AHO1

AUDIT OF SEXUAL HEALTH CARE OF HIV POSITIVE PATIENTS IN AN URBAN CENTRE

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Objective: As HIV positive patients continue to live increasingly longer on HAART, improving quality of life, including sexual health, becomes as important as provision of acute medical care. Quality Improvement Scotland (QIS) released new sexual health standards in April 2008, of which standard 5 deals with the sexual health care of HIV positive patients. We audited the performance of our clinic against section 1 (90% of HIV positive patients should be offered syphilis screening within the preceding 6 months) and section 3 (80% of HIV positive patients should be offered STI screening within the preceding 12 months) of this standard.
Methods: All patients receiving their HIV care at the clinic and who attended the clinic between 1st July 2007 and 30th June 2008 were included in the audit. Data was collected by retrospective case-note review. SPSS 14.0 was used for data analysis.
Results: 509 patients were included in the audit: 69% (n=351) had syphilis serology screening offered within the preceding 6 months and 64.3% (n=326) had STI screening offered within the preceding 12 months. Patient relationship status and sexual orientation were both significantly associated with receiving an offer of syphilis and STI screening ($p < 0.005$).
Conclusion: Our clinic did not achieve the recommended QIS standard for the sexual health care offered to HIV positive patients. However, our results were broadly comparable with results of previous UK GUM clinic audits (including the 2006 National BASHH audit). Possible explanations for the clinic results include clinicians not offering screening to patients they deem low risk, and poor documentation.

AHO2

AN AUDIT OF ANOGENITAL WART TREATMENT

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Objectives: An audit of the performance of our clinic against our treatment algorithm for anogenital warts and BASHH auditable outcomes was performed.
Methods: A retrospective case note review of those who presented to the clinic with first attack of anogenital warts between 1 October 2007 and 31 March 2008 was conducted.
Results: A total of 136 case notes were audited with regards to treatment at initial presentation and at 4, 8 and 12 week follow up. There were 78 male and 58 female patients. 124 (91%) were heterosexual, 6 (4%) were men who have sex with men, 4 (3%) were bisexual.
The number of warts was recorded in 118 (87%) of cases. Thirty (22%) patients had a single wart of which 18 (60%) were initially treated according to the algorithm. Fifty-four (40%) patients presented with 2-5 warts and 37 (68%) were treated accordingly. 32 patients (23%) presented with multiple (>6 warts) and 50% were initially treated as per the algorithm.
At 4 weeks, a total of 98 (72%) patients did not attend or did not book follow up. 7 patients (5%) attended with complete resolution of symptoms. 18 patients (13%) attended with partial improvement in symptoms and 13 (10%) had no improvement.
At 12 weeks there were 4 (3%) cases of no / partial improvement of warts. If we assume patients who did not attend at 12 weeks were clear of warts, then we meet the standard for wart clearance at 12 weeks.
Of the 136 cases analysed, 112 accepted STI screening for Chlamydia and gonorrhoea. Of these 112, 27 (24%) cases of genital Chlamydia were identified.
Conclusions: Audit showed that BASHH and internal standards are currently not met. Clearer documentation is needed with regards to sexual orientation, number of warts and clinical coding. Simplification of the algorithm and increased staff awareness could improve adherence to algorithm. 24% of patients had Chlamydia which stresses the importance of screening for other STIs.

AHO3

A RETROSPECTIVE CASE NOTES AUDIT OF THE MANAGEMENT OF SYPHILIS MEASURING PERFORMANCE AGAINST THE SYPHILIS GUIDELINES 2008

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Background: Over the last few years there has been a large increase in the number of cases syphilis. Revised syphilis guidelines 2008 have just been published. We wanted to measure our clinical

performance against the auditable outcome measures in the new guideline.
Methods: A case notes proforma was developed using the new guideline and the auditable outcome measures. A retrospective case notes review was undertaken for all patients diagnosed with syphilis from 1 August 2004 to 31 January 2008. Data were analysed in Excel.
Results: A total of 87 (68Male:19Female) cases were reviewed. Twenty two were HIV positive (21M: 1F), 57 HIV negative (41M: 16F) and eight (6M: 2F) were of unknown HIV status (refused test). Overall 48 were MSMs and 39 were heterosexual. Of those who were HIV+ve, 20 were MSMs. Early syphilis was diagnosed in 71, late in 16 and there were no cases of neurosyphilis. Regarding the auditable clinical outcome measures, 100% had a VDRL/RPR at initiation of treatment. 100% responded to treatment with resolution of clinical signs. 100% of patients with early syphilis completed treatment. Four-fold drop in dilution of VDRL/RPR was obtained in only 71% (79% HIV+ve: 67% HIV-ve). Overall 55% of contactable partners attended for screening and treatment (HIV+ve index 64%: 52% HIV–ve index).
Conclusions: Four out of five outcome measures were achieved. We fell short of achieving the required four-fold drop in dilution of VDRL/RPR. The reason for failure was that patients did not re-attend for follow up. Results were better in the HIV+ve patients as they do attend regularly for their HIV monitoring/ treatment. We hope to improve our follow up attendance by using a specially designed follow-up proforma sheet inserted in the clinic notes. The health advisers will actively encourage all patients to re-attend when appropriate. We shall re audit after 12 months to see if the change in process results in improved outcome.

AHO4

AUDIT OF COMPLETION OF HEPATITIS B VACCINATION - A COMPARISON OF DIFFERING SCHEDULES
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Objectives: Standard, accelerated and ultra accelerated schedules are available for patients being offered Hepatitis B vaccination. Locally, patients are now offered accelerated courses. Has this resulted in better completion and immunity?
Methods: Case notes from patients identifying themselves as Men having sex with Men (MSM) from both the GU clinics in the county were analysed retrospectively with respect to age, type of schedule offered, uptake of 2nd and 3rd vaccines and antibody levels.
Results: 133 case notes of MSM were analysed, the average age was 26.5. 5 cases were excluded due to natural immunity or previous vaccination. 81/128 (63%) were given the standard course. 60/81 (74%) attended for the 2nd vaccine, 46/81 (56%) attended for the 3rd. 12/81 attended for boosters. 14/81(17%) had antibody levels between 10-100. 14/81(17%) had antibody levels over 100. 16/128 (12.5%) had the accelerated course and 31/128(24.2%) had the ultra rapid course. 45/47(95%) attended for the 2nd vaccines (results combined for both schedules). 38/47(80%) attended for the 3rd. 8 had boosters. 13/47(27%) had antibodies between 10-100. 6/47(12%) had antibody levels over 100.
Conclusion: There was a significant difference between the accelerated regimes and standard course in uptake of the 3rd vaccine (38/47 compared to 46/81- p=0.0068). There was no significant difference between achieved immunity between the standard and accelerated regimes (if >10 is regarded as being protective). Given the good uptake of 3rd vaccines in the accelerated courses, resources could be directed to better follow up for boosters or immunity checks to improve completion rates.

AHP1

TEENAGERS VISITING COMMUNITY GENITOURINARY MEDICINE CLINIC - WHAT MORE CAN WE DO?
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Objectives: To determine the prevalence, characteristics, sexual behaviour, condom usage, contraception, Fraser competency documentation (in <16s), and sexually transmitted infections (STI) diagnoses among young people (YP) aged ≤ 19 years attending a GUM clinic.
Methods: Retrospective case note analysis of YP ≤ 19 years (April 2007- March 2008).
Results: 411/2,660 new patients (15.5%) were YP ≤ 19 years, 127(3 being homosexuals, 2 bisexuals) males (31%), 284 females (69%), mean age 17.6, average age of sexual debut 14.8 and number of sexual partners were 5.8 . History of smoking, alcohol, cannabis, cocaine and injecting drug use were 35%, 50.8%, 13.8%, 9.5% and 0.7% respectively. Sexual abuse was experienced by 2.5% and rape by 0.7% females 90% of males and 28.5% females had received oral sex, 12.5% of males practised insertive anal sex, 3.9% males and 3.8% females had had receptive anal sex. Condom usage for STI prevention was 21% and 28% in males and females respectively. 57% of females used contraception. 9.9% females had been pregnant before, with 2.8% pregnant at the time. 77% of <16s (17/22) had

Fraser competence documented. Uptake of STI and HIV testing were 96% and 85.6% respectively. The prevalence of gonorrhoea, chlamydia, genital warts, herpes and molluscum contagiosum in males and females respectively were 3.4%, 0%; 5%, 8%; 5%, 12%; 1.7%, 1.8%; 2.5%, 0.004%.
Conclusion: YP form a significant proportion of our GUM attendees. Condom usage for STI prevention is low, half of young females did not use contraception. Oral sex was common, with receptive anal sex being similar in both sexes. Risk assessment identifying risk factors associated with unsafe sex, reasons for not using contraception is vital, so that health education can be targeted. Proper sexual history to target proper sites for taking swabs/assess HIV risk cannot be stressed. A dedicated high quality integrated sexual health clinic targeting their specific needs may help reduce teenage pregnancies and STI rates.

AHP10

BRIDGING THE GAP (WHOSE CHOICE IS IT ANYWAY ?)
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Objective: To assess the reasons why clients opt not to be seen at Genito-urinary Medicine (GUM) clinics within 48 hours.
Method: A prospective audit was carried out across GUM units in the South-West for a week in September 2008. During this week, the receptionists were requested to ask clients who opted not to be seen within 48 hours their reasons for this.
Results: 8 GUM units participated in this audit with a total of 909 requests for appointments. All units offered 100% of clients an appointment within 48 hours of the request for an appointment, during the week of the audit. However on average, only 71.75% of clients accepted an appointment within 48 hours. The commonest reasons why clients declined an appointment within 48 hours were: request for an appointment on a specific day in 78/909 (33%), work-commitments in 69/909 (29.5%), request for an evening appointment in 44/909 (19%), lack of transport in 10/909 (4%) and lack of child-care in 7/909 (3%) of cases. Less common reasons for decline included clinical considerations, requests to attend a gender-specific clinic or a clinic at a specific peripheral site or clients wishing to attend with partner.
Conclusion: While the Department of Health is keen that GUM units offer all clients an appointment within 48-hours and see 95% of clients within 48-hours, it appears that clients often choose to opt for an appointment beyond 48-hours for reasons that may suit their life-styles or their work-commitments.

AHP11

IMPROVING CLINICAL STANDARDS IN GU MEDICINE: A RETROSPECTIVE AUDIT
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Objectives: This was a retrospective analysis of clinic performance in the management and treatment of Neisseria gonorrhoeae (GC) according to current BASHH guidelines.
Methods: Confirmed cases of GC at our clinic between 1st January - 31st of March 2007 and 1st January – 30th June 2008 were extracted using the Telecare computer records system. These patient notes were then were assessed against the BASHH criteria and the collated data analysed using Microsoft Excel. The number of cases identified for 2007 and 2008 was 22 and 61 respectively.
Results:

Criterion	Guideline	Target	2007	2008
CR1	At least 95% of cases of genital gonorrhoea should be cured by first line therapy.	95%	77.3%	91.8%
CR2	All patients with GC should be screened for genital infection with Chlamydia trachomatis or receive presumptive treatment.	100%	100%	100%
CR3	All patients identified with genital gonorrhoea should have at least one documented interview with a health professional.	100%	81.8%	95.1%
CR4	All patients identified with gonorrhoea should receive written information about STI's and their prevention.	100%	31.8%	63.9%
CR5	For every case of GC, at least 0.6 sexual partners should be verified as having been satisfactorily managed within 4 weeks.	0.60	0.41	0.33

Current BASHH targets were missed in all but one criterion, CR2. However, over the audit period there has been an overall improvement in our figures. The number of patients cured by first line therapy (CR1)

showed an improvement of 15% between 2007 and 2008 and this was similarly mirrored by 13% and 32% improvements in the criteria pertaining to health advisor interviews (CR3) and education documentation (CR4). Contact tracing and management (CR5) however is still poorly performed and has worsened over the last year. Chlamydia screening (CR2) was maintained at the highest level (100%) over the entire audit period.
Conclusions: In conclusion we have missed targets but have shown improvements in most of the key criteria. To further improve our performance we plan to implement new clinic policies; these include restricting the dispensation of GC medications solely to the health advisors in order to provide at least some contact with these patients and upgrading our Telecare software in order to facilitate contact tracing and management. Finally, and most importantly, we have re-emphasised to all staff the need for concise, clear documentation.

AHP12

RIGHTS AND RESPONSIBILITIES: IMPLICATIONS FOR SEXUAL HEALTH
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Background: The right to have access to appropriate healthcare services is proposed in the debated UK Bill of Rights. Whilst the responsibility of the client to utilise these services is out with legislation, creating respect for the sexual wellbeing of the individual and of the community is key to sexual health policy. Anonymous and confidential testing engenders such respect, but follow-up relies on clients providing accurate personal contact information. We investigated the methods of communicating results accepted by clients attending our clinic, and the implications for the sexual health of our community.
Methods: All clients with a positive sexual health screen in August 2008 were identified using electronic case-notes. Records were reviewed retrospectively.
Results: Eight hundred and seventy nine clients attended our clinic in August 2008 and 257 had a positive sexual health screen (29%). Diagnoses included genital chlamydia infection (n = 240, 93%), gonorrhoea (n = 18, 7%) and syphilis (n= 5, 2%). More than 1 method of communicating results was provided by 153 clients (60%): mobile phone numbers (n = 230, 89%) and home addresses (n = 116, 45%) being provided most frequently. Clients were contacted and treated in 238 cases (93%). One of the 19 untreated clients did not provide accurate contact details. Eighteen clients were successfully contacted but did not attend for treatment. The majority of those who remain untreated were female (n = 11, 58%) and asymptomatic (n = 13, 68 %). All untreated clients had been diagnosed with chlamydia (8% of chlamydia diagnoses in August 2008).
Conclusion: Good sexual healthcare balances rights and responsibilities. In our experience, the majority of clients exert their right to confidential and anonymous testing and respect the need for follow-up. Future interventions to increase the awareness of the potential consequences of untreated infection should target asymptomatic female clients in particular.

AHP13

DEVELOPMENT OF A CROSS SECTOR INDUCTION TRAINING PROGRAMME IN GENITOURINARY MEDICINE FOR NEW DOCTORS
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Background: Since the implementation of the changes in junior doctors' training, GUM departments in the North East London (NEL) sector were running induction programmes individually for new starters every two months. This was having a marked impact on service provision. It was decided to streamline the induction process across three departments within the sector, by centralising the common elements of their individual induction programmes.
Method: A common induction programme was created for all new doctors at the 3 GUM departments, to be delivered at one site. A standardised package of 11 lectures, an interactive revision session and evaluation forms was prepared, so that future programme co-ordinators need only identify a venue and lecturers. The inaugural 1-day cross sector training programme was delivered in November 2008. The trainees would then sit in on clinics in their individual departments, to complete their induction programme.
Results: Aside from the once-off preparation of materials, this approach reduced the workload of each participating hospital. The total number of staff involved in delivering the teaching was reduced from 21 to 7. Participants rated the training highly and felt confident to manage patients unsupervised more quickly. Further improvements included extending the program to 1½ days to make it easier for participants to absorb the high volume of information provided and revision of lectures to reflect variations in management between the three sites.

Conclusions: Pooling resources has enabled the NEL sector to deliver a professional and comprehensive induction programme to all new doctors, every two months, while reducing the onus on each individual service. Formalising the process and standardising the lectures increases the flexibility of who can deliver the lectures. In the long term it is hoped that participation can be extended to new nurses, health advisors and other paramedical starters within the multi-disciplinary team.

AHP14

SYMPTOMATIC EFFICACY OF GATIFLOXACIN IN MALE NON-GONOCOCCAL URETHRITIS IN JAPAN: A CLINICAL TRIAL

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Objective: To determine the symptomatic efficacy of gatifloxacin (GAT) in male non-gonococcal urethritis (NGU) patients.
Methods: This open clinical trial involved male patients, over the age of 20 years, with NGU, who were diagnosed at the Urological Department of 23 medical faculties in Japan. Patients were treated with 200 mg of GAT, twice a day for 7 days. Before and 3-4 weeks after treatment, patients' first voided urine was collected for detection of bacterial genes of Neisseria gonorrhoeae, Chlamydia trachomatis, Mycoplasma genitalium, Ureaplasma urealyticum, Ureaplasma parvum, and Mycoplasma hominis. Genital symptoms were recorded, and white blood cells in the urinary sediment of the first voided urine were examined. All patients gave their written informed consent for this study and agreed to no sexual behavior without condoms.
Results: Between March and September 2008, 214 men were recruited, and 192 men were eligible for evaluation. Eighty patients were excluded because they were lost to follow-up, engaged in prohibited sexual behavior, or other reasons. Overall, 150 patients had genital symptoms, including dysuria, urethral discharge, urethral discomfort, and urethral itching. Three patients were asymptomatic sexual partners of patients with cervicitis. The symptomatic cure rate was 96.7% in all NGU patients. In C. trachomatis-positive, M. genitalium-positive, and U. urealyticum-positive cases, the symptomatic cure rates were 96.1%, 100%, and 100%, respectively; pyuria improvement rates were 59.5%, 42.9%, and 54.5%, respectively. There was no relationship between symptomatic cure and improvement of pyuria.
Conclusion: GAT with 400 mg/day for 7 days cured the genital symptoms of male NGU patients.

