerobic organisms were isolated, e.g. *Fusobacterium* species, two (40%) and 0%, *Prevotella* species, four (80%) and 0%, *Bacteroides* species, one (20%) and 0%, and *Peptostreptococcus* species, four (80%) and two (40%) in sub prepuce and penile shaft of five men respectively. Penile microbial flora was comprised of aerobes, mostly human skin flora, and both Gram-positive and Gram-negative anaerobes. Specifically, flora obtained from the sub prepuce was comprised mostly of anaerobes while that yielded from the shaft was mostly aerobes. Concentration of bacterial isolates from the sub-prepuce and shaft decreased by 2-log, 30 minutes after application of the microbicide. However, after 24 hours, the initial organisms increased by 1-log from the reduced amount. Opportunistic organisms (not isolated before application of microbicide) were also isolated.

Conclusions: BV-associated anaerobic bacteria were present mostly in the sub prepuce. Organisms were eliminated within 30 minutes of microbicide use (in vivo), but increased thereafter.

WP-117 REAL-TIME PCR ANALYSIS OF ATOPOBIUM VAGINAE IN PATIENTS WITH BACTERIAL VAGINOSIS TREATED WITH METRONIDAZOLE GEL

M.J. Ferris¹, J. Norori¹, D.H. Martin²

¹ Research Inst. for Children, New Orleans, United States of America

² LSU Health Sciences Center, New Orleans, United States of America

Objectives: Bacterial vaginosis (BV) is a common condition characterized by an increase in abnormal (non-Lactobacillus) bacterial populations in the vagina. BV is linked to a number of important medical conditions including HIV transmission. The cause of BV is not understood and treatment failures are common. Using 16S rRNA PCR assays, we discovered and reported a novel association between BV and *Atopobium vaginae* (Av), a fastidious metronidazole-resistant anaerobe. We hypothesized that Av is associated with metronidazole treatment failures.

Methods: We designed species-specific PCR primers targeting the 16S rRNA gene of *Av*, developed a real-time (RT) PCR assay, and used it to measure the relative quantity of *Av* in vaginal swabs obtained from six BV patients, pre- and post-treatment with 0.75% metronidazole gel daily for 5 days. Study enrollment required the presence of all four of Amsel's criteria plus a Nugent score (NS) of ≥ 4 . **Results:** Two of the six patients failed treatment as defined by a post-treatment NS of 8. One of these was also a clinical failure. A third patient had a normal NS post-treatment but was judged a clinical failure because of a persistently elevated vaginal pH. RT PCR showed that *Av* was detectable in all patients, pre- and post-treatment. Pre-treatment concentrations of *Av* were higher in the three NS/clinical failures than in the three cases that were completely cured. Moreover, the two NS failures had the highest *Av* concentrations in their four week post-treatment specimens. **Conclusions:** While these data are limited by the small sample size, they suggest that high concentrations of *Av* in women with BV as determined by RT PCR may predict metronidazole treatment failures. Furthermore, it is possible that *Av* could have a role in such failures.

WP-119 A RANDOMISED, SINGLE-BLIND (INVESTIGATOR-BLINDED), STUDY OF INTRAVAGINAL TEA TREE OIL GEL VERSUS INTRAVAGINAL METRONIDAZOLE GEL IN THE TREATMENT OF BACTERIAL VAGINOSIS (BV)

J.D. Wilson¹, C.F. Carson², S.J. Wellard¹, T.V. Riley²

¹ Leeds General Infirmary, Leeds, United Kingdom

² University Western Australia, Perth, Australia

Objectives: Tea tree oil has in vitro broad spectrum antibacterial activity which includes many of the bacteria implicated in BV. Anecdotal evidence suggests it may be useful in the treatment of BV but this has not been evaluated scientifically. The aim of the study was to compare the efficacy and safety of intravaginal tea tree oil with intravaginal metronidazole gel in the treatment of BV. **Methods:** Symptomatic women with BV diagnosed by Amsel and Nugent criteria were randomly assigned either intravaginal tea tree oil gel 5% (5 g once daily for 5 days) or intravaginal metronidazole gel 0.75% (5 g once daily for 5 days). An interim telephone call was conducted at day 6-9. Follow-up visit was between days 21-30. Intent to treat analyses were performed.

Results: 51 women enrolled in the study, 26 were randomised to metronidazole gel and 25 to tea tree oil gel, 7 using metronidazole and 6 using tea tree oil failed to attend for follow-up. Using Amsel's and Nugent's criteria, persistence or recurrence of BV was present in 38.5% and 34.6% of the metronidazole gel group, and in 68% and 60% of the tea tree oil group ($p=0.03$).

There were no severe adverse reactions. Mild itching/irritation were reported by 9 women, 6 had received tea tree oil and 3 metronidazole, 2 women stopped medication because of moderate to severe itching/irritation, 1 had received tea tree oil and 1 metronidazole.

Conclusions: In this small study tea tree oil vaginal gel was inferior in efficacy to metronidazole vaginal gel in the treatment of BV. However, tea tree oil gel was as well tolerated as metronidazole gel. A new thermoreversible formulation of intravaginal tea tree oil gel has now been produced to try to improve its efficacy. This will need further clinical evaluation.

WP-120 RISKS FOR INFECTION WITH NOVEL BACTERIA ASSOCIATED WITH BACTERIAL VAGINOSIS (BV)

J.M. Marrazzo¹, K.K. Thomas¹, K. Ringwood¹, T. Fiedler², D.N. Fredricks²

¹ University of Washington, Seattle, United States of America

² Hutchinson Cancer Research Ins, Seattle, United States of America

Objective: Characterize risks for infection with three novel BV-associated bacteria (BVAB1, 2, and 3, previously undescribed members of the Clostridiales order) we have detected by cultivation-independent methods.

Methods: We studied 106 women (40 BV+ and 66 BV- by Nugent criteria). Species-specific 16S rDNA PCRs were used to detect BVAB1, 2, and 3 in vaginal fluid. Demographic data were obtained on all women, and detailed behavioral data obtained for most (75%). Univariate relationships between detection of BVAB1, 2 and 3 and subjects' characteristics were examined. Results of multivariate analyses will be presented.

Results: Detection of any BVAB was directly associated with younger age (25.7 vs. 24.2 y, $P=0.03$), report of recent (3 months) receptive oral-anal sex (OR (95% CI) 3.9 (1.4, 11) or vaginal sex toy use (OR 3.1, 1.2, 8.1) with a female partner, and complaint of abnormal vaginal discharge at evaluation (OR 3.1 (1.3, 7.4)). Detection of BVAB1 was associated with higher number of self-reported lifetime BV episodes (5.7 vs. 1.8; $P=0.04$). Women with BVAB3 detected were more likely to be non-white (OR 3.7 (1.2, 12)). Women with either BVAB1 or BVAB3 detected reported a higher number of recent male sex partners (prior 6 months, 1.4 vs. 0.8; $P=0.04$). No BVAB detection was associated with time to or frequency of last intercourse with males.

Conclusions: Detection of all BVAB is associated with older age, receptive oral-anal sex, and report of abnormal vaginal discharge. Other behavioral risks for specific BVAB were distinct, and may explain variation of BV incidence by sexual practices. Our findings suggest that vaginal infection with BVAB may account for a high proportion of symptomatic, and possibly recurrent, BV, and support evaluation of the oropharynx and rectum as potential reservoirs for these uncharacterized bacteria.

WP-121 ASSOCIATIONS BETWEEN BACTERIAL MORPHOTYPES SEEN ON GRAM STAIN AND INFECTION WITH NOVEL BACTERIA ASSOCIATED WITH BACTERIAL VAGINOSIS (BV)

K.K. Thomas¹, D.N. Fredricks¹, K.J. Agnew¹, T. Fiedler², J.M. Marrazzo²

¹ University of Washington, Seattle, WA, United States of America

² Fred Hutchinson Cancer Rs. Ctr, Seattle, WA, United States of America

Objective: Characterize associations between bacterial morphotypes seen on Gram stain and infection with three novel BV-associated bacteria (BVAB1, 2, and 3, previously undescribed members of the Clostridiales order) we have detected by cultivation-independent methods.

Methods: We studied vaginal fluid samples from 30 women positive for BV by Amsel criteria. Species-specific 16S rDNA PCRs were used to detect BVAB1, 2, and 3. Gram stains were performed. Because BVAB1 and *Mobiluncus* have similar morphologies by in situ hybridization, we also examined presence of *Mobiluncus* species by PCR where *Mobiluncus* morphotypes appeared on Gram stain.

Results: All 30 samples had Gardnerella and Bacteroides morphotypes seen on Gram stain. Lactobacillus morphotypes were rare, appearing in just one sample. None of these morphotypes were associated with presence of BVAB1, 2, or 3. However, appearance of Mobiluncus morphotypes was more frequent in BVAB1+ women compared with BVAB- women (8/9 (89%) vs. 3/21 (14%), $p=0.002$), and in BVAB3+ women (5/7 (71%) vs. 6/23 (26%), $p=0.07$). Gram positive cocci were more common in BVAB3+ women (4/7 (57%) vs. 3/23 (13%), $p=0.03$), and may have been more common in BVAB1+ women (4/9 (44%) vs 3/21 (14%), $p=0.15$). Most subjects (87%) had BVAB2, so more subjects will be required to assess differences in morphotypes by BVAB2 status. PCR identified Mobiluncus species in 91% of samples positive for Mobiluncus morphotypes on Gram stain and in 32% of negative samples.

Conclusions: Both BVAB1 and BVAB3 appear to be associated with Mobiluncus morphotypes and Gram positive cocci on Gram stain. The strong association between BVAB1 and Mobiluncus morphotypes may be due to simultaneous colonization with BVAB1 and Mobiluncus species or to visualization of BVAB1 as Mobiluncus morphotypes.

WP-123 THE ASSOCIATION BETWEEN INTRAVAGINAL PRACTICES, BATHING, AND BACTERIAL VAGINOSIS IN HIV-1 SERONEGATIVE FEMALE SEX WORKERS IN MOMBASA, KENYA

W.M. Hassan¹, L. Lavreys², V. Chohan³, K. Mandalya³, W. Jaoko³, J.O. Ndinya-Achola³, K.K. Holmes², R.S. McClelland²

¹ Uni. of Nairobi/Uni. of Washington, Seattle, United States of America

² University of Washington, Seattle, United States of America

³ University of Nairobi, Nairobi, Kenya

Objective: To analyze the relationship between intravaginal practices, bathing, and bacterial vaginosis (BV) among HIV-1 seronegative female sex workers (FSWs).

Methods: Between May 2003 and September 2004, a cross-sectional study was carried out among HIV-1 seronegative FSWs enrolled in an ongoing vaginal infections trial. Detailed information about intravaginal practices and bathing habits were collected at enrolment. Bacterial vaginosis was determined by Gram stain score.

Results: Data on the first 224 women enrolled were analyzed. One hundred and ninety-four women (87%) reported intravaginal washing (IVW), either using a finger or a piece of cloth. Douching with a stream of water was uncommon in this population. In analyses stratified by frequency of IVW, increasing frequency was associated with increasing likelihood of BV ($p=0.05$; Figure 1). In a multivariate analysis controlling for age, sexual behavior, and hormonal contraceptive use, lubrication with petroleum jelly (OR 3.2, 95% CI 1.6-6.4, $p=0.001$), lubrication with saliva (OR 2.6, 95% CI 1.2-5.8, $p=0.02$), and bathing less than the median for the cohort (14 times per week; OR 6.4, 95% CI 1.6-26.5, $p=0.01$) were associated with increased likelihood of BV (Table 1). Different intravaginal practices were associated with different abnormalities on the vaginal Gram stain.

Conclusions: Intravaginal practices were common in this cohort of Kenyan FSWs. Specific practices including increasing frequency of IVW, vaginal lubrication with saliva or petroleum jelly, and less frequent bathing were associated with an increased likelihood of BV. Because BV has been associated with an increased risk for HIV-1 infection, it seems plausible that intravaginal practices might

increase HIV-1 susceptibility through a mechanism mediated by alterations in the vaginal flora. Modification of intravaginal and hygiene practices could provide an inexpensive female-controlled strategy for reducing the risk of HIV-1 acquisition.

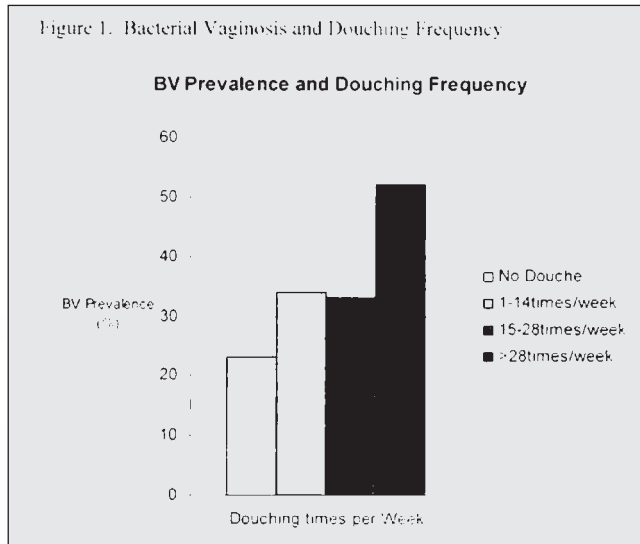


Figure 1

Table 1: Association of Bacterial Vaginosis with Intravaginal and Bathing Practices

	OR (95% CI)	aOR* (95% CI)
Douches 1-14 times week	1.5 (0.5 - 4.3) $p = 0.5$	1.5 (0.5 - 4.5) $p = 0.5$
Douches 15-28 times week	1.5 (0.5 - 4.2) $p = 0.4$	1.4 (0.5 - 4.1) $p = 0.5$
Douches >28 times week	3.4 (1.0 - 11.3) $p = 0.05$	3.3 (1.0 - 11.6) $p = 0.06$
Lubricates with petroleum jelly	3.1 (1.5 - 6.1) $p = 0.001$	3.2 (1.6 - 6.4) $p = 0.001$
Lubricates with saliva	2.8 (1.3 - 5.9) $p = 0.009$	2.6 (1.2 - 5.8) $p = 0.02$
Uses cloth to clean vagina	4.2 (1.1 - 15.7) $p = 0.03$	3.1 (0.8 - 12.3) $p = 0.1$
Bathe < 14 times week	5.0 (1.3 - 19.4) $p = 0.02$	6.4 (1.6 - 26.5) $p = 0.01$

Table 1

SESSION: WP - C12 EPIDEMIOLOGY- BACTERIAL VAGINOSIS

WP-122 PREVALENCE AND RISK FACTORS FOR BACTERIAL VAGINOSIS IN HIGH RISK WOMEN, TANZANIA

D. Watson-Jones¹, H. Weiss², M.L. Shushu³, M. Rusizoka¹, I. Hambleton³, D. Everett³, J. Chagalucha³, L. Knight³, R. Hayes², P. Hay⁴

¹ AMREF, Mwanza, Tanzania

² LSHTM, London, United Kingdom

³ NIMR Mwanza Centre, Mwanza, Tanzania

⁴ St George's Hospital, London, United Kingdom

Objectives: Bacterial vaginosis 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. The prevalence of BV and risk factors for BV have been examined in women in Tanzania

Methods: A double-blind, placebo-controlled trial of HSV-2 suppressive therapy with aciclovir (ACV) 400mg bd is being conducted in HSV-2 seropositive female bar, hotel and other facility workers in NW Tanzania. At enrolment into the cohort, HIV and RTI prevalence were measured.

Results: 1001 HSV-2 seropositive women were enrolled. 38.8% were HIV-seropositive, 9.8% had candidiasis, 30.8% evidence of lifetime infection with syphilis, and 30.5% had *Trichomonas vaginalis* (TV) infection. 68.3% had BV by the Ison-Hay score, 16.0% had normal flora and 15.5% were intermediate. 71.2% reported douching within the past day. Factors independently associated with BV included young age, being divorced or separated, fewer live births, number of partners in the last 3 months, younger age at sexual debut, poor knowledge of HIV transmission and using cloths for menstrual hygiene. BV was also associated with HIV infection (OR=3.36, CI 2.0-5.6); TV (OR=2.23, CI 1.2-4.0), and PID (OR=2.00, CI 0.9-4.5). Among women who had ever douched, BV was most prevalent among those who douched using traditional methods, or disinfectant or dry cloth, rather than water or soap and water. BV was more prevalent among women who did not douch before sex, or who douched before going to the toilet.

Conclusions: Female HSV-2 seropositive facility workers have an extremely high prevalence of BV. Given the association of BV and adverse pregnancy outcome and HIV, strategies that reduce preventable risk factors for BV warrant further investigation.

WP-124 FEMALE AND MALE RISK FACTORS FOR BACTERIAL VAGINOSIS

C.M. Maingi¹, E.A. Bukusi¹, R. Nguti², C.R. Cohen³, N.S. Mutai¹, K. Holmes⁴

¹ *Kemri, Nairobi, Kenya*

² *University of Nairobi, Nairobi, Kenya*

³ *University of California, SF, San Francisco, United States of America*

⁴ *University of Washington, Seattle, United States of America*

Objectives: Bacterial vaginosis (BV), the most prevalent bacterial vaginal infection, frequently recurs after treatment and is linked to female HIV acquisition. This study sought to determine the female and male partner risk factors for BV.

Methods: Couples presenting to Nairobi City Council clinics, over 18 years old and willing to participate in the study were recruited. Demographic and clinical information, blood for HIV and syphilis testing and vaginal specimens to test for BV were collected. BV was diagnosed using Nugent's criteria. Simple univariate and logistic regressions were used to analyze the data.

Results: BV was detected in 184 (39%) of the 469 women screened. 96% of the women screened were either married or cohabiting with their male partner. Women with BV were on average 1.5 years younger than women without BV ($p < .05$), more likely to report an uncircumcised partner (22% vs. 14%, $p < .05$), had been engaged in their current relationship for less time (4 years vs. 5 years, $p < .01$), and were more likely to be HIV seropositive (27% vs. 16%, $p < .01$). In multivariate analysis, being older (OR=.96; 95% CI .92-.99), HIV negative (OR=.37; 95% CI .23-.60), with a HIV negative male partner (OR=.49; 95% CI .30 - .79), lower frequency of sexual intercourse (OR=1.03; 95% CI 1.01-1.06) and longer duration of relationship of the male partner with the woman (OR=.93; 95% CI .89 - .97) were associated with an altered odds of BV in women.

Conclusion: BV was highly prevalent and correlated with predominantly time dependent risk factors in both the participant and her partner. While modifiable behavioral factors to reduce the risk of BV appear elusive, discovery of a microbicide or prophylaxis to prevent BV should be a priority.

WP-125 RECURRENT BACTERIAL VAGINOSIS IN ADOLESCENTS

R.M. Brotman¹, E.J. Erbelding², R.M. Jamshid², M.A. Klebanoff³, J.M. Zenilman², K.G. Ghanem²

¹ *Johns Hopkins School of Public Health, Baltimore, United States of America*

² *Johns Hopkins Medicine, Baltimore, United States of America*

³ *NICHD NIH DHHS, Rockville, United States of America*

Objectives: Bacterial vaginosis (BV) is common among reproductive age women. Episodes recur frequently and few studies have investigated factors associated with recurrence. We describe here characteristics associated with multiple BV episodes in adolescents attending STD clinics.

Methods: We conducted a retrospective cohort study of 108 girls with ? 3 episodes of BV and compared them to 216 girls with no documented BV episodes. The girls were age 11-18 years and had visited a Baltimore STD clinic in 1990-2002. Girls with and without BV were matched on total number of clinic visits. BV diagnosis was based on Amsel's criteria. We used generalized estimating equations to calculate odds ratios with 95% confidence limits.

Results: The mean age was 15.5 years (range 11.1-17.9). 97.5% were African-American. The median number of visits was 7 (range 3-40). Girls with BV were more likely to report use of alcohol [OR 1.74 (CI: 1.24-2.45)]. In multivariate analysis, participants with multiple BV episodes were more likely to report cannabis use [OR 2.31 (CI: 1.51-3.55)], prior history of gonorrhoea [OR 2.13 (CI: 1.27-3.58)] and chlamydia [OR 2.37 (CI: 1.25-4.52)], oral sex [OR 1.89 (CI: 1.06-3.37)] and two or more sexual partners in the last 30 days [OR 1.58 (CI: 1.03-2.42)]. After adjusting for sexual behaviors, neither gonorrhoea nor chlamydia lower tract infections were more common in girls with multiple BV episodes; however, girls with recurrent BV were at greater risk for pelvic inflammatory disease [OR 2.07 (CI: 1.20-3.59)]. **Conclusions:** Adolescent girls with multiple BV episodes may be at increased risk for pelvic inflammatory disease and its sequelae. This high-risk population may benefit from targeted behavioral and clinical interventions.

SESSION: WP - A14 BASIC SCIENCE- TRICHOMONIASIS

WP-126 DEVELOPMENT OF A NONHUMAN PRIMATE MODEL FOR TRICHOMONAS VAGINALIS INFECTION

D.L. Patton¹, K.J. Agnew¹, Y.T. Cosgrove Sweeney¹, P.K. Cummings¹, S.L. Hillier²

¹ *University of Washington, Seattle, WA, United States of America*

² *Magee Womens Hospital, Pittsburgh, United States of America*

Objectives: *Trichomonas vaginalis* is a prevalent STI associated with increased risk of HIV infection. A reliable animal model of *T. vaginalis* infection would enable scientists to further investigate trichomoniasis infection.

Methods: Four macaques were enrolled in a pilot study, paired with three negative control animals. Metronidazole treatment was

initiated after day 14 in this study. Eight additional animals participated in a two-arm (T. vaginalis v. sham inoculated) cross-over study that followed animals for 5 weeks before initiating treatment. In all, twelve *Macaca nemestrina* monkeys were challenged with a single intravaginal inoculation of $6.6-7.1 \times 10^5$ trichomonads (ATCC 50148). Vaginal culture (InPouch™ TV), colposcopic exam, cervical cytokine analysis, vaginal microbiology and pH were assessed at baseline, day 2, and weekly thereafter.

Results: Ten of twelve challenged animals tested positive for trichomoniasis infection at each visit. One animal tested culture positive on days 2 and 7, but negative thereafter. Only one animal did not infect. Following oral treatment with metronidazole (35mg/kg/day X3 days), infection was resolved in all animals. No serious adverse findings were documented by colposcopy throughout the five week study; however mild erythema was noted more frequently in the test than the control arm. Cytokine analysis from the pilot study revealed T. vaginalis infected animals developed increased levels of GM-CSF, IL-4 and MIP-1 α in cervical swabs, compared to control animals. These cytokines indicate macrophage activation, which suggests an immune response to infection. Further cytokine data are pending. Trichomoniasis infection did not lead to shifts in vaginal microbiology constituents nor to vaginal pH.

Conclusions: These data show that a single inoculation with *Trichomonas vaginalis* results in infection which persists in the vagina of the pigtailed macaque. The resultant cytokine profile provides evidence of host immune response.

WP-127 GENOTYPING OF TRICHOMONAS VAGINALIS

T. Crucitti¹, S. Abdellati¹, V. Cuylaerts¹, J. Vandepitte¹, C. Mulenga², E. van Dyck¹, A. Buvé¹

¹ Institute of Tropical Medicine, Antwerp, Belgium

² TDRC, Ndola, Zambia

Objectives : We set out to develop a genotyping system for T.vaginalis (Tv) with the aim to study the dynamics of transmission and the pathogenicity of Tv.

Methods: A nested PCR was designed for the amplification of the actin gene of Tv strains obtained after culture. Using 3 restriction enzymes (Hind II; Mse I; Rsa I) different patterns of Tv strains were detected.

Results: A total of 192 strains from young girls (aged 13-16 years), sex workers and pregnant women from Ndola (Zambia) and 65 strains from sex workers in Kinshasa (DR Congo) were obtained by culture in InPouch and were genotyped with the above designed Restriction Fragment Length Polymorphism (RFLP) technique. Ten different genotypes were found in Ndola and in Kinshasa. In Ndola there was no difference in the distribution of the genotypes between the different study groups. However a difference was noted in the study group of young girls, in which 8 different genotypes were detected in the subgroup of non-sexually active girls compared to 4 in the subgroup of sexually active girls.

Genotype E was significantly more prevalent among sex workers in Kinshasa than in Ndola (56.9% vs 4.4%, $p < 0.0001$). Among sex workers in Ndola the predominant genotype was genotype G (44.4%) which was found in only 21.5% of sex workers in Kinshasa ($p < 0.02$).

Conclusion: With our RFLP technique we were able to distinguish 10 genotypes of Tv. There were marked differences in the distribution of genotypes between sex workers in Ndola and in Kinshasa. More genotypes were detected among the non-sexually active girls, compared to the sexually active girls.

SESSION: WP - B14 CLINICAL SCIENCE, INCL. DIAGNOSTICS AND TREATMENT- TRICHOMONIASIS

WP-128 ANTIMICROBIAL SUSCEPTIBILITY TESTING AND CHARACTERISATION OF HSP70 GENE OF TRICHOMONAS VAGINALIS

A.A. Hoosen, M.A. Mawela, L. Fernandes

University Limpopo - Medunsa Campus, Pretoria, South Africa

Objectives: To determine the invitro susceptibility of local T. vaginalis strains to metronidazole, clotrimazole and amphotericin B, and to characterise the HSP70 gene

Methods: Susceptibility of 10 local T. vaginalis strains to metronidazole was tested according to Meri et al, (2000) while susceptibility to metronidazole, clotrimazole and amphotericin B was done according to Upcroft & Upcroft, (2001). RNA was isolated and the designed RT-PCR primers (Primer3 output program) from GenBank sequence AF053326 amplified a target 226bp HSP70 gene sequence. The RT-PCR product was analysed by electrophoresis and the gene was sequenced by an automated sequencer (Inqaba Biotech, RSA). The comparison of local T. vaginalis HSP70 gene sequences to GenBank sequences was done using the BLAST program after which the sequences were aligned and translated manually.

Results: Anaerobic MICs ranged from 0.40 μ g/ml to 2.00 μ g/ml (mean MIC=1.002 μ g/ml) while aerobic MICs ranged from 0.78 μ g/ml to 4.00 μ g/ml (mean MIC=2.260 μ g/ml) against metronidazole. When comparing the three drugs tested, metronidazole was found to have the lowest MICs (MIC<0.80 μ M/ml) compared to clotrimazole (MIC from 25.00-50.00 μ M/ml) and amphotericin B (MIC>100 μ M/ml). The HSP70 genes of local T. vaginalis strains were variably but reasonably related to GenBank sequences AF053326 (homology=93-99%) and TVU93873 (homology=90-93%).

Discussion: This study demonstrated that all the local T. vaginalis strains possess the HSP70 gene with sequences related to GenBank sequences (mean of 95.90% to AF053326 and mean of 91.70% to TVU93873). Using the method of Meri et al, (2000), all strains were highly susceptible to metronidazole with an average MIC < 4 μ g/ml. Of the three drugs compared in this study metronidazole showed the lowest MIC values. The comparison of the MIC values to the sequences of HSP70 gene showed no correlation. However, comparison for metronidazole resistant strains of T. vaginalis needs to be undertaken.

WP-129 DETECTION OF TRICHOMONAS VAGINALIS (TV) IN FEMALE URINE AND VAGINAL SPECIMENS USING A TRANSCRIPTION-MEDIATED AMPLIFICATION (TMA) ASSAY

D.H. Martin¹, R.A. Lillis¹, B.A. Smith¹, M. Nsuami¹, C. Cammarata¹, D. Diodene¹, K. Dickey²

¹ *LSU Health Sciences Center, New Orleans, United States of America*

² *Gen-Probe Incorporated, San Diego, CA, United States of America*

Objectives: To determine the sensitivity and specificity of a new, research-use TMA assay for the detection of TV in female urine and vaginal swab (VS) specimens.

Methods: Adult women attending the New Orleans STD clinic were enrolled. A first voided urine specimen was obtained initially. At the time of the speculum examination, VS specimens were obtained for TV culture and the TMA assay. The TMA assay includes a magnetic bead-based target capture step, TMA, and a Hybridization Protection Assay for detection following the standard APTIMA (Gen-Probe Incorporated) assay protocols. Culture was used to determine the infection status of each subject.

Results: Four hundred women were enrolled, of whom 95% were African American. TV cultures of vaginal swabs were positive in 87 (21.8%) of the subjects. The sensitivity of the TMA assay in urine and VS specimens was 93.6% and 100%, respectively, while the specificity was 97.4% and 48.9%, respectively. As there appeared to be a contamination problem with VS specimens for the TMA assay, all clinical and laboratory procedures were reviewed. This investigation revealed that a common container used to temporarily hold vaginal swabs while the investigator completed the pelvic examination was the likely source even though it appeared that only the swab shafts, not the tips, directly touched the container walls.

Conclusions: The data from this study suggests that TMA testing of female urine specimens could be a useful, non-invasive TV screening assay. A urine specimen placed in the TMA assay processing medium for the purpose of *C. trachomatis* and *N. gonorrhoeae* testing also could be tested for TV, thus efficiently adding this organism to the TMA STD screening repertoire. Additionally, clinicians should be aware of the potential for contaminating specimens intended for nucleic acid amplification testing.

WP-130 RECURRENT TRICHOMONAS VAGINALIS AMONG HIV POSITIVE AND NEGATIVE WOMEN

P. Kissinger¹, N. Schmidt¹, R.A. Clark², T.H. Jackson¹, J. Dumestre², A. Powell¹, H. Smith¹, D.H. Martin²

¹ *Tulane University, New Orleans, United States of America*

² *Louisiana State University, New Orleans, United States of America*

Objectives: To describe the TV recurrence rates and associated behaviors in two populations of women in New Orleans.

Methods: TV culture positive women from Family Planning (FP) and HIV Outpatient Program (HOP) clinics were enrolled, retested for TV at one month and asked behavioral information. Women were treated 2 grams of metronidazole as a single dose. At HOP all women were given single dose metronidazole to deliver to their sex partners and at FP, one-third were randomized to give medication to give to their sex partners. Specimens of women with clinical resistance were tested for metronidazole sensitivity.

Results: Of 376 TV positive women with follow-up at FP, 98.9% were African American (AA), mean age was 26 (range 15.3-44.7), 12.2% had > 1 partner in the last 60 days. During follow-up, 4% acquired a new partner, 46.3% resumed sex, 57.7% of those who resumed sex said they wore a condom for all sex acts, 71.7% said partners told them they took medicine and 8.2% tested positive at 1-month. Of 81 TV/HIV positive at HOP, mean age 37.3 (range 18.3-54.6), 58 were on ART, 92.4 were AA, 14.2% had > 1 partner in the past 4 weeks at baseline. At follow-up, 71.9% resumed sex and 78.3% said they used condoms consistently and 17.3% retested positive. No association between recurrence and unprotected sex was observed in either cohort. Thirteen women were clinically resistant to metronidazole (FP n=8, HOP, n=5) and most had mild to moderate in lab testing.

Conclusion: A high rate of TV recurrence was observed in these two populations which was not associated with reexposure, lack of partner treatment or metronidazole resistance. Single dose metronidazole may not constitute optimal TV therapy, particularly for HIV-positive women.

WP-131 COMPARISON BETWEEN THE GEN-PROBE TMA TRICHOMONAS VAGINALIS ASSAY AND A REAL-TIME PCR, B-TUB FRET, FOR THE DETECTION OF TRICHOMONAS VAGINALIS

A.J.H. Hardick¹, J.P.H. Hardick¹, R.L.M. Miller¹, B.J.W. Wood¹, T.C.Q. Quinn², C.A.G. Gaydos¹

¹ *Johns Hopkins University, Baltimore, United States of America*

² *NIAID, NIH, Bethesda, United States of America*

Objectives: To compare two assays for *Trichomonas vaginalis* (TV) detection, the Gen-Probe transcription-mediated amplification assay (TMA-TV) (research use only) and a real-time PCR, (B-TUB). TV causes vaginitis, urethritis, and cervicitis.

Methods: Men (N=290) and women (N=325) were screened in STD clinics. Duplicate male urine samples and female vaginal swabs were obtained. Processing and testing for TMA-TV was according to Gen-Probe's instructions. B-TUB samples were extracted on the Roche MagNAPure-LC-robot and screened by B-TUB FRET PCR, targeting the β -tubulin gene. Discrepant samples were retested using TMA-TV, B-TUB, and another PCR using primers TVK3/4. True positives were defined as 2 positive results by 2 different tests.

Results: 611 had matching samples for analysis (290 men; 321 women). Overall, 59 samples were positive by B-TUB and TMA-TV; 535 were negative by both; 15 were TMA-TV positive and B-TUB negative; and 2 were TMA-TV negative and B-TUB positive (Initial TMA-TV sens. 96.7%; spec. 97.5%). After resolution of the 15 TMA-TV positive/B-TUB negative, 10 resolved as true positives (7 females and 3 males). Of the 2 TMA-TV negative/B-TUB positive, 1 (female) resolved as a true positive. Resolved TMA-TV sensitivity was 98.6% (69/70) and specificity was 99.1% (536/541). For males, resolved sensitivity and specificity were 100% (13/13) and 100% (277/277), respectively. For females, resolved sensitivity and specificity were 98.2% (56/57) and 98.1% (259/264), respectively. 7/12 female TMA-TV positive/B-TUB negative samples were TVK3/4 positive; 2/12 were TVK3/4 negative; and 2/12 female TMA-TV positive/B-TUB negative samples were QNS for TVK3/4 analysis and were graded true negatives based on repeat TMA-TV and B-TUB negative tests. 1/12 was QNS for discrepant analysis.

Conclusions: The prevalence of trichomoniasis was 11.5%. The research Gen-Probe TMA-TV assay has excellent sensitivity and specificity when compared to real-time B-TUB FRET PCR.

SESSION: WP - C14 EPIDEMIOLOGY- TRICHOMONIASIS

WP-132 SOCIO-DEMOGRAPHIC AND BEHAVIOURAL FACTORS ASSOCIATED WITH TRICHOMONAS VAGINALIS (TV) INFECTION IN AN ANTENATAL POPULATION IN KUMASI, GHANA

A. Adu-Sarkodie¹, B.K. Opoku², H.A. Weiss¹, D.C. Mabey¹

¹ London School of Hygiene & Tropical Med, London, United Kingdom

² School of Medical Sciences, Kumasi, Ghana

Objectives: Trichomonas vaginalis (TV) infection is the most endemic treatable sexually transmitted infection in many populations with high HIV prevalence. The control of TV may be important in the control of HIV infection and in the reduction of adverse pregnancy outcomes. . This would however depend on laboratory diagnostic tools with high performance characteristics for the detection of TV. Unfortunately in many resource poor countries, these tools are not available. The elucidation of historic and sociodemographic characteristics that could predict infection in a population would be useful in the diagnosis and/or treatment of infection.

Methods: A random sample of antenatal clinic attenders in Kumasi, Ghana were screened for TV infection and 206 TV cases were matched with 412 controls. Multiple logistic regression was used to assess association of TV infection with sociodemographic, genital hygiene and sexual practices factors. The sensitivity, specificity and predictive values of factors in the final multivariate model were calculated.

Results: The prevalence of TV infection in this population was 4.9%. Young age (< 20 years), ethnicity other than Akan/northerner, no religion and douching were significantly associated with infection. Complaining of vaginal discharge, not using toilet roll for menstrual hygiene and time of last sexual intercourse before enrolment being more than 2 weeks, were also significantly associated with infection. The diagnostic values of all the factors predicting TV infection was poor with sensitivities 3.7%-18% and positive predictive values of 12.3-18.4%.

Conclusion: In this low TV prevalent population from Ghana, demographic and behavioural factors associated with infection were poor at predicting TV infection. Thus TV management protocols depending on these risk factors would have little impact on the control of infection. Laboratory diagnosis of infection and its subsequent treatment would have a far greater impact on control of infection

WP-133 CLINICAL CORRELATES OF TRICHOMONAS VAGINALIS INFECTION IN PREGNANT WOMEN; ARE THEY USEFUL IN PREDICTING INFECTION?

Y. Adu-Sarkodie¹, B.K. Opoku², H.A. Weiss¹, D.C. Mabey¹

¹ London School of Hygiene & Tropical Med, London, United Kingdom

² School of Medical Sciences, Kumasi, Ghana

Objectives: Present laboratory diagnostic assays for TV infection are either insensitive or technologically demanding for many resource limited populations. We studied whether using clinical

parameters could predict TV infection. This could be useful for screening and/or treatment of infection in settings with limited or no laboratory resources for the detection of TV infection.

Methods: Women attending antenatal clinics in Kumasi, Ghana were screened for TV infection. All those testing positive (206) and a random sample of those testing negative (412) were enrolled in a case control study of risk factors for TV infection. Clinical parameters studied included; circumcision status, abnormal vaginal discharge (offensive odour, colour other than clear, increased quantity of discharge), yeast-like discharge, pH of discharge, and results of an amine test. The presence of vulval erythema and colpitis macularis (strawberry cervix) was also studied. Multivariate analysis adjusting for all parameters associated with infection during univariate analysis was undertaken. A scoring system for all factors independently associated with infection (weighting for the odds ratios of the factors) was developed and its diagnostic value in predicting infection was calculated.

Results: The prevalence of TV infection in this population was 4.9%. Abnormal vaginal discharge (OR 1.8, $p=0.005$) and $pH>5$ (OR 1.5, $p=0.05$) remained independently associated with infection. Abnormal vaginal discharge had a sensitivity of 25% and PPV of 9% in predicting infection while that for $pH>5$ was 26.6% and 7.3%. The clinical utility of the scoring system for the selection of patients with TV infection was limited, with the highest sensitivity and PPV for TV infection being 39.9% and 13.4% respectively.

Conclusion: The use of clinical parameters associated with TV infection in predicting infection in this low TV prevalent population was poor. The need for a laboratory diagnostic for detecting TV infection in such population is paramount.

WP-134 LACK OF EVIDENCE FOR THE INVOLVEMENT OF RECTAL AND ORAL TRICHOMONADS IN THE AETIOLOGY OF VAGINAL TRICHOMONIASIS IN GHANA

Y. Adu-Sarkodie¹, B.K. Opoku², T. Crucitti³, H.A. Weiss¹, D.C. Mabey¹

¹ London School of Hygiene & Tropical Med, London, United Kingdom

² School of Medical Sciences, Kumasi, Ghana

³ Institute for Tropical Medicine, Antwerp, Belgium

Objectives: Trichomonas vaginalis (TV) infection is the commonest non-viral sexually transmitted infection worldwide, and may facilitate the transmission of HIV infection and impact negatively on pregnancy outcomes. It has been suggested that the control of TV at a population level could be important in the control of HIV in HIV/TV endemic settings. Recently it has been suggested that human trichomonads other than TV might be implicated in the aetiology of vaginal trichomoniasis. This could have implications for the control of trichomoniasis as human trichomonads other than TV have their reservoirs outside the urogenital tract. This study looked at the possible involvement of Pentatrachomonas hominis (Ph), and Trichomonas tenax (Tt), rectal and oral trichomonads respectively, in the aetiology of vaginal trichomoniasis.

Methods: 633 women out of 3807 attending an antenatal clinic in Kumasi, Ghana were randomly selected and tested for TV infection by wet preparation and culture. Vaginal swabs from the 633 women were further tested for TV, Ph and Tt by TV, Ph, and Tt specific PCR assays. Information on genital hygiene and sexual practices (including rectal and oral sex) was obtained.

Results: The prevalence of TV infection in this population was 4.9% by an expanded gold standard of wet prep and/or culture. Of 173 morphologically based TV positive samples, 161 were evaluable by PCR, out of which 152 (94%) were TV PCR positive. All vaginal swab samples were negative by Ph and Tt specific PCRs, including the 9 samples that were TV wet prep/culture positive.

Conclusion: In this low TV prevalent population from West Africa, there was no evidence for the involvement of rectal and oral trichomonads in the aetiology of vaginal trichomoniasis.

WP-135 PREVALENCE AND RISK FACTORS FOR TRICHOMONA VAGINALIS AMONG FEMALE ADOLESCENTS IN MWANZA

D. Muriuki¹, R. Balira², J. Todd¹, J. Chungalucha², D. Ross¹, H. Weiss¹, D. Mabey¹, A. Buve³, R. Hayes¹

¹ LSHTM, London, United Kingdom

² NIMR Mwanza Centre, Mwanza, Tanzania

³ ITM, Antwerp, Belgium

Objectives: To measure the prevalence of Trichomoniasis Vaginalis (TV) among young women in rural Mwanza, Tanzania, and to investigate factors associated with infection.

Methods: From 1998 to 2002, the Mema kwa Vijana (MkV) trial used a community randomised design to evaluate an intervention to improve the sexual health of adolescents in 122 primary schools in rural Mwanza. Vaginal swabs were collected and tested for TV using two independent sets of PCR primers. A specimen was deemed positive if it was positive by both PCR assays. Multiple logistic regression was used for risk factor analyses, adjusting for the cluster design of the trial.

Results: TV results were available for 2929 females aged 16-20. Prevalence was 32% (670/2119) in women who reported having been sexually active, and 15% (124/804) in those reporting never being sexually active. TV was independently associated with older age, being of the Sukuma tribe, lower educational attainment, being employed, and having little knowledge of HIV transmission. For women who reported having been sexually active, TV was associated with having had more than one sexual partner, being current pregnant, HSV-2 seropositivity and current infection with Chlamydia trachomatis. For those who reported never being sexually active, TV was associated with older age and Sukuma tribe only. Conclusions: TV had the highest prevalence of any STI in this population of adolescent females. TV was associated with sexual activity, but a high proportion of those with TV denied sexual activity. For those who reported sexual debut, TV was associated with several markers of high risk sexual behaviour. Further analyses will be conducted to explain TV infection in women who deny sexual debut.

WP-136 NON-SEXUAL TRANSMISSION OF T.VAGINALIS IN NDOLA, ZAMBIA

T. Crucitti¹, J. Vandepitte¹, C. Mulenga², E. van Dyck¹, A. Buvé¹

¹ Institute of Tropical Medicine, Antwerp, Belgium

² TDRC, Ndola, Zambia

Objectives: Trichomoniasis is considered the most common curable STI worldwide. In a population based study conducted in 1996 in Ndola, Zambia, we found a prevalence of T.vaginalis infection of

40% in women who denied sexual activity. The objective of the present study was to confirm these findings and to explore risk factors for trichomoniasis in adolescent girls.

Methods: Girls aged 13-16 years were recruited from schools and in the community in Ndola. Parents were asked for their informed consent to participate in the study; girls themselves were asked for their assent. Participants were interviewed about their socio-demographic characteristics, hygiene practices, and sexual behaviour. A vaginal specimen was collected with a self-administered swab and tested for Tv using NAATs. Blood was taken to test for HSV-2 antibodies to validate reported sexual activity.

Results: A total of 504 girls participated in the study. Of these 26% had Tv. The prevalence of trichomoniasis was 38.5 in sexually active girls and 23% in girls who denied sexual activity and were negative for HSV-2 ($p < 0.0005$). In univariate analysis the following risk factors were significantly associated with Tv infection in girls who denied sexual activity: bathing in a basin; infrequent use of soap; sharing a bed; use of a pit latrine; and not using tissue after defecating. In multivariate analysis bathing in a basin and infrequent use of soap remained associated with Tv infection. Among sexually active adolescents none of the risk factors related to genital hygiene were associated with Tv infection.

Conclusion: We found a high prevalence of Tv in girls in Ndola, Zambia, who denied they had ever had sexual intercourse, suggesting that non-sexual transmission of Tv is important in this population. Poor hygiene (infrequent use of soap and bathing in a basin) was found to be a risk factor for Tv infection.

WP-137 A COMMUNITY-BASED STUDY OF RISK FACTORS FOR TRICHOMONAS VAGINALIS INFECTION IN MEN AND WOMEN FROM MOSHI URBAN DISTRICT, NORTHERN TANZANIA

V. Klinger¹, J. Mlay², N.E. Sam², S. Aboud³, R. Ballard⁴, S.H. Kapiga¹, U. Larsen¹

¹ Harvard School of Public Health, Boston, United States of America

² Kilimanjaro Christ. Med Center, Moshi, Tanzania

³ National Bureau of Statistics, Dar Es Salaam, Tanzania

⁴ Centers for Disease Control, Atlanta, United States of America

Objectives: Trichomonas vaginalis (TV) is a common STI in both women and men, and is associated with a number of reproductive health morbidities. TV has also been implicated in HIV transmission and acquisition. We estimated the prevalence and risk factors for TV among women aged 20-44 years and their regular male partners within the general population of Moshi, Tanzania.