AHP15

COORDINATING LOCAL CHLAMYDIA SCREENING PROGRAMMES (LCSPs) TO ACHIEVE THE NATIONAL TARGET - VOLUNTARY & COMMUNITY ORGANISATION (VCO) IMPACT & LEARNING

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Objective: Most LCSPs have struggled to hit national targets. In 2007/08 the first VCO coordinated LCSPs began, with 9 LCSPs VCO coordinated by Mar 2008. This provides the chance to assess the impact of VCO LCSP coordination & identify policy issues ahead of separation of PCT commissioning & provision in 2010.
Methods: A retrospective review was undertaken of activity and experiences in VCO coordinated LCSPs between Aug 2007 & Dec 2008
Results: VCO coordinated LCSPs activity averaged only 20% of plan during the first two quarters. In the following quarters activity has increased to hit or exceed the 17% target in 6 of 9 PCTs. Average 2008/09 performance in the VCO coordinated LCSPs has been higher than in other Year 5 programmes, and is 25% higher than the England average.VCO coordinators experienced challenges in getting NHS providers to engage with LCSPs. These were greatest where local providers had bid unsuccessfully to coordinate the LCSP. VCO coordinators have fewer levers than schemes coordinated by PCT commissioners and as such a close working relationship with commissioners has been important. PCT expectations that VCOs should innovate has encouraged the development of new approaches eg, outreach and Chlamydia Screening Assistants. Payments per screen were effective in encouraging performance. VCO social marketing & media management experience were of value in raising awareness of LCSP work with 15-24 year olds.
Conclusions: VCO coordinated LCSPs can be effective in achieving national CSP targets. For maximum impact, a combined approach should be pursued to ensure full use of PCT contractual levers & financial incentives, coordinator innovation & leadership, and strong PCT performance management.The successful introduction of a VCO as LCSP coordinator needs careful change management by the PCT and VCO from the beginning. The learning from this review has broader implications for LCSPs once PCT commissioning & provision functions are separated in 2010.

AHP16

RISK IDENTIFICATION TOOLS: MANAGING SELF-INJURIOUS BEHAVIOUR IN SEXUAL HEALTH CARE SETTINGS

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Background: Sexual violence is one of the most significant risk factors for suicide (APA, 2006). 41% of women disclosing a history of sexual assault in a local sexual health clinic reported a history of previous suicide attempts (Petrak et al. 1997). With the establishment of the North-east London sexual assault service in 2004, the development of risk identification tools to facilitate healthcare staff's management of self-injurious behaviour has been a key priority. Screening questions initially identified a prevalence of 26% self-harm and 21% psychiatric history in 240 attendees (Campbell et al., 2007). Risk identification (RI) tools are now completed routinely at the time of forensic medical examination (FME) and at follow-up. These have been incoporated into pan-London guidelines with the Metropolitan Police. RI tools completed for all clients attending between July and September 2008 were audited to validate their efficacy in assisting healthcare staff to identify and appropriately manage risks of suicidal behaviour.
Methods: RI tools were audited according to level of potential risk identified and recommended action. High or immediate risk indicates referral to psychiatric liaison via A&E. For medium or non-immediate risk, a referral is made to the GP and/or mental health services.
Results: At the time of FME (n=52), 41% described low mood, 37% history of depression; 8% severe mental health problems. Although 37% reported self-injurious behaviour, none were identified as immediate risk. 22% were referred to GP/other service. At follow-up over 60% reported trauma-related symptoms (e.g. 'flashbacks'), whereas two were actively suicidal. Follow-up from other services is varied.
Conclusions: The RI tools and guidelines have been proven to be effective in identifying patients at immediate risk of self-injurious behaviour. It is recommended that this model of good practice be adopted in sexual health care settings with better links to GPs and mental health

AHP17

CHILDREN CARED FOR IN ADULT AREAS - THIS APPLIES TO YOU! CARING FOR CHILDREN AND YOUNG PEOPLE AUDIT AND DEVELOPMENT TOOL

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Background: Many hospitals see children in adult areas. UK standards for care for those 18 yrs and under is set out in the the Healthcare Commission (private and voluntary) Inspection Programme, Acute Hospitals Self-Assessment document, the National Service Framework (NSF) and Every Child Matters.
Method: An audit tool commissioned by a Teaching Hospital Trust was applied to the STI service in that Trust, and also to the linked ward. The aim of the audit tool was to help staff identify the standards of care that are applicable to all children and young people (YP) regardless of the specialty in which they are cared for. The audit period was April 2006-March 2007.
Results: 3477 0-18 yr olds seen (<11 =13, 11-15 =227,16-17=1563,18=1914). The STI clinic scored blue / green (area of excellence/dept functioning well) in all or the majority of items related to risk management(7/7), record keeping(5/7),staff issues(6/6), training(3/4),obtaining consent, transfer & discharge (4/4),and out of hours clinic provision. Results were less good in other areas eg for liason with, & development of, primary care services.
Conclusions: Although STI clinics are usually part of adult services, they must also meet standards for childrens' services because they provide care to adolescents. Many clinicians may not be aware of these requirements. The audit tool developed showed in which areas our service was performing well, and also highlighted other areas, of which we had been unaware, where improvements were required or needed to be considered.

AHP18

FROM POLICY TO PRACTICE : AN AUDIT OF THE MANAGEMENT OF NON SPECIFIC URETHRITIS IN AN URBAN GENITOURINARY MEDICINE CLINIC

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Background: The British Association of Sexual Health and HIV guidelines (2007) recommend that all men with Non Specific Urethritis (NSU) be offered microscopy of a gram stained urethral smear and recommended drug treatment. Using these guidelines as standard of care, local policy was defined and implemented at an urban genitourinary medicine clinic. A re audit was undertaken to ascertain

compliance with the standard of clinical practice.
Methods: A retrospective review of 100 consecutive case notes from January to May 2008 was conducted. Data collected included age, presenting symptoms, last passed urine, diagnostic tests, treatment, partner notification (PN), and written information given to patients. In addition, microbiological culture results were documented in each case.
Results: 100 patients aged between 17 and 58 years were identified. 99% of patients presented with urethral discharge. 91% patients were tested after holding their urine for more than 2 hours. 100% were offered microscopy of a gram stained urethral smear with 97% receiving an accurate diagnosis and 95% the recommended drug treatment. Referral to the health advisor was made in 85% of cases. 176 contacts were identified, of whom 40 received epidemiological treatment, giving a PN of 0.4 partners per index patient. There was documented evidence of written information given to 29% of patients. Chlamydia was detected in 30%, gonorrhoea in 14 %, and both infections were found in 7% of cases. Microbiology was negative in 49%.
Conclusions: This audit shows that national guidelines and local audits are effective tools in improving standards of care. It highlights that greater effort and targeted interventions are required to optimize clinical practice.

AHP19

BRITISH ASSOCIATION OF SEXUAL HEALTH AND HIV UNDER 16s RISK ASSESSMENT PROFORMA - IS IT A USEFUL TOOL?
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Background: Young people are a vulnerable group, at risk of exploitation. All STI clinics should have guidelines for risk assessment of under 16 yr olds. The new BASHH guidelines (currently out for consultation) include a standardised risk assessment proforma and suggest it should be used to ensure optimal risk assessment. We aim to assess whether the draft BASHH proforma is a useful method of detecting young people at risk of abuse and exploitation.
Methods: The proforma was piloted in an STI clinic in a large city. A retrospective case note review was performed for all under 16 yr olds attending in 2008.
Results: 111 patients were seen. 62 case notes have been reviewed so far, of these 12 were excluded (not sexually active (5) , did not attend (7)). The proforma was complete in 90% (41/50), 11 male, 39 female. 82% (41/50) were seen by a senior doctor. 24% (12) admitted to previous involuntary sexual activity. 56% (28) were consuming alcohol regularly & 24% (12) using recreational drugs. 24% (12) were out of school. 30% (15) were using condoms consistently. 32% (16) were diagnosed with an STI at that visit and of those 3 had had a previous STI. Social services and/or other child protection services were already involved in 32% (16) . No cases required referral to child protection services.
Conclusion: In the 10% of patients without proformas we cannot say if further action regarding referral to child protection services would have been warranted as history taking was inadequate. The proforma is useful to enable the clinician to thoroughly and consistently assess young people's risk by ensuring that important issues are raised that may otherwise be overlooked during standard sexual history taking. This allows the clinician to focus intervention & management depending on individual need.

AHP2

AUDIT OF THE EFFECTIVENESS OF DIFFERENT HEPATITIS B VACCINATION SCHEDULES IN A GUM CLINIC
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Objective: To audit Hepatitis B vaccination in a GUM clinic according to recent National BASHH guidelines.
Method: All available case notes coded for Hepatitis B vaccination from 01/04/2007 to 31/03/2008 were reviewed.
Results: 232 case notes were reviewed. The commonest schedule offered was the standard (S) of 0, 1 and 6 months (192, 83%) with 23 (10%) being offered the ultra-rapid (UR) of 0,7,21 days and 1 year. Indications for vaccination and schedule chosen complied with BASHH guidelines in all but 3 cases. The patients given the standard scheduled attained the highest number (48, 25%) receiving both a full course and test for post-vaccination response (vs. 1, 4% in the UR regime, auditable target >50%). A higher proportion of patients following the UR schedule (18, 78%) received all 3 vaccinations (vs. standard schedule 83, 43%). Of the 49 tested, 43 (88%) had surface antibody levels above 10 iu/l after 3 vaccinations. There was a high rate of non-attendance (DNA) for both vaccination schedules. Overall DNA rate for the standard course was 62% (119) as compared to 70% (16) in the UR regime. DNA rates were higher for the 2nd (53, 44%) vaccination when compared to the 3rd vaccination (41, 34%) in the

standard regime. Eleven (68%) of those receiving the UR regime did not attend follow-up following their 3rd vaccination.
Conclusion: Low post vaccination response test rates fall short of the guideline target. The UR schedule gives the best chance of achieving 3 doses of vaccination. The utility and cost-effectiveness of post vaccination antibody levels in a GUM setting is debatable.

AHP20

PROVIDER REFERRAL FOR GONORRHOEA AND CHLAMYDIA IN A UK CLINIC 2004-8
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Objectives: To evaluate methods and outcomes associated with patient requested provider referral for gonorrhoea and chlamydia over a five year period.
Methods: Provider referral records were reviewed for all contacts where tracing was initiated for gonorrhoea or chlamydia for January 2004 – Dec 2008. Those requested by another clinic were included, whereas requests passed to a nearer service were not counted. Number and type of actions (phone, text, letter, internet site, visit, email), and outcomes (informed, verified attended, infected) were recorded.
Results: For gonorrhoea contacts, provider referral was initiated for 341, of whom 280(82.1%) were informed, 182 (53.4%) verified screened, 86/182 (47.3%) had gonorrhoea and 46/182 (25.3%) had another sexually transmitted infection (STI).; For chlamydia contacts, provider referral was initiated for 41, of whom 280 (82.1%) were informed, 182 (53.4%) verified screened, 86/182 (47.3%) had gonorrhoea and 46/182 (25.3%) had another STI. Contact methods used most frequently overall were phone (1511/3272; 46.2%), post (1067/3272; 32.6%). text (649/3272; 19.8%), Visits and emails were rarely used. Trends over time show increasing use of phone and text and also of Internet dating sites for men who have sex with men. Figures per year infection and action will be presented.
Conclusion: Provider referral is an effective case- finding intervention for both chlamydia and gonorrhoea. Contact tracers make increasing use of newer technologies, which allow rapid confidential communication with the individual through mobile, text and Internet messaging. PN for gonorrhoea is slightly more labour intensive, but the yield of newly diagnosed STI is higher.

AHP21

SEXUAL HEALTH RELATED MEDICATION ERRORS: FREQUENCY, CAUSE AND OUTCOMES
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Background: Medication errors are the second most reported patient safety incident and responsible for 6.5% of hospital admissions in the United Kingdom (UK). To date there are no published data on sexual health related medication errors. We aim to prospectively evaluate sexual health related medication error frequency, cause, actual and potential outcomes in outpatients attending a hospital based clinic in the UK.
Methods: All prescriptions for sexual health outpatients were prospectively evaluated for medication error, cause, medicines, outcome and potential outcome if error undetected in March 2008. All errors were recorded in a database.
Results: Overall 28 (5.4%) errors were recorded from 523 prescribed items. Prescribing errors 7 (1.3 %), were due to unintentional slip or lapse 5 (71%) or intentional mistake 2 (29%). A clinical pharmacist identified, confirmed and corrected 2 (29%) prescribing errors on clinical screening, dispenser identified 4 (57%) and patient identified 1 (14%). Clinical screening errors 4 (0.76%) all due to slips following prescribing error, were identified and corrected at the labelling stage. Dispensing errors 16 (3.1%), from slip or lapse 12 (75%), mistakes 4 (25%), 15 (94%) were identified and corrected during dispensing or at final check. Checking error 1 (0.19%) due to a mistake following an inadequate supply error, was found on patient collection. All errors were identified and corrected before the patient left pharmacy. Medicines involved were antibiotics, antifungal 11 (39%), analgesics, anti-inflammatories 7 (25%), erectile dysfunction agents 4 (14%) and other 6 (22%). No errors resulted in harm.
Conclusion: We report a high frequency of errors related to prescribing and dispensing processes due to unintentional slips and intentional mistakes, however no actual harm was done.

AHP22

WAITING ROOM ON HIV/AIDS: VULNERABILITIES FOR INFECTION AT A PRIMARY HEALTH CARE SERVICE IN SÃO PAULO, BRAZIL
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Background: Offering HIV testing and counseling constitutes one of the majors' HIV prevention strategies which could be addressed to the entire population. In Brazil it is available HIV testing in the majority of the services although the strategies of offering HIV test and counseling in Primary health care services (PHCS) remains as a challenge. Considering PHCS as the first level of contact of individuals, the family and community with the national health system, they appear to be an appropriate sight to reduce programmatic vulnerabilities for the HIV infection. The present study aimed to identify and decrease vulnerabilities for infection at a primary health care service in Sao Paulo, Brazil.
Methods: Using a theoretical logical model based on the health communication technology as a conceptual framework we organize an intervention performed in the medicals consultings waiting rooms during one entire week (period from 18 to 22 December 2008). The health service users of this PHCS participated of an interactive activity organized consisted of posters in which we proposed a discussion related to HIV/STI transmission and human rigths. At the end of each educational activity we distributed condoms and offered counseling and HIV testing. The obtained data was categorized according to the theoretical logical model and submitted to qualitative-quantitative analysis by Epi-info statistical package.
Results: We performed 17 waiting rooms groups, with a total of 156 participants from which 69% were women. Age average corresponded to 38 years old (17 - 82). From the total, 12% agreed to be counseled and tested for HIV.
Conclusion: The main vulnerabilities identified are related to gender, lack of information and prejudice. Among the programmatic vulnerabilities some users was ill informed about the availability of HIV testing on a PHCS. The use of this intervention model in others PHCS could enable to reduce the programmatic vulnerabilities to the population.

AHP23

MALE ONLY, LATE NIGHT, NURSE-LEAD CLINIC: EVALUATION OF DEMAND, LEVEL OF STI'S, PATIENT PREFERENCE AND COST EFFECTIVENESS

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Objective: Due to patients' demand for appointment outside normal working hours, a three month pilot nurse-lead clinic was started. Due to the staff skill levels (dual trained nurse practitioners, with prescribing abilities) the service provides a high standard of care as well as being cost effective. It offers appointments for symptomatic and asymptomatic clients. If required, the nursing team have consultant access by phone. The pilot also aims to ascertain the level of clinical risk due to the absence of an onsite doctor.
Methods: The clinic opened in November 2008 to February 2009, 10 weeks. The clinic hours are 1900hrs to 2130hrs with appointments every thirty minutes for nurse practitioners. In this allocated time, practitioners would take a sexual history, counsel high risk patients, examine, diagnose, treat and discharge. The service also offered asymptomatic, treatment and vaccination appointments by a band 5 nurse.
Results: Over the 10 weeks there was 132 symptomatic appointments, 49 were not filled (37%). Out of the 66 asymptomatic patients, 20 were not filled (30%). Over the 3 month period the vacant appointments went from 44% in the first month to 9% by the third month. Over this period 94 new patients were seen and 35 (27%) appointments were booked for follow up. 28 patients (22%) had a sexually transmitted infection. Two patients were referred to the consultant in her specialist clinic. No patients required instant doctor assessment and the consultant was not contacted by phone on any occasion. If the service was not nurse-lead, additional staff would be required - this would lead to a +37% increase in staff costs.
Conclusion: This nurse-lead clinic is a safe, patient focused and cost effective service. Experienced nurses can provide appropriate care levels and tend to be more flexible with regard to their working hours - something GUM patients require. The service was also not impacted by sickness or annual leave as one nurse practitioner session could be closed, however the clinic could still offer 2/3 of appointments.

AHP24

GUM CLINIC DESIGN AND FUNCTION: IMPACT OF NEW SHEFFIELD CLINIC

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Background: A new £3.5 million GUM clinic building funded exclusively by the host Foundation Trust has opened in Sheffield. The development is complete phased rebuild necessitated by the failure of the existing clinic to meet the clinical, teaching and research demands.
Objective: To describe the process leading to the design of the new clinic and evaluate the effects upon current functional requirements.
Method: Well designed clinical environments should improve both patient satisfaction and health

outcomes. Local students were invited to evaluate the old clinic and propose a new model using a specific healthcare architecture tool (ASPECT).They addressed such issues as how to combine privacy with a sense of light and openness, ease of patient movement, flexible use of clinic space, and service efficiency . Increased patient throughput was assessed against national access targets. Patient satisfaction, teaching, training and research capacities have also been measured.
Results: The new clinic is based around a central work hub separating male and female areas, where medical and nursing clinicians (of varying experience), health advisers and clerical staff work in close proximity. This optimises clinical care, facilitates partner notification, encourages staff collaboration and learning, and allows flexible response to changing patient appointment and walk-in demand. A separate purpose-built facility now better meet the needs of specialist/research clinics, and of HIV patients.
Conclusion: The unique features of the new clinic have vastly improved patient facilities, enhanced staff working conditions, increased patient satisfaction, allowing all local and national targets to be met.

AHP3

ARE CONTRACEPTION ISSUES ADDRESSED BT GU DEPARTMENTS IN AN INTEGRATED SEXUAL HEALTH SERVICE?