Methods: A census sampling scheme was used to recruit women aged 20-44 years and their husband/regular partners. Subjects were interviewed about potential risk factors and urine and blood specimens were collected for detection of TV and other STIs. TV was confirmed using PCR.

Results: Urine specimens were collected from 1,440 (71.3%) women and 588 (74.1%) men. The weighted prevalence of TV was 10.7% (95% CI=8.5-12.9) in women and 6.3% (95% CI=4.0-8.6) in men. Of the 481 couples interviewed, 86.9% were concordant TV negative, 4.0% were concordant TV positive, and 9.1% were TV discordant. A partner with TV was associated with increased risk of TV among women (adjusted OR=19.4, 95% CI=7.8-48.3) and men

(adjusted OR=19.0, 95% CI=6.9-52.4). Women with Mycoplasma genitalium and HSV-2 were more likely to be infected with TV (adjusted OR=3.6, 95% CI=1.5-8.5; adjusted OR=1.8, 95% CI=1.1-2.9, respectively). Consuming alcohol everyday increased risk of TV in women (adjusted OR=3.03, 95% CI=1.38-6.63) but not in men. No STIs were independently associated with TV in men, but an income-earning activity was protective. The risk of TV increased in both sexes as education levels decreased.

Conclusions: TV is prevalent in northern Tanzania. Prevention efforts might include educating couples about symptom recognition and treatment-seeking. Reduction of alcohol consumption in women may also be an important intervention.

Predictor	Women OR (95% CI)*	Men OR (95% CI)*
Level of Education		
More than high school	1.00 (1.00-1.00)	1.00 (1.00-1.00)
High school	1.12 (0.48-2.61)	0.72 (1.17-4.35)
Low school	1.42 (0.88-2.30)	4.92 (1.12-21.88)
No school	1.98	7.88
How often do you drink alcohol?		
Never drink alcohol	1.00	1.00
Less than once a month	2.11 (0.93-4.81)	1.12 (0.32-3.86)
At least once a month	3.74 (2.08-6.70)	1.12 (0.32-3.86)
Everyday	3.03 (1.38-6.63)	1.12 (0.32-3.86)
Marital status		
Married	1.00	1.00
Co-habiting	1.71 (0.94-3.08)	1.12 (0.32-3.86)
Single	1.43 (0.72-2.78)	1.12 (0.32-3.86)
Divorced	1.90 (0.85-4.24)	1.12 (0.32-3.86)
Widowed	1.24 (1.17-1.31)	1.12 (0.32-3.86)
Do you do any activity that earns you an income?		
Yes	1.00	1.00
No	0.28 (0.07-0.84)	1.12 (0.32-3.86)
Ever had problems getting pregnant?		
Yes	1.00	1.00
No	1.29 (1.00-1.67)	1.12 (0.32-3.86)
Partner or partner has children with other women?		
Yes	1.00	1.00
No	1.11 (0.71-1.73)	1.12 (0.32-3.86)
Herpes Simplex Virus Type 2 (laboratory confirmed)		
Positive	1.00	1.00
Negative	1.49 (1.10-2.00)	1.12 (0.32-3.86)
Cytomegalovirus (laboratory confirmed)		
Positive	1.00	1.00
Negative	2.51 (0.93-6.71)	1.12 (0.32-3.86)
Mycoplasma genitalium (laboratory confirmed)		
Positive	1.00	1.00
Negative	3.60 (1.53-8.47)	1.12 (0.32-3.86)
TV status of partner		
Positive	1.00	1.00
Negative	12.88 (7.88-20.88)	10.71 (6.80-17.88)
No information	1.91 (0.98-3.69)	3.93 (1.22-12.88)

Table 1

SESSION: WP - A12 BASIC SCIENCE- BACTERIAL VAGINOSIS

WP-113 MODIFICATION OF GRAM-STAINED VAGINAL SMEAR SCORING MAY INCREASE THE SENSITIVITY OF VAGINAL SMEAR ASSESSMENT IN THE PREDICTION OF PRETERM BIRTH

H.R. Verstraelen, R. Verhelst, G. Claeys, K. Roelens, E. De Backer, M. Vanechoutte, M. Temmerman
Ghent University, Ghent, Belgium

Objectives: Ascending genital tract infection originating from the vaginal niche is considered the primary pathway to preterm labour. Clinically, this contention is hitherto confined to vaginosis-like alterations on Gram stain. We evaluated defined Gram-stained vaginal smear categories, not accounted for by conventional Nugent scoring, in predicting preterm birth.

Methods: 221 pregnant women were scheduled to provide one and preferably two consecutive vaginal smears during the first and/or second trimester. Gram-stained smears were initially categorized as normal (grade I), intermediate (grade II), bacterial vaginosis (grade III), or Streptococcus-dominated (grade IV), according to Ison & Hay. Two additional categories were subsequently distinguished: 1/ 'idiopathic purulent grade I smears', i.e. lactobacilli-dominated

smears showing heavy leucorrhoea of unknown cause and 2/ 'grade I-like smears', which show predominantly curved or irregularly shaped (bifido- or corynebacterioform) gram-positive rods.

Results: From the 221 women, a single (27.6%) or two consecutive vaginal smears (72.4%) were obtained during the first (9.6 ± 3.0 weeks) and/or second (19.7 ± 2.6 weeks) trimester. The spontaneous preterm birth rate was 9.0% (20/221). Women presenting with grade I microflora on each occasion had a fivefold decreased risk (RR=0.2, 95%CI: 0.1- 0.5, p<0.001) and women with at least once a purulent grade I or a grade I-like stain had a fourfold increased risk (RR=3.9, 95% CI: 1.8 – 9.0, p<0.001) of spontaneous preterm birth. The sensitivity of vaginal smear diagnosis for preterm birth increased from 25% with Nugent criteria up to 70% with our criteria, without changing specificity.

Conclusions: Repeated vaginal smear assessment and categorizing Gram-stained vaginal smears by accounting for atypical Gram-positive (bifido- or corynebacterioform) bacteria and polymorphonuclear neutrophils may identify a much larger proportion of women at risk of preterm birth as compared to diagnosis of bacterial vaginosis alone.

Vaginal smear category	Baseline probability (n=221)	Prevalence with preterm birth (n =20)	Risk estimate (RR, 95% CI)
- on each occasion			
a "clean" grade I	151/221= 0.68	6/20 = 0.30	0.2 (0.1 - 0.5)
- at least once			
Abnormal, all	79/221= 0.36	14/20 = 0.70	4.0 (1.6 - 10.1)
Non-BV-like	38/221= 0.17	9/20 = 0.45	3.9 (1.8 - 9.0)
purulent grade I*	17/221= 0.08	4/20 = 0.20	3.0 (1.1 - 8.0)
grade I-like	21/221= 0.10	5/20 = 0.25	3.2 (1.3 - 7.9)
BV-like			
grade II/III	45/221= 0.20	5/20 = 0.25	n.s.

* Purulent in the absence of Candida spp., Trichomonas.

Table 1: Risk of preterm birth relative to baseline risk

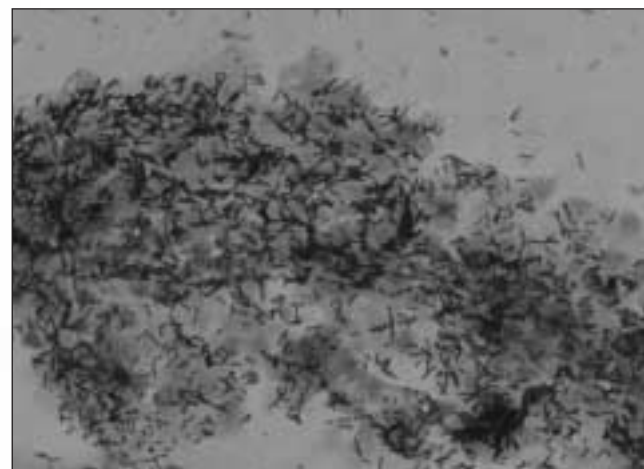


Figure 2

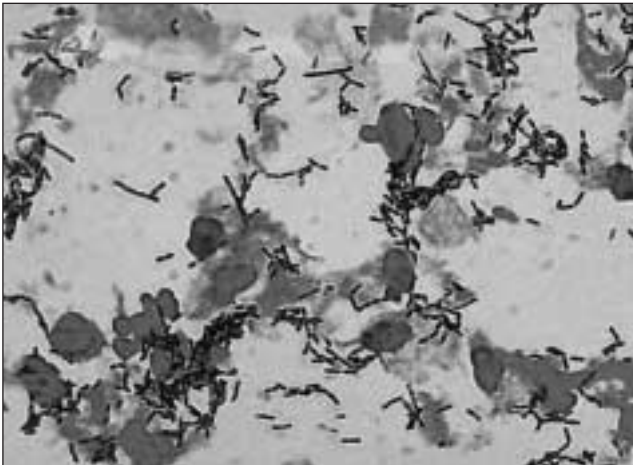


Figure 3

WP-114 ASSOCIATION OF BACTERIAL VAGINOSIS AND HSV-2 INFECTION IN A COHORT OF HIGH-RISK WOMEN IN BURKINA FASO

N. Nagot¹, A. Ouedraogo¹, M.C. Defer¹, R. Vallo¹, I. Millogo¹, P. Vande Perre²

¹ Centre Muraz, Bobo-dioulasso, Burkina-Faso

² CHU Montpellier, Montpellier, Burkina-Faso

Objective: Bacterial vaginosis (BV) has been shown to facilitate HSV-2 and HIV acquisition. We investigated whether HSV-2 infected women were at higher risk of BV acquisition.

Methods: High-risk women were followed every trimester for 18 months in Bobo-Dioulasso, Burkina Faso. The Nugent score was used to diagnose BV. A wet mount preparation was done on vaginal swabs to diagnose *Trichomonas vaginalis* (TV) while *Candida albicans* (CA) was cultured on a specific milieu. HSV-2 infection was assessed using the Kalon (Kalon, UK) ELISA test. A face-face interview was used to collect details of vaginal douching practices. Longitudinal data were analysed using a Generalised Estimating Equations model.

Results: A total of 279 women were followed over the study period. At the first study visit, daily vaginal douching was reported by 90.1% of participants, using either soap or water for 88% of them. The mean age was 28 years while HIV and HSV-2 prevalence was 31.9% and 70.4% respectively. Prevalence of TV and CA were 3.2% and 2.4% respectively. BV was significantly associated with HSV-2 infection (OR=1.97; 95%CI: 1.12-1.45; p=0.01), and with HIV-1 (OR=2.18; 95%CI: 1.42-3.35; p<0.001), adjusting for age, condom use and presence of other genital infections. The use of hormonal contraception was associated with a reduced risk of BV (OR=0.09;p=0.004) while no association was found with antibiotic use or vaginal douching in past 24 hours. The association between BV and HSV2 was similar among HIV positive and HIV negative women respectively.

Conclusion: Women infected by HSV-2 were more likely to develop an episode of BV whatever their HIV status. Further studies will assess the role of HSV-2 genital shedding on the development of BV episodes.

VARIABILITY IN THE SEXUAL STRUCTURE OF RURAL POPULATIONS IN INDIA: A CASE STUDY

James F. Blanchard¹, B.M. Ramesh^{1,2}, Han Kang³, Parinita Bhattacharjee², Reynold Washington^{1,4}, Stephen Moses¹

¹ University of Manitoba

² India-Canada Collaborative HIV/AIDS Project

³ Princeton University;

⁴ St. John's Medical College

Background and Objectives: There is considerable epidemiological evidence that the HIV epidemic in India is as advanced in rural populations as in urban areas. However, there is a paucity of information about sexual structures and STI/HIV epidemiology and transmission dynamics in rural Indian populations. The objective of this study is to describe the sexual structure of rural populations in a district of south India, with emphasis on the volume and distribution of female sex work.

Methods: The context of this research is a comprehensive HIV/AIDS prevention program (the India-Canada HIV/AIDS Project, funded by the Canadian International Development Agency) based in the Bagalkot district of Karnataka, in southern India. The present analysis focuses on three adjacent Talukas (sub-district administrative areas) with a combined population of 810,100 distributed

across 241 villages and 6 urban centres. Three sources of data were used: 1) a detailed mapping and enumeration of female sex workers (FSWs) in all 247 villages and urban areas; 2) a set of "polling booth" surveys of sexual behaviours in a random sample of village-dwelling men; 3) a population-based sample survey of HIV prevalence.

Results: Compared to Taluka A, Talukas B and C have substantially more FSWs in absolute and relative terms, and a wider rural distribution of FSWs. Taluka C has greater proportions of men reporting ever visiting an FSW and married men reporting non-marital sexual partners. The HIV prevalence is highest in Taluka C, and Talukas B and C both have significantly higher HIV prevalence than Taluka A. The overall HIV prevalences and differences are greatest in rural populations. All differences in HIV prevalence are statistically significant at $p < 0.05$.

Conclusions: Within a small geographic area of rural India there are substantial differences in the sexual structure of the population, which is reflected in differences in HIV prevalence. Prevention programs in rural India should be focused on those areas with the highest concentrations of high-risk sexual networks. Further research is required to better understand underlying determinants of the population sexual structure in rural India.

Characteristic	Taluka A	Taluka B	Taluka C
Total population (% rural)	226,212 (59.8)	354,731 (57.2)	229,134 (68.0)
Number of villages	94	66	81
Total number of FSWs	295	1,927	1,269
FSWs per 1,000 adult population (15-49)	4.2	19.9**	15.6**
Number (%) of villages with 10+ FSWs	11 (11.7)	35 (53.0)	40 (49.4)
% of men who ever visited an FSW	11.4 (n=306)	13.2 (n=235)	18.0 (n=250)*
% of married men reporting pre-marital or extra-marital sexual partner(s) (non-FSW)	26.0 (n=204)	28.0 (n=157)	42.3 (n=163)**
Rural HIV prevalence (95% CI)	1.4% (0.51-3.0)	3.3% (2.2-4.6)	6.0% (4.1-8.4)
Total HIV prevalence (95% CI)	1.2% (0.61-2.0)	2.9% (2.2-3.7)	4.9% (3.6-6.5)

* $p < 0.05$ compared to Taluka A; ** $p < 0.01$ compared to Taluka A

ParTnership Dynamics, Network Structure and STI Prevention

Martina Morris

Over the past two decades, the epidemic of HIV has challenged the public health community to rethink the framework for preventing STIs. Since there are at least two people involved in the behavior that confers risk, the network of partnerships becomes epidemiologically relevant. Population transmission dynamics, the epidemiology of individual risk and the constraints to behavioral change

are all determined by the structure of this network. This talk will demonstrate the importance of network structure for STI with an empirically grounded simulation study. Data from Uganda, Thailand and the US on sexual activity levels and the patterns of concurrent sexual partnerships reveal key differences in individual level behavior. These differences are shown to influence network connectivity and STI transmission dynamics. The results suggest that concurrency can be as effective as high contact rates for establishing the network connectivity that generates epidemic spread of STIs.

USING SEXUAL AFFILIATION NETWORKS TO MEASURE THE “SEXUAL STRUCTURE” OF A POPULATION

Simon D.W. Frost

University of California, San Diego

Background: The structure of a sexual network is widely acknowledged to play a central role in determining the rate and extent of spread of sexually transmitted diseases (STDs) within a population. Although direct information on the sexual network is difficult to obtain, the places where sexual partnerships form may be central in determining the “sexual structure” of a population. I will discuss how sexual affiliation networks, which link people to the places where partners are recruited, can be constructed and analyzed, and the implications of these structures on the transmission of STDs. Preliminary data on the sexual affiliation networks, both through internet websites and through bathhouses and bars, of men who have sex with men (MSM) with recent HIV infection will be presented.

Materials: Ideally, the data required to build a sexual affiliation network are the places where individuals recruit partners, the frequency of both visits and the number of sexual partners recruited, and information regarding the types of partner and behavior with those partners in the context of different places.

Methods: There are a variety of methods that can be used to analyze sexual affiliation networks; capture-recapture models can be used to estimate the total number of places used for recruitment; block models can be used to identify groups of individuals that share many recruitment venues, and deviations from random graphs can be used to detect whether such groups arise simply because of the popularity of a given venue; and exponential random graph models can be used to determine whether individual- or venue-specific covariates are associated with location in the network. The bipartite nature of the sexual affiliation network can be retained, or the affiliation network can be transformed into two networks, one of people who recruit from similar venues, and one of venues that are visited by people in common.

Results: In a cohort of 158 MSM with recent HIV infection, relatively few internet websites were used for recruitment by a given person. Four websites were extremely popular, and individuals who used these sites for recruitment reported more lifetime partners, were more likely to be students, and more likely to have sex only with men, rather than men and women. In contrast, recruitment from bars was spread out over a large number of bars, with bathhouses occupying a central location in the sexual affiliation network of bars.

Discussion: Large datasets on sexual affiliation are relatively easy to collect in comparison with other kinds of network data. A comparison of sexual affiliation networks of MSM with recent or chronic HIV infection with those of uninfected MSM may provide important information regarding how sexual affiliation corresponds to risk of acquiring HIV. When constructing sexual affiliation networks, the total number of venues used for partner recruitment may be difficult to estimate, especially when venues vary in their popularity and when the average number of venues used for recruitment by an individual is low. It may also be important to consider fine-grained structure, for example, the preferred personal profile of an individual visiting a website, or particular theme nights at a bar, in order to avoid problems of ecological fallacy. New analytical approaches

are required to model these data, including exponential random graph models and stochastic blockmodels that retain the bipartite nature of the network.

PREVENTION STRATEGIES FOR SEXUALLY TRANSMITTED INFECTIONS: THE IMPORTANCE OF SEXUAL NETWORK STRUCTURE AND EPIDEMIC PHASE

Helen Ward, Imperial College London

Aim: To review the changing relationship between sexual network structure and epidemic phase in sexually transmitted disease epidemiology to inform prevention strategies at the population level

Methods: A review of empirical studies of sexual networks and STI transmission networks

Results: There are relatively few empirical studies of sexual networks, and even fewer that track the evolution of networks over time. Most studies focus on networks in the context of disease transmission and will miss the network structure in the wider population. Results from disease-related studies show that in the early epidemic phase, networks are densely connected with multiple short loops. In later endemic phases, networks are more loosely connected with a dominance of long branching structures. The latter structure has also been described from non-diseased populations. These structures evolve over time, both of the epidemic curve and as a cohort ages and undergoes demographic change.

Conclusion: Population strategies for prevention should vary depending on network structure and epidemic phase. In early epidemic phases, interventions focussing on high risk populations, ie. dense areas of a sexual network, will have a large population effect. In contrast, for established endemic diseases a smaller change (of behaviour or interruption of transmission through screening) in a larger proportion of the population could have the largest population impact. Further empirical work on the way networks change with epidemic phase, with age and demographic changes will help to inform intervention strategies at the population level. h.ward@imperial.ac.uk

THE ABCS OF HIV PREVENTION IN MEN: ASSOCIATIONS WITH HIV RISK AND PROTECTIVE BEHAVIORS

M.S. Steele¹, E. Bukus^{2,3}, C.R. Cohen^{4*}, Bettina A. Shell-Duncan⁵, K.K. Holmes⁶

¹ Program for Appropriate Technology in Health (PATH), Seattle, WA

² Kenya Medical Research Institute, Nairobi, Kenya,

³ Department of Obstetrics and Gynecology, University of Nairobi, Nairobi, Kenya

⁴ Department of Obstetrics and Gynecology, University of Washington, Seattle, WA

* current affiliation: Department of Obstetrics, Gynecology and Reproductive Science, University of California, San Francisco, CA

⁵ Department of Anthropology, University of Washington, Seattle, WA

⁶ Department of Medicine, University of Washington, Seattle, WA

Objective: To elucidate associations between beliefs in abstinence, fidelity (being faithful), and condom use (the ABCs of HIV prevention) and HIV risk and protective behaviors among Kenyan men.

Methods: We asked a respondent-driven sample of 500 men in Nairobi to discuss the three “best” ways to prevent HIV transmission.

We assessed associations between demographic variables and reports of beliefs in the "ABCs", and associations between these beliefs and self-reported HIV risk and protective behaviors.

Results: Younger age and single marital status were significantly associated with belief in abstinence and condom use as best prevention methods, whereas older age and marriage were associated with belief in fidelity. Educational attainment was associated with belief in abstinence and condom use as best prevention methods. Additionally, other factors such as number of children, religion, tribe, income, and years of residence in Nairobi also influenced specific components of the ABCs. Many of these associations persisted in multivariate models. Men citing at least 2 of the ABCs were significantly more likely to have ever used condoms and to use condoms consistently with wives or girlfriends. Men citing abstinence or fidelity were less likely than others to have ever had sex with a female sex worker (FSW) or have concurrent partnerships during the past 3 months. Men citing fidelity were less likely to ever have used condoms. Those citing condom use were more likely to have recent concurrent partnerships.

Conclusions: Life stages and other demographic factors were associated, in plausible directions, with beliefs in the ABCs. Beliefs in the ABCs were associated with corresponding protective behaviors. Beliefs in ABC prevention approaches appear complementary and have demographic and context-specific applications. However, context-specific, selective educational promotion of individual ABC components in young people ignores the subsequent evolution of sexual behaviors throughout the life course.

EVOLUTION OF SEXUAL RISK AND NETWORKS AMONG MSM IN BRITAIN: A LIFECOURSE PERSPECTIVE

Kevin A Fenton MD, Cath H Mercer PhD, Anne M Johnson MD
 Division of STD Prevention, Centers for Disease Control, 1600 Clifton Road, Mailstop E-02, Atlanta 30333, GA, USA & Centre for Sexual Health and HIV Research, Department of Primary Care and Population Sciences, Royal Free and University College Medical School, London

Recent increases in STDs among men who have sex with men (MSM) raise cause for concern – not only because they signify a deterioration in sexual health and the need for intensified STD prevention efforts, but also because of their potential for epidemiological synergy with HIV infection. STD surveillance data consistently show that much of these increases, including recent outbreaks syphilis and LGV, are occurring among MSM aged 30 years and over. In this presentation we use data from the 2nd British National Survey of Sexual Attitudes and Lifestyles (Natsal 2000) to explore how risk behaviours and sexual networks vary along the life course of MSM and how in turn may influence their STD acquisition risk. Natsal 2000 is a probability sample survey of the general population in which trained interviewers administered a combination of face-to-face and self-completion questionnaires to individuals aged 16 to 44 years resident in Britain. In this study 2.8% of British men reported sex with men in the past 5 years. 46.0% of MSM reported five or more partners in the past 5 years, and 59.8% reported unprotected anal intercourse in the past year. We explore the changing patterns of risk behaviours and aspects of the sexual network structures along successive age cohorts of MSM in Britain; compare these patterns to heterosexual men of corresponding

age; and finally, relate these changes to reported STD diagnoses. Changes in MSM's risk behaviours and network connectedness evolve with increasing age, in patterns which are distinct to heterosexual males in the British population. An understanding of this natural evolution of risk may help to explain the varying STD risk faced by MSM along their life course and to refine age-specific HIV/STD prevention interventions more appropriately.

CREATING COUNTERFACTUALS: MODELLING THE SPREAD OF HIV IN THE ABSENCE OF INTERVENTIONS

Geoff P Garnett, Tim B Hallett and Simon Gregson, Department of Infectious Disease Epidemiology, Imperial College London

Background: Randomised controlled trials provide the most reliable evidence of intervention efficacy. However, for many complex HIV prevention interventions effectiveness at the population, particularly at a national scale cannot readily be determined through trials. In such cases mathematical models simulating the spread of HIV with and without interventions can be used to assist in interpreting trends in HIV prevalence.

Methods: Mathematical models describing the natural evolution of HIV epidemics in the absence of behaviour change provide an epidemiological null model with which to compare observed behaviour changes. A deterministic age, sex and activity stratified model is explored to derive a conservative set of assumptions maximising declines in HIV prevalence. Model predictions are then compared with HIV surveillance data.

Results: In a number of sub-Saharan African populations prevalence declines exceed those predicted in a conservative model in the absence of behaviour change. Assuming an appropriate model structure and parameter values it is possible to estimate the timing and scale of change in risks of transmission. Similarly, for health economic studies, mathematical models can predict the number of infections averted through an observed change in risks.

Conclusions Mathematical models can provide counterfactual HIV epidemics (i.e. those that would have been observed without acknowledged changes in parameter values) which assist the interpretation of surveillance data. Because they are dependent upon modelling assumptions such counterfactuals have to be treated with caution. However, the recognised inability to ethically and practically carry out trials on many interventions means that such models provide an acceptable tool in the development and evaluation of policy.

THE CHALLENGE OF EVALUATING A NATIONAL PREVENTION PROGRAM: THE CASE OF LOVELIFE

A. Pettifor PhD MPH¹, S. Bertozzi MD PhD², C. MacPhail PhD³, H. Rees MB BCHIR, DRCOG³

¹ Department of Epidemiology, University of North Carolina at Chapel Hill

² Division of Health Economics & Policy, National Institute of Public Health, Cuernavaca, Mexico

³ Reproductive Health and HIV Research Unit, University of the Witwatersrand, Johannesburg, South Africa

Background: South Africa, one of the countries hardest hit by the HIV epidemic, has a number of prevention and care programs, including one of the world's largest national prevention programs

for youth, loveLife. Despite our ability to track changes in the epidemic over time and the importance of evaluating the impact of prevention programs, attributing change in infections to particular prevention programs remains an enormous challenge.

Methods: In 2003 we conducted a nationally representative household survey of sexual behavior, exposure to prevention programs (including loveLife) and HIV infection among 11,904 young people age 15-24 years in South Africa.

Results: HIV prevalence among males was 4.8% and among females it was 15.5%. 85% of youth reported awareness of loveLife and 34% of youth reported participation in loveLife programs. In multivariable models, both sexually experienced males and females who reported participation in loveLife were significantly less likely to be infected with HIV (OR 0.56, $p=0.01$; OR 0.73, $p=0.04$; respectively) after controlling for potential confounders. Youth who participated in 2 or more programs were less likely to be infected compared to youth who participated in only 1 program. Youth who participated in loveLife programs were also more likely to report consistent condom use (OR 1.88, $p<0.01$).

Conclusions: Ascribing change in HIV prevalence to a particular program must be undertaken carefully, to distinguish program effects from that of other unmeasured individual and community factors. The suggestion that loveLife decreased new HIV infections among youth would be supported by evidence of concomitant changes in sexual behavior and dose-response associations. Other information that may make attribution more plausible in the future includes: evidence of the robustness of the associations observed, consistency of results across studies, better measurement of behavior and program exposure, and inclusion of other possible confounders.

THE INFLUENCE OF STD EPIDEMIC PHASES ON THE COST-EFFECTIVENESS OF STD PREVENTION ACTIVITIES

H.W. Chesson, Division of STD Prevention, Centers for Disease Control and Prevention, Atlanta, Georgia, United States of America

Cost-effectiveness evaluations of STD prevention interventions can help to inform resource allocation decisions and to maximize the impact of prevention activities. The cost-effectiveness of STD prevention efforts depends in part on the phase of the STD epidemic. All else equal, prevention interventions would be expected to be more cost-effective in the earlier stages of an outbreak (when the reproductive rate is greater than one) rather than during a period of declining incidence (when the reproductive rate is less than one). The influence of the phase of the STD epidemic on the cost-effectiveness of prevention, however, is likely far less important than the influence of other factors such as the cost of the intervention, the number of primary cases averted by the intervention, and the average lifetime medical costs associated with each new case of the STD. Thus, prevention efforts during times of declining incidence, or even during periods of stable, low incidence, might also be considered worthwhile, given the probability and magnitude of an increase in incidence if prevention efforts were terminated.

PROJECTING THE COSTS AND CONSEQUENCES OF ANTIRETROVIRAL THERAPY IN POOR COUNTRIES: THE CASE OF INDIA

Mead Over

Having announced that the government will pay for AIDS treatment for its estimated 4 million HIV-infected people, the Government of India needs to project the future costs of the epidemic and its future health benefits. This talk presents work done jointly by a team from the World Bank and India in order to review the situation regarding AIDS treatment in India and to project the costs and estimate the cost-effectiveness of alternative policy responses to this mandate. Using a mathematical epidemiological model of the epidemic, the authors estimate that the government will be able to save healthy life years at a cost of less than US \$300 per life year, assuming that patients adhere well to first-line therapy and the population does not become complacent about the risks of HIV. However, analysis reveals the extreme sensitivity of these numbers to assumptions regarding the behavioral response of those at higher risk, the sex workers and their clients. Should these "high risk groups" decrease their prevention efforts by practicing more frequent risky sex or using fewer condoms, the benefits of the treatment program will be seriously undermined or even reversed. On the other hand, should these groups be induced to reduce their exposure to risk, perhaps a result of the treatment program, the benefits of the treatment program could be multiplied by as much as 3 or 4.

The impact of HSV-2 on new HIV infections increases over time: the changing role of sexually transmitted infections in sub-Saharan African HIV epidemics

Esther Freeman, Kate Orroth, Judith Glynn, Roel Bakker, Richard White, Anne Buve, Richard Hayes, for the Study Group on Heterogeneity of HIV Epidemics in African Cities

Objective: To understand the impact of HSV-2 and other sexually transmitted infections (STI) on HIV incidence 5 years, 10 years, and 15 years after the introduction of HIV in four sub-Saharan African cities.

Methods: The STDSIM mathematical model was fitted to the data from the Multicentre Study of factors determining the different prevalences of HIV in sub-Saharan Africa (in Kisumu, Kenya; Ndola, Zambia; Yaounde, Cameroon; and Cotonou, Benin) to simulate the 1997 HIV and STI epidemiology in the populations. In order to estimate the proportion of new HIV infections attributable to HSV-2 and other STIs over time, the effect of the STIs on HIV acquisition and transmission were removed 5, 10 and 15 years into the simulated HIV epidemics (HIV introduced in the early 1980s).

Results: The only STIs with a major impact on new HIV infections were HSV-2 and chancroid. The proportion of incident HIV attributable to HSV-2 infection (the population attributable fraction, PAF) increased with maturity of the HIV epidemic, as can be seen in the table below. The PAF was 8%-28% 5 years into the epidemic, but grew to 34%-47% 15 years after the introduction of HIV. In contrast, the proportion of incident HIV attributable to chancroid decreased over time with strongest effects 5 years after HIV introduction and weakest effects 15 years after.

Conclusions: Although HSV-2 appears to have a limited impact on HIV incidence in the early stages of sub-Saharan African HIV epidemics when the epidemic is concentrated in core groups, it

has an increasingly large impact as the epidemic progresses. In generalised HIV epidemics, in which the impact of interventions against curable STIs appears to be limited, interventions against HSV-2 may have a key role in HIV prevention.

THE IMPACT OF REDUCING CROSS-GENERATIONAL SEX AND DELAYING AGE OF SEXUAL DEBUT IN GENERALISED HIV EPIDEMICS

T. B. Hallett, J.J.C. Lewis, M-C Boily, S. Gregson and G. P. Garnett
 Department of Infectious Disease Epidemiology, Imperial College, Norfolk Place, London, W2 1PG

Background: Studies have found an association between HIV infection and an early age of first sex and older male sexual partners (termed cross-generational sex) in women in many high prevalence settings in sub-Saharan Africa. This has led to calls for behaviour interventions promoting abstinence and a reduction in age differences between sex partners.

Methods: To explore the potential impact of such interventions we developed an age, sex and sexual activity stratified deterministic model of the transmission dynamics of HIV. Sexual mixing and age of sexual debut parameters were derived from data collected in rural Zimbabwe. We changed sexual behaviour as advocated with a range of assumptions about the response of the sexual network i.e. whether individuals seek to maintain their current level of sexual activity despite these 'distributional' changes and the sex which determines the pattern of partnership formation.

Population attributable fraction (PAF) of HIV incidence due to HSV-2 at different time points in the epidemic			
City	5 years after HIV introduction	10 years after HIV introduction	15 years after HIV introduction
Kisumu	8.0%	17.8%	34.5%
Ndola	10.3%	27.2%	33.9%
Cotonou	28.4%	37.7%	46.9%
Yaounde	17.0%	35.8%	37.9%

Results: Assumptions made about the reaction of sexual network to changes in sexual behaviour can dramatically alter the effect of increasing age at sexual debut and reducing crossgenerational sex. If partnerships with peers are substituted for cross-generational partnerships the risk of infection for young men increases and the reduction in female incidence is less than when the partnerships are not replaced. If men dominate the process of partnership formation and seek to maintain the number of sexual partnerships they form, then when women delay their age of sexual debut incidence among the youngest sexually active females will increase and limit the reduction in lifetime risk of infection.

Conclusions: Sexual partnerships among peers are not the safe alternative to 'cross-generational' sex and the effect of encouraging young women to delay sexual debut is highly sensitive to the reaction of the male population. Those developing behavioural interventions need to consider the potential impact of altering the distribution of sexual partnerships. *timothy.hallett@imperial.ac.uk

NETWORK-LEVEL INTERVENTIONS AS FEASIBLE STRUCTURAL-LEVEL INTERVENTIONS WITH POTENTIALLY HIGH IMPACT

D. Wohlfeiler, STD Control Branch, California Dept. of Health Services

Public health efforts to reduce STD and HIV transmission need to allocate resources across a hierarchy of interventions, including behavioral (individual, dyad, group, and community) and structural-level interventions. Yet, there is little guidance as to how to optimally allocate resources, either within an epidemic phase or as epidemics progress through different phases. Structural-level interventions, which aim to modify social, economic and political structures as well as physical environments, have been proposed as alternatives and complements to behavioral interventions, since they require fewer financial and human resources to sustain their impact at the population level. Further, they do not require collective community involvement, which wanes as epidemics progress and threats wane. Acceptance and implementation of structural interventions have been hampered by the category being too broad, since it includes relatively low-level, feasible interventions (for example, condom distribution in bars or commercial sex venues) and high-level interventions which are relatively unfeasible in the short or even medium term (undoing racism, economic disparities, gender inequality and homophobia). Clear decision-making regarding structural-level interventions as a field has also been hampered by resistance from among prevention practitioners and from stakeholders across the political spectrum. Practitioners often raise concerns about unintended consequences, usually only attributing these to structural interventions. However, as this paper will argue, unintended consequences may also emerge from individual, group or community-level behavioral interventions. STD and HIV prevention efforts may be better served by advocating that when choosing which structures to focus on, practitioners focus their attention on altering the structures of sexual networks in order to achieve maximum impact in the short and medium term. Five guiding principles will be suggested for network interventions: 1) Being willing to consider altering the structure of sexual networks, rather than accepting them as a given; 2) focusing on institutions which either a) facilitate partner mixing or b) disrupt ecologies of communities; 3) fragmenting networks through pulling low-risk individuals away from high-risk individuals, 4) helping individuals make more informed choices about their sexual partners and 5) maintaining basic human rights and freedom of choice.

WP-138 PATTERNS AND CAUSES OF MORTALITY IN HIV-1 AFFLICTED RURAL ZIMBABWE

R.V. Barnabas¹, B. Lopman², C. Zvidzai², K. Gaitskell¹, T. Harrop², P. Mason², G.P. Garnett², C. Nyamukapa² and S. Gregson²

¹ *Cancer Epidemiology Unit, Department of Medicine, University of Oxford, Oxford, United Kingdom*

² *Department of Infectious Disease Epidemiology, Faculty of Medicine, Imperial College London, United Kingdom*

Objectives: The lack of vital registration or completeness of hospital records necessitates field-based collection of mortality data in Zimbabwe. Using data from verbal autopsies we 1) assigned the most likely cause of death; 2) assessed whether the death was caused by AIDS; and 3) estimated the risk of specific causes of death for HIV positive and negative individuals for rural Zimbabwe. **Methods:** The Manicaland HIV/STD prevention project follows a population-based open cohort where there were 404 deaths between 1998 - 2003. A nurse conducted a verbal autopsy questionnaire with the primary caregiver of the deceased. HIV-antibody testing was performed on all individuals at baseline survey. Two medical students and a computer algorithm each assigned cause of death and agreement between two out of three assigned the final cause of death. The computer algorithm using (a) clinical criteria only and (b) clinical criteria and HIV-serostatus was used to assess the proportion of deaths associated with HIV. To account for competing causes of death the cumulative incidence for each cause in HIV positive and negative individuals was calculated.

Results: Overall diarrhoea/wasting accounted for 27% (n=104) of deaths, respiratory illness 25%, meningitis/malaria/tetanus/other fevers 18%, homicide/accidents 6% and 21% undetermined. Using the clinical criteria computer algorithm, without serostatus, 41% of deaths classified as "AIDS- death" compared with 76% when the serostatus was accounted for. Among HIV positives the cumulative incidence for wasting was highest compared to negatives (0.044 vs. 0.002), similar to meningitis/malaria/tetanus/other fevers (0.044 vs. 0.005).

Conclusions: In this population with HIV prevalence of 25% the majority of adult deaths are associated with HIV, with infectious disease the leading cause of death. Algorithms based on conventional clinical criteria for HIV alone could underestimate the proportion of HIV associated deaths. Developing these methods is important in understanding cause specific mortality in many developing countries.

WP-139 PROSPECTIVE EVALUATION OF HOUSEHOLD CLUSTERS OF HANTAVIRUS CARDIOPULMONARY SYNDROME (HCPS) IN CHILE: INCREASED RISK AMONG SEX PARTNERS

G.J. Mertz¹, M. Ferrés², P. Via^β, L. Yañez³, P. Godoy², C. Castillo⁴, H. Galeno⁵, B. Hjelle¹

¹ *University of New Mexico, Albuquerque, United States of America*

² *Universidad Católica, Santiago, Chile*

³ *Universidad del Desarrollo, Santiago, Chile*

⁴ *Universidad de la Frontera, Temuco, Chile*

⁵ *Institute of Public Health, Santiago, Chile*

Objectives: We studied household contacts of index cases with HCPS in Chile to evaluate the natural history of HCPS, including person-to-person transmission of Andes virus.

Methods: HCPS was diagnosed based on the presence of a febrile illness with a prodrome followed by a cardiopulmonary phase and confirmed with testing for IgG and IgM antibodies. Household contacts >2 years of age were evaluated with a questionnaire, followed a least once weekly for 28 days, and tested at each visit for IgG or IgM antibodies, for plasma viremia and for Andes virus RNA in blood cells by RT-PCR.

Results: Among 83 index cases with HCPS, we identified 13 household clusters, including 11 with 1 additional case and 2 households with 2 additional cases. The risk was significantly higher (20.5%) among 44 sex partners of index cases than among 333 household contacts (1.8%) who were not sex partners. Andes virus RNA was detected by RT-PCR in PBMC up to 14 days prior to the onset of symptoms or antibody and up to 21 days prior to hospitalization for HCPS.

Conclusions: Although most Andes virus infections in humans are acquired from infected rodents, almost 30% of the cases in our prospective study occurred in household clusters. The mechanism of person-to-person transmission of Andes virus is unknown, but sex partners of index cases are at significantly greater risk than household contacts that are not sex partners. Virus is present in blood for up to 14 days before symptoms and up to 21 days before hospitalization, but it is not known whether virus is present in semen, vaginal fluid, sweat or saliva.

Author Index

10-13 JULY 2005, AMSTERDAM, THE NETHERLANDS

ABSTRACTS

- A**
- Aanensen D.M., WO-001
Aban I., TP-168
Abdala N., TP-111
Abdellati S., WP-127
Abdulaeva M., MP-025, MP-033
Aboud S., WP-137
Abu-Rajab K., WP-030
Accardo S., WP-051, WP-066
Adam A., WP-007
Adam P.C.G., WW-103
Adam T., WP-074
Adams E.J., MP-195
Adamson S., TW-202, TW-203
Adimora A.A., MP-149, MP-150, TO-106
Adu-Sarkodie A., WP-132
Adu-Sarkodie Y., WP-133, WP-134
Afonina G.B., WP-098
Agnew K.J., WP-126, WP-121
Agot K., TO-702
Agreda P., TP-167
Aguas M.J., WP-052, WP-053
Ahmed K., MP-054, MP-055, MP-082, MP-083, MP-056, MP-057, MP-058, TO-706
Aïna G., WP-013
Ajayi A.A., TP-123
Akasaka S., WP-012
Akovbyan V., WO-105
Al-Tayyib A., TP-128, TP-138
Al-Tayyib A.A., TP-070
Al Taqatqa W., MP-041
Alaeva O.A., TP-039
Alary M., MP-016, MP-070, TP-132, TP-173, WP-013
Alcala B., WP-001
Aldir I., WP-052
Alefelder M., TP-089
Aleixo M.J., WP-052, WP-053
Alencar W., MP-029
Alexander S., MP-141
Alexander S.M., MP-132, WO-101
Alibaeva G., MP-025, TP-116
Allen C., MP-091
Almond G., WP-098
Altini L., TP-175, TP-105
Amani B., MP-053, MP-131
Amedee A., TO-101, WP-108
Amey A.L., TP-059
Anderson K., MP-171
Anderson R., TW-203, TW-204
Ando Y., WP-012
Andonaba J.B., MP-015
- Andrews G., MP-060
Anekvorapong R., TP-129
Anglin A., TP-093
Angulo A., TP-180
Annang L., TP-168
Antunes W., WP-009
Aoki F., TP-005
Appalata T., WP-018
Appleby P.R., MP-059
Aragon T., TP-140
Aral O., TP-189
Aral S., MW-101, TP-117
Aral S.O., MP-160, MP-162, WW-201
Araújo P., WP-105
Arellano E., MP-007
Arno J., TO-502, TP-035
Arrazola de Onate W.P.W., TP-097, TP-191
Arrowsmith S., TO-205
Artz L., MO-104
Arvis P., TP-089
Aryee E.A.N., TP-002
Asghar Z., MW-304
Ashcroft R.E., MP-042
Ashley-Morrow L., TP-004
Ashley-Morrow R., TP-011, TP-022
Ashton M., WP-073
Astete S., MO-405
Astete S.G., MO-406, WP-103, WP-111
Atashili J., TO-103, TO-106
Atherly D., WP-085
Aubin M., WP-048
Aueaksorn W., TP-129
Auerswald C., MP-154
Auerswald C.L., MP-150
Augenbraun M., TP-187
Ault A., WP-033
Ausheva M., TP-119
Auslander B.A., MP-170
Austin H.D., MO-104
Auvert B.A., TO-704
Awasana A.A., MO-005, MP-034
Awio P., TW-006
Aycok C.A., TP-057, TP-099
Ayella E.O., MP-020, MP-021, MP-051
Aynalem G.M., TP-130
Aynalem M., TP-172
Azevedo J., TP-064, WP-052, WP-053
- B**
- Bachmann L.H., MP-090, WP-014
Backhouse P.G., WP-004
Baeten J.M., MO-002, MP-026
Baggaley R.F., MP-037, MP-042
Bailey J., WP-083
Bailey R.C., TO-702
Bailey R.L., TP-002
Bair M., TP-176
Bakare R.A., TP-123
Bakka H., TW-005
Bakken I.J., TP-062
Bakker R., MO-606, MP-027
Balira R., TP-016, WP-056, WP-135
Ballard R., MO-403, TP-043, TP-104, TP-136, WP-137
Ballard R.C., MW-204, WP-024, WP-054, WP-068, WP-104
Ballesteros J., TP-142, TP-194
Bandeira M.G., TP-112, TP-115
Barbeyrac B. de MW-201, TP-051, TP-052, TP-054
Barbosa S., TP-147
Bardsley P.E., TP-088
Barnes M., TP-082, TP-094, WO-103
Barnes R., MP-107, MP-113, MP-114, MP-115, MP-118, MP-126
Barnes T., TP-143
Barnett J., MP-152, MP-178, MP-179, TP-069, TP-190, WP-028
Barr E., MP-121
Barracrough T., WP-083
Barros R., WP-105
Barton P., WP-030
Bash M.C., WP-015
Bass D.C., TO-601
Baster K. ms MP-195, TO-405
Bastos R., MO-403, TP-097
Batteiger B., TP-072
Batteiger B.E., MP-119, TP-056, WP-109, WP-110
Bauer H.M., TP-059
Bauer H.M.B., WP-039
Bauer M.E., WP-096
Bautista C.T., MP-033
Bautista S., MW-102
Beauchamp G., MO-602
Bébéar C., TP-051, TP-052, TP-054
Becher J.R.B., MP-061
- Becker M., TP-132
Becquart P., MO-604
Beets G., MO-006
Behets F., TO-701, TP-163
Behets F.M.T., TP-093
Behets W., WP-049
Beigi R., MP-109
Belec L., MO-605, MP-014, TP-007, TP-008, TP-010
Belkum van A., TP-046
Bell G.B., MP-067
Bell K., WP-005, WP-043
Ben-Abdallah A., TP-131
Benech I. dr TP-136
Benet D., MO-004, MO-301
Bennett J.S., MW-004
Benzaken A., TP-112, TP-115, WP-062
Benzaken A.S., WP-009, WP-055
Bergen J.E.A.M. van MP-147, TO-002, TO-406, TP-074, TP-084
Bergland V., MO-603
Berkowitz J., MP-035, MP-036
Berman S., MW-101, MW-202, MP-138, TO-403, TO-502, TO-606, WP-069
Bernabeu A., TP-052
Bernstein D.I., MP-197, TP-001
Bernstein K.T., MP-192, TO-204, WP-021, WP-046, WP-070
Berthelsen L., WP-035
Bertozi S., MW-102, WW-202
Bertozi S.M., WW-203
Bertucci C.F., WP-103
Bessudo-Manor N., TP-133
Bhalla S., MP-001
Bhandari R.P., MP-196
Bhola P., MP-023, TP-014, TP-015
Bidwell P., MO-501, TP-166
Biersteker S., WP-083
Bij A. van der MW-203, TP-160
Bij A.K. van der MP-137, WO-002
Bij de Vaate K., MP-085
Bindels P., MP-147
Binger A., TP-107
Biraro S., MP-037
Birdthistle I.J., MP-046
Birkelund S., MO-404, TP-041
Birn D.B., MP-005
Bishop C., WO-003
Bishop C.J., WP-038, WO-001
Bitera R., MP-016