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Objectives: GUM Clinics A and B are part of a county wide sexual health service with joint management structures, protocols and referral pathways with the local Contraception and Reproductive healthcare (C+RHC) services . Locally however, teenage pregnancy rates have increased. The causes of this rise are likely to be multifactorial, however, one possibility may be missed opportunities for addressing contraception issues with GU attendees in spite of good links with C+RHC.
Methods: 168 case notes of female GUM attendees under the age of 20 were analysed with respect to the type of contraception used, whether no or inconsistent contraceptive methods were used, and whether advice or action was taken to address these issues.
Results: The average age of the cohort was **17**. **81/168 (48%)** were using a oral contraceptive method. **40/168 (24%)** were using long acting methods. **47/168 (28%)** were using no method or an inconsistent method of contraception. In **17/47 (36%)** of these cases, no discussion about contraception was documented. **2/47** declined advice. and **28/47(60%)** were either advised about different methods or referred to C+RHC or Primary Care.**4/28** accepted oral contraception following consultation while only **2/28** subsequently attended C+RHC.
Conclusion: In only **6/47 (13%)** of patients identified as having no or an inconsistent method of contraception was a consistent method of contraception accepted either in the clinic or following referral Given the integrated management structure of the sexual health service, the next step may be the offer more contraceptive provision e.g.(long acting methods) onsite to improve uptake.

AHP4

WHAT SERVICE USERS WANT: A NEW CLINIC RESULTS SERVICE. CAN WE SATISFY BOTH PATIENTS' NEEDS AND WANTS?

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Background: Many clinics still have a "no news is good news" (NNGN) policy for clinic results. Increasingly, evidence shows that patients do not like this approach. We undertook a survey of our service users to determine their preferences for obtaining results. We also designed a new clinic results service. Could the service satisfy both patients' needs and their wishes?
Methods: Patients attending during July/August 2008 were invited to complete a confidential questionnaire. They were given a number of options for obtaining results and asked to rate acceptability on a 1 (unacceptable) to 9 (acceptable) scale for nine possible options. Completed questionnaires were compared with the actual method that they chose to obtain their results for that visit.
Results: 1000 questionnaires were completed. Preference ratings showed that the most acceptable method was to be called on a mobile phone, followed closely by receiving a text and receiving a letter. NNGN and returning for results received the least popular ratings. When compared with the actual method chosen, mobile phone was the most popular (62%) followed by letter (17%). At that time we did not have a texting service. Only 10% of patients found NNGN acceptable.
Conclusions: A previous survey has shown that patients prefer "the human approach" to the newer technologies. Although the mobile phone appeared to be the most popular method with patients, this was not an easy method for the clinic. Often patients were unable to answer the phone. Receptionists would telephone up to three times and then leave a message, but many patients had no access to voicemail. Following the survey we purchased texting software and redesigned our results service. There are now four options for receiving results - texting, letter, patient phones us or NNGN. We believe we

have been able to satisfy both patients' needs and their wishes by redesigning our service around their views.

AHP5

PILOT OF A YOUTH CLINIC IN A MAINSTREAM STI SERVICE

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Objective: To determine the need for, and feasibility of, a youth clinic in a mainstream STI (Genitourinary Medicine) service.
Methods: A pilot scheme was set up for a 5 month period to assess need. This was a non-funded service provided by 2 GUM nurse/health advisor volunteers, in a separate part of the GUM department after school for 1 hour. The service was walk-in with advertising by means of a board. Data was collected prospectively.
Results: Analysis of the first 8 clinics showed variable numbers 0-5 patients, age range 15-20 yrs, mean 17.4 . 11/21 (52%) had previously accessed GUM or Family planning based youth clinic. 10 STIs (CT, genital warts, genital herpes) were diagnosed in 9 patients (43%) and a further 2 were CT/GC contacts. Reason for attendance were asymptomatic screen 6 (29%), STI contact 3, genital lumps 5, emergency contraception 2, other 4. Full data of 5 month pilot will be presented.
Conclusion: A small unfunded pilot is a useful method of determining whether there is a need for a separate youth clinic in a mainstream STI clinic. Although numbers so far are small, initial results suggest that users of such a clinic have a high STI rate. Further information is needed on whether attendees would have accessed the main clinic if the walk-in youth service had not been available.

AHP6

VACCINATION FOR HEPATITIS B IN AN HIV OUTPATIENTS' DEPARTMENT: A RETROSPECTIVE AUDIT AGAINST BHIVA VACCINATION GUIDELINES

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Objectives: To perform a retrospective audit of hepatitis B vaccination of HIV-positive outpatients against the BHIVA immunisation guidelines 2004/2008 both before and after the implementation of a vaccination record sheet. The efficacy of the record sheet will be assessed for its impact on adherence to the guidelines.
Methods: A retrospective case notes review was conducted between December 2007 and January 2008. A single page vaccination record sheet was introduced to all patient records in July 2008. A re-audit was then carried out as a retrospective case notes review between December 2008 and January 2009.
Results: Adherence to guidelines in the original audit was poor. Only 67% of patients requiring vaccination for hepatitis B received a full course of vaccination. Following introduction of the vaccination record sheet this vaccination completion rate increased to 78%. Overall the percentage of patients managed according to BHIVA guidelines improved from 33.3% in the original audit to 64.7% in the re-audit.
Conclusions: Introduction of a simple hepatitis B vaccination record sheet improved the quality of care for our HIV outpatients. Further modification of this system is warranted, perhaps by the introduction of a computerised reminder system.

AHP7

HOW DO WE TARGET YOUNG PEOPLE? THE COLLEGE CLINIC: A 'ONE STOP SHOP' SEXUAL HEALTH SERVICE IN A CROSS CULTURAL, FURTHER EDUCATION SETTING

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Objectives: The greatest burden of Sexually Transmitted Infections (STIs) falls upon on young people (16-24 years) who are disproportionately affected. The Health Protection Agency recommends easy access for young people (YP) to sexual health services. In order to improve access, we designed a dedicated walk-in 'one-stop-shop' YP clinic in a local college within the borough. We report on demographics of attendees, rates of STIs, pregnancy and contraceptive uptake in the cohort.
Methods: Data were collected prospectively from all clinic attendees between March 1st – November 30th 2008.
Results: There were 197 attendances pertaining to 177 patients. The mean age was 18.4 years (14.6 - 35.7), 100 (56.5%) were male and 80 (45%) were local residents. The cohort was ethnically diverse:

20% Caucasian, 39% Black African or Black Caribbean and 10% mixed. There were 87 (49%) patients from Black and ethnic minority groups, representative of the diverse population of the College. Almost three quarters of attendees (70%) had a full sexual health screen of whom 98 (55.3 %) underwent HIV testing. Six patients were diagnosed with Chlamydia (5%). There was a high uptake of contraception in women attending the college, with 26 (33.7 %) receiving a hormonal method of contraception. Six women (7.7%) required progestogen-only emergency contraception.
Conclusions: The College clinic opened in response to a growing need for YP's sexual health services in the community. The once weekly clinic has encouraged the students to seek contraceptive/sexual health advice and STI screening. The rate of STIs remains high in this vulnerable group.

AHP9

WHAT WOMEN WANT (WITH REGARDS TO CONTRACEPTION)
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Objective: To assess the contraceptive needs of a group of women attending a Genito-urinary Medicine (GUM) clinic.
Method: Women attending a GUM clinic at a District General Hospital (DGH) for a screen for sexually transmitted infections (STIs) were requested to complete a questionnaire over a 4-week period in mid-2008. Questions related to demographic details and sexual and contraceptive histories.
Results: 178 completed the questionnaire. Of these, 1 was under the age of 15, 110 (62%) were between the ages of 16-25, 61 (34.5%) between 26-45 years and 6 (3%) over the age of 45. 172 of the 178 women (96.62%) were sexually active and of these 149 (86.63%) used contraception, while 23 (13.3%) were not. However of these 23, 5 were trying for a baby and 5 were already pregnant, leaving 13 women at risk of unwanted pregnancy. Of 157 respondents, 141 obtained contraceptive advice from their General Practitioner, 13 from contraceptive services and 3 from their local GUM unit. 107/161 respondents were agreeable to obtain contraceptive advice from the GUM unit, if this facility was available, but 59/161 preferred to receive contraceptive advice outside GUM.
Conclusions: The broad majority of attendees at the GUM unit were sexually active and using some form of contraception. The majority of the attendees were willing to obtain contraceptive advice at the GUM unit if this facility was made available to them.

CCR1

HETEROSEXUAL FEMALE WITH NON-LYMPHOGRANULOMA VENEREUM CHLAMYDIA PROCTITIS.
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Background: Chlamydia trachomatis(c.trachomatis) is the most prevalent bacterial cause of sexually transmitted disease in the United Kingdom.
C.trachomatis infection involving the rectum usually produce no symptoms or mild symptoms when caused by non-Lymphogranuloma venereum(non-LGV) strains.Occasionally,significant symptoms arise which may mimic ulcerative colitis,Crohn's disease and other infective colitides.
We describe a case of C.trachomatis in a heterosexual female with proctitis.
Method: The 33year old heterosexual female presented with 3week history of rectal pain like passing 'shards of glass' during defecation which was associated with melaena stool.
Examination of the abdomen revealed no tenderness.Endocervical swabs for chlamydia and Neisseria gonnorrhoeae were taken.
Proctoscopy revealed empty rectum with hyperaemia and friable bleeding mucosa.Swabs for chlamydia,Neisseria gonorrhoeae and herpes simplex virus was obtained from the rectal mucosa.
Results: The results of the tests for endocervical gonorrhoea and rectal herpes simplex virus was negative.Both endocervical and rectal chlamydia(TMA Aptima combo)was positive for non-LGV strain.
The patient was treated with Doxycycline 100mg BD for 3weeks and on post-treatment follow-up the symptoms had subsided.
Conclusion: Symptomatic non-LGV strains of C.trachomatis infection of the rectum is uncommon.It may produce significant morbidity and mimic other conditions.Increasing incidence of C.trachomatis infection of the genito-urinary tract will make it an important cause of proctitis in the heterosexual female.

CCR10

DOES ASPERGILLOMA WARRANT TREATMENT IN HIV INFECTED PATIENTS – A CASE REPORT
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Background: Opportunistic infections in the HAART era are rarer however; altered presentations are becoming more prevalent. Aspergilloma is a rare opportunistic infection HIV infected people.
Methods: A case note review of an HIV positive patient with aspergilloma is presented here.
Results: Case history: A 44 years old lady from zimbabwe was diagnosed as HIV positive when she was admitted to the medical ward with respiratory failure in April 2005. She was ventilated and recovered after 7 weeks of intensive care for pneumocystis carini pneumonia and presumptive fungal infection. Nadir CD4 count was 7 and viral load was >100,000 cop/ml. She was discharged on Zidovudine lamivudine, Nevirapine, dapsone and fluconazole. Viral load was undetectable after two months of treatment. In April 2006, she was diagnosed with semi invasive aspergillosis following broncho alveolar lavage. Chest Xray showed a cavity with a consolidate in the apex of the right lung. She was treated with Itraconazole and was on secondary prophylaxis for one year. She remained asymptomatic throughout and CD4 count has risen to 340. Anti retrovirals were switched to Kivexa and Efavirenz and Itraconazole was stopped following a chest Xray with marked improvement. Six months later, she presented with cough and X-ray showed a dense patch on the right apical zone and CT showed a fungal ball with an air crescent sign. She was commenced on Itraconazole 200mg bd and levels of efavirenz and and Itraconazole are being monitored. TB screen was negative throughout.
Discussion: Invasive aspergillosis can occur with CD4 counts <50 and carries a poor prognosis with around 80% mortality. Voriconazole has been shown be superior to ambisome in a randomised trail of 277 patients in terms of response, efficacy and had fewer side effects. Apergilloma per say does not warrant any treatment in an immuno competent host. However, our patient showed radiological deterioration on stopping secondary prophylaxis.
Conclusion: Aspergilloma in an HIV positive patient may require secondary prophilaxis irrespective of the immune status.

CCR2

PARAPHIMOSIS AS THE STDs COMPLICATION. CASE REPORT.
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Background: Paraphimosis is infrequent but threatening disease. Risk of strangulation of penis and blood supply shortage claims for emergent care. Standard procedures in paraphimosis management are reposition of glance penis and cutting of the swelling prepuce to reduce the edema. Aims. To estimate the influence of STI treatment in STI-associated paraphimosis management.
Methods: We observed 3 cases of paraphimosis at different stages of severity. All patients passed urgent STIs investigation: Gram staining and rapid plasma test on syphilis. The treatment was based on the test results.
Results: All 3 cases were associated with different STI: gonococcal urethritis, primer syphilis and scabies. Purulent discharge in case of gonorrhea, penile erosion and lymphadenopathy in syphilis, and typical for scabies skin rash in the latter case helped to suspect the appropriate diagnoses in time. Medical history in all cases disclosed various conditions which could provoke paraphimosis: car driving for the long period, cologne water used for penis washing and extensive sex in sauna. Before the glance penis reposition etiological treatment of STI was started. In all 3 cases of paraphimosis the glance penis was released within hours, and there were no need to cut the prepuce in any case. Preputial edema in paraphimosis associated with gonorrhea, syphilis and scabies resolved completely in 7, 9 and 11 days respectively.
Conclusion: In STI-associated paraphimosis etiological treatment before glans penis reposition may help to avoid the surgery of the prepuce.

CCR3

CASE REPORT-A CASE OF MISTAKEN SYPHILITIC ANEURYSM
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Background: We describe a case of a 51 yr old Malaysian lady who presented for a routine asymptomatic sexual health screen, her general health was good apart from a "Thyroid Goitre". The results indicated positive syphilis serology with a positive Treponemal EIA, positive TPHA and negative RPR. There were no clinical signs of neurological or cardiovascular involvement , and she had no previous treatment for syphilis. A provisional diagnosis of "Late latent Syphilis" was made and a routine Chest X ray was requested.This revealed a large "superior mediastinal mass" suggestive of an ascending aortic aneurysm.In view of her large co-incident Thyroid Goitre, a CT scan of thorax was ordered which revealed retrosternal extension of the gland into the mediastinum,with a normal aorta.
Method: We describe this case with illustration of her Thyroid Goitre, and the radiological findings on

both plain Chest X ray and CT thoracic scan findings.
Results: In view of these findings on CT scan she was therefore given standard treatment with 3 doses of Benzathine G Penicillin IM at weekly intervals.No herxheimer response was reported and her syphilis serology remained unchanged.
Conclusion: A pre-treatment CXR is recommended for cases of presumed Late Syphilis, the finding of a syphilitic aneurysm has important implications for both dosage and duration of Penicillin treatments, in addition to steroid cover.In this particular case we demonstrate with radiological imaging how a coincidental Thyroid Goitre could have potentially resulted in a mis-diagnosis of Cardiovascular Syphilis with prolonged and inappropriate treatment. It is important to be aware of other radiological causes of "superior mediastinal masses" such as Thyroid disease in patients with positive syphilis serology.

CCR4

FAILURE OF BENZATHINE PENICILLIN G IN PRIMARY SYPHILIS
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STI Unit CAP Drassanes, Spain

Objective: To present a case report of a patient treated without success with benzathine penicillin G in primary syphilis.
Methods: The case was a 21-year-old white MSM with a 4-day history of genital ulcer with VDRL=1/2, and negative IgG anti-T. pallidum and darkground examination, treated with one dose of benzathine penicillin G 2.400.000 units IM (day 0). Between days 21-30 the patient noticed the appearance of a rash, a node on the groin and fever. On day 32 he was referred to the STI Clinic with a subpreputial indurated ulcer, a maculopapular rash, and a lymph node in the left groin. He denied further sexual exposures during that period. HIV and darkground examination were negative; HSV from the lesion was negative; RPR=1/256 and TPHA=1/1280. He was retreated with that same penicillin regimen plus 20 mg of prednisone IM. After improving somehow, on day 39 he was treated with procaine penicillin 1.200.000 units IM once daily for 10 days.
Results: On day 63 the lesion was almost epitheliazed. Three months after the last treatment, results were RPR=1/4 and TPHA=1/160.
Conclusions: The patient was treated initially for early syphilis as recommended. Nevertheless, the ulcer did not heal after 1 month and it progressed to secondary syphilis. Because the patient improved after an extended course of treatment, we do not consider there is evidence to show penicillin resistance. With increasing diagnoses of syphilis, clinicians should be involved in full surveillance after its treatment, and be aware that as with other bacteria, the potential for development of penicillin resistance in syphilis exists.

CCR5

A WIDE SPECTRUM OF DISEASE: GENITAL SQUAMOUS INTRAEPITHELIAL NEOPLASIA
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Objective: Eryhtroplasia Queyrat, Bowenoid papulosis and Bowen's disease are terms used to describe severe squamous intraepithelial neoplasia. Sizable proportion of squamous intraepithelial neoplasias has been associated with HPV infection. Most high-risk HPV infections are asymptomatic and resolve spontaneously within 1 year. Persistent infection with high-risk HPV causes epithelial dysplasia. This can progress to invasion, and high-risk HPV has been shown to be a necessary cause of cervical cancer and is also causative in 40% of vulval and penile cancers. Our aim is to describe and discuss the clinical spectrum of external genital squamous intraepithelial neoplasias.
Methods: A case series.
Results: 3 cases of external genital intraepithelial neoplasia: vulvar carcinoma in situ, vulvar Bowenoid papulosis, penile erythroplasia Queyrat are presented and discussed.
Conclusions: External genital squamous intraepithelial neoplasia encompasses a wide spectrum of disease:
• from squamous dysplasia to squamous cell carcinoma when viewed histologically;
• in potential to progress into invasive squamous cell carcinoma;
• for management strategies (including treatment targeting HPV infection);
• for prevention efforts (including HPV vaccination) and follow up.

CCR6

IMIQUIMOD; GOOD FOR WARTS, BAD FOR LICHEN

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Background: Imiquimod interacts with toll like receptors activating immune cells and increasing production of interferon alpha and cytotoxic T cells. This has beneficial effects in treating various skin conditions, but can also potentially unmask other inflammatory dematoses. Eczema, psoriasis and vitiligo, are known to have a risk of exacerbation after use of topical imiquimod. We describe two cases here where imiquimod appears to have stimulated lichenoid conditions.
Results: Patient 1
A 37 old man presented with an unusual area of leucoplakia on the reflex prepuce (Fig.1). There was also a small area of adherence, so the patient was referred for a biopsy. The biopsy only showed viral wart changes, so topical imiquimod was prescribed. Within three weeks there was marked inflammation, although the warts had cleared (Fig.2). The biopsy now showed evidence of lichen sclerosus and although clobetasol propionate 0.05% (Dermovate) was helping, the warts started to recur (Fig.3). He eventually needed circumcision (Fig.4).
Patient 2
A 21 year old man presented with some flat keratinised warts on the preputal area. Within two weeks he developed typical inflammatory changes, often noted with a successful response to imiquimod. Two months later the warts had cleared, but there was extensive changes of lichen planus with typical lesions on shaft (Fig.5) glans and prepuce (Fig.6). There was also some ulceration . Despite Dermovate treatment the lichen planus remained extensive and a circumcision was done.
Conclusion: The aetiology of lichen planus and lichen sclerosus is unknown. It is thought that Toll-like receptors may be important and cases like this help support that theory. Although imiquimod has transformed the management of genital warts in our clinics, staff need to be aware of the possibility of inducement or exacerbation of other skin conditions. In our two cases the patients were so severely affected that they both needed circumcision. (6 images to be shown)

CCR7

A SERIES OF CASES OF VAGINITIS DUE TO SACCHAROMYCES CEREVISIAE

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Background: *Saccharomyces cerevisiae* (SC) is a ubiquitous organism which can be found in nature on various plants and in the soil. It is often referred to as brewer's or baker's yeast with industrial uses including fermentative processes and beer production. It is emerging as an opportunistic fungal pathogen in the immunocompromised but has also been associated with recurrent vaginitis in immunocompetent women. The overall incidence of vaginitis due to saccharomyces is 0.3-0.4%. Clinically it can be indistinguishable from the vulvovaginitis caused by candida and often contributes to the relapse of symptoms.
Method: We report 4 cases of vulvovaginitis caused by SC and their management.
Results: Four patients presented to our GU services with recurrent symptoms of vaginal discharge and vulval soreness and itchiness. They all had either partial or no response to stat treatments with clotrimazole pessaries or fluconazole orally. SC was isolated on culture of high vaginal swabs. Patient 1 responded to weekly use of nystatin pessaries over a period of 3 months. Patients 2, 3 and 4 responded to consistent use of fluconazole of either weekly or fortnightly treatment. Suppression therapy regimes were for a period of 2 to 5 months. Patients remained asymptomatic and were negative on both microscopy and culture following suppression therapy.
Conclusion: Review of the literature reveals very little on the effective management of vaginitis due to SC. In our clinical experience, the use of fluconazole as suppression therapy produced a good response in the majority of our patients. However, in the literature, fluconazole at the usual dose has not been reported as effective. In 2 separate studies, fluconazole resistant or fluconazole susceptible dose dependent saccharomyces isolates were identified. The saccharomyces organisms isolated in these studies were susceptible to clotrimazole, miconazole and ketoconazole. These case reports highlight our own observation in clinical practice.

CCR8

LATE HIV DIAGNOSIS AND IRIS: MAC IS COMPLEX!

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Background: Recent HIV testing guidelines emphasise the importance of testing in multiple settings to achieve earlier diagnosis. We describe a case where late diagnosis of HIV led to the development of

complicated mycobacterium avium complex (MAC) immune reconstitution inflammatory syndrome (IRIS).
Case Report: A 40 year old UK man was diagnosed with HIV (CD4 count 90 (5%), viral load 614,576 copies/ml). He started truvada and efavirenz and suffered no initial side-effects. Six weeks later he developed night sweats and a painless submental mass. His CD4 count was then 329 (12%) and viral load 1626 copies/ml. Fine needle aspiration revealed acid fast bacilli. Initial anti-mycobacterial therapy was isoniazid, rifampicin, pyrazinamide, ethambutol and clarithromycin. When MAC was subsequently identified, treatment was rationalised to rifabutin, ethambutol and clarithromycin. Shortly after this he developed an acutely painful achilles tendonitis and a raised urate. The urate returned to normal after stopping pyrazinamide and isoniazid but his urea became elevated after starting non-steroidal anti-inflammatory (NSAID) treatment for the tendonitis. NSAIDs were stopped and his urea improved. Six weeks after starting anti-mycobacterial therapy the submental mass was not resolving and prednisolone was commenced. After a month of steroids he was admitted as an emergency with severe epigastric pain and a diagnosis of steroid-induced gastritis was made. Six months after his late diagnosis of HIV our patient had gained weight, stopped having night sweats and felt better overall. However he still had a large submental mass and a painful tendonitis.
Conclusions: Late diagnosis of HIV infection with its associated problems is still a major contributor to mortality from HIV. Treatment of the patient with advanced immunosuppression and opportunistic infection can lead to a cascade of further complications which may challenge the ability of even experienced HIV physicians.

CCR9

IRIS PHENOMENA CAN OCCUR UP TO ONE YEAR FOLLOWING INITIATION OF ANTIRETROVIRAL THERAPY FOR HIV
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Background: Immune reconstitution inflammatory syndrome (IRIS) is characterised by a paradoxical worsening or uncovering of occult infection soon after recovery of immune function associated with treatment of HIV infection. We present the case of an HIV positive man who developed IRIS phenomena up to 1 year after starting antiretroviral (ARV) therapy.
Case report: A 50 year old bisexual Filipino man presented in July 2007 with general malaise, fatigue and night sweats. He was found to be HIV-1 positive with a CD4 count of 9 cells/mm3 and viral load (VL) of 149,000 copies/ml. He was diagnosed with cutaneous Kaposi's sarcoma (KS) and miliary Mycobacterium tuberculosis (MTB) for which he was started on standard quadruple therapy. Two weeks later he was commenced ARV therapy (tenofovir/emtricitabine and efavirenz). In October 2007, his CD4 count had improved to 81 cells/mm3 and his VL was 184 copies/ml. His malaise and sweats had improved but the KS lesions continued to progress and he was started on thalidomide. In January 2008, he completed his MTB therapy. His KS lesions had continued to progress and he was switched from efavirenz to lopinavir/ritonavir. In February 2008, with a CD4 of 140 cells/mm3 and VL<40 copies/ml, he developed a 3cm necrotic ulcer on his tongue and a large pericardial effusion. Biopsy of the ulcer revealed Histoplasmosis capsulatum. The ulcer resolved with oral itraconazole and the effusion was drained and did not recur. In June 2008, with a CD4 count of 119 cells/mm3 and VL<40 copies/ml, he developed retinitis of his right eye. A clinical diagnosis of CMV retinitis was made (no vitreal sample was taken) and his symptoms resolved with valganciclovir. His KS lesions are now improving.
Conclusion: This case demonstrates that IRIS phenomena can occur at least 6 months and probably up to one year after starting ARVs. Opportunistic infections should continue to be considered in the differential diagnosis of new problems despite an improved CD4 count.

OS1.1.01

WORLDWIDE HPV GENOTYPE DISTRIBUTION IN 10,289 CASES OF CERVICAL CANCER
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Objectives: To describe the HPV genotype distribution in invasive cancer of the cervix.
Methods: Paraffin embedded invasive cancer cases were collected from historical archives. HPV detection was done through amplification of HPV DNA by SPF-10 broad-spectrum primers PCR subsequently followed by DEIA and genotyping by LiPA25 (version 1). Samples were tested at HPV laboratories at ICO (Barcelona, Spain) and at DDL (Voorburg, The Netherlands). Countries in the study include Algeria, Argentina, Australia, Bangladesh, Bosnia-Herzegovina, Brazil, Chile, China, Colombia, Croatia, Czech Republic, France, Greece, Guatemala, Honduras, India, Italy, Japan, South Korea, Lebanon, Mexico, Mozambique, Netherlands, Nigeria, Paraguay, Peru, Philippines, Portugal, Spain,

Taiwan, Thailand, Turkey, Uganda, USA and Venezuela.
Results: Out of 10,289 cases of invasive cervical cancer, HPV detection and typing was successfully done on 8,714 cases. The five most common types detected as single types worldwide were HPV16(56.7%), HPV18(9.6%), HPV45(5.3%), HPV33(3.5%) and HPV31(3.5%). The first 3 HPV types were consistent with the exception of Europe where HPV33 was the third. The 4th and 5th HPV in ranking by region were as follows: America (HPV31&33), Europe (HPV45&31), Africa (HPV35&HPV31), Asia (HPV58&HPV52) and Oceania (HPV35& HPV39&HPV68 with the same relative contribution). In cervical adenocarcinomas the ranking was: HPV 16(46.9%), HPV 18(29.6%) and HPV 45(10.6%). Any other individual HPV type showed relative frequencies below 1%. HPV 16, 18 and both types combined accounted for 70.4% of the HPV positive cases. Multiple infections represented 6.0% of the HPV positive cases. Mean age of cases with HPV16, 18 or 45 (50.1, 48.3 and 47.2, respectively), were statistically lower than mean age of cases with other HPV types (54.8; $p<0.05$).
Conclusions: The study confirms the consistent contribution of HPV 16 and 18 to cervical cancer around the world.

OS1.1.02

HIGH PREVALENCE OF GENITAL HUMAN PAPILLOMAVIRUS (HPV) IN SEXUALLY ACTIVE YOUNG WOMEN IN ENGLAND PRIOR TO HPV IMMUNISATION PROGRAMME
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Background: The prevalence of HPV in sexually active women under 25 years of age is poorly known and is important to inform immunisation strategies, and as a baseline for measuring the (early) impact of immunisation (before impact on cervical disease).
Objective: To determine HPV type-specific prevalence in sexually active women under 25 years in England.
Methods: Residual vulval-vaginal swab samples from under 25 year old women undergoing chlamydia screening were obtained from sites around England. Unlinked anonymous data, including age, region, ethnicity, the setting of sample collection, sexual partnerships and chlamydia positivity, were collected for each sample. HPV testing was conducted using Digene Hybrid Capture II HPV DNA test (HCII), including both the high-risk and low-risk probes. HCII positive samples were genotyped using the Roche Linear Array Genotyping Test.
Results: At the interim analysis 1,563 eligible samples (30% of the total study to be presented) had been HCII tested: 39.9% were positive. Prevalence increased from 12.8% in 13-14 year olds to 43.8% in 17-18 year olds. Univariable analyses indicated HPV infection to be associated with age, region, collection setting, reporting two or more sexual partnerships in previous year and chlamydia infection. At the interim analysis, genotyping had been conducted on 427 HCII positive samples: 44.7% (n=191) were HPV 16 and/or 18 positive; 6.3% (n=27) were HPV 16 and 18 positive.
Conclusions: HPV was common in this sample of sexually active young women undergoing chlamydia screening in England: the risk of infection varied by factors also associated with chlamydia infection. These data will inform the current debate on the benefit of vaccinating women in their late teens and early 20s. Repeating this survey in future should determine the effectiveness of HPV immunisation, and determine changes in frequency of non-vaccine HPV types and herd immunity effects.

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OS1.1.03

MONITORING HPV TYPE-SPECIFIC PREVALENCE OVER TIME THROUGH CLINIC-BASED SURVEILLANCE
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Objectives: This analysis provides clinic-based type-specific HPV prevalence data that establish baseline parameters for monitoring the prevalence of vaccine-preventable HPV types in populations into which the HPV vaccine is introduced.
Methods: Cervical samples were collected from women 18 to 65 years of age who attended 10 STD, 8 family planning, and 6 primary care clinics in 6 US cities between January 2003 and December 2005. L1 consensus PCR was used to identify 44 HPV types in the samples. We calculated prevalences of vaccine-preventable and non-vaccine-preventable high- and low-risk types for each year to evaluate baseline

variability. We used these data to perform power analyses of sample size needed to detect anticipated type-specific changes in prevalence.
Results: Among 8,944 cervical samples collected over a three-year period, the prevalence of vaccine-preventable high-risk HPV types ranged from 7% to 8% and low-risk types from 2% to 3%. Among non-vaccine-preventable types, the prevalence of high-risk types ranged from 19% to 22% and low-risk types from 13% to 17% (see table). Bivariate analyses demonstrated year-to-year stability in various HPV prevalences and in clinic populations with respect to age, city, race, and clinic type. Multivariate analyses indicated that predictors of vaccine-preventable HPV prevalence did not change over the three-year period, strengthening the argument that clinics can provide a stable population to monitor HPV prevalence. Power analyses indicated that a sample size of 3,000 women per year would be needed to have 80% power to detect a 25% change in prevalence of vaccine-preventable high-risk types when baseline prevalence is 7%; in types with higher baseline prevalence, similar changes would be detectable with smaller sample sizes.
Conclusions: Clinic-based surveillance could be used to track changes in HPV types to monitor effects of the HPV vaccine, including type replacement, provided sufficiently large sample sizes are used.

	2003 Prevalence (%)	2004 Prevalence (%)	2005 Prevalence (%)
2 vaccine-preventable high-risk HPV types	7	8	8
2 vaccine-preventable low-risk HPV types	2	3	3
22 non-vaccine-preventable high-risk types	19	22	21
18 non-vaccine-preventable low-risk types	13	17	16

OS1.1.04

PREVALENCE AND BETWEEN-PARTNER CONCORDANCE OF HUMAN PAPILLOMAVIRUS (HPV) INFECTION AMONG COUPLES IN A NEW SEXUAL RELATIONSHIP
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Objectives: To investigate HPV prevalence among newly-formed couples.
Methods: The HITCH Cohort Study (HPV Infection and Transmission among Couples through Heterosexual activity) enrols women aged 18-24 attending a university or junior college in Montreal and their new male partners. Self-collected vaginal swabs and clinician-obtained swabs of epithelial cells from the penis and scrotum were tested for DNA of 36 HPV types. We analysed enrolment data from 263 couples, and used logistic regression to identify risk factors for positive type-specific concordance among 169 "exposed" couples (i.e., at least one partner was HPV+).
Results: Couples engaged in vaginal sex for a mean of 3.6 months. HPV was detected in 56% of men and women, and 64% of couples. 41% of couples were concordant for 1+ types, nearly 4 times more than expected if HPV status were independent ($p<0.00001$). Among exposed couples, type-concordance was observed in 42% (95%CI 36%, 47%) of infections; this rose from a low of 25% at <2 months to a peak of 68% among those engaging in vaginal sex for 5-6 months. After adjustment for relationship duration, concordance was observed among fewer couples who always used condoms compared to those who never did (OR 0.35, 95%CI 0.15-0.86), and more often when the male was uncircumcised (OR 1.8, 95%CI 1.1-2.8).
Conclusions: Although HPV was very common, detection of the same type in persons initiating a sex relationship would be rare given type-specific prevalence rates. Therefore the high degree of concordance suggests a high probability of transmission. Condoms conferred significant but incomplete protection.

OS1.1.05

PATTERNS OF CLEARANCE OF HPV-16 INFECTION AND IMPACT OF VACCINATION
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Background: An understanding of the dynamics of the transmission and clearance of carcinogenic human papillomavirus (HPV) types is essential to project the impact of HPV vaccination.

Methods: We developed and analysed an age-structured dynamic model of HPV-16 infection and cervical cancer, accounting for the effect of age of infection and age of pre-cancerous lesions on the natural history of cervical cancer. The model has been parameterized with consistent sets of data on the occurrence of HPV-16 infection, pre-cancerous lesions and invasive cervical cancers observed, in Turin (total population 900,608) Italy. We explored the impact of introducing vaccination assuming two different patterns of clearance of the HPV-16 infection, namely: susceptible – infected – recovered (SIR) and susceptible – infected – susceptible (SIS).
Results: By adapting the force of infection (per capita rate of infection), both SIR and SIS scenario could be fitted to the observed data. The simulations, assuming the same vaccination coverage of girls before their sexual debut in an unscreened population, suggest that under the SIS scenario it would possible to prevent up to 20% more cases of cervical cancer than under the SIR scenario. Interestingly, both vaccinated and unvaccinated cohorts take advantage of the increased protection. The prevention of cancer cases among unvaccinated cohorts of women under the SIS scenario is attributable the indirect protection provided by the 'herd immunity'. Indeed, when also boys are 'altruistically' vaccinated, about 30% of extra-cases of cancer can be prevented under the SIS scenario.
Conclusions: The actual patterns of clearance of HPV-16 infection are possibly best represented as a mixture of SIR and SIS patterns. This study shows that the both patterns need to be accurately characterized to reliably project the impact of vaccinating against carcinogenic HPV types. In particular, if catch-up vaccination and vaccination of sexually adult women is being investigated.

OS1.1.06

RISK OF HIV ACQUISITION AMONG MEN WITH AND WITHOUT HUMAN PAPILLOMAVIRUS INFECTION IN KISUMU, KENYA

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Background: Although several sexually transmitted infections (STIs) have been associated with an increased risk of HIV infection, there are few data concerning the potential effect of human papillomavirus (HPV) infection on HIV acquisition.
Methods: HIV-seronegative, sexually active 18-24 year-old men within a randomized trial of male circumcision provided penile exfoliated cell specimens from two anatomical sites (the shaft, and glans/coronal sulcus) at the baseline study visit. Specimens were tested with the GP5+/6+ PCR assay to detect a wide-range of HPV DNA types. HIV incidence [95% confidence interval (CI)] was calculated using Kaplan-Meier methods, and relative risk (RR) [95% CI] was estimated from proportional odds models with data restricted to 24 months of follow-up.
Results: Among 2,168 men with data on baseline HPV classified strictly as circumcised or uncircumcised over follow-up, 1,089 (50%) were HPV DNA positive at baseline. 754 (35%) were high-risk HPV positive and 335 (15%) were low-risk positive. In 1,101 uncircumcised men, the 24-month HIV incidence was 3.3 [1.5, 5.1] in high-risk baseline HPV positive men vs 5.5 [1.8, 9.2] in low-risk HPV positive men vs 2.9 [1.4, 4.3] in HPV-negative men (p=0.31, log-rank test). In 1,067 circumcised men, the 24-month HIV incidence was 2.6 [0.9, 4.2] in high-risk- vs 0.6 [0.0, 1.8] in low-risk- vs 0.4 [0.0, 0.9] in HPV-negative men (p=0.0093, log-rank test). The RR of HIV infection in men positive for any HPV type at baseline was 1.4 [0.7-2.7](p=0.38) in uncircumcised men; and 5.0 [1.1-22.6] (p=0.02) in circumcised men. Controlling for circumcision status, the RR of HIV infection in men positive for HPV was 1.8 [1.0, 3.2](p=0.06).
Conclusions: Preliminary analyses suggest a higher rate of HIV seroconversion among men who were HPV positive at baseline. Further analyses and additional studies are required to confirm whether HPV infection increases risk for HIV.