Author Index

16TH BIENNIAL MEETING OF THE INTERNATIONAL SOCIETY FOR SEXUALLY TRANSMITTED DISEASES RESEARCH (ISSTD)

- Blackburn P., TP-059, TP-147
Blackmore T., WP-034
Blake D.R., TP-082
Blanchard J., TP-132
Blanchard J.F. dr MP-106,
MP-165, MP-168, TP-173
Blanchard K., MP-099
Blank M.P.H., TO-503
Blank S., MP-156, TP-145,
WP-065
Bloomfield S., MP-145
Blossom D., MP-109
Boily M.C., MW-306, MP-037
Boivin G., TP-012, TP-024
Bolan G., TP-019, TP-059,
TP-140, TP-147, WO-005,
WP-039
Bolan G.A., MO-101, MP-144
Boland M.S., MP-098
Bolding G., MP-094, MP-096
Bolding G.J., MP-095, TO-003
Bollen L.J.M., TP-129
Borborema S.C., WP-009,
WP-062
Borenstein L., TP-130
Borgen K., WP-025
Borkovic L., WO-104, WP-070
Borrego M.J., TP-064, WP-115
Bortolanza E., MO-506
Botas J., WP-052, WP-053
Botros B., MP-025, TP-116
Botros B.A., MP-033
Boudov M.R., TP-079
Bouhlal H., MO-605, TP-007,
TP-008, TP-010
Bourboulia D., TP-036
Bovee L.P.M.J., TP-029
Bowman C., TP-124, TP-127,
TP-030
Bozicevic I.B., WP-037
Bradshaw C.S., MO-401,
TO-104, WP-116
Brady R., TP-184
Braham J., TP-093
Branch L., TP-125
Branco J., WP-105
Braslins P.G., MP-050
Brathwaite A., TO-701, TP-093
Bremer V., TP-134, TP-135,
TP-137
Brewer D.D., MP-062, TP-164
Brill I., MO-104
Brinkman K., MP-045
Brito de Sá A., TP-064
Brizendine E.J., TP-035
Broad J., WP-067
Broad J.M., TP-121, TP-125,
WP-072
Broer J., TO-406, TP-074,
TP-084
Bronzan R., MO-204
Brotman R.M., WP-125
Broutet N., MO-202, TO-304,
TP-104, WP-074
Brown A.B., MP-005
Brown A.E., MP-032, MP-039
Brown B., MP-053
Brown B.J., MO-302
Brown E.L., MO-602
Brown H.E., TP-158
Brown J.M., TW-005
Brug J., TP-170
Bruin P. de TP-073
Bruisten S.M., TO-202, TP-029,
WO-002
Brunham R., TP-045, WP-032
Brunham R.C., MP-152,
MP-178, MP-179, TP-069,
TP-190, WP-028
Brunt C., MW-305
Buchbinder S., MO-004,
MO-301
Buckner R., WP-020
Budilovskaya O., WP-011
Buendía C., TP-126, TP-174
Buffardi A., TP-126, TP-174
Bukusi E., WO-106
Bukusi E.A., MP-184, WP-118,
WP-124
Bull S., MP-171, MP-175,
TP-182
Burdge D.R., MP-035, MP-036
Burgess S., MP-169
Buscemi L., WP-001
Buve A., MO-606, MP-027,
WP-135
Buvé A., MO-006, MP-008,
TO-102, WP-127, WP-136
- C**
- Caceres C.F., MP-172, TP-114
Caceres F., MP-038
Cai W., TP-060
Cai Y.M., MP-081
Caka S., TP-006
Calderon S., TP-141
Cameron C.E., WW-003
Cammarata C., WP-129
Cammarata C.L., TP-057,
WP-020
Campagnari A.A., WP-095
Campbell C., TW-205
Campos P.E., TP-126, TP-174
Capretti M.G., WP-066
Carcamo C., TP-126, TP-174
Carlin L., MP-107, MP-113,
MP-114, MP-115, MP-118,
MP-126
Carr J.K., MP-025, MP-033,
TP-116
Carrick-Anderson K., TO-505
Carson C.F., WP-119
Cassim N., TO-706
Castilla J., TP-142
Castro L., WP-003
Castro R., TP-031, WP-105
Castro R.C., WP-052, WP-053
Cates J.R., MP-166
Cates, Jr. W., WW-205
Cavrin F., WP-051
Cawthorne A., MP-051
Celentano D.D., MP-030,
TW-002, TW-003, TW-005,
TW-006, TW-007
Celum C., TP-021
Celum C.L., MO-602
Cent A., MO-602
Cevenini R., WP-051
Chadborn T.R., MP-039
Chalmers J., MP-153
Champion J.D., MO-505,
MP-127, TP-177
Chan K., MP-087, TO-006,
MO-304
Chandiwana S., TW-201,
TW-203, TW-204
Chandler-Ezell K., TP-101
Changalucha J., MO-501,
MP-031, TO-703, TP-016,
TP-166, WP-056, WP-084,
WP-122, WP-135
Chapin J., TP-072
Chase J., TP-140, WO-005
Chatterjee A., MP-038
Chemin C., TP-008
Chemtob D., TP-133
Chen C., MO-403, TP-043,
WP-104
Chen S.Y., MP-072
Chen X.S., TP-048
Chen Y., WP-043
Cheng H., WP-014
Cheng W.W., TO-201, WP-057
Chernesky M., TP-060
Chesson H., MP-193, MP-194,
MP-197, WO-105
Chi K.-H., WP-104
Chi K., TP-043
Chiappe M., TP-174
Chiappe M.A., TP-126
Chiduo B., MP-091
Chigbo R.C., MP-009
Chilongozi D.A., MO-003
Chimbadzwa T., TW-202,
TW-203
Chin-Hong P.V., MO-004,
MO-301
Chinaglia M., MO-506
Chipato T., MP-012, TW-002,
TW-003, TW-005, TW-007,
TP-195, MP-030
Chohan V., WP-123
Choi S.-J., MP-108
Chong S., TP-060
Choudhury B., WO-001,
WO-003, WP-038
Chow J.M., TP-059, TP-058
Chow M., TP-147
Christiansen G., MO-404,
TP-041
Christilaw J., MP-035, MP-036
Chyu L., TP-071
Ciesielski C., TO-205, WP-064,
WP-067, WP-081
Cintron A., TP-187
Cisterna R., WP-017
Claeys G., WP-113
Clark A., TP-171
Clark R.A., TO-101, WP-108,
WP-130
Clavo P., TP-142
Clayton T., TO-703
Clerc M., TP-052, TP-054
Clift S., TP-166
Coates T.J., MP-172, TP-114
Codina M.G., MP-007
Cotori N., MP-074
Cody S., WO-005
Coenen T., TO-406, MP-147
Cohen C., MP-124, MP-184,
TP-122, TP-193
Cohen C.R., MO-405, MO-406,
TW-105, WP-032, WP-118,
WP-124
Cohen M., MO-303, WP-049
Cohen M.S., MO-003, TO-103
Cohen R.C., TP-045
Collins C., MP-075
Collum S.C., TP-099
Conaty S., MP-016A
Conde-Glez C., TP-025
Cook D., MO-304
Coombs R., WP-118
Cooper B., MP-037
Copas A.J., MP-102, MP-158
Corbett K.K., MP-076
Cordero E., TP-130

Cordova D., WP-065
 Corey L., MO-603, TP-004,
 TP-021, TP-022
 Cormier L., TP-017
 Cornelisse P.G.A., MP-030,
 TW-002, TW-003, TW-006,
 TW-007
 Corrah T., MP-034
 Cortina G., MO-302
 Cosgrove Sweeney Y.T.,
 WP-126, TP-152, TP-153,
 TP-154, TP-081
 Costenbader E., MP-187
 Costes-Martineau V., MO-305
 Cottler L.B., TP-131, TP-101
 Coursey E.J., TO-502
 Coury-Doniger P., MP-073,
 MP-076
 Coutinho R.A., MW-203,
 MP-024, MP-045, MP-135,
 MP-137, TO-005, TO-202,
 TW-104, TP-029, TP-053,
 WP-002, WP-047
 Cowan F.C., MO-503, MP-089,
 MP-104
 Cowan F.M., MP-019, MP-022,
 MP-060, MP-069
 Cowan S., WP-035
 Cox A.D., TP-035
 Cox D.S., TP-035
 Cox T., TP-125
 Cranston R.D., MO-302,
 MP-110, MP-131
 Cromack L., TP-112, TP-115
 Cronje H.S., TP-089
 Crosby R., TP-006
 Cross P.L., MO-607
 Crucitti T., MP-008, MP-139,
 TO-102, WP-127, WP-134,
 WP-136
 Cruz A., WP-050
 Cubbins L.A., MP-097, MP-180
 Cummings P.K., WP-126
 Cunningham A.L., MO-601
 Cunningham P.H., MO-102
 Curry A., MP-079
 Cuylaerts V., WP-127
 Cyrier R., TP-035

D

D'Antuono A., WP-066
 D'Entremont D., MP-084
 Da Costa M., MO-004, MO-301,
 MO-303
 Daar E.S., MP-049
 Dam J. van TO-303

Damme K. van MO-504,
 WP-049
 Damme L. van MP-008
 Dan -, WP-031
 Danavall D., MO-403
 Dandona L., MP-064
 Dangor Y., WP-007
 Daniel G.E., TP-099
 Darragh T., MO-301
 Darragh T.M., MO-303
 Darrow W.W., MP-066, WP-083
 Datta S.D., MO-306, TP-078
 Davidovich U., TO-005
 Davidovich U.E., MP-085
 Davidson O.R., MP-102,
 MP-105, MP-185
 Davis M., MP-094, MP-096,
 TO-003
 Davis M.D.M., MP-102,
 MP-105, MP-185
 Davis T., TP-057, TP-095
 De Backer E., WP-113
 De Bruyn G., MP-099
 De Hulsters B., TP-191
 De Vuyst H., MP-167
 De Walque D., MW-102
 DeAugustine N., WP-039
 Deblonde J., TP-191
 Declich S., MP-020, MP-021,
 MP-051
 Defer M.C., WP-114
 Defraye A., TP-120
 Del Romero J., TP-194
 Delany S., MP-017, MP-070,
 TP-011
 Delcher C., TP-140
 Della Bella E., WP-051
 Delpech V., WP-016, TP-075,
 WP-036
 DeMaria L.M., WW-203
 Dendukuri N., TP-063
 Deperthes B.D., TP-104
 Der G., MP-091
 Des Jarlais D., TP-109, TP-027
 Deshmane K., TP-028
 Desire F., TO-503
 Desmond N., MP-091
 Diaz-Mitoma F., TP-005
 Diaz J., TP-105
 Díaz J., MO-506, TP-100
 Diaz J.D., TP-102
 Diaz Olavarrieta C., WP-077,
 WP-079, WP-080
 DiCarlo M., TP-166
 Dicker L., TP-068, TP-113
 Dicker L.W., TO-403, TP-066
 Dickey K., WP-129

Dickey K.A., MO-402
 Dierdorp M., TO-202, WO-002
 Dillon J.A.R., MW-001
 Dillon J.R., WP-006, WP-005,
 WP-043
 Dimitry C.A., TP-024, TP-012
 Dimmitt Champion J.D.C.,
 TP-188, TP-192
 Diodene D., WP-129
 Dixon P.B., TP-099
 Djigkaeva E., TP-119
 Dmitriev G., WO-105
 Dodds J.P., MP-100
 Doherty I., MP-154
 Doherty I.A., MP-149, MP-150
 Domeika M., WP-011
 Domingues D.D., WP-105
 Donegan E., WP-008
 Donini A. A., MO-506
 Donovan B., MO-102, MP-068,
 MP-163
 Doornum G. van TP-047
 Dos Santos B., TP-191
 Dotson Y.F., TP-035
 Dougan S., MP-032, MP-039
 Douglas J., MO-306
 Douglas J.M., MO-101, TP-019,
 TP-159
 Drazdakova M., TP-033
 Drolette L., TP-006
 Drumright N., MP-049
 Dube S., TW-205
 Dubovskaya L., TP-117
 Dubovsky S., TP-119
 Dudchenko O., WP-088
 Dugasheva L., TP-117, TP-119
 Dukers N.D., TO-005
 Dukers N.H.T.M., TP-029,
 WO-002, WP-047
 Dullaart E.G., TP-049
 Dumestre J., TO-101, WP-108,
 WP-130
 Dunbar M.S., MO-502, TP-195,
 TP-196
 Dunn E., MP-074
 Dunne D.W., TP-158
 Dunne E.F., MP-123
 Dupin N., WP-089
 DuPlessis J., MP-064
 Durawo J., MP-019
 Dutra J.C., WP-062
 Dutra Jr J.C., WP-009
 Dworkin M.S., TP-121, WP-072
 Dwyer K., WO-103
 Dyatlov R.V., TP-111
 Dyck E. van MP-008, MP-139,
 TO-102, WP-127, WP-136

E

Earhart K.C., MP-025, MP-033,
 TP-116
 Ebel C., MP-128
 Edmunds J., MO-106
 Edmunds W.J. dr MP-195
 Edwards S.G., MP-102
 Efird J.T., MO-303
 Egesah O.B., MP-092
 Egger S., MP-163
 Einwalter L., WP-033
 Ekalaksananan T., TP-042
 Ekstrand M., TP-028
 Elam G., MP-047, TO-004
 Elford J., MP-032, MP-039,
 MP-094, MP-095, MP-096,
 TO-003
 Elghorri M., TP-034
 Elkas J.C., MP-119
 Elkins C., WW-001, WP-098,
 WP-099
 Ellen J., TO-206
 Ellen J.E., TP-070
 Ellen J.M., MO-105, MP-159,
 TP-138
 Elwood Martin R., MP-116
 Embree J., TP-017
 Emery S., MP-026, TP-022
 Emmett L. ms MP-195, TO-405,
 TP-075
 Eng N.F., WP-005, WP-043
 Engelman J., MP-143, TO-203,
 TP-092
 Enriquez M.E., TP-102
 Erbeling E., MP-189, TO-206
 Erbeling E.J., MP-018,
 MP-073, TO-201, WP-021,
 WP-046, WP-057, WP-125
 Erbeling E.J.E., MP-151
 Erens B., MP-158
 Esbroeck M. van MP-139
 Escoto G., TP-079
 Esser M.T., MP-121
 Esteban V., WP-017
 Evans A.L., TP-076
 Evans A.E., TP-009
 Evans B., TO-004
 Evans B.G., MP-032, MP-039,
 MP-047
 Everett D., MP-031, TP-016,
 TO-703, WP-056, WP-122
 Exposto F., TP-031, WP-052,
 WP-053, WP-105
 Ezpeleta G., WP-017

Author Index

16TH BIENNIAL MEETING OF THE INTERNATIONAL SOCIETY FOR SEXUALLY TRANSMITTED DISEASES RESEARCH (ISSTD)

F

- Fabiani M., MP-020, MP-021, MP-051
Fairley C.K., MO-401, MP-174, TO-104, TP-061, TP-107, WP-015, WP-116
Faldella G., WP-066
Farley T., TP-104
Farley T.A., TO-101, WO-102
Farquhar C., MP-184, TP-022
Farrell J., MP-109
Fayemiwo S.A., TP-123
Feldblum P.J., MO-504
Feng Q., MP-120, MP-122
Feng T., WP-063
Fennema H., TO-005
Fennema H.S.A., MP-137, WP-047
Fennema J.S.A., MW-203, MP-010, MP-135, TO-202, TO-604, TW-104, WO-002
Fenton K., TO-004, WO-001, WO-003, WO-101, WP-038, WP-069
Fenton K.A., MP-032, MP-039, MP-047, MP-105, MP-141, MP-158, MP-185, WW-102, WP-002, WP-016, WP-036, WP-037
Ferguson N.M., MP-042
Ferguson T., TP-175
Fernandes L., WP-128
Fernandes de Brito O., TP-170
Fernández-Cuenca F.F.C., MP-004
Fernandez-Esquer M.E., MP-077
Fernandez P., MP-172
Fernández Canigia L., WP-001
Fernando J., TP-097
Ferreira M.A., TP-064, WP-115
Ferreira S., TP-036, TP-003
Ferris M.J., WP-117
Fichtenberg C.M., MO-105
Fiedler T., TO-105, WP-120, WP-121
Fielding J.E., TP-130, TP-172
Fife K.H., MP-197, TP-001, TP-184
Fife K.H.F., TP-018
Figueroa J.P., TO-701, TP-093
Fine D., TO-403, TP-068
Fine P., TP-095
Fiore D., MP-061
Fiore D.F., MP-067
Fiscus S.A., MO-003
Fishbein M., MO-101
Fisher W.A., MP-035, MP-036
Fisman D.N., MO-106
Fleenor M.E., MO-104
Fleming M., MP-062
Flemming T., WO-103
Florindo C., TP-064, WP-115
Floyd S., MP-046
Folgosa E., MO-403, TP-097, TP-136
Ford A., TP-088
Fortenberry J.D., MP-176, MP-177, TO-401, TP-018, TP-156, TP-157, WP-109, WP-110
Fortin D., MP-016, WP-013
Fortney K.R., WP-095, WP-096, WP-097
Foster G., TW-202, TW-203
Foster M., TP-019
Foulongne V., MP-015, MO-604
Fox K.K., TP-129
Foxman B., TP-189
Francis K., TP-093
Frantz-Blancpain S., TP-051
Fraser C., MP-044
Fredlund H., WP-034
Fredricks D.N., TO-105, WP-120, WP-121
Freeman C., MP-107, MP-113, MP-114, MP-115, MP-118, MP-126, MP-180
Freeman C.M., MP-097
Freeman E.E., MO-607, MO-606, MP-027
Freire W.S., TP-037
French F.S., WP-006
French K.M., MP-040
Friedman A.L., MP-129, MP-130
Friedrich D., TP-004
Frisan T., WP-101
Frost E., MO-605, TP-008, TP-010
Fujita M., TP-091
Fujiwara M., TP-091
Fulcher R.A., WP-092
Fuller D., TP-057, TP-095, WP-020
Furj J.A.F. ms. MP-067
Galea J.T., MP-053
Gallagher K., TO-205
Gallo M., TO-501
Galvin S., MO-003
Gameiro R., TP-031
Gandacu D., TP-133, WP-031
Gao J., TP-005
Gao X., TP-048
Garcia G., WP-080
Garcia M., WP-009
Garcia P., TP-174
Garcia P.J., TP-126
García S., TP-194, WP-079
Garcia S.G., WP-077, WP-078
Garland S.M., MO-401, MP-111, MP-112, TO-104, TP-061, WP-015
Garnett G., TW-201, TW-203, TW-204, TP-174
Garnett G.P., MP-040, MP-042, TO-605, TP-020, TP-126, WW-204
Gavyole A., MO-501, MP-031, TP-016, TP-166
Gaydos A., WO-103, TP-094
Gaydos C., WO-006
Gaydos C.A., TP-082, TP-167
Gaydos C.A.G., WP-106, MP-136, WP-131
Gbenafa-Agossa C., WP-013
Gehret M., MP-082, MP-058
Geisler W.M., TP-071, TP-058
George R., WP-068
George R.W., WP-054
Ghanem K.G., MP-018, MP-151, TO-201, WP-057, WP-125
Ghani A., MP-037
Ghani A.C., MP-044, WO-001, WO-003, WP-038
Ghys P., MP-038
Giana M.C., MP-029
Gibson B.W., WP-094
Gift T., MP-193
Gift T.L., MP-062, MP-191, WO-102
Gil A., TP-119
Gilbart V., MP-047, TO-004
Giles J.G., WO-006
Gill O.N., WP-032
Gilmour M.W., WP-004
Gilson D., TP-140, WO-005
Gilson R.J.C., MP-117
GISP Investigators WP-026
Gladwin H., MP-066
Glchangi P., MO-203
Golthoff G., TO-206
Glynn J.R., MO-607, MO-606, MP-027, MP-046
Godoy C.G.G., MP-059
Gogate A., TP-092
Gold F., TP-169
Goldberg D. J., TO-402
Golden M.R., MP-053, MP-062, TO-605, TP-164, TP-171, TP-180, WP-060, WP-087
Golding A., TP-171
Gomberg M.A., TP-149
Gomes J.P., TP-064, WP-115
Gompf S.G., WP-061
Gong X.D., TP-038
Gonzales V., TP-180
Goodfellow A.G., MP-189
Gorbach P.M., MP-049, MP-053, MP-131, MP-160
Gordones C., TO-203
Gore O., MO-503, MP-089, MP-104
Gorter A.C., TP-108
Gorton R., WP-073
Gottlieb S., WP-031
Gottlieb S.L., TP-019
Götz H., TO-406
Götz H.M., MP-013, TP-049, TP-074
Gotz H.M., TP-083, TP-084
Goulet V., WP-023
Graaf H. de MP-186
Graham M.R., WP-004
Granger P., MO-304
Granskaya J., TP-111
Gras L., MP-044
Gratzer B., WP-081
Grauer K., TP-073
Green S., TP-158
Greenblatt R.M., MO-303
Greenhouse P., TP-009
Greenwood G.L.G., TP-161
Gregson S., MO-001, MP-046, TW-201, TW-202, TW-203, TW-204, TW-205
Gresenguet G., MO-605, TP-007, TP-008, TP-010
Grey T.W., MO-504
Grierson J., TP-185
Griffin J.T.A., MP-044
Grimley D.M., MP-090, TP-168
Groff Megan, WP-033
Groot F. de TP-084
Groot R. de TP-046, TP-047
Grosskurth H.G dr MP-181, TP-103
Grossman D., WP-077, WP-079, WP-080