OS1.10.01

NO INCREASE IN HIV OR STI TESTING FOLLOWING A SOCIAL MARKETING CAMPAIGN AMONG MEN WHO HAVE SEX WITH MEN IN AUSTRALIA

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Background: A social marketing campaign ran between March and September 2004 in Victoria, Australia to increase rates of HIV/STI testing among men having sex with men (MSM). Campaign messages were displayed using posters and takeaway cards. Advertisements were placed in publications and radio targeting the gay community.
Methods: To evaluate the initiative we analysed testing data from a sentinel surveillance network and laboratories servicing clinics with a high case load of MSM. The Kruskal–Wallis test was used to compare average monthly tests conducted before, during and after the campaign. Linear regression was used to estimate trends in monthly tests. We also analysed STI/HIV testing uptake reported in annual surveys between 2004 and 2006 using the chi-square test for trend.
Results: The sentinel surveillance network showed no increase in the overall extent of HIV testing and no difference in the proportion of MSM reporting regular annual HIV testing during the campaign (43%) and post campaign (41%). The annual behavioural surveys showed that between 2004 and 2006 there was no significant increase in this overall proportion of MSM reporting having a HIV test in the last 12 months (p=0.96). The behavioural surveys also showed an increasing trend in the proportion reporting specific STI tests over time: anal swab (26% to 39%, p=<0.01) and urine test (42% to 50%, p=<0.01) and there was a steady increase in the amount of STI testing at the clinics detected through the laboratory reports: chlamydia (average increment of 6.4 tests per month, p<0.01), gonorrhoeae (6.5 tests per month, p=<0.01) and syphilis (4.0 tests per month, p=<0.01) but it began at least two years before the campaign and was not accelerated during the campaign.
Conclusion: There was no evidence that the campaign increased HIV/STI testing. These findings highlight the importance of evaluating public health campaigns to assess their impact to ensure that they are modified if no impact is identified.

OS1.10.02

PREFERENCE BETWEEN PREEXPOSURE PROPHYLAXIS (PREP) AND TOPICAL RECTAL MICROBICIDES TO PREVENT HIV INFECTION IN PERUVIAN MSM
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Objectives: As both Pre-Exposure Prophylaxis (PrEP) and Rectal Microbicides (RM) are under investigation as methods for HIV prevention among men who have sex with men (MSM), it is important to understand the acceptability of each approach. Our study assessed preferences for PrEP (a daily pill) versus a RM (a topical solution applied during anal intercourse) among Peruvian MSM.
Methods: In the 2008 Peruvian HIV Sentinel Surveillance 1283 MSM completed a Computer Assisted Self-Interview assessing risks for HIV/STIs and preferences for PrEP versus RM. Multinomial regression analysis was used to estimate odds ratios (OR) and 95% confidence intervals (CI) for the association between selected covariates and both overall and comparative willingness to use PrEP versus an RM.
Results: If both products were available and effective in preventing HIV acquisition, 1080/1282 (84%) participants would be willing to use an RM and 1166/1282 (91%) to use PrEP. If given a choice, 705/1282 (55%), would prefer to use PrEP and 335/1282 (26%) to use an RM. If combined use provided an added protective effect, 800/1282 (62%) would use both products simultaneously, though 129/1282 (10%) stated they would prefer to only use an RM and 240/1282 (19%) to only use PrEP. Preference for PrEP over an RM was associated with age ≥35 years (OR 2.6, 95% CI 1.4 to 4.8), exclusive homosexuality (OR 2.6, 95% CI 1.2 to 5.8), exclusively receptive anal intercourse (OR 1.9, 95% CI 1.0 to 3.4), and self-identification as gay (OR 3.6, 95% CI 2.0 to 6.6).
Conclusions: The majority of Peruvian MSM in our sample expressed willingness to use PrEP or an RM, though there was an overall and exclusive preference for PrEP. Social and behavioral characteristics associated with preference for PrEP over an RM are similar to factors associated with increased risk for HIV acquisition among MSM. Future studies should explore preferred characteristics and anticipated strategies for use of each prevention method in target populations.

OS1.10.03

SCREENING FOR SYPHILIS AS PART OF HIV MONITORING INCREASES DETECTION OF ASYMPTOMATIC SYPHILIS AMONG HIV INFECTED MEN WHO HAVE SEX WITH MEN
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Background: Syphilis continues to be a significant public health problem among HIV infected men who have sex with men (MSM) internationally. This study aimed to determine whether the routine inclusion of syphilis serology in the blood tests that are usually performed as part of HIV monitoring improves the detection of early syphilis among HIV infected MSM.
Methods: We examined the effect of this intervention, implemented in January 2007, on the detection of

early, asymptomatic syphilis among HIV infected MSM attending the Melbourne Sexual Health Centre, Australia, and compared this with results from the previous clinic policy of annual syphilis screening. To assess the effect on the duration since infection, we took the midpoint between last negative serology and time of diagnosis and compared the duration between the midpoint and diagnosis.
Results: In the 18 months before and after the intervention, the average number of syphilis tests performed per man per year was 1.9 and 3.3 respectively. The proportion of HIV infected MSM tested who were diagnosed with early syphilis during these periods was 3.1% (14/444) and 8.1% (48/587) respectively (p=0.001). The proportion of these who were asymptomatic was 21% (n=3) and 85% (n=41) respectively (p=0.006). The median duration between the midpoint since last negative serology and diagnosis was 107 days (range 9-362) and 45 days (range 23-325) respectively (p=0.018).
Conclusion: By including syphilis serology as part of HIV monitoring, this increase in the frequency of syphilis screening resulted in a substantial increase in the proportion of HIV positive, syphilis infected MSM diagnosed with early, asymptomatic infection. This intervention probably also decreased the duration of infectiousness, enhancing syphilis control while reducing morbidity.

OS1.10.04

AN INNOVATIVE ONLINE HIV PREVENTION CAMPAIGN FOR MEN WHO HAVE SEX WITH MEN ON WORLD AIDS DAY 2008

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Background Despite decades of traditional HIV prevention efforts aimed at heightening awareness of the undiminished danger of HIV, HIV incidence rates show that infection in men who have sex with men (MSM) continues to rise. In this modernized approach to HIV prevention, MANHUNT.net (MANHUNT) a popular social networking website for MSM, and industry leader in health partnerships and promotion, designed a comprehensive multi-media World AIDS Day event.
Methods On World AIDS Day 2008, MANHUNT sent a broadcast e-mail to all English-speaking members worldwide to promote HIV prevention, highlighting three websites: HIVBigDeal.org MANHUNTCares.org and Inthelifetv.org. These sites offer videos that have been shown to increase HIV status disclosure and HIV testing.
Results From December 1–7, 2008 e-mail and website data were analyzed using Google analytics. The e-mail was opened by 214,580 members and resulted in 26,025 (13%) unique visitors to one of the 3 campaign partners. Worldwide participation was 62% US, 16% Australian, 10% UK, 7% Canadian, and 2% South African. HIVBigDeal videos were viewed 25,817 times. Inthelifetv videos were viewed 677 (17% of n= 4025) times. MANHUNTCares.org statistics revealed 1232 (15% of n=8402) sought information on testing resources; 272- from the CDC National HIV testing database, 303- from GLMA.org, and 293– from home-based testing resources, while 364 visited health providers outside the US. Neilsen data related to Public Broadcasting Service LGBT documentary series IN THE LIFE (In The Life Media, Inc.) will be analyzed.
Conclusions Collaboration between for-profit MSM social networking websites and non-profit HIV prevention sites allow access to a difficult-to-reach population. This example of online outreach and education provided a unique opportunity to improve the sexual health of MSM worldwide and highlights an opportunity for unique collaborations between researchers, social networking sites, and traditional media.

OS1.11.01

RECENT EMERGENCE OF N. GONORRHOEAE ISOLATES WITH MOSAIC PBP2 AND ELEVATED ORAL CEPHALOSPORIN MIC –– SAN FRANCISCO, 2008

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Background: Single-dose oral cephalosporins are used to treat many N. gonorrhoeae (NG) infections in San Francisco. In Asia and Australia, altered penicillin binding protein 2, described as a "mosaic,"(mPBP2) has been associated with oral cephalosporin resistance and treatment failures. We sought to determine whether mPBP2 was present in San Francisco, whether it affected MIC for the oral cephalosporins, cefixime and cefpodoxime, and when it began to emerge.
Methods: NG isolates collected in San Francisco for the Gonococcal Isolate Surveillance Program (GISP) during 2001–2006 and Jan–Oct 2008 were tested for the presence of mosaic PBP2 by using a published real-time polymerase chain reaction (PCR) assay. A subset of isolates underwent sequencing of the gene that codes for PBP2 and determination of cefixime and cefpodoxime MICs using Etest.
Results: Of 170 isolates submitted to GISP during Jan–Oct 2008, 140 were available for further testing. Of these, 14 (10%) had mPBP2 by PCR. Among available isolates collected during 2001–2006, 0 of 73

had the mPBP2 by PCR. Among 5 isolates with mPBP2, 3 had PBP2 amino acid sequences (mPBP2-A) nearly identical to previously identified mPBP2, whereas 2 isolates had a PBP2 sequence pattern (mPBP2-B) intermediate between wild type and mosaic PBP2. Among mPBP2-A isolates, cefpodoxime MICs were 0.5 or 1 mg/L and cefixime MICs were 0.094 or 0.19 mg/L. Among mPBP2-B isolates, cefpodoxime MIC was 0.094 and 0.125 mg/L and cefixime MIC was <0.016 and 0.023 mg/L. Cefixime and cefpodoxime MICs for isolates without mPBP2 were <0.016 mg/L (n=2).
Conclusions: NG isolates with mPBP2 are present in San Francisco and likely emerged recently. Cefpodoxime and cefixime MICs appear to correlate with PBP2 sequence pattern. Ongoing monitoring for oral cephalosporin resistance and treatment failure is warranted.

OS1.11.02

HORIZONTAL TRANSFER OF PENA ALLEL BETWEEN TWO DIFFERENT LINEAGES OF NEISSERIA GONORRHOEAE

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Objectives: Cefixime reduced susceptible *Neisseria gonorrhoae* (CFIX-RS) has emerged the late 1990's and was increasing during this decade in Japan. We do not know whether the dissemination of CFIX-RS is a clonal expansion or not. To address this question, we analyzed CFIX-RS isolated during 1998-2005.
Methods: We randomly selected 107 of *N. gonorrhoae* from our gonococcal collection (n=660, 1995-2005). MLST typing was performed as described by Maiden et al. PFGE and *penA* sequencing were done as described by Ito et al. In vitro *penA* transfer was assayed by co-culture using two clinical isolate, NG1403 (MIC to CFIX; 0.004 microg/mL, ciprofloxacin; 8 microg/mL) and NG1208 (0.25 microg/mL, 0.25 microg/mL).
Results: We identified 30 STs from 107 *N. gonorrhoae* isolates. Nineteen CFIX-RS isolates (0.25≤ microg/mL) were found in only 3 STs, ST1596, ST1901 and ST10008. PFGE analysis suggested that isolates of ST1596 and ST10008 were closely related, while ST1901 isolates formed another different cluster. We could conclude that CFIX-RS existed in two different lineages. Sequencing of *penA* of CFIX-RS revealed that *penA-X* allele was shared by the different lineage isolates. We could speculate *penA-X*, which is the original allele for CFIX-RS, has been transferred between the two lineages. To test this possibility we studied a *penA-X* transfer in vitro. Simple overnight co-culture of CFIX-S and "CRS isolates followed by selection with CFIX and ciprofloxacin, double resistant clones were obtained. PFGE and sequencing analysis of a *penA* spanning region demonstrated that the all clones were derived from CFIX-S recipient, and *penA*-allele replacement on CFIX-S genome.
Conclusions: Our data suggested the dissemination of CFIX-RS is partially due to horizontal transfer of *penA-X* allele. Therefore it is important to realize a possibility that once a new type of drug resistant *N. gonorrhoeae* emerges, a horizontal transfer of the determinant, even if chromosomally, may accelerate the dissemination.

OS1.11.03

PREVALENCE OF THE 23S rRNA POINT MUTATION IN TREPONEMA PALLIDUM IN THE UNITED STATES AND ASSOCIATED FACTORS, 2006–2008

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Objectives: In patients with primary and secondary (P&S) syphilis, determine the prevalence of and factors associated with the 23S rRNA point mutation in *Treponema pallidum*, a mutation associated with macrolide resistance and azithromycin treatment failure.
Methods: During 2006-2008, specimens from genital ulcers were collected from patients attending 11 sexually transmitted disease clinics across the US. Specimens were submitted in GeneLock® or viral transport media to the CDC. DNA was extracted and amplified by real-time polymerase chain reaction to identify sequences specific to *T. pallidum* and the 23S rRNA mutation. Accompanying epidemiologic information, including gender of sex partners was abstracted from medical records.
Results: Of 341 specimens from 11 clinics, 96 (28%) were positive for *T. pallidum* (median=7 specimens/clinic, range=1–34), of which 49 (51%) from 9 clinics had the 23S rRNA mutation (median=3 specimens/clinic, range=1–25). The clinic-specific median percentage of specimens with *T. pallidum* and the 23S rRNA mutation was 70% (range 8–100%). Patients in whom *T. pallidum* was detected (n=96) had the following characteristics: median age was 31 years (range 16–61), 82 (85%) were male, 35

(36%) were black, 30 (31%) were white, and 21 (22%) were Hispanic. Of the 82 males, 61 (74%) were men who had sex with men (MSM). Of the 49 specimens with *T. pallidum* and the 23S rRNA mutation, 47 (96%) came from males: 45 (96%) were MSM. *T. pallidum* specimens with the 23S rRNA mutation were more likely to come from MSM than women or other men (prevalence ratio [PR]=7.8, 95% confidence interval=2.1–29.2), regardless of race/ethnicity.
Conclusions: The 23S rRNA mutation associated with macrolide resistance in *T. pallidum* is present throughout the US, with a higher prevalence in some locations. In this sample, the 23S rRNA mutation was more likely to be present in specimens from MSM than in women or other men with P&S syphilis.

OS1.11.04

DETECTION OF THE POINT MUTATION ASSOCIATED WITH AZITHROMYCIN RESISTANCE USING A REAL-TIME DUPLEX PCR AND TYPING OF TREPONEMA PALLIDUM IN THE U.S.
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Objectives: To develop a TaqMan-based real-time allelic discrimination PCR assay for detection of the mutation that has been associated with azithromycin treatment failure and, to determine if there is a correlation between this mutation and Treponema pallidum subtype.
Methods: Specimens were obtained from patients with primary or secondary syphilis presenting to STD clinics at 11 sites within the United States. T. pallidum DNA was detected by a real-time multiplex PCR assay (M-PCR) and the point mutation in the 23S rRNA gene associated with azithromycin resistance (AZr) was detected using a real-time allelic discrimination format. This assay was compared to a previously described real-time PCR assay using fluorescence resonance energy transfer (FRET) probes and melt-curve analysis. Strain typing was performed as previously described including sequencing of the homonucleotide G tandem repeats within the rpsA gene.
Results: The AZr mutation was detected in specimens from 9 of 11 study sites. Of 81 specimens that tested positive for T. pallidum DNA, both AZr mutation assays identified 38 specimens with azithromycin-susceptible genotypes and 43 with resistant genotypes. Of 107 specimens testing negative for T. pallidum by M-PCR, none were reactive by either assay. Strain typing identified 10 subtypes among 54 specimens tested to date. The majority of strains, 63% (34/54) were subtype14d9, of which 79% (27/34) had the AZr mutation. The AZr mutation was also detected in two other subtypes.
Conclusions: The AZr mutation is associated with different T. pallidum subtypes and is present in strains from different areas in the United States. However, the clinical relevance of this mutation requires further investigation. The TaqMan-based assay offers an alternative to FRET probes for AZr detection in T. pallidum and can be easily adapted for high-throughput applications.

OS1.12.01

HOW MUCH DOES PARTNERSHIP TYPE AFFECT THE PUBLIC HEALTH IMPACT OF A PARTNER NOTIFICATION SERVICE? APPLICATION OF AN EVIDENCE-BASED ALGORITHM.
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Objectives: Partner notification (PN) is an essential part of STI care, whose impact at population level has been shown by mathematical modelling. However the impact of an individual service on local transmission dynamics is hard to estimate, while existing service standards for PN ignore the interaction between partnership type and potential for transmission. We developed a method for estimating the public health impact of PN activity in a locality.
Methods: We designed an algorithm which estimates the impact of clinic PN activity on transmission, based on published data from a national survey of sexual behaviour, transmission parameters and routinely-collected clinic data. The algorithm compares the impact of PN outcome by partnership type, through evidence-based assumptions about the proportion of different types of partnership (regular only, casual only, or regular and casual) in the clinic population, with sensitivity analyses of their impact. Two new epidemiological concepts, the "Number Needed to Interrupt Transmission" (NNIT, the number of PN successes need to interrupt 1 transmission by 1 year), and its reciprocal the Absolute Transmission Reduction (ATR) are introduced. The approach is applied to an exemplar UK clinical population, demonstrating the impact of varying PN outcomes by partnership type.
Results: The table shows the number of transmissions averted by partnership type and different levels of PN success for male and female indexes. PN for male indexes with only casual partners reduces transmission by 30% more over 1 year, relative to targeting men with only regular partners.