G

- Gahiro E., TP-096
Gaist P.A., MP-064
Galarza P., WP-001, WP-003
Galban E.G., WP-009, WP-055, WP-062

Grulich A.E., MO-102, MP-068, MP-163
 Grundy D.G. mr. MP-067
 Gu W.M., TP-048, WP-043
 Guerra F.A., MO-505
 Guerra L., WP-101
 Guerras S., TP-142
 Guerrero-Lemus V., TP-025
 Guerry S., MP-144
 Gully M., TP-127, TP-030
 Gunn R., WP-039
 Gunter D., TP-068
 Guo J., TP-147
 Guraiib M., WP-074

H

Habbema J.D.F., MO-001, MP-092, MP-101
 Hadgu A., TP-063
 Hagensee M., MO-306
 Hajat A., MP-156
 Hall A., WP-101
 Hall C.S., MP-076, MP-144
 Hall J., MP-050
 Hall S.H., WP-006
 Hallett T., TW-204, TW-205
 Hallett T.B., WW-204
 Halli S., MP-106
 Halttunen M., TP-041
 Hamasuna R., WP-102
 Hambleton I., MP-031, TO-703, WP-122
 Hamed K., TP-005
 Hamilton I., TP-003
 Hamouda O., TP-134, TP-135, TP-137
 Handsfield H.H., MP-062, TO-605, TP-164, TP-171, WO-107, WP-060, WP-087
 Hansen E.J., WP-091, WP-092
 Hansl B., MP-064
 Harcourt C., MP-163
 Hardick A., TP-082, TP-094, TP-167
 Hardick A.J.H., WO-006, WP-106, WP-131
 Hardick J., TP-094
 Hardick J.P.H., WP-106, MP-136, WP-131
 Hargrove J., MP-022, MP-069
 Harper O., TP-143
 Harris P., TP-165
 Harris S., WP-054
 Harrison A., WP-096
 Harrison W.G., WP-032
 Harrisson U., MP-063

Hart G., MP-094, MP-095, MP-096, TO-003, TO-402, WP-030
 Hart G.J., MP-102, MP-105, MP-185, TO-505
 Hart S.D., MP-110, MO-302
 Hartog J.E. den TP-055
 Harvey A., WP-026
 Hassan W.M., MO-002, WP-123
 Hatzell T., MO-504
 Haufe M., MP-085
 Hawken M., TO-501
 Hawkes S., MO-202
 Hawkins K.M., TP-130
 Hay P., WP-122
 Hayes R., MP-155
 Hayes R., MP-019, MP-022, MP-023, MP-031, MP-091, TO-703, TP-007, TP-014, TP-015, TP-016, WP-122, WP-135
 Hayes R.J., MO-103, MO-606, MO-607, MP-027, MP-037
 Hayhoe B., TP-060
 Heath K., MP-035, MP-036
 Hedenquist R.B., WP-076
 Heffelfinger J., TP-118, WP-069, WP-071
 Heijman R.L.J., TO-604
 Heijnen M.L.A., TP-032
 Heise L., MP-070
 Hellard M.E., TP-061
 Henderson Z., MP-107, MP-118
 Henderson Z.T., MP-113
 Hennessy R., WP-065
 Herat A., TP-198
 Herida M., MW-201, WP-023, WP-089
 Herida M.H., MP-142
 Herlt C., TP-112, TP-115
 Hermann B., TW-304
 Hermans M.H.A., TP-108
 Hernandez A., TP-028, TP-092
 Herrera G., WP-034
 Hewett P., TO-506
 Hickson F., TO-004, MP-047
 Hightow L.B., MP-098
 Hijazi L., WP-019
 Hilari C., WP-078
 Hillier S.L., WP-126, TP-152, TP-154
 Hillis S., TP-118, WP-071, WP-088
 Hillman R.J., TP-198
 Hirschowitz S.L., MP-110, MO-302

Hislop G., MP-116
 Hobbs M., TO-103, TO-501, TP-093, WP-098
 Hobbs M.M., TO-701
 Hocké C., TP-051
 Hocking J., TP-107
 Hocking J.S., TP-061
 Hoebe C., TO-406
 Hoebe C.J.P.A., TP-074, TP-080, TP-084
 Hoek A. van den MP-024, TP-160
 Hoek C. van den TP-170
 Hoek J.A.R. van den MP-045, TP-029
 Hoek K. van den MP-013
 Hoffman I.F., MO-003
 Hoffmann S., WP-002
 Hoffmann S.H., WP-035
 Hofmann A., TP-134, TP-135, TP-137
 Hogan T., WO-103
 Hogben M., MP-062, MP-173, TP-164, TP-181, TP-186, TP-187, WO-107
 Hogg R.S., MP-087, TO-006, MO-304
 Hojo T., TP-091
 Holden A.E.C., MO-505, MP-127, TP-188, TP-192
 Holden E.C., TP-177, TP-178, TP-197
 Holden J., TP-167
 Holland M.J., TP-002
 Holly E.A., MO-303
 Holmes K., TP-189, WP-118, WP-124
 Holmes K.K., MP-122, TO-605, TP-126, TP-164, TP-174, TP-183, WO-004, WP-060, WP-112, WP-123
 Holmes R.K., WP-101
 Holmes S.W., TP-121
 Hondo T., TP-091
 Hong F.C.H., MP-081
 Hook E., WP-049
 Hook E.W., TP-023, TP-099, TP-168, WP-020
 Hook III EW, MO-104, MP-090, TP-057, TP-071, WP-014
 Hooks T., TP-168
 Hoosen A.A., MP-011, MP-058, WP-007, WP-128
 Hop W., TP-047
 Hopkins C.A., MO-401
 Horvath L.B., TO-104
 Hoshina S., TP-091

Hossain M., MO-202
 Houdt R. van TP-029
 Houston L.A., WP-100
 Houston L.S., WP-112
 Hsieh T.C., WP-044
 Hsieh Y.H., WP-041, MP-074, WP-044
 Hsu L.H., MP-048
 Hua W.H., MP-187
 Huang M., TP-022, WP-033
 Huang M.L., MO-603, TP-021
 Hudspeth M., MO-402
 Hughes A., TP-023
 Hughes G., TP-034
 Hughes J.P., MP-120
 Hughes P.H. mr TP-103
 Huhn G.D., TP-121
 Humphrey J., MP-069
 Humphreys T.L., WP-097
 Hutchins H., TP-180
 Hutchins K., TP-072
 Hylton-Kong T., TO-701

I

I digbe E.O., MP-009
 Iliff P., MP-069
 Imosemi O.D., MP-009
 Imrie J., MP-047, MP-102, MP-105, MP-185, TO-004, WW-104
 Ingabire C., TP-096
 Irwin K., MP-107, MP-113, MP-114, MP-115, MP-118, MP-126, TP-110
 Isaac Renton J., MP-116
 Ishida T., MP-169, WP-075
 Isingo R., MP-101
 Ison C., MW-201, WO-101, WP-024
 Ison C.A., MP-132, MP-141, WO-001, WO-003, WP-002, WP-016, WP-036, WP-037, WP-038
 Ito J.I., TW-103
 Iverson Cabral S.L., MO-406

J

Jaccard J., TP-088
 Jackson J.B., MP-074
 Jackson T.H., WP-130
 Jaffar S., MP-019, MP-022
 Jain N., MP-107, MP-113, MP-114, MP-115, MP-118, MP-126
 James L., MW-305

Author Index

16TH BIENNIAL MEETING OF THE INTERNATIONAL SOCIETY FOR SEXUALLY TRANSMITTED DISEASES RESEARCH (ISSTD)

- Jamshidi R.M., WP-125
Jang D., TP-060
Janier M., WP-089
Janowicz M., WP-095, WP-097
Janowitz B., TO-501
Jansen K.U., MP-121
Jaoko W., WP-123
Javanbakht M., TP-079
Jay N., MO-303
Jayaraman G., WP-059
Jaye A., MO-005
Jeanson F., TP-052
Jenckes M.W., MP-073, MP-073
Jenkins H., TP-158
Jensen J.S., MO-404, WP-102
Jensen S., WP-118
Jentsh U., TP-011
Jerajani H., TP-028
Jerajani H.R., TP-092
Jespers V., MP-008
Jespers V., MO-006
Jin F., MP-068
Jin F.Y., MO-102
Joesoef M., TP-065, TP-066
Joesoef M.R., TP-067
John-Stewart G., TP-022
Johnson A.M., MW-104, MP-100, MP-158
Johnson H.L.J., MP-151
Johnson R., TP-078, WP-014
Johnson R.E., TP-044
Johnston C., MP-148
Johnston C.L., MP-183
Jolly A., MP-148, MP-183
Jolly A., MW-305
Jolly A.M., WP-043
Jones H., MW-305, TO-506, TP-100, TP-105, TP-175, WP-068
Jones H.J., TP-102
Jones P., MP-063
Jones R.B., TP-057
Jong K. de MP-010
Jongh M. de WP-007
Joshi S.D., MP-196
Juarez-Figueroa L.A., TP-025
Judson F., MO-301
Juliar B.E., TP-176
- K**
Kachur R., MP-175, TP-182
Kahn J.G., MP-064
Kahn R.H., TO-205, TO-502
Kaldor J., MP-068
Kaldor J.M., MO-102
Kalichman A.O., MP-029
Kamali A.K. MP-181, TP-103
Kamb M.L., MO-101, TP-019, TP-139
Kambugu F., MP-109
Kane S., TP-092
Kang M.J., MO-502, TP-195, TP-196
Kanga Z., TP-166
Kapiga S.H., WP-137
Kaplan A.H., MP-098
Karani A., MP-167
Karavaeva O., TP-119
Kasindi S., MP-031
Kasprzyk D., MP-097, MP-107, MP-113, MP-114, MP-115, MP-118, MP-126, MP-180
Kasse K.M., TP-103
Kasse M.K. ms MP-181
Katampora J., MP-124
Katz B.P., MP-177, TO-401, TP-018, TP-035, TP-157, WP-095, WP-097, WP-109
Kawai S., WP-012
Kawula T.H., WP-092
Kayibanda E., TP-096
Keawvichit R., TW-006
Kedhar A., MP-037
Keefe M., MP-128
Kelen G.D., MP-074
Kelly J., TP-111
Kelly S.C.K., MP-121
Kemeny B., WP-058
Kemp P., MP-085
Kennedy T., TP-151
Kenney D.L., MP-122
Kenslea G., WP-086
Kent C., WO-006
Kent C.K., MP-143, TP-059
Kent C.K.K., TP-077, MP-144
Keogh P., WW-101
Kerani R., WO-004, WP-060, WP-087
Kernaghan K., TO-505
Kerndt P., MO-306, MP-131
Kerndt P.R., MP-088, TP-079, TP-172, WP-086
Kerndt R., TP-130
Kerrigan D., MO-506
Kerssens J., MP-147
Khakimov M., MP-025, MP-033, TP-116
Kharasch S., MP-050
Kharod M., MP-183
Khetarpal S., MP-001
Khonde N., MO-605, TP-007, TP-008, TP-010
Khosla G. MP-182, MP-157
Khryanin A., TP-039
Khunou L., MP-056, MP-057
Kim-Farley R., TP-130, TP-172
Kim H.N., TP-021
Kim J., TP-036, TP-037
Kim K.S., MP-108
Kimani P., TP-193
King E., MP-084
King J., MP-088
Kinyari T., TP-045, WP-032
Kinyari T.N., MP-184
Kippax S., MP-068
Kippax S.C., MO-102
Kirumira E., MP-167
Kishamawe C., MP-101
Kishore K., TP-148
Kissinger P., TO-101, TP-141, TP-155, WO-102, WP-108, WP-130
Kiviat N., MP-124
Kiviat N.B., MP-120, MP-122
Klausner J., MP-154, TO-205, WP-039
Klausner J.D., MP-143, MP-172, MP-190, TO-203, TP-077, TP-114, TP-151
Klausner J.D.K., TP-161
Klavs I., MP-155
Klebanoff M.A., WP-125
Kleinbaum D.K., MO-104
Klinger V., WP-137
Klingler E.J., WP-065
Kmak D.K., MP-119
Knapp J., WP-008
Knapp J.S., WP-042
Knapper K., MP-072
Knight L., MO-501, MP-031, MP-091, TO-703, TP-016, WP-122
Knowles L., MW-305, MP-152, MP-178, MP-179, TP-069, TP-165, TP-190, WP-028
Ko T., TP-085
Ko W.C., WP-044
Koblin B., MO-301, MO-602
Kock A. de TP-175, TP-105
Kok G., WW-105
Kolader M., TO-202, WO-002, WP-047
Konate I., MP-015, MO-604, MO-305
Konda K.A. ms. MP-038
Konda K.A.K., MP-172, TP-114
Kongyingoes B., TP-042
Kooomey M., MW-003
Koornhof H., MP-133
Koornhof H.J., TP-104, WP-019
Korenromp E.L., MP-037
Korte J.E., MO-505, MP-127, TP-177, TP-188, TP-192
Koskela P., TP-041
Koubanova A., WO-105
Koumans E., MP-173, TP-181
Kourbatova E., WO-105
Koutsky L., MO-306
Koutsky L.A., MP-120, MP-121, MP-122
Kovalyk V.P., TP-149
Kozlov A., TP-111
Kraaijeveld A.G., TP-032
Krajden M., MP-116
Kramer M.A., MP-024
Krantz E., MO-602, TP-021
Kretzschmar M., MW-301
Kristof K., TP-090
Krivenchuk N.A., TP-039
Kropp R.Y., TP-017, TP-124, MP-140
Kuklova I.K., TP-033
Kumar S., MP-196
Kumaranyake L., WP-084
Kuntz S., TP-021
Kuo M.J., WP-041, WP-044
Kureishi A., TP-089
Kurth C.N.M., TP-180
Kusunoki Y., TP-071
Kuzevska I., TO-104
Kwatampora J., TP-193
Kwena A., WO-106
Kwindt L., WP-028
Kwindt T.L., MP-152, MP-178, MP-179, TP-069, TP-190
Kwok C., TP-122
- L**
Laar M.J.W. van de MW-201, MP-041, WP-025
Labbe A.C., MP-016, WP-013
Lacey C.J.N., MP-117, TP-076
Lagarde E. dr TO-704
Lagergård T., WP-093
Lagos D., TP-036, TP-037
Lai C., WP-075
Lakeman F., TP-023
Lambertsen L., WP-035
LaMontagne D.S. mr MP-195, TP-075, TO-405
Lampinen M., MP-087, TO-006, MO-304
Land J., TW-103, TP-053

- Land J.A., TP-055
 Langhaug L., MP-022
 Langhaug L.F., MO-503,
 MP-019, MP-089, MP-104
 Lapple D.M., TO-103
 Larsen U., WP-137
 Larsson M., WP-011
 Latimer J.L., WP-091
 Latkin A., MP-079
 Latkin C., WO-104
 Latkin C.A., MP-187
 Laura Herrera L.H., TO-206
 Lavagnole M.C., WP-055
 Laver S., MO-502, TP-196
 Lavreys L., MO-002, MP-026,
 WP-123
 Law D.C.G., MP-192
 Lawing L.F., TO-103
 Le Roux W., MP-017
 Leclair R., MP-183
 Leduc I., WP-098
 Leduc I.L., WP-099
 Lee B.I., MP-108
 Lee D.M., TP-107
 Lee M., MP-099
 Lee S.K., MP-121
 Lee W.Y., MP-108
 Leent E.J.M. van MP-010,
 TO-604
 Lees S., MP-091
 Legoff J., MP-014, TP-007,
 TP-008, TP-010
 Leichter J., TP-001
 Leichter J.S., MP-197,
 TP-155, WO-102
 Leichter S., TP-184
 Leigh-Brown A., MP-153
 Lemstra E., TP-073
 Lenderman C.J., TP-057,
 TP-099
 Lenderman J., WP-020
 Leon S.R., MP-172
 Leone P.A., MP-098, MP-192,
 TO-103, WP-076
 Lescano A.G., MP-172, TP-114
 Letke-Alexander P., MP-189
 Letyagina V., TP-118, WP-071,
 WP-088
 Leventhal A., TP-133
 Levin C., WP-080, WP-085
 Levine D., TP-151
 Levine W.C., TP-129
 Lewis D.A., TP-144, WP-019
 Lewis I., TP-168
 Lewis J., TW-201, TW-204,
 TP-117, WO-105
 Li G., MP-002
 Li H., WP-005
 Li J., WP-063
 Liao M., WP-006
 Liao M.L., WP-005, WP-043
 Liao Q., MP-002
 Lichtenstein B., MP-090
 Liddon N., TP-187
 Liddon N.C., MP-173, TP-181
 Lilley B.N., WP-101
 Lillis R.A., WP-129
 Limnios E., WP-034
 Limnios E.A., WP-010
 Lin C.W., WP-041, WP-044
 Lindan C., TP-028
 Lindan C.P., TP-092
 Lindstrom A., TP-150
 Lindstrom H., MP-138,
 MW-202
 Ling A.E., WP-015
 Lippman S.A., MO-506,
 TO-506, TP-100, TP-105
 Lippman S.L., TP-102
 Lipshutz J.A., MP-162
 Lipton M., MP-063
 Liska S., MP-190
 Lister N., WP-015
 Little S.J., MP-049
 Liu H., MP-080, TP-043
 Liu J., MP-002
 Liu P., MO-603
 Livermore T., WO-005
 Lloyd L., MP-175, TP-182
 Lloyd L.V., TO-001
 Loeff M.S. van der MO-005
 Logie L., MP-145
 Lohman B., TP-022
 Long J.L., TP-131
 Loo I.H.M. van WP-025
 Looker K.J., TP-020
 Lopman B., TW-204
 Loseva O., TP-118, WP-071
 Louisirojchanakul S.L.,
 MP-005
 Loureiro E., MP-007
 Low N., TW-306
 Lowndes C., WP-073
 Lowndes C.M., TP-034
 Lubega R.L. mr MP-181
 Luchters S.M.F., MP-167
 Luinstra K., TP-060
 Lukehart S.A., TO-203
 Lundberg M., MW-102,
 WO-005
 Luo B., MP-081
 Luppi C.G., TO-506, TP-100,
 TP-105
 Luppi C.G.L., TP-102
 Lyerla R., MP-038
 Lynch K., MP-061
 Lyons J.M., TW-103
 Lyss S., MP-050
 Lytkina I., WO-105
- M**
- Maan E., MP-035, MP-036
 Maaskant J., TP-049
 Mabey D., MP-060, TW-101,
 TP-007, TP-038, TP-048,
 WP-084, WP-135
 Mabey D.C., WP-132, WP-133,
 WP-134
 Mabey D.W., WP-056
 Mableton S.I., TP-099
 Macaluso M., MO-104
 MacDonald G., MP-035,
 MP-036
 MacDonald N.D., MP-141,
 MP-047
 MacDonald N., MW-201,
 MP-039, MP-132, TO-004
 MacDonald P.D.M., MP-098
 Machingura A., MP-046
 Mackay W., MP-109
 Maclean I., TP-132
 Maclean I.W., TO-702
 Macmillan C., TP-169
 MacRichie C., TP-060
 Maginley J., TP-165
 Maginley J., MP-116
 Mahomed A., TP-191
 Maiden M.C.J., MW-004
 Main C., TP-060
 Maingi C.M. mrs WP-124
 Mak R., TP-033
 Malaza M., TP-144
 Malembic S., TP-052
 Malinski C., TP-171
 Malka E.S., TP-187
 Malkin J.E., TP-010
 Mall K.L., WP-086
 Malotte C.K., TP-159
 Malotte C.K.M., TP-161
 Malotte C.K., MO-101, TP-019
 Malow R., TP-109
 Manata M.J., WP-052,
 WP-053
 Mandaliya K., MP-167
 Mandaliya K.N., MO-002,
 MP-026
 Mandalya K., WP-123
 Manhart L.E., MO-402,
 MP-122, MP-160, WP-103,
 WP-111, WP-112
 Mann J., TP-124, MP-140
 Mansour M., TP-125
 Manyonga B., MO-503,
 MP-089, MP-104
 Mapanje C., MO-003
 MaPhail C., MP-071, TP-146
 Marangoni A., WP-051,
 WP-066
 Marchand R., TP-165
 Marcus U., TP-134, TP-135,
 TP-137
 Mårdh P.A., TP-090
 Marealle J., WP-056
 Mark K., WP-039
 Mark K.E., MO-603
 Markowitz L., WP-014
 Markowitz L.E., MP-123,
 TP-019, TP-072
 Marks C., MO-601
 Marrazzo J., MP-076
 Marrazzo J.M., TO-105,
 WP-120, WP-121
 Marrero Y., WP-083
 Marseille E., MP-064
 Marsiglia V.C., WP-021
 Marsol M., TP-052
 Martens M., TP-095
 Martin D.H., TO-101, WP-107,
 WP-108, WP-117, WP-129,
 WP-130
 Martin I., WO-101, WP-023,
 WP-024
 Martin I.M.C., MP-132,
 MP-141, WP-002, WP-016,
 WP-036, WP-037
 Martín M.J., TP-194
 Martinez-de-Oliviera J.,
 TP-090
 Martínez J.M., TP-194
 Martins T., TP-112, TP-115
 Martinson F.E.A., MO-003
 Marumo M.P., MP-083
 Maseko V., TP-104
 Masiyiwa M., MO-503,
 MP-089, MP-104
 Mason P., TW-201, TW-203,
 TW-204
 Mastorides S.M., WP-061
 Matambo P., MP-046
 Maternowska C., MO-502
 Mathieu C., TP-051
 Mathole SA, MP-011
 Mathur M., TP-028, TP-092
 Matisic J., MP-116
 Matson P.A., MP-159
 Matsumoto T., WP-012
 Mavinkurve M., TO-503

Author Index

16TH BIENNIAL MEETING OF THE INTERNATIONAL SOCIETY FOR SEXUALLY TRANSMITTED DISEASES RESEARCH (ISSTD)

- Maw R, MP-117
Mawela M.A., WP-128
Mayaud P., MO-305, MO-604, MO-605, MP-015, MP-017, TP-003, TP-007, TP-008, TP-010, TP-011, TP-036, TP-037
Mayer K., MO-301
Mays R.M., TP-176
Mazzoni E., WP-066
Mbwana J., WP-090
McCarthy T.D., TP-154
McClelland R.S., MO-002, MP-026, WP-123
McConkey S., MO-005
McCormack S.M dr MP-181, TP-103
McCormack W.M., TP-058, TP-187
McCoy S., MP-098
McFarland W., MP-072, TO-005
McFarlane M., MP-171, MP-175
McGarrigle C.A., MP-047, TO-004
McGloster N., TP-095
McGloster N.L., TP-143
McIntyre A.F., TP-121, WP-072
McIntyre K., MP-153
McLean C., MW-202, MP-138
McMillan A., TP-026
McNeal Arrindell D.A., MP-128
McNeeley S.G., TO-601
McNeil L., TO-701
McQuillan G., TP-078
Meagher A., TP-198
Meakins S., MP-034
Meda H., MP-016
Meeks C.C., TP-131, TP-101
Mehta S.D., MP-018, MP-050, WP-046
Meier A., MO-405, MP-184, TP-004, TP-021, WP-032
Meier A.S., TP-006
Meijer S., MP-186
Mejia M., TP-079
Melo J., TP-097
Mena L., TP-095, WP-107
Mena L.A., TP-143
Menéndez B., TP-142
Meng T.C., MO-603
Mennella C., TP-125
Mensch B., TO-506
Mercer C.H., MP-105, MP-185, MP-158
Mercey D.E., MP-100
Meroño M., MP-007
Merrick D., TP-076
Merson M., TP-111
Metcalf C.A., TP-159
Metzger D.S., MP-061
Metzger D.M. dr. MP-067
Meyers C., TP-095
Michel A., WP-089
Middleton D., TO-404
Mika J., WP-024
Mikanda J., TP-147
Miller L.C., MP-059
Miller M.L., MP-087, TO-006, MO-304
Miller R., TP-094
Miller R.L.M., WP-131
Miller W.B., TP-177
Miller W.C.M., TP-070
Miller W.C., MO-003, MP-192, TO-103, TW-302, TP-088, TP-128, TP-138, WP-076
Millogo I., WP-114
Millstein S.G., TP-088
Mindel A., MO-601, MP-068, MP-137
Miner J.B., WP-083
Minkoff H., MO-303
Minnis A., MP-188
Minnis A.M., MP-150, MP-154
Mitchell J., MP-143
Mitchell S.J., TO-203
Mlay J., WP-137
Mmiro F., MP-012, MP-030, TW-002, TW-003, TW-007, TP-122
Mock J.R., WP-091
Modal S., MP-168, MP-106
Moe A.A., MP-110, MO-302
Moerman F., MP-139
Mohale B.L., MP-058
Mohammed F., MO-501
Mohammed H., TP-141, TP-155
Moherdau F., MP-161, TP-112, TP-115
Mok J., MP-145
Moncada J., MP-190, TW-005, TW-006, TP-028, TP-092, WP-008
Monedi C., MP-056
Monedi M.C., MP-057
Montanea J.E., MP-066
Montano D., MP-107, MP-113, MP-114, MP-115, MP-118, MP-126, MP-180
Montaño D., MP-097
Monteiro E.F., TP-076
Montes S.P., WP-083
Montgomery E., MP-099
Montoya J.A., MP-088, TP-172, WP-086
Moodley P., MP-023, MP-133, MP-134, TO-602, TO-603, TP-014, TP-015, WP-018
Moore S., TP-186
Mor Z., TP-133
Moral G., TP-142
Moreiras J, WP-083
Morison L., MP-023, TP-014, TP-015
Morison L.A., MP-034
Moroni A., WP-051, WP-066
Moropeng M.L., MP-058
Morré S.A., MW-203, MP-135, MP-137, TW-103, TW-104, TP-053, TP-055, TP-074, TP-108
Morris M., MP-184, MW-303
Morris M.B., TO-104
Morrison C., TW-004
Morrison C.S., MP-012, MP-030, TW-002, TW-003, TW-005, TW-006, TW-007, TP-122
Morrow R.A., MO-602
Morshed M.G., WP-068
Morton A.N., TO-104, WP-116
Moses S. prof MP-106, MP-165, TO-702, TP-132, TP-173
Moss M.B., TO-104, MO-401
Mostad S.B., WP-111
Mostashari F., MP-156
Mosure D.J., TO-403, TP-065, TP-066, TP-067, TP-068, TP-113
Mothle A., MP-056, MP-057
Moyes J., TP-011
Mroczkowski T.F., WP-107
Muchini A., TP-195
Mudekunye I., MO-502
Mueller K., TP-147
Muga C., WO-106
Mugerwa R., MP-012, MP-030, TP-122
Mugeye K., WP-056
Mugo N., MP-124, TP-045, TP-193, WP-032
Mugo N.R., MO-405, TO-705
Mukurutamu B., TP-096
Mukyala M.M. ms TP-103
Mulder J.W., MP-045
Mulenga C., WP-136, WP-127, TO-102
Muliawan P., WP-008
Munabi S.K., MO-103
Munayco C., TP-114
Mundo Y.M., WP-055
Mundondo J., TW-202, TW-203
Mungekar S., TP-028
Mungur R., WP-094
Munjoma M., TW-006
Munro H.L., TP-034
Munson R.S., WP-094, WP-096
Mupambireyi Z., TW-205
Muratani T., WP-012
Murchie M., WP-027
Muriuki D., WP-135
Murphy C., WO-101
Murphy D., TP-125
Murphy G., MP-039
Murray J.E.M., MP-067
Musabyimana R., TP-096
Mutai N.S. mr. WP-124
Mutanga O., MO-503, MP-089, MP-104
Muth S.Q., MO-105
Muthama E., TP-193
Mutisi M., MO-503, MP-089, MP-104
Mwaluko G., MP-101
Mwangi J.N.M., WP-118
Myers L., TO-101
Myers R.M., MP-136
Myint-U A.M., TP-161
Mytil A., WP-088

N

- Nabunnya G.N. ms TP-103
Nagot N., MO-305, MP-015, WP-114, MO-604
Nagy K., WP-058
Nalukenge W.N ms MP-181
Nanchahal K., WP-037
Napier G., MP-017
Nascimento M.C., TP-003, TP-036, TP-037
Nasution M.D., MO-504
Natividad-Sancho A., TP-002
Nattabi B., MP-020, MP-021, MP-051
Ndeki L., MO-501, TP-166
Ndhlovu L., TO-303
Ndinya-Achola J.O., MO-002, MP-026, TO-702, WP-123
Ndour M., WP-013
Ndowa F.J., TO-301
Ndumbe P.M., TO-106

Nelson D.B., TO-601
 Nelson S.J., MP-160
 Neplouev I., WP-098
 Ness R., TO-601
 Neudorf C., TP-073
 Neuhaus J., TP-085
 Newhall W.J., WO-107
 Newman D., MO-101
 Newman D.R., MO-104
 Newman L., MO-403, TP-136
 Ng L.K., WP-004
 Nghia K.V., TP-013
 Ngugi E., MP-184
 Nguti R., MP-124, TP-045,
 TP-193, WP-032, WP-124
 Nguyen N., WP-034
 Nguyen T.Q., MP-098
 Ngwalle A., MO-501, TP-166
 Nhatave I., MO-403, TP-136
 Nhurod P., TP-129
 Niccolai L.M., MP-084, TP-158
 Niekerk D. van MO-304
 Nieri G., TP-151
 Nitayaphan S.N., MP-005
 Noguchi M., TP-087, TP-091
 Noguchi Y., TP-087, TP-091
 Nogueira F., WP-105
 Nolde L., TP-112, TP-115
 Norori J., WP-117
 Norris Turner A., TP-163
 Nosek M., MO-405
 Notenboom R.H., WP-058
 Novey S., MP-075
 Novikova N., TP-090
 Nsuami M., WP-129, WP-107
 Ntozini R., MP-069
 Nunn A.J., MP-117
 Nuradini B., MP-013
 Nyamukapa C., TW-201,
 TW-203, TW-204, TW-205

O

O' Farrell N., TO-602
 O'Brien K., WO-005
 O'Donnell L.O., TP-161
 O'Farrell N., MP-023, TP-013,
 TP-014, TP-015
 O'Reilly S., MP-120
 Obando A.M., WP-050
 Ocampo P., WP-054
 Odaibo G.N., TP-123
 Odugwu S., TP-144
 Odugwu S.O., TP-104
 Odunukwe N.N., MP-009
 Oehler R.L., WP-061
 Ofner S., MP-176, TP-018

Ogilvie G., MW-305, TP-169
 Ogilvie G.S., MP-035, MP-036,
 MP-116, MP-178, MP-179,
 TP-069, TP-165, TP-190
 Ogilvie M.M., TP-026
 Ogwang M., MP-020, MP-021,
 MP-051
 Ohishi A., TP-091
 Öhman H., TP-041
 Olaleye D.O., TP-123
 Oliveira R.L.S.O., TP-102
 Oliver I., WP-073
 Olthoff G., WP-021
 Ombidi W., TO-501
 Omungo Z., TO-501
 Onaga E., TP-112, TP-115
 Ondondo B.O., TP-045
 Oni A.A., TP-123
 Op de Coul E.L.M., MP-041
 Oparaugo C.T., MP-009
 Opdyke K.M., TP-145
 Opoku B.K., WP-132, WP-133,
 WP-134
 Opondo J., TP-073
 Orndorf P., WP-098
 Orr D., TP-072
 Orr D.P., MP-177, TP-018,
 TP-156, TP-157, WP-109,
 WP-110
 Orroth K.K., MO-606, MP-027,
 MP-028, MP-037
 Osada Y., WP-102
 Ossewaarde J.M., TP-046,
 TP-049, TP-083
 Ostyn B., MP-139
 Otero-Sabogal R., MP-154
 Ott M.A., MP-176
 Otuonye N.M., MP-009
 Ouburg S., TW-103, TW-104,
 TP-053, TP-055
 Ouedraogo A., MO-305,
 MO-604, MP-015, WP-114
 Ouma J.O. mr MP-181
 Over M., MW-102, WW-202
 Overbaugh J., MP-026
 Oviedo C., WP-001, WP-003
 Ozerkina R., MP-064

P

Paavonen J., TP-041, TW-102
 Padgett P.M., MP-093
 Padian N., MP-099, MP-188,
 TW-005, TW-007
 Padian N.P., TP-196

Padian N.S., MO-105, MO-502,
 MP-012, MP-030, MP-150,
 MP-154, TW-002, TW-003,
 TW-006, TP-195, WW-203
 Paes J.L.L., WP-055
 Pagano I., WP-001, WP-003
 Page-Shafer K., TO-005
 Pai-Dhungat M., TP-085
 Pajuelo P., TP-114
 Palefsky J.M., MO-301
 Palefsky M., MO-303
 Palepu A., MP-035, MP-036
 Palmer H.M., WP-022,
 WP-027, WP-034
 Pandit N., MP-196
 Pankova R., TP-033
 Pannuti C.S., TP-003, TP-036,
 TP-037
 Pantell R., TP-085
 Pantzar M., WP-093
 Papaya S., TW-202, TW-203
 Papp J., MP-138, MP-143,
 TP-078
 Papp J.R., TP-044, WP-014
 Pappas L.G., WP-086
 Parham J., TP-143
 Park J.H., MP-108
 Park K., WP-026
 Parker C.B., TO-702
 Parker J.B., TP-093
 Parker K., TP-117, TP-119
 Parry J., TP-003
 Parry J.V., MP-100
 Pascoe S., MP-071
 Pascoe S.J.S., MP-019,
 MP-022
 Pascual A.P.H., MP-004
 Paszkowski T., TP-089
 Patel D., TP-189
 Patel H., WO-101
 Patel P., MP-088
 Patel V., MP-060
 Pathela P., MP-156
 Pati Ms., MP-164
 Pati S., MP-103
 Patrick D., MP-169, WP-075
 Patrick D.M., MP-148, MP-152,
 MP-178, MP-179, MP-183,
 TP-069, TP-190, WP-028
 Patterson J.D.P., TP-161
 Pattison P., TP-185
 Patton D.L., TP-152, TP-153,
 TP-154, TP-081, WP-126
 Patyrak H.S., TP-178
 Paul S.M., TP-159
 Paulino A., TP-064, WP-115
 Pecheny M. MP-038

Pedro M., TP-031
 Peeling R., WP-009, WP-055,
 WP-084
 Peeling R.W., TP-048, WP-013,
 WP-056, WP-062, WP-063
 Peipert J.F., TO-601
 Pell C., MP-068
 Pell C.M., MO-102
 Peña A.S., MP-135, TW-103,
 TW-104, TP-053, TP-055
 Pepin J., TP-007, MO-605
 Perault M., WO-101
 Perdue S., TP-188, TP-192
 Perdue S.T., MO-505, TP-177
 Perea E.P.P., MP-004
 Perez G.S., WP-055
 Perfect M.M., MP-170
 Perkins S.M., TO-504, TP-176
 Pervysheva Y., WP-088
 Peryshkina A., MP-064
 Peterman T., TP-159, WP-069
 Peterman T.A., MO-101,
 TO-502, TP-150
 Pettifor A.E., MP-071, TP-146
 Phelan J., TP-127, TP-030
 Phibbs S., MP-171
 Phofedi R.M., MP-082
 Phung C.T., MO-101
 Phyllis Burnett P.B., TO-206
 Pientong Ch., TP-042
 Pierce G., TO-502
 Pilcher C.D., MO-003, MP-098
 Pillay A., WP-068
 Pillay C., TP-144
 Pillay K., MP-023, TP-014,
 TP-015
 Pina-Vaz C., TP-090
 Pinho A., TO-506, TP-100,
 TP-105
 Piper J.M., MO-505, MP-127,
 TP-177, TP-188, TP-192
 Pitts M., TP-185
 Pitts M.K., MP-174
 Plant A., MP-088
 Plastino K.A., TP-178
 Pleijster J., TW-104, TP-053,
 MP-135, TP-055
 Ploegh H.L., WP-101
 Plotinsky R.N., WP-072
 Poelman J., MP-186
 Pol B. van der WP-020
 Polonis V.P., MP-005
 Ponnusamy K., WP-073
 Poole C., TO-106
 Pope C., WP-050
 Pope V., WP-054
 Post D.M.B., WP-094

Author Index

16TH BIENNIAL MEETING OF THE INTERNATIONAL SOCIETY FOR SEXUALLY TRANSMITTED DISEASES RESEARCH (ISSTD)

Powell A., WP-130
Powell S., TO-701
Power R., MO-503, MP-047,
MP-089, MP-104, TO-004
Powers K., MO-003
Prather D.T., WP-095
Prentice E., WP-019
Prescott L., TO-205
Prestage G., MP-068
Prestage G.P., MO-102
Prieto E., TP-031
Prieto E.S., WP-052, WP-053
Prins J.M., MP-045
Prins M., MP-024, MP-041
Pritchett E.N., MP-084
Pulver A., MP-193
Pun M.C., TP-114
Puren A., TO-704

Q

Qihua Q., MP-003
Quigley M., MP-023, TP-014,
TP-015
Quinn T.C., TP-082, TP-094,
TP-167
Quinn T.C.Q., WP-106, MP-136,
WP-131

R

Raba J., TP-125
Rabenja Ny L., TP-163
Rabins C., TP-121, WP-072
Radebe F., MP-133
Radebe F.M., TP-104
Radolf J.D., WP-050
Raharinivo M.S.M., TP-163
Raherison S., TP-051, TP-052,
TP-054
Rajarethnam T. dr MP-165
Rakoczi I., TP-089
Ramaniraka V., WP-049
Ramesh B.M., MP-106,
MP-165, TP-173
Ramjee G., MP-099
Ramtshela S.A., MP-082
Ramsay M., TP-034
Ranaivo N., WP-049
Randall H., TO-601
Rangel D.C., WP-055
Rasania S.K., MP-001
Ratelle S., MO-306, MP-076
Rauch L., WO-006
Ravalomanana N., WP-049
Ravelomanana N.R., TP-163
Ray S., WP-010

Raymond H.F., TO-005
Razafimpanarivo M., TP-054
Read S.J., MP-059
Read T.R., MO-401
Recant R., TP-145
Rees H., MP-070
Rees H.R., MP-071, TP-146
Regez R.M., MP-045
Reich K., WO-006
Reid M., TO-402
Reimnitz P., TP-089
Reingold A., MO-506
Rekart M., MW-305
Rekart M.L., MP-116, MP-152,
MP-178, MP-179, TP-165,
TP-190, WP-028
Remple V.P., MP-035, MP-036,
MP-148, MP-152, MP-178,
MP-179, MP-183, TP-069,
TP-190, WP-028
Reshetnikov O.V., TP-039
Revollo R., WP-077, WP-078,
WP-079, WP-080
Reza-Paul S.R.P., MP-168,
MP-106
Reza Paul S., TP-173
Ribeiro M., TO-506
Rice B., MP-032
Rice P.A., TP-072
Richards J.E., TP-006
Richardson-Alston G., TP-141,
TP-155
Richardson B., MP-012
Richardson B.A., MP-026,
MP-030, TW-002, TW-003,
TW-005, TW-007
Richardson D.B.R., TP-161
Richardus J., TO-406
Richardus J.H., TP-074,
TP-083, TP-084
Richart D., TP-180
Richter H.E., TO-601
Richters J., MP-163
Rider A.T., MP-102
Ried C., WP-039
Rietmeijer C., MW-103,
MP-175, TP-182
Rietmeijer C.A.M., TO-001
Rietmeijer C.R., TP-161
Rietmeijer K., MP-171
Righarts A.A., WP-073
Riley S., MP-040
Riley T.V., WP-119
Rime T., WP-048
Rinaldi A., TP-122
Ringrose A., TP-017
Ringwood K., TO-105, WP-120

Rios I., TP-112, TP-115
Risley C., WO-003
Risley C.L., WP-038, WO-001
Rissel C.E., MP-163
Rizvi A.S., WP-006
Rizzo-Price P., WO-103, TP-167
Roberts M., TP-005
Roberts M.C., WP-042
Roberts T., TW-308
Robins G., TP-185
Rock D., TP-141
Rodas C., MP-154
Rodrigues A.G., TP-090
Rodrigues L.C., MP-155
Rodrigues R.R., TP-112, TP-115
Rodríguez C., TP-142
Rodríguez S., TP-125
Roelens K., WP-113
Rogers M.E., TP-145
Rogers S.M., TP-070, TP-128,
TP-138
Rojas D., TP-142, TP-194
Roley J., MO-502
Romero J. del TP-142
Rompalo A., MP-076
Rompalo A.M., MP-018,
MP-192, TO-201, TO-204,
WP-046, WP-057, WP-070,
WO-104
Rosas R., MP-017
Rosenthal S.L., MP-170,
MP-197, TP-001, TP-184
Ross D., MO-501, MP-031,
MP-091, TP-016, TP-166,
WP-135
Ross J., MP-117
Ross J.D.C., TP-089
Ross L., MP-145
Ross M.R., MP-162
Ross M.W., MP-093
Rotblatt H., TP-172
Rotblatt H.R., WP-086
Rothenberg R., MW-302
Rothman R., TP-070
Rothman R.E., MP-074, TP-128
Rours G.I.J.G., TP-046, TP-047
Rousseau Didelot M.N.,
MO-305
Routh P., WP-098
Roux M.C. le MP-011
Rowen D., MP-117
Roy K., MP-039
Rubin S., TP-187, WP-065
Rubin S.R., TO-503
Rubtsov A., TP-118, WP-071
Rudd E.A., WP-016, WP-036,
WP-037

Ruddock P.S., WP-006
Rudland E., MP-111, MP-112
Rugpao S., TW-002, TW-003,
TW-007
Ruiz E.C., MP-029
Rungruengthanakit K., TW-005
Rusch L.A., MP-169, WP-075
Rusch M., TO-006
Rusizoka M., TO-703, WP-122,
TP-016
Rwambuya S., MP-109
Ryan C., TP-117, TP-118

S

Saad M.D., MP-025, MP-033
Sabino E., TP-003, TP-036,
TP-037
Safarova E., TP-118, WP-071
Saladié P., MP-007
Salakhov E., WP-088
Salata R., MP-109
Salata R.A., MP-012, MP-030,
TW-002, TW-003, TW-005,
TW-006, TP-122
Salata R.A.S., TW-007
Salazar J.C., WP-050
Saleh W., WP-062
Saliku V., MP-182, MP-157
Sam N.E., WP-137
Sambola Estrada F., TP-097
Sambri V., WP-051, WP-066
Sampson L.A., WP-076
Samuel M., MP-144, WP-039
Samuel M.C., TP-140, WO-005
Sanchez-Aleman M., TP-025
Sanchez J.L., MP-025,
MP-033, TP-116
Sande M. van der MO-005
Sandfoort T., MP-147
Sandvig K., WP-101
Santo I., TP-064, WP-052,
WP-053
Sanz B., MP-007
Saravanya M., MP-007
Saravia N., WP-050
Sarge-Njie R., MP-034
Sasse A., MP-139, TP-120
Savelkoul P.H.M., TP-108
Savicheva A., WP-011
Sayegh M.A., TP-156
Schachter J., MP-144,
MP-190, TP-058, WP-008
Schalk D. van TO-406
Schalk D.T. van TO-002, TP-084
Schechter M.T., MP-087
Schenken R.S., TP-178