			ASSUMED PN SUCCESSES PER BILATERALLY INFECTED PARTNERSHIP					
			0.8	0.5	0.2	0.8	0.5	0.2
			NUMBER OF TRANSMISSIONS AVERTED OVER 1 YEAR IN THIS CLINIC POPULATION:					
Number of male patients in clinic population	Number of female patients in clinic population		Of n=6230 partnerships reported by male indexes:			Of n=5625 partnerships reported by female indexes:		
		GONORRHOEA						
650	1100	Regular partner only (1 only)	319	199	80	548	342	137
950	850	Regular & casual partner(s) (1 regular + ≥ 1 casual)	615	384	154	1005	628	251
1400	1050	Casual partner(s) only (≥ 1 casual)	973	608	243	376	235	94
n=3000	n=3000							
		CHLAMYDIA						
650	1100	Regular partner only (1 only)	80	59	24	137	102	41
950	850	Regular & casual partner(s) (1 regular + ≥ 1 casual)	154	115	46	251	187	75
1400	1050	Casual partner(s) only (≥ 1 casual)	243	182	73	94	112	45
n=3000	n=3000							

Conclusions: PN activity focussed on casual partnerships is more effective in interrupting transmission than that focussed on regular partners by a factor of up to 3 (ATR). Services should collect PN outcome data by partnership type to estimate their impact on transmission and cost-effectiveness.

OS1.12.02

EXPEDITED PARTNER THERAPY (EPT): A ROBUST INTERVENTION?

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Objectives: We previously reported results of a randomized trial that found that EPT reduces patients' risk of persistent or recurrent gonorrhea (GC) and chlamydia (CT), and increases the proportion of sex partners receiving treatment. Here we present data on the effect of EPT within sociodemographic and behavioural subgroups.
Methods: We conducted a subset analysis that compared patient referral (PR) to EPT among heterosexuals with GC or CT infection. All subjects were offered assistance notifying partners.
Results: We originally identified infections in the 18 wks following treatment in 92 (10%) of 929 persons receiving EPT and 121 (13%) of 931 persons receiving PR (relative risk [RR]=0.76, 95%CI 0.59-0.98);

the RR associated with EPT was lower for men than for women (RR 0.56, 95%CI 0.30-1.08; RR 0.81, 95%CI 0.61-1.07) and lower for GC than for CT (RR 0.32, 95%CI 0.13-0.77; RR 0.82, 95%CI 0.62-1.07). Reinfection risk was lower among EPT recipients than nonrecipients in almost all subgroups defined by age, race/ethnicity, symptoms at diagnosis, type of diagnosing clinic, belief that >1 partner had other partners, belief that participant would have sex again with >1 partner, number of partners and partner type (casual/onetime vs. regular); RRs varied from 0.4 to 0.94. The RR for infection at follow-up was >1 only among persons with a single casual partner and among those with an undefined race. Persons in the EPT arm vs. the PR arm were more likely to report that their partners were very likely to have been treated or tested negative for STI in all subgroups (RRs range: 1.03-1.4). Unlike our findings related to persistent or recurrent infection, the RR of partners being treated associated with EPT was similar in men (RR 1.21, 95%CI 1.051-1.39) and women (RR 1.18, 95%CI 1.1-1.27) and in persons with GC (RR 1.33, 95%CI 0.81-2.21) and CT (RR 1.33, 95%CI 1.07-1.66).
Conclusions: EPT is superior to PR across a wide spectrum of sociodemographic and behaviourally defined subgroups.

OS1.12.03

ADHERENCE TO PATIENT DELIVERED PARTNER TREATMENT BY HIV-INFECTED WOMEN WITH TRICHOMONAS VAGINALIS

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Background: Repeated infections with Trichomonas vaginalis (TV) among HIV+ women are common and patient-delivered partner treatment (PDPT) may prevent reinfections. The objective was to examine adherence to PDPT and its influence on repeat TV infections among HIV-infected women.
Methods: A multi-centered cohort study was conducted in three US cities. HIV+/TV+ women were treated with metronidazole and provided treatment to deliver to all named sex partners. A test-of-cure (TOC) was conducted 7 days post-treatment and behavioral data was collected.
Results: Of 214 women enrolled (mean age=40 years), 99.1% were African-American, 30.9% had CD4 cell counts <200/mm3, 41.1% had plasma viral loads >10,000 copies, and 60.5% were taking ART. Number of sex partners in past 3 months was: none (23.5%), 1 (62.0%), >1 (14.5%). At TOC (n=200) 11.2% were TV+; 15.9% reported sexual exposure, 97.3% took all medications, 74.4% provided PDPT and 72.3% reported partner(s) took the medications. Of the 40 who did not give medications to their partner(s), 52.2% were unable, 10% unwilling, and 12.5% were afraid of the partner's reaction. Factors associated with not giving medications to partner(s) were: younger age (p=0.01), >1 sex partner (p=0.002), single (p=0.001), and having at least one partner not knowing their HIV status (p=0.008). Partner treatment and sexual exposure were not associated with being TV+ at TOC.
Conclusion: Adherence to PDPT and sexual exposure were not associated with being TV+ at TOC; treatment failure is likely to be the most common cause.

OS1.12.04

CAN ACCELERATED PARTNER THERAPY (APT) IMPROVE OUTCOMES OF PARTNER NOTIFICATION (PN) FOR STIs IN THE UK? A FEASIBILITY STUDY & EXPLORATORY TRIAL

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Objectives: The effectiveness of PN in controlling STIs in the UK is unclear. Expedited Partner Therapy can improve PN outcomes but does not comply with UK professional guidance. (1) To develop Accelerated Partner Therapy (APT), new PN strategies which reduce time for sex partner treatment and include assessment by a health care professional, compliant with UK professional guidance. (2) To obtain preliminary evidence of feasibility and effectiveness of APT compared with standard PN (patient referral) by undertaking exploratory trials in 2 contrasting GUM services.
Methods: We developed 2 APT models: Hotline (telephone assessment of partner) and Pharmacy (pharmacist assessment of partner) and implemented both models along with standard PN for 4 months in 2008. We offered adult indexes with C.trachomatis &/or N.gonorrhoeae &/or NGU and 1+ contactable partners a choice of PN strategy and compared outcomes. Outcomes: proportion of contactable partners considered treated <=6 weeks of index diagnosis; proportion of contacts selected for each PN option.

Time from index diagnosis to partner treatment; factors associated with index choice of and partner uptake of each PN strategy.
Results: Clinic A: Study was offered to 191 indexes. 126 met inclusion criteria and agreed to participate. Indexes described 171 contactable partners and chose Hotline 35 Pharmacy 34 Standard 102. Number of contactable partners considered treated <= 6 weeks of index diagnosis was Hotline 25; Pharmacy 22 and Standard 37. Clinic B outcomes were similar. Time from index diagnosis to partner treatment; factors associated with choice of PN will be presented.
Conclusion: APT provides a new approach to PN compliant with UK professional guidance. APT may be more effective then standard PN. Further work will determine effectiveness of APT in RCTs in different health care settings.

OS1.2.01

THE IMPACT OF HIV RISK REDUCTION BEHAVIOURS ON SEXUALLY TRANSMISSIBLE INFECTIONS IN HIV NEGATIVE HOMOSEXUAL MEN

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Background: HIV risk reduction behaviours, including serosorting (SS) and strategic positioning (SP), are common in gay men and might be effective in lowering the risk of HIV transmission. However, the impact of these behaviours on sexually transmissible infections (STIs) has not been assessed.
Methods: Between 2001 and 2004, 1,427 initially HIV negative men were enrolled in the Health in Men cohort and interviewed six-monthly through to June 2007. SS (reporting unprotected anal intercourse (UAI) with HIV-negative partners only) and SP (reporting insertive UAI only) were defined behaviourally. Participants were tested annually for anal and urethral gonorrhoea and chlamydia, herpes simplex virus types 1 and 2, and syphilis. In addition, they reported annual diagnoses of these conditions, and of genital and anal warts.
Results: Compared with men who reported UAI with HIV non-concordant partners, men who practised SS had significantly lower risk of incident syphilis (Hazard Ratio (HR)=0.19, 95% CI 0.05-0.68), urethral gonorrhoea (HR=0.41, 95% CI 0.27-0.63) and chlamydia (HR=0.55, 95% CI 0.42-0.73), and anal gonorrhoea (HR=0.53, 95% CI 0.35-0.82) and chlamydia (HR=0.51, 95% CI 0.36-0.71). Compared with men who reported no UAI, SS was associated with an increased risk of urethral chlamydia (HR=1.76, 95% CI 1.28-2.42). In men who practised SP, the incidence of anal gonorrhoea (HR=0.39, 0.20-0.75) and chlamydia (HR= 0.49, 95% CI 0.31-0.78) was significantly lower when compared with men who reported receptive UAI. In contrast, SP was associated with an increased risk of urethral gonorrhoea (HR=1.95, 95% CI 1.19-3.21) and chlamydia (HR=2.46, 95% CI 1.72-3.53) compared with men who reported no UAI.
Conclusion: SS and SP were associated with lower risk on a range of STIs compared with men who practised other means of UAI. However, SP appears to increase the risk of urethral STIs compared with men who have no UAI.

OS1.2.02

HIGH RATES OF PRIMARY AND SECONDARY SYPHILIS AMONG AFRICAN AMERICAN MEN WHO HAVE SEX WITH MEN IN THE UNITED STATES, 2005-2007™

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CDC, US

Objectives: To compare rates of primary and secondary (P&S) syphilis among African American and white men who have sex with men (MSM) in different regions of the U.S. during 2005-2007.
Methods: Syphilis is a notifiable condition in all U.S. states and reported weekly to the Centers for Disease Control and Prevention. Data from state health departments were included in this analysis if codings for sex partner were "male", "female", or "both" for at least 75% of the male cases of P&S syphilis reported for each year. Rates were calculated using bridged race population data for 2005-2006 from the U.S. census and National Center for Health Statistics. Population figures for males of white and black races were used. Census data were not available for 2007 (2006 population data were used) or for MSM.

Results: Twenty seven states reported information on the sex of sex partners for males with P&S syphilis that was complete for 75% or more of the cases each year. These states accounted for 60% of all reports of P&S syphilis in 2007. During 2005-2007, rates of P&S syphilis in black MSM increased 53%; increases were observed in all 4 census regions, ranging from a 32% increase in the Midwest to a 96% increase in the West. Overall rates among white MSM remained stable; a 13% increase was observed in the West and a 22% decrease was observed in the Midwest. In 2007, rates among Black MSM were 5 times higher than those among white MSM (2-8 times higher depending on census region). The largest disparity was observed in the South.
Conclusions: The census data used underestimate the actual rates of P&S syphilis among MSM. However, they do allow for comparing rates across racial groups and for monitoring trends over time. These data show marked racial disparities in syphilis between black and white MSM. They also suggest that syphilis in black MSM is increasing in the U.S. while it may be stabilizing among whites.

OS1.2.03

TRANSMISSION DYNAMICS OF HIV AMONG MEN WHO HAVE SEX WITH MEN IN SOUTHERN INDIA: INSIGHTS FROM MATHEMATICAL MODELLING

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Objectives: In India the HIV epidemic remains concentrated in high-risk groups including men who have sex with men (MSM). Indian MSM show considerable behavioural heterogeneity. Different subgroups are likely to have different risks of infection and some subgroups may contribute disproportionately to the epidemic. This study simulates the transmission of HIV among MSM in a Southern Indian setting, estimates the contribution from each subgroup to the HIV epidemic among MSM, and compares the potential impact of increasing condom use in each subgroup.
Methods: A deterministic compartmental model was developed, parameterised and fitted to setting-specific data to simulate joint transmission dynamics of HIV, syphilis and herpes between 3 subgroups of MSM in a Southern Indian setting (Table 1). Potential evolution of the epidemic was investigated in the absence and presence of two simulated 5-year interventions that assumed: (1) all MSM in a subgroup were effectively reached and transmission was entirely prevented (to explore the contribution this subgroup makes to the HIV epidemic among MSM); and (2) all MSM in a subgroup were effectively reached and had an absolute 10% increase in the number of sex acts protected by a condom.

T1: MSM subgroup characteristics and relative effectiveness of reaching different subgroup in a 5-year intervention (2010-2015)				
	All MSM	Panthi / Bisexual	Kothi / Hijra	Double Decker
Number of MSM in subgroup (percentage)	320 (100%)	71 (22%)	163 (51%)	86 (27%)
HIV seroprevalence (2005)	36%	13%	45%	38%
Average no. of partners per month	36	9	57	19
Percentage of sex acts that are insertive	23%	73%	8%	12%
Percentage of sex acts protected by condom at baseline	69%	59%	76%	65%
Percentage reduction in new HIV infections if transmission from one subgroup is entirely prevented (2010-2015)	-	31%	39%	38%
Percentage of infections prevented when every MSM in subgroup increases condom use by 10% (absolute) between 2010 and 2015	25%	3%	15%	9%
No. of MSM in subgroup who would need to increase condom use by 10%(absolute) to avert 1 HIV infection in overall MSM population	9	16	8	7

Results: Preliminary results showed that the Kothi/Hijra and Double Decker subgroups, which are the

largest subgroups, have the highest numbers of partners each and mainly engage in receptive sex, contribute most to HIV transmission among MSM. Fewer Kothi/Hijra and Double Decker than Panthi/Bisexual need to be effectively reached by the condom intervention in order to avert HIV infections in the overall MSM population.
Conclusions: Preliminary findings support the current work of Indian NGOs in most effectively reaching Kothi/Hijra in condom interventions but suggest that more attention should also be given to Double Deckers. Panthi, Bisexuals and Double Deckers may be harder to reach but good data on subgroup size is needed to combat the epidemic.

OS1.2.04

TRENDS IN SEXUAL BEHAVIOUR AMONG LONDON GAY MEN BETWEEN 1998 AND 2008
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Objective: To examine changes in sexual behaviour among London gay men between 1998 and 2008.
Methods: Over 6000 gay men using gyms in central London were surveyed annually between 1998-2005 and then again in 2008 (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 partner of unknown or discordant HIV status. "Serosorting" was defined as UAI with a partner of the same HIV status.
Results: Of the 6064 men, 1001 (16.5%) were HIV positive, 3866 (63.8%%) were HIV negative, while 1197 (19.7%) had never been tested for HIV. The percentage who were HIV positive increased from 14.1% in 1998 to 22.8% in 2008 ($p<0.001$). Median age was 39 years. Between 1998 and 2003 the overall percentage of men reporting high risk sexual behaviour with a casual partner increased significantly from 6.7% to 16.1% ($p<0.001$). Between 2003 and 2008, however, the percentage of men reporting high risk sexual behaviour with a casual partner decreased from 16.1% to 8.6% ($p<0.001$). This decrease was seen for both HIV positive and negative men, but not for never-tested men. During the same period of time the percentage of HIV positive men who reported serosorting with casual partners increased from 6.8% to 14.2% ($p=0.004$). For HIV negative men, however, there was no increase in serosorting with casual partners between 1998 and 2008 (1.7% and1.6% respectively).
Conclusion: The percentage of London gay men reporting high risk sexual behaviour with a casual partner increased between 1998 and 2003 but has decreased since then. Between 1998 and 2008 however, an increasing percentage of HIV positive (but not HIV negative) men reported serosorting with casual partners. These changing patterns of sexual behaviour have important implications for the transmission of HIV and other STIs among London gay men.

OS1.2.05

ETHNICITY, SEXUALITY AND SEXUAL BEHAVIOUR: A NATIONAL STUDY OF MEN WHO HAVE SEX WITH MEN IN BRITAIN
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Background: Anecdotal reports suggest that, in Britain, ethnic minority men who have sex with men (MSM) are more likely to identify as bisexual than white British MSM and more likely to have sex with women. In this paper we examine sexuality and sexual behaviour among ethnic minority and white MSM living in Britain
Methods: Between August 2007 and March 2008 MSM living in Britain were asked to complete an anonymous, confidential online survey. The research was advertised on a range of websites used by ethnic minority and white MSM, as well as in bars, clubs and sexual health clinics across Britain.
Results: 1241 ethnic minority MSM completed the questionnaire (mean age 30 years) including 399 black Caribbean or African men, 379 South Asian men (Indian, Pakistani or Bangladeshi) and 318 Chinese or other Asian men. 13,717 white British MSM (mean age 36 years) also completed the questionnaire. In all groups, the majority of men described themselves as "gay" or "homosexual" (68%-86%). Ethnic minority MSM were more likely to describe themselves as bisexual than white British men (19.4% v 13.9%, $p<0.01$), although this varied significantly between specific ethnic groups. While a quarter (25.1%) of South Asian MSM and nearly a third (30.9%) of black African MSM described themselves as bisexual, only 16.5% of black Caribbean MSM and 10.2% of Chinese MSM did so ($p<0.001$). Sexual behaviour followed a similar pattern. Ten percent (9.9%) of white British MSM said they had had sex with both men and women in the previous 12 months, compared with 17.7% of black African MSM, 14.8% of South Asian MSM, 8.6% of black Caribbean MSM and 1.8% of Chinese MSM ($p<0.001$).
Conclusions: In Britain there is considerable heterogeneity between different ethnic minority groups in

their sexual identity and behaviour. Sexual health promotion and HIV prevention programmes targeting ethnic minority MSM in this country must recognize the considerable diversity of this population.