- Schilder A.J., MP-087, TO-006, MO-304
 Schillinger J.A., MP-156, TP-072, TP-145, WP-065
 Schim van der Loeff M.E., MP-034
 Schlanger G., TO-503
 Schmid D.S., TP-019
 Schmid G., MO-201, WP-074
 Schmidt A., WP-101
 Schmidt N., TP-141, TP-155, WP-130
 Schmitt K., WP-083
 Schnizlein-Bick C.T., WP-097
 Schoenbach V.J., MP-149
 Scholes D., TP-006
 Schout C., TP-032
 Schrijver K. de MP-139
 Schubeck D., TO-601
 Schumacher C.M., MP-192, TO-204
 Schwarcz S.S., MP-048
 Schwartz R., TP-187
 Schwebke J.R., TO-103
 Scott G., TO-505
 Scott J., WO-104, WP-070
 Scott K.C., TP-077
 Scoular A., TO-402, WP-030
 Sednaoui P., WP-023
 Segondy M., MO-305, MO-604, MP-015
 Segura P., TP-126, TP-179
 Segura Z.E., TP-108
 Selke S., MO-603, TP-021, TP-022
 Sell R.L., MP-156
 Semaan S., TP-109, TP-027
 Semaille C., WP-089
 Sena A.C., TO-103
 Sergeant M., MP-139
 Serre M.L., MP-192
 Sexsmith M., MP-073
 Shafer M.A., TP-085
 Shafii T., TP-183, WP-060, WP-087
 Shahan J.B., MP-074
 Shahmanesh M., MP-060
 Shain N., MO-505
 Shain R.N., MP-127, TP-177, TP-188, TP-192
 Shakarishvili A., TP-117, TP-118, TP-119, WO-105, WP-071, WP-088
 Shang S., TP-038
 Shannon K., WP-075
 Sharma A., MP-184, WO-106
 Shaw C., TP-069
 Shaw J., MO-601
 Shayevich C., MP-190
 Sheikh A., TP-095
 Sheinberg B., WP-031
 Shen J., MP-006
 Shepeard H., MP-129, MP-130
 Sherlock C., MP-116
 Sherr L., MP-016A MP-094, MP-095, MP-096, TO-003
 Sheth P., TP-045
 Shi M.Q., TP-048
 Shiboski S., MP-154
 Shields S., TP-124, TP-127, TP-030, MP-140
 Shin A., MP-053, MP-131
 Shlay J., MO-306
 Shoveller J., MP-169
 Shrier L., TP-072
 Shushu M.L., WP-122
 Si-Mohamed A., TP-008, MP-014
 Singer P., TP-039
 Singh A., WP-059
 Singh S., MP-001
 Sings H.L., MP-121
 Sinka K., MP-032, MP-039
 Sinnott J.T., WP-061
 Sirinak C., TP-129
 Sirugo G., MO-005
 Sisco K., TP-147
 Sisodia P., MP-064
 Sitta R., TO-704
 Sizemore J.M., TP-023
 Skhosana J., MP-058
 Skolnik P.R., MP-050
 Slezak T., WP-068
 Smieja M., TP-060
 Smikle M., TO-701
 Smikle M.P., TP-093
 Smith A.M., WP-019
 Smith A.M.A., MP-163, TP-185
 Smith B.A., WP-129
 Smith E., WP-033
 Smith H., WP-130
 Smith J.S., MP-124, TO-106
 Smith K., WP-068
 Smith L.V., TP-130
 Smith S.I., MP-009
 Smith T., WO-006
 Smith W., TP-168
 Sobngwi-Tambekou J., TO-704
 Soge O.O., WP-042
 Sohani S.B. dr. MP-182, MP-157
 Sokolovsky E., WP-011
 Somasundaram C., MP-001
 Sombredero A., WP-050
 Somlai A., TP-111
 Sonder G.J.B., MP-045
 Song E.S., MP-108
 Song S.Y., MP-108
 Song Y.S., MP-108
 Sonnex C., MP-117
 Soper D.E., TO-601
 Sota M., WP-017
 Souza M.Z. de MP-005
 Souza V.A.U., TP-003, TP-036, TP-037
 Spaargaren J., MW-203, MP-135, MP-137, TW-104, TP-053, WP-025
 Spear P., WW-002
 Spencer D., TP-165
 Spinola S.M., WP-095, WP-096, WP-097
 Spitznagel E., TP-101
 Spratt B., WO-001, WO-003, WP-024
 Spratt B.G., WP-038
 Ssali A.S., MP-181, TP-103
 St. Lawrence J., MP-131, TP-117
 St. Lawrence J.S., MP-062, TP-168
 Stanberry L.R., MP-170, TP-001
 Stancer K., MP-169
 Stanley N., MP-064
 Steben M., TP-012, TP-017, TP-024
 Steece R., TP-113
 Steele M., WP-013, WP-077, WP-080
 Stein E., TP-028
 Stein E.S., TP-092
 Steiner B., WP-054, WP-104
 Steiner J., TO-701
 Steiner M.J., TP-093
 Stenerlöw B., WP-101
 Stenger M., WP-087
 Stenger M.R., WP-048
 Stephen J., TP-132
 Stephens G., WP-028
 Stephenson J.M., MP-102, MP-105, MP-185
 Sternberg M., TP-078
 Stevens M., MP-111, MP-112
 Stevens W., TP-011, MP-017
 Stolte I.G., TO-005, WP-047
 Stoner B.P., TP-131, TP-101, WP-074
 Storni E., WP-051
 Stovel K., TP-183
 Stover J., TP-140
 Straten A. van der MP-099
 Studzinski A., TP-121, WP-072
 Sturm A.W., MP-023, MP-133, MP-134, TP-014, TP-015, TO-602, TO-603, WP-018
 Sturm L.A., TP-176
 Sturm P.D.J., TO-602, MP-133, TO-603, MP-134
 Su X., WP-045
 Suarez L., TP-114
 Subtil A., WW-004
 Sugase M., TP-091
 Sugimoto B., MO-602
 Suksripanich O., TP-129
 Sumita L.M., TP-003, TP-037
 Supawitkul S., TP-129
 Surcel H.M., TP-041
 Sutherland R., WP-059
 Sutthent R.S., MP-005
 Svenstrup H.F., MO-404
 Svoboda J.S., MP-065
 Swadpanich U., TP-042
 Swezey T., TP-163
 Swygard H., TO-103
 Sziller I., TP-090

T

- Tabidze I., WP-064, WP-067, WP-081
 Tabidze I.L., WP-072
 Taboy C., MO-403, TP-136
 Tabrizi S., MP-111, MP-112, TP-061, WP-015
 Tabrizi S.M., TO-104, MO-401
 Talbott J., WP-020
 Taljaard D., TO-704
 Tam R., TP-098
 Tancredi A.N., MP-029
 Tancredi M.V., MP-029
 Tanton C., TO-703
 Tanton C.T., MP-014
 Tao G., TP-110, MP-191
 Tapsall J., WP-034
 Tapsall J.W., WP-010
 Taqatqa W. al TP-170
 Tarqui D., WP-079
 Tataje J.L., TP-174
 Taylor D., MW-305, MP-116, MP-152, MP-178, MP-179, TP-069, TP-169, TP-190
 Taylor J., MO-601, MP-068
 Taylor M., TO-205
 Taylor R., MO-304, MO-601
 Taylor S.T., MP-136
 Tayra A., MP-029
 Tebb K.P., TP-085
 Teinina T.R., TP-039

Author Index

16TH BIENNIAL MEETING OF THE INTERNATIONAL SOCIETY FOR SEXUALLY TRANSMITTED DISEASES RESEARCH (ISSTD)

- Tejani M., MP-191
Temkit M., MP-177, TP-157
Temmerman M., MO-203,
MP-167, TP-097, TP-191,
WP-113
Temu M.M., WP-056
Teneberg S., WP-093
Terris-Prestholt F., WP-084
Teter K., WP-101
Thacker S., WP-083
Theall K., TO-101, WP-108
Thelestam M., WP-101
Thep-Amnuay S., MP-123
Thiede H., MP-062
Thikonova L., MO-205
Thippawan C., MP-005
Thomas K.K., TO-105, WP-120,
WP-121
Thomas S.L., MO-103
Thompson C., MP-145,
MP-146, MP-153
Thomsen S.C., TO-501
Thrun M.W., MP-076
Thuong N.V., TP-013
Tian L., TP-150
Tian L., TP-159
Tideman R.L., MP-174
Tigchelaar J., MW-305
Tiglechaar J., TP-165
Tiitinen A., TP-041
Tikhonova L., TP-118, WO-105,
WP-071, WP-088
Tilatti K., TP-051
Tinajeros F., WP-078, WP-079,
WP-080
Tinajeros F.T., WP-077
Tipton A., TP-085
Tisserand P.T., MP-014
Todd C.S., MP-025, MP-033
Todd C.S.T., TP-116
Todd J., MO-005, WP-135
Tolbert V., TP-090
Toney J.F.T., WP-061
Tórtola T., MP-007
Totten P., MO-405
Totten P.A., MO-402, MO-406,
MP-160, WP-100, WP-103,
WP-111, WP-112
Toutant D.A., TP-024
Tram L.T., TP-013
Trautmann G., TO-601
Trees D.L., WP-042
Trees L., WP-024
Tridapalli E., WP-066
Trout W., TO-601
Trujillo R., WP-050
Truong H.M., MP-072
Trussler T., TP-165
Tsaagane L., WP-019
Tshelane S., TP-144
Tu W., TO-401, TP-001
Turner C.F., TP-070
Turner J.M., MP-102
Turner K.M.E., MP-195, TO-605
Tweedy K., TO-701
Tyndall M., MP-169, WP-075
Tyndall M.W., MP-148, MP-183
Tyring S., MO-603, TP-005
- U**
Uhr H.K., MP-085
Unemo L.E.M., WP-011,
WP-034
Unger E.P., MO-306
Upchurch D.M., TP-071
Urassa M., MP-101
Urban M., MP-073
Uribe-Salas F., TP-025
- V**
Valderrama L., WP-050
Vall Mayans M., MP-007
Vallely A., MP-031, MP-091
Vallès X., MO-305
Vallo R., MP-015, WP-114
Van Damme K., TP-163
Van de Perre P., MO-305
Van de Wijgert J., TP-100
Van Der Pol B., MP-012,
MP-119, TP-056, TP-057,
TP-122, WP-109, WP-110
Van Howe R.S., MP-065
Van Roey J., MO-006
Vance D.E., MP-078
Vande Perre P., MP-015,
WP-114, MO-604
Vandenbruaene M., MP-139
Vandepitte J., WP-136,
WP-127, TO-102
Vanechoutte M., WP-113
Vanmali T., MP-023, TP-014,
TP-015
Vanwesenbeeck I., MP-186
Varkevisser C.M., MP-092
Vazquez JA, WP-001, WP-003
Veen M.G. van MP-041
Veldhuijzen I., TO-406
Veldhuijzen I.K., MP-013,
TP-049, TP-074, TP-083,
TP-084
Veldhuijzen N.J., TP-096
Venters G., MP-153
Veras M.A., TO-506, TP-100
Verbrugh H.A., TP-046, TP-047
Verevochkin S., TP-111
Vergara A. dr TP-136
Vergne L., MP-015, MO-604
Verhelst R., WP-113
Verhooren M.J.C., TP-084
Verkooyen R. dr. TP-046,
TP-047
Verstraelen H.R., WP-113
Vickerman P.T., MP-070,
WP-084
Vidarte K., TP-174
Viegas S., TP-064
Viegas S.J., WP-115
Vildaite D., TP-089
Villa M., MP-007
Villarroel M.A., TP-070,
TP-128, TP-138
Virapat P., TP-129
Viscidi R.P., MW-002
Visser R.O. de MP-163
Vissers D.C.J., MP-101
Vittinghoff E., MO-004, MO-301
Vlas S.J. de MP-101
Vlaspolder F., TP-039
Voeten H.A.C.M., MO-001,
MP-092, MP-101
Vries H.J. de MW-201
Vries H.J.C. de MW-203,
MP-135, MP-137, TO-604
Vries M. de TP-032
Vrolijk C.I.M., TP-049
Vrungskos S.M.V., TP-161
Vyankandondera J., TP-096
- W**
Wadd S., TO-402
Wald A., MO-602, MO-603,
TP-006, TW-005, TP-021,
TP-022
Waldhober Q., TP-032
Walker C., WP-109
Wallace L., WP-073
Wallace L.A., TO-402
Walter J., MP-041
Wamae N. , WO-106
Wandiembe S.W mr MP-181
Wandiembe W.S. mr TP-103
Wang L.J., WP-044
Wang L.N., WP-063
Wang Q.Q., TP-038
Wang S., WP-039
Wang X., MP-006, TP-160
Wang Z.S., TP-048
Ward H., MW-205, MP-047,
MP-132, MP-141, WO-001,
WO-003, WP-038, WP-073
Warner D.L.W., MO-104,
TP-161
Warren T., MO-603
Washburn K., TO-503
Washington G., MP-165
Washington R., MP-106,
TO-305, TP-132
Washington R.G., TP-173
Wasi C.W., MP-005
Watson-Jones D., MO-501,
MP-031, TO-703, TP-016,
TP-166, WP-084, WP-122
Watson S., MP-171
Watts C., MP-070, WP-084
Wayal S., MP-060
Weaver B., MP-121, MO-306
Wegbreit J., WW-203
Wei W.H., TP-048
Weinstock H., MO-306,
MW-202, MP-138, TP-078,
WP-026, WP-069
Weiss H., MP-014, MP-069,
TO-703, TP-008, TP-016,
WP-122, WP-135
Weiss H.A., MO-103, MO-604,
MO-605, MO-607, MP-017,
MP-155, TP-003, TP-007,
TP-010, TP-011, TP-036,
TP-037, WP-132, WP-133,
WP-134
Wellard S.J., WP-119
Wellings K., MP-155, MP-158,
WP-037
Wendt A., MP-138, MP-143
Wenthold L., TO-101
Westeinde A. van 't TP-083
Westmark M., TP-136
Whalen C., MP-109
White C.D., WP-099
White E., MP-184
White P.J., TO-605, WW-204
White R.G., MO-001, MO-606,
MP-027, MP-037
Whitehead S.J., MP-123
Whitfield M.J. , TP-198
Whitley R., TP-023
Whittington W.L.H., WP-042,
WO-004
Whittle H., MO-005
Whittle H.C., MP-034
Whitworth J.A., MO-607
Whyte P., MP-016A
Wibbelsman C., TP-085
Wijgert J. van der TW-007

Wijgert J. van de TP-096,
TP-175
Wijgert J.H.H.M. van de,
TW-006, TP-105, TO-506
Wilcox M.H., TP-076
Willard N., TP-138
Willemse H.F.M. TP-046
Williams I.G., MP-102, MP-105,
MP-185
Williams J., MP-119, TP-057,
TP-085, TP-187, WP-020,
WP-110
Williams J.A., WP-109, TP-056
Williams M.M., MP-055
Williams S., TP-168
Williamson M., TO-505
Willis J., TP-061
Wilson J.D., WP-119
Wilson P., TO-402
Wilson T., TP-187
Wimberly Y.H., TP-186
Winer R.L., MP-120
Winsor Y., TP-169
Winter A., WP-030
Winter A.J., MP-153, WP-027
Wirawan D.N., WP-008
Wit J. de, TO-002
Wit J.B.F. de, WW-103, WP-047
Woelk G., MP-097
Woelk G., MP-180
Wohlfeiler D.A., MP-075

Wolf F. de MP-044
Wolfers M.E.G., TP-170
Wong E., MW-305
Wong E.L., MO-504
Wong T., TP-017, TP-124,
TP-127, TP-030, MP-140,
WP-059
Wong W., TP-125
Wonglikitpanya N., TP-042
Wood B.J., WO-103, TP-094,
TP-167
Wood B.J.W., WP-106, WP-131
Wood G.E., WP-100
Wood T.R., MP-122
Workowski K., MP-138, TP-027
Workowski K.A., TO-606
Wouter L., TP-083
Wright C., TO-404
Wright J., TP-073
Wright J.G., WP-026
Wright L., MP-188
Wright S., TO-503
Wright S.M., WP-065
Wroblewski J.K., MO-402
Wu J., TO-401
Wuillaume F., TP-097
Wylie C., WO-104, WP-070

X

Xia L.Q., TP-038

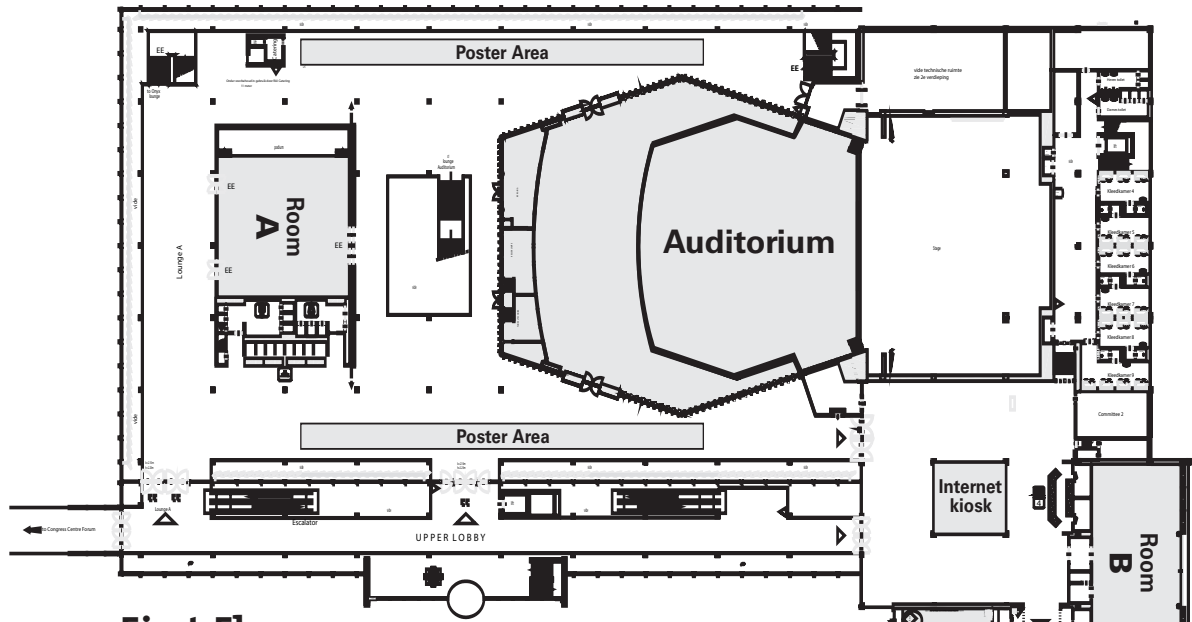
Y

Yabushita H., TP-087
Yakubov S.K., MP-033
Yamada Y., WP-012
Yang Y., WP-043
Yarbro P., TP-006
Yard E., MP-167
Yared Y., TP-106
Yasuda J., TP-091
Ye S., WP-045
Yin Y.P., TP-048
Yindom L.M., MO-005
Young H., WP-022, WP-027
Young T., TP-105
Young T.N., TP-175
Yuenger J., WO-006

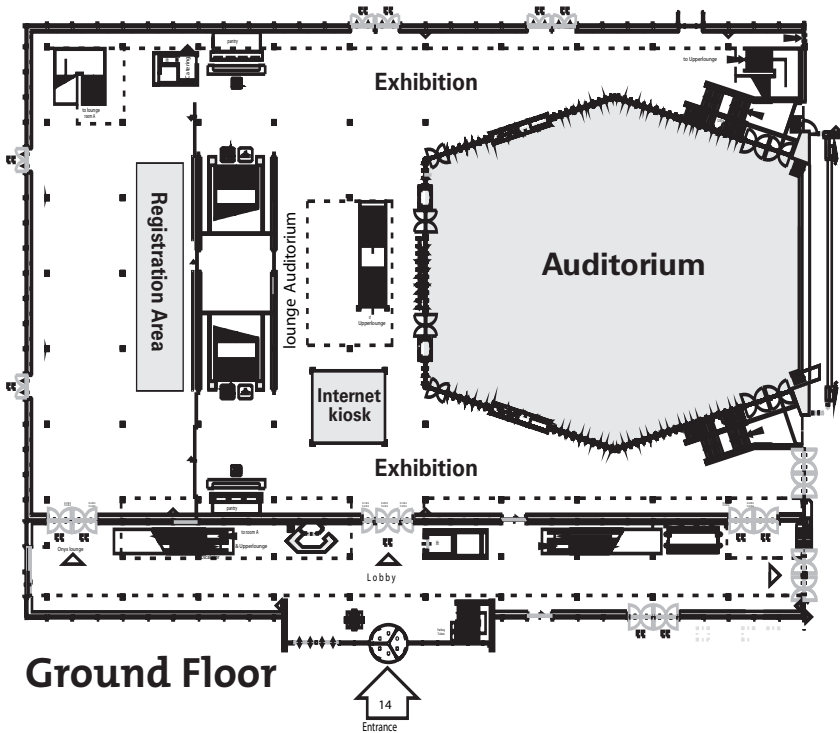
Z

Zaba B., MO-001, MP-101
Zaidi A., WP-040
Zajdowicz T.R., WP-072
Zakoucka H., TP-033
Zegarra L., WP-077, WP-078
Zeller K., TP-163
Zenilman J. dr. MO-306, MP-
198, TP-019, TP-070, WO-
006

Zenilman J.M., MP-192,
TO-204, WP-021, WP-057,
WP-125
Zenilman J.M.Z., MP-151
Zenilman J.M., MO-101,
TP-133
Zhang J.P., TP-038
Zhang L., TP-160
Zhao J.B., TP-038
Zheng H.Y., WP-063
Zhong M.Y., TP-038
Zhou H., MP-081, TP-048
Zhu S., MP-003
Zick E., WP-087
Zimba T., WP-018
Zimet G.D., MP-197, TO-504,
TP-001, TP-035, TP-176,
TP-184
Zimmerman B., WP-033
Zohrabyan L., TP-117, TP-118,
TP-119, WP-088
Zohrabyan S., WP-071
Zubowicz E.A., MP-170
Zwaan E.A.E. van der, TP-049
Zwaan van der E.A.E.
TP-046
Zwart O. de MP-013, MP-041,
TP-083, TP-170
Zwickl B.W., WP-097



First Floor



Ground Floor