OS1.2.06

RECENT HIV TESTING AMONG GAY MEN IN SCOTLAND, UK (1996-2005): TRENDS, RISK BEHAVIOURS AND IMPLICATIONS FOR HIV PREVENTION

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Objectives: Routine opt-out testing, whereby all patients should be offered an HIV test regardless of symptoms or risk factors, is recommended in genitourinary medicine (GUM) clinics throughout the UK. Here, we examine trends in recent HIV testing behaviour of gay men in Scotland over a ten-year period.
Methods: Seven cross-sectional surveys in commercial gay venues in Glasgow and Edinburgh (1996-2005). 9613 men completed anonymous, self-complete questionnaires (70% average response rate).
Results: Among the 8305 respondents included in these analyses, the proportion who had ever had an HIV test increased between 1996 and 2005, from 49.7% to 57.8% (P< 0.001), and the proportion tested recently (in the calendar year of, or immediately prior to, the survey) increased from 28.4% to 33.2% (P<0.01). Recent testing decreased with age. On average, 31.3% of the <25, 30.3% of the 25-34, 23.2% of the 35-44, and 21.2% of the >44 years age groups had tested recently. Aggregate rates of recent HIV testing were consistently higher among men who reported two or more unprotected anal intercourse (UAI) partners in the previous year than among men who reported none or one partner (AOR = 1.93, 95% CI = 1.68-2.23). Among men reporting two or more UAI partners, on average only 41.4% had tested recently (41.0% of the <25, 45.7% of the 25-34, 34.2% of the 35-44, and 38.8% of the >44 year age groups), and there was no increase in testing between 1996 and 2005.
Conclusions: HIV testing has increased among gay men in Scotland but not among those at greatest risk. Rates still compare unfavourably to near universal testing levels reported in the US and Australia. The decline across age groups in recent testing is consistent with HIV testing being a one-off event and suggests few men test repeatedly or regularly; a particular concern among men reporting high-risk behaviour. Additional, innovative efforts are required to increase, and normalise, regular HIV testing among gay men.

OS1.3.02

PGP 3 ANTIBODY ELISA: A SENSITIVE AND SPECIFIC ASSAY FOR THE SEROEPIDEMIOLOGY OF CHLAMYDIA TRACHOMATIS INFECTION

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Background: Understanding the burden of *Chlamydia trachomatis* infection and its clinical sequelae is hampered by the absence of well-characterised and accurate serological assays to determine past exposure to infection.
Methods: An ELISA based on the *C. trachomatis*-specific pgp3 antigen was produced and evaluated against three commercial ELISA assays. Sensitivities and specificities were determined using sera from 356 patients in whom *C. trachomatis* had been detected at least one month prior to the sample being tested and from 722 Chlamydia-negative children aged 2-13 years.
Results: The pgp3 ELISA was significantly more sensitive (57.9% (95% CI: 52.7 to 62.9%)) than the Anilabsystems IgG (49.2%, (44.0 to 54.3%; P=0.003)), the Savyon SeroCT-IgG (47.2% (42.1 to 52.4%; P<0.0005)) and Medac pELISA plus (44.4% (39.3 to 49.6%; P<0.0005)) ELISAs. The pgp3, Anilabsystems and SeroCT, but not the Medac had significantly higher sensitivity in female specimens than in male specimens (73.8 vs 44.2%, 59.8 vs 40.5%, 55.5 vs 40% and 45.7 vs 43.7%, respectively). In female patients, the pgp3 assay was 14.0% (5.5 to 22.5%) more sensitive than the next most sensitive ELISA, Anilabsystems (P=0.001). Men with a past history of urethritis or gonorrohoea were more likely to be pgp3 antibody positive (OR 2.4, p 0.05 and OR 2.2, p 0.01 respectively) but there was no association with clinical disease in women. There was no significant difference in specificity between the pgp3 (97.6% (96.2 to 98.6%)), Anilabsystems (99% (97.7 to 99.6%)), SeroCT (97.2% (95.7 to 98.2%)) and Medac 96% (94.3 to 97.2%) ELISAs. None of the ELISA assays showed evidence of cross-reactivity with *C. pneumoniae*.
Conclusions: The pgp3 ELISA achieved comparable specificity and higher sensitivity than existing commercial assays, particularly in women. This assay could be used to quantify past exposure to

Chlamydia, to elucidate the clinical spectrum of disease and to evaluate the population impact of screening programmes.

OS1.3.04

IGG THAT BINDS AN INTERNAL PARAGLOBOSYL LIPOOLIGOSACCHARIDE (LOS) ANTIGEN CONTRIBUTES TO RESISTANCE TO GONOCOCCAL INFECTION IN MEN.

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Objective: To find out whether Paraglobosyl LOS IgG antibodies contribute to the resistance of the male urethra to gonococcal infection.
Methods: We quantified IgG that bind LOS with the full-length lacto-N-neotetraose (LNnT) paraglobosyl á chain (1291wt) and with the internal LNnT triaose structure (1291a) in the sera of men who identified themselves as gonococcal contacts on presentation to a Baltimore STD Clinic with use of affinity-purified LOS IgG as standards.
Results: Contacts who had negative cultures for Neisseria gonorrhoeae had higher levels of 1291a LOS IgG (N = 16; mean: 2.2 Gm/mL) than those who had positive gonococcal cultures (N = 10; mean: 0.611 Gm/mL). Only one of the infected men had more than 1.2 Gm/mL of serum 1291a LOS IgG; five of the uninfected men had >1.4 Gm/mL. Only 5 of 16 uninfected men had more 1291wt IgG antibodies than 1291a IgG, whereas 5 of 10 infected men had greater levels of 1291wt LOS IgG than 1291a LOS IgG; the difference between concentrations of 1291wt LOS IgG in sera from the infected and uninfected men was less (0.417 Gm/mL vs. 1.009 Gm/mL, respectively) than that between 1291a LOS IgG.
Conclusions: Levels of IgG antibodies that bind the internal triaose of LNnT are higher in the sera of men who remain uninfected after contact with N. gonorrhoeae than in the sera of those who become infected. Very high levels of serum triaose IgG may provide sufficient mucosal IgG to bind most inoculae encountered by the male urethra and contribute to resistance.

OS1.3.05

HLA A*01 AND B*08 ARE ASSOCIATED WITH INCREASED GENITAL HSV-2 SHEDDING

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Background: T-cells are implicated in the control of HSV at mucosal and neuronal sites. HLA class I and II control the recognition of HSV-2 by CD8 and CD4 T-cells, respectively. We correlated HLA types with genital HSV-2 shedding.
Methods: HSV-2+, HIV- persons performed daily genital swabs for HSV and kept diaries of lesions. HLA genotypes were determined by sequencing. We compared rates of genital HSV detection and of lesions with HLA genotype using Poisson regression.
Results: 282 persons obtained genital samples for a mean of 58 days (range 30-163). 41% were men, 14% had HSV-2 infection <1 year, and 86% were Caucasian. Overall, HSV was detected on 18% of 16,382 days. The 55 allelic groups within HLA*A (13 groups), HLA*B (15), HLA*C (12), HLA*DQB1 (5) and HLA*DRB1 (10) present in >10 persons were analyzed. After adjustment for sex, length of infection, and multiple comparisons, HLA A*01 and B*08 were associated with genital shedding rates. One or more A*01 genes (dominant model) was associated with a 1.7-fold (95% CI 1.3-2.2; p<.001) increase in shedding frequency. The impact of B*08 appeared to be additive, with a 1.5-fold (95% CI 1.2-1.8; p<.001) increase in shedding rate for each B*08 allele. In multivariate analysis of allelic groups that showed univariate significance, genital shedding was highest for the 51 persons with at least 1 copy of both A*01 and B*08 versus those 222 persons with neither (RR=1.9, 95%CI 1.4-2.5; p<.001). Similar analysis preserved elevated HSV shedding with 1 or more copies of both A*0101 and B*0801 relative to neither (RR=1.8, CI 1.3-2.5, P<.001). Restriction to Caucasians yielded similar findings. No significant interactions between HLA and lesion rate were found.
Conclusions: HLA A*01 and B*08 are associated with increased genital HSV shedding. CD8 T-cells restricted by these alleles may be less efficient in controlling HSV infection, although contributions from HLA-interacting molecules such as KIR are also possible.

OS1.3.06

INTERACTION OF TREPONEMA PALLIDUM WITH MICROGLIAL CELLS

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Objectives: *Treponema pallidum*, the agent of syphilis, exerts tropism for the central nervous system, in the course of natural infection. In the present study we investigated *T. pallidum* susceptibility to phagocytosis by microglia cultured cells in opsonic and non-opsonic conditions.
Methods: Bacterial strains and culture conditions. *T. pallidum*, Nichols strain, was maintained by testicular passage in adult male New Zealand white rabbits.
BV/2 cells and culture conditions. BV/2 cell line, retaining the morphological, phenotypic and functional properties of freshly isolated microglial cells, was maintained in vitro in RPMI 1640 medium supplemented with 10% heat-inactivate FBS, gentamycin (50 microg/ml) and L-glutamine (2 mM).
Measurement of phagocytosis. Phagocytosis was evaluated on adherent BV/2 cells by immunofluorescent assay.
Opsonisation of treponemes. When indicated, treponemes were incubated for 30 min with normal or immune human serum at a concentration of 10%.
Results: The phagocytosis of viable *T. pallidum* by BV/2 cells, studied by immunofluorescence staining of cells-associated bacteria, showed that ingestion of live, unopsonized treponemes was slow. Microglial cells started to be positive 30 min. after infection, when only 3% of the cells presented small round fluorescent inclusion-like bodies. Thereafter, the number of positive cells progressively increased with time: 10% and 21% of BV/2 cells were positive, respectively, 1 and 2 h after infection. Opsonisation of *T. pallidum* with human immune serum did not substantially modify the percentage (5%) of microglial cells ingesting *T. pallidum* 30 min. after infection, whereas opsonisation increased phagocytosis after 1 and 2 h of incubation, when 15% and 48% cells were positive, respectively.
Conclusions: Microglial cells play an important role in the innate immune response in the brain. Our findings suggest that BV/2 cells, in in-vitro non opsonic conditions, are capable to very slowly clear syphilis spirochetes.

OS1.5.02

INTERNET AND HOME COLLECTION TO SCREEN MALES WITH SELF-OBTAINED PENILE SWABS AND URINE FOR C. TRACHOMATIS, T. VAGINALIS, AND N. GONORRHOEAE
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Objectives: To describe the acceptability of self-obtained penile swabs for detection of STIs via Internet recruitment. To evaluate the accuracy of penile swabs for detection of STIs, prevalence, sexual risk factors, and symptoms in this group.
Methods: Men requested free self-sampling kits for home collection using penile swabs and urine via the Internet. Specimens were mailed to the laboratory. Questionnaires were completed for demographics, acceptability, perceptions of use, and sexual risk history. Samples were tested for chlamydia, gonorrhea, and trichomonas using nucleic acid amplification tests. Infected men were treated at participating clinics.
Results: Of 1201 men requesting kits, 28.3% returned samples; 98.5% submitted both penile swabs and urines; 92.6% of men found the instructions very easy/easy. Median age was 24 yr. For 333 tested samples, chlamydia prevalence was 14.1% [for 15-19 yr. 17.9%; for 20-24 yr, 20.6%; for 25-29 yr, 7.5%]. Trichomonas prevalence was 5.9% and gonorrhea prevalence was 1.2%. Treatment was verified for 97.2% of infected men. 35.5% reported any symptoms; 13.2% reported discharge; 14.7% used condoms consistently. Over 32% reported a history of an STI; 49.4% had a new partner in the prior 90 days; 71.5% reported multiple partners, 69.9% reported drinking during sex, and anal sex was reported by 54.1%. High satisfaction was reported: 87.1% preferred to collect his own specimen; 87.3% indicated the swab collection was easy/very easy and 88.0% would use the Internet program again. Education was primarily high school (35.8%) or community college/college (44.2%). From matched sample pairs, swabs identified 45/47 and urine identified 36/47 true chlamydia positives.
Conclusions: Self-collected penile swabs were acceptable to men, were accurate, and identified more STIs than urine. Internet recruitment and home collection of self-obtained genital samples may make possible the detection of STIs in men who may not access care in clinics.

OS1.5.03

THE STI OUTPATIENT CLINIC ONLINE- THE USE AND EFFICACY OF A FULL-SCALE STI & HIV TESTING APPLICATION ONLINE
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Background: Sexual Transmitted Infection (STI) are on the rise among men who have sex with men (MSM) in Amsterdam and Rotterdam. To lower the threshold for routine STI testing among a-symptomatic MSM an online STI and HIV test-service was developed for these cities.
Methods: Through a national site for the sexual health of MSM, mantotman.nl, men can arrange anonymously and free-of-charge a complete test package for Chlamydia, Gonorrhea, Syphilis and HIV at an accredited testing lab without the need to visit a doctor for a referral. Results can be later obtained online and men found positive are referred to the STI clinic for treatment. Data on usage of the service was collected for 11 months. To determine the efficacy of the test service we compared the rate of positive serology found in the online sample with a sample of a-symptomatic MSM who visited the Amsterdam STI clinic.
Results: The online test service received 4818 visits of which 3555 were unique visitors. In total the visitors completed 1406 intakes, 1130 were referred to the laboratories to get tested and 276 were directly referred to the STI clinic. Of the men referred to the laboratories, 47% (532/1130) got tested, of which 16% (85/532) did that after receiving an email reminder. Of the tested men 96% (509/532) obtained their test results online and 17% (84/500) had one or more positive test result. In Amsterdam 19% tested positive compared to 15% (260/1701) at the STI clinic. Almost all men who tested positive (99%, 83/84) visited the STI clinic for treatment. On average 10 days passed between referral download and testing, and additional 9 days between testing and watching the results online.
Conclusion: Online STI testing seems feasible as a relatively high rate of the referred men got tested, and compliance with test procedures was high. The service proved effective in detecting MSM with asymptomatic infections since the percentage of positive diagnoses was higher (not stat. sig.) than at the STI clinic.

OS1.5.04

EFFECT OF AN ONLINE VIDEO-BASED INTERVENTION TO INCREASE HIV TESTING IN MEN WHO HAVE SEX WITH MEN IN PERU
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Background: Although many men who have sex with men (MSM) in Peru are unaware of their HIV status, they are frequent users of the Internet, and can be approached by that medium for promotion of HIV testing.
Methods: We conducted an online randomized controlled trial to compare the effect of HIV-testing motivational videos versus standard public health text, both offered through a gay website. The videos were customized for two audiences based on self-identification: either gay or non-gay men. The outcomes evaluated were 'intention to get tested' and 'HIV testing at the clinic.'
Results: In the non-gay identified group, 97 men were randomly assigned to the video-based intervention and 90 to the text-based intervention. Non-gay identified participants randomized to the video-based intervention were more likely to report their intention of getting tested for HIV within the next 30 days (62.5% vs. 15.4%, Relative Risk (RR): 2.77, 95% Confidence Interval (CI): 1.42-5.39). After a mean of 125.5 days of observation (range 42-209 days), 11 participants randomized to the video and none of the participants randomized to text attended our clinic requesting HIV testing (p=0.001). In the gay-identified group, 142 men were randomized to the video-based intervention and 130 to the text-based intervention. Gay-identified participants randomized to the video were more likely to report intentions of getting an HIV test within 30 days, although not significantly (50% vs. 21.6%, RR: 1.54, 95% CI: 0.74-3.20). At the end of follow up, 8 participants who watched the video and 10 who read the text visited our clinic for HIV testing (Hazard Ratio: 1.07, 95% CI: 0.40-2.85).
Conclusions: This study provides evidence of the efficacy of a video-based online intervention in improving HIV testing among non-gay-identified MSM in Peru. This intervention may be adopted by institutions with websites oriented to motivate HIV testing among similar MSM populations.

OS1.5.05

100 INNOVATIVE SEXUAL HEALTH PROMOTION IDEAS YOU CAN USE: A 10-MINUTE VISUAL TOUR
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Background: Using avant-garde marketing principles, health communicators have begun to reconceptualize sexual health promotion and STD and HIV prevention. As a result, dozens of ingenious ideas have revolutionized the way health educators can design, deliver, and evaluate sexual health promotional messages. This corresponds to a great need to craft old messages in original ways to overcome traditional STD and HIV prevention message fatigue.
Method: ASHA compiled over 100 ideas from all over the world to demonstrate clever inventive

messages, new materials, contemporary tools, and unique dissemination methods. The freshest 100 were selected, and, when available, all process and impact evaluation information (e.g., cost, benefit, acceptability, numbers reached) associated with each promotion was collected.
Results: The 100 most innovative sexual health promotions were categorized into six groups: New messages (e.g., No Apologies), new technologies (e.g., cell phone podcasts), new audience segments (e.g., ER visitors), new formats (e.g., wordless animation), new tools (e.g., risk assessments), new devices (e.g., self-tests) and a miscellaneous category (e.g., The Pearl of Wisdom). The range of cost associated with the promotions ranged from less than $100 to more than $100,000. Most were formatively evaluated during the development process, yet few were evaluated in terms of impact or cost-benefit.
Conclusions: In a series of fast-moving clips, all 100 new ideas will be shown. This information has been compiled to spark the creative imaginations of STD prevention professionals, health communicators, and clinicians. The field of health education and specifically sexual health promotion can learn from the advertising and marketing worlds to design and deliver attention-getting and memorable messages.

OS1.6.01

NEW FACE OF FEMALE SEX WORK IN PAKISTAN: NEED FOR INNOVATIVE HEALTH SYSTEMS INTERVENTIONS

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Objectives: The aim of this paper is to describe the profile, in-depth characteristics and behavioural patterns of female sex workers (FSW) in two cities in Pakistan.
Methods: Women were recruited through: peer networks for in-depth qualitative interviews; and respondent-driven sampling for structured interviews and clinical examinations.
Results: Our study identified that mostly illiterate (n=345, 64%) but employed (n=n=301, 59%) married (n=490, 91%) women having children (n=462, 98%) and living with their families (n=478, 91%) sell sex part-time during the day at kothie khana's , hotels or special rooms behind shops. Peers and media are key players in motivating women to enter into sex business. Despite significant use of modern contraceptives (n=334, 64%) lifetime experience of abortion (n=288, 60%) was noteworthy and very few reported using condoms. Though prevalence of STIs was low (HIV 0, Herpes Simplex 6%, active Syphilis 2%, Gonococcal infection 2% and Chlamydial infections1.3 %), sizeable proportion reported experiencing STI symptom (n=317, 63%) for which private female healthcare providers were accessed.
Conclusion: Contrary to widely held beliefs about sex work in Pakistan, female sex work in our study was mainly part-time by married women living with their families and often employed in other trade. While STI rates were low, sexual health needs were predominantly unmet through existing public sector services – care was sought mainly in the private sector. Interventions are needed to equip health sector to increase access to high quality and comprehensive sexual and reproductive health care.

OS1.6.02

HIV RISK ASSOCIATED WITH MOBILE FEMALE SEX WORKERS IN THE CONTEXT OF JATRAS (FESTIVALS) IN KARNATAKA, INDIA

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Background: The state of Karnataka in South India has a number of jatras (festivals) in which people gather for a short duration of time at specific locations, usually prompted by religious observances. Jatras also represent venues for female sex workers (FSWs) to meet potential clients in an environment of anonymity. The present study, supported by the India AIDS Initiative of the Bill & Melinda Gates Foundation, examines the predictors of jatra participation by FSWs and the associated HIV risk.
Methods: Data from a quantitative survey conducted among 1,499 mobile FSWs in northern Karnataka were analysed using multinomial logit regression predicting sex work at jatras, and logistic regression predicting condom use at last sex with a commercial client. Qualitative data consisting of interviews with FSWs and their clients were also examined.
Results: Overall, 31% of mobile FSWs reported attending jatras in the previous year, and in some districts this was as high as 49%. Significant predictors of practising sex work at jatras were the district of origin, age, religion, and duration and type of sex work. FSWs who practised sex work at jatras reported lower condom use at last sex with commercial partners at their places of origin (odds ratio=1.9), even after controlling for other socio-demographic and sex work characteristics. Only 13% of FSWs used condoms consistently at jatras. Qualitative data suggests that this is a result of the lack of availability and accessibility to condoms, the improvised environment for sex work, lack of privacy, high alcohol

consumption, clients' unwillingness to use condoms, and FSWs' perception that the clients are less risky.
Conclusions: FSWs who attend jatras engage in riskier sexual behaviour at their places of origin compared to non-jatra-attenders. In addition, most FSWs do not use condoms at jatras. HIV prevention programs among FSWs should offer enhanced outreach activities and services at jatras.

OS1.6.03

CHARACTERIZING THE FACTORS ASSOCIATED WITH THE NUMBERS OF CLIENT PARTNERS OF FEMALE SEX WORKERS IN SOUTH INDIA: A GEOGRAPHIC COMPARISON

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Objectives: The numbers of partners that female sex workers (FSWs) have affects individual-level HIV risk and contributes to population-level HIV transmission. This study aimed to characterize and compare factors that influence the numbers of client partners of FSWs in Karnataka state, south India.
Methods: Data were analyzed from cross-sectional biological and behavioural surveys of FSWs in five districts in Karnataka, supported by the India AIDS Initiative of the Bill & Melinda Gates Foundation. Univariate trends in the monthly numbers of occasional clients per FSW (clients/month) according to sociodemographic factors and sex work characteristics were examined and multivariate negative binomial regression was conducted for each district to model these relationships. Normalized weights were applied to account for sampling design.
Results: Overall, 2,285 FSWs were sampled. FSWs with the highest (34.3%) and lowest (9.6%) district-level HIV prevalence also had the highest (59.6, SE=5.2) and lowest (24.3, SE=1.9) average clients/month, respectively. For all districts, FSWs in less stable relationships (e.g. cohabiting versus married), or without other paid work, had higher rates of clients ($p<0.05$). In the three districts with the highest HIV prevalence, greater heterogeneity (variance) in the distribution of numbers of clients was observed. Rates of clients/month decreased steadily as age increased for only two districts ($p<0.05$). Overall, brothel-based FSWs had greater (>2-fold) clients/month compared with home- or public-places-based FSWs; however, this relationship was only significant in the district with the highest and the two with the lowest HIV prevalence ($p<0.05$).
Conclusion: Women with reduced economic and marital stability consistently reported greater numbers of clients across districts. These findings are being used to focus HIV preventive interventions on those FSWs at highest risk and better understand local partnership formation patterns and sexual networks in south India.

OS1.6.04

SEX WORK IN A DECRIMINALISED AND UNLICENSED ENVIRONMENT: A 15 YEAR STUDY OF FEMALE SEX WORKERS IN SYDNEY, AUSTRALIA

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Objective: To determine the demographics, behaviours and sexual health of sex workers in Sydney through a period that spanned the decriminalisation of prostitution in 1995.
Methods: For the sexually transmissible infection (STI) prevalence study we included all female sex workers who attended Sydney Sexual Health Centre for the first time from 1992 through 2006. For the incidence study we included all women who attended for further STI testing from 2004 through 2006. Data were extracted from the Centre's database. Factors associated with STIs were determined using univariate and multivariate logistic regression analysis.
Results: Between 1992 and 2006 the Centre saw 3,834 female sex workers for the first, time with an increase in median age from 25 years to 29 years over the study period (p-trend <0.001), and a large increase in the proportion of sex workers born in Asian countries (33% in 1992-1994 to 55% in 2004-2006, $p<0.001$). Consistent condom use in the workplace increased among Asian sex workers from 77% in 1995-1997 to 95% in 2004-2006 (p-trend <0.001), while remaining high (>95%) among non-Asian women throughout the study period. The prevalence of STIs decreased over time, with the greatest decline among Asian sex workers (9% in 1992-1994 to 1% in 2004-2006, p-trend <0.001). On multivariate analysis prevalent STIs were associated with younger age (<27 years, odds ratio [OR] 1.98, 95% confidence intervals [CI] 1.33-2.93; $p<0.001$), Asian origin (OR 2.38, 95% CI 1.60-3.58; $p<0.001$), and inconsistent (<100%) use of condoms at work (OR 3.98; 95% CI: 2.47-6.40; $p<0.001$). Between 2004 and 2006 the incidences of chlamydia (2.3 per 100 person years), gonorrhoea (0.02), trichomoniasis (0.04), syphilis (0), and HIV infection (0) were too low to determine any risk factors.

Conclusions: Sex workers in Sydney have achieved and maintained extraordinarily low rates of STI in a decriminalised environment. We see no justification for compulsory screening.

OS1.6.05

TRENDS IN HIV/STI PREVALENCE AND CONDOM USE IN FEMALE SEX WORKERS (FSW) AND THEIR CLIENTS IN BENIN: POTENTIAL IMPACT OF A CHANGE IN INTERVENTION MODEL

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Background: Projet Sida-3, a preventive intervention targeting FSW and their clients and involving fully integrated field outreach, communication for behavioural change (BCC) and STI clinical care, was implemented in Benin from 1993 to 2006. It first covered Cotonou and was then extended to Abomey-Bohicon, Parakou and Porto Novo (AB/P/PN) in 2001, and to Kandi and Malanville (K/M) in 2004. At project termination in 2006, the intervention was taken over by the Beninese authorities and implemented with BCC and STI care as separate components, a standard model in most HIV national strategic plans.

Methods: Integrated biological and behavioural surveys (IBBS) were carried out among FSW in Benin from 1993 to 2008 (see table for dates and locations). From 1998, IBBS were also carried out among clients in parallel to FSW surveys. Chi-square for linear trend was used for univariate analyses of time trends in HIV/STI prevalence and consistent condom use (CCU), whereas multivariate binomial regression, controlling for changes in the demography of the FSW population, was used for multivariate analyses.

Results: Overall, there was a highly significant downward trend over time in HIV/STI prevalence among FSW (table). Similar findings applied to clients, with decline in gonorrhea prevalence reaching significance in both Cotonou (5.5% in 1998, 3.0% in 2008, p=0.006) and AB/P/PN (4.0% in 2002, 0.6% in 2008, p=0.04). CCU with FSW, as reported by clients, also increased over time in Cotonou and AB/P/PN (table). However, there was a significant increase in gonorrhea prevalence in FSW from 2005 to 2008 (table, p<0.01) and a corresponding decrease in CCU (p<0.01).

Location	Infection type/CCU	1993	1996	1998-9	2002	2004-5	2008	p-value (trend)
Cotonou								
	HIV	53.3%	49.4%	40.7%	38.9%	33.3%	30.4%	0.0005
	Gonorrhea	43.2%	30.7%	23.7%	14.0%	2.8%	6.4%	<0.0001
	Chlamydia	9.4%	6.8%	5.4%	4.8%	3.4%	2.8%	<0.0001
	CCU-clients	NA	NA	39.0%	55.1%	86.2%	71.2%	<0.0001
AB/P/PN								
	HIV	NA	NA	NA	59.5%	34.7%	27.6%	<0.0001
	Gonorrhea	NA	NA	NA	31.0%	3.4%	5.3%	<0.0001
	Chlamydia	NA	NA	NA	8.0%	5.5%	5.3%	0.168
	CCU-clients	NA	NA	NA	41.8%	79.4%	68.5%	<0.0001
K/M								
	HIV	NA	NA	NA	NA	NA	31.5%	NA
	Gonorrhea	NA	NA	NA	NA	6.9%	18.2%	0.052
	Chlamydia	NA	NA	NA	NA	0.0%	3.6%	0.192
	CCU-clients	NA	NA	NA	NA	56.7%	48.8%	0.227
	NA: not available	CCU-clients:	consistent	condom use	with FSW	as reported	by clients	

Conclusions: There has been a significant decline in HIV/STI prevalence in parallel to an increase in

condom use over the 15 years of this targeted intervention. However, the recent increase in gonorrhea prevalence and decrease in CCU is worrying. This could possibly be due to the lack of integration of intervention components after 2006.

OS1.6.06

UNDERSTANDING MEN WHO FREQUENT SEX WORKERS IN HONDURAS: ESTIMATES AND TRENDS SHOW DECLINE IN CLIENTS BUT INCREASES IN HIGH-RISK BEHAVIOR, 2001-2005

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Objective: Men who frequent female sex workers (FSW) may represent an important bridging population by transmitting HIV from FSW to other women within a concentrated HIV epidemic. We sought to characterize and determine trends over time in the population of clients of FSW in Honduras by assessing demographics, sexual risk behavior, and HIV knowledge and attitudes.
Methods: We analyzed data from a national, probabilistic, multistage household survey from Honduras, the Encuesta Nacional de Demografia y Salud Masculina, conducted on men aged 15-59 in 2001 and 2005. Recent clients, who reported sex with FSW in the past 12 months, were compared with all other sexually active men along measures of demographics, sexual behavior, and HIV knowledge, as well as trends among recent clients over time. Logistic regression was used to assess whether changes in client behavior could be attributed to changes over time in demographics alone.
Results: From 2001 to 2005, the percentage of men who frequented FSW in the past 12 months decreased from 3.2% to 1.6% ($p<0.001$), particularly among younger (<25 years), single, and urban men. The proportion of recent clients reporting multiple partners in the past year did not change during this period, but condom use with FSW significantly decreased (96.3% to 47.3%; $p<0.001$). Simultaneously, HIV knowledge increased (22.2% to 71.9%; $p < 0.001$) and perceived effectiveness of condom usage declined (69.3% to 52.1%; $p=0.05$). Regression models indicated that observed trends in the likelihood of being a recent client, condom use with FSW, and HIV knowledge could not be explained by demographic changes in the population alone.
Conclusion: Behavior change interventions between 2001 and 2005 may have been successful in reaching the general male population in Honduras, however, continued high risk behavior among men who frequent FSW and a decreasing belief in the effectiveness of condoms, indicate better targeting and renewed strategies are needed.

		2001			2005		
	n	Other Men	Recent Clients	n	Other Men	Recent Clients	p-value of trend within recent clients from 2001 to 2005
DEMOGRAPHICS							
Age by Category							
-15-24	2912	31.9%	62.7%	5446	25.3%	36.5%	0.004
-25-34		27.9%	20.8%		30.2%	33.3%	0.102
-35-45		20.7%	12.6%		23.0%	15.4%	0.645
-45+		19.5%	4.0%		21.4%	14.8%	0.027
Highest Education Received							
-None	2912	14.0%	9.2%	5446	13.0%	12.5%	0.626
-Primary		60.9%	70.1%		67.3%	70.1%	0.995
-Secondary		18.6%	15.3%		13.1%	12.3%	0.600
-University		6.0%	5.4%		6.3%	5.1%	0.942
-Literate/No response		0.5%	0.0%		0.3%	0.0%	NA
Marital Status							
-Married/Living together	2912	65.5%	25.3%	5446	71.8%	41.0%	0.054
-Separated/Divorced/Widowed		8.1%	8.4%		4.9%	12.5%	0.415
-Single		26.3%	66.3%		23.2%	46.4%	0.023
Urban residence	2912	52.9%	56.1%	5446	49.0%	33.1%	0.011

SEXUAL ACTIVITY AND KNOWLEDGE							
Age at first sex (median)	2766	15.6	15.0	5160	16.0	15.6	0.249
Age at first sex with FSW (median)	1028	19.5	19.6	1167	18.8	22.1	0.136
Number of partners							
-One	2638	76.2%	24.1%	5030	80.6%	23.6%	0.950
-Two		13.2%	18.5%		10.4%	20.2%	0.834
-Three		6.5%	20.6%		5.1%	18.6%	0.792
-Three or more		4.1%	36.7%		4.0%	37.6%	0.927
STI in past year	NA	NA	NA	3203	0.5%	2.1%	NA
HIV Knowledge	2904	28.2%	22.2%	5365	68.6%	72.4%	<0.001
Sought and received HIV test (ever)	2425	24.8%	23.8%	5365	28.8%	37.0%	0.159
CONDOM USAGE							
With last sex worker (in last year)	35	NA	96.3%	39	NA	47.3%	<0.001
With last stable partner (in last year)	2401	12.5%	25.6%	4712	10.7%	10.4%	0.122
With last casual partner (in last year)	585	47.0%	50.0%	1078	27.2%	34.7%	0.229
Would use condom is asked	2507	82.1%	93.6%	4302	83.2%	80.1%	0.025
Perceived condom effectiveness in prevention of HIV/STI							
-Effective	2717	59.8%	69.3%	4967	39.0%	52.1%	0.052
-Somewhat effective		33.8%	28.4%		47.1%	39.8%	0.185
-Not effective		6.3%	2.3%		13.9%	8.0%	0.082
Reason for use							
-Prevent HIV/AIDS	284	68.0%	92.4%	554	70.0%	84.7%	0.351
-Prevent STI	284	72.1%	97.8%	551	64.5%	73.6%	0.003

OS1.7.01

SUCCESSFUL COINFECTION OF FEMALE MICE WITH NEISSERIA GONORRHOEAE AND CHLAMYDIA MURIDARUM

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Background: *Chlamydia trachomatis* (Ct) and *Neisseria gonorrhoeae* (Gc) cause similar urogenital diseases and as many as 70% of individuals with gonorrhea also have chlamydia. A coinfection model is needed to examine how these bacteria influence disease severity, symptomology and susceptibility.
Methods: Female BALB/c mice were inoculated with *C. muridarum* (MoPn), the mouse *Chlamydia* species, on three consecutive days, after which 17-β estradiol was given to promote susceptibility to Gc. Mice were inoculated with Gc 2 days later and vaginal mucus was cultured for both organisms and examined for neutrophils. Upper genital tracts were cultured for MoPn and sera were obtained for antibody analysis. Control groups consisted of uninfected mice and mice infected with each agent alone.
Results: Mice were colonized with both Gc and MoPn and coinfection did not alter the infection duration of either pathogen. Colonization loads ranged from 10^2-10^5 colony forming units (CFU) of Gc and 10^2-10^5 inclusion forming units (IFU) of MoPn per ml of vaginal swab suspension. Significantly more Gc were recovered from coinfected mice compared to mice infected with Gc alone ($p=0.011$, repeated measures ANOVA). The presence of Gc did not alter the number of MoPn IFU recovered. Coinfected mice had a higher percentage of vaginal neutrophils compared to mice infected with either pathogen alone. MoPn did not influence the Gc-specific antibody response. However, Gc appeared to dampen the MoPn-specific serum IgG response late in infection. Coinfection did not alter the rate or colonization load of MoPn in the upper reproductive tract.
Conclusions: We are the first to successfully coinfect laboratory animals with *N. gonorrhoeae* and *C. muridarum*. Our results suggest a sophisticated interplay occurs between these two pathogens and the host that results in elevated gonococcal colonization and differences in host responses. This model will ultimately provide new insight into gonorrhea and chlamydia coinfection.

OS1.7.02

EVALUATION OF A PRIMATE MODEL FOR MYCOPLASMA GENITALIUM INFECTION

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Background: *Mycoplasma genitalium* (MG) is a newly recognized pathogen associated with acute and persistent reproductive tract infections in men and women. Studies on the disease mechanisms and persistence of this organism are limited by the lack of a suitable animal model.
Methods: In this pilot study, we evaluated MG infection in a female pigtail macaque (*Macaca nemestrina*), using a previously developed salpingeal pocket model. In this study, fimbrial tissue was autotransplanted subcutaneously into multiple abdominal pockets. Three weeks later the pockets were inoculated with 7×10^8 genome equivalents (1×10^7 ccu's) of MG in PBS (12 pockets) or PBS alone (8 pockets). At each of the following four weeks, 3 MG-inoculated and 2 PBS-inoculated pockets were removed and tested for viable organisms by culture (color change in H broth) and increased genome copies (detected by quantitative PCR). This primate was also inoculated cervically (coincidentally with the pocket inoculation) and evaluated similarly for MG infection for 8 weeks. Sera collected pre- and post-inoculation were tested for antibodies to MG by ELISA and Western blot.
Results: Viable MG were detected in the MG-inoculated pockets at week 1 and 2 (in 1/3 and 3/3 pockets, respectively), but not at weeks 3 or 4. In contrast, viable MG were detected in the cervical and vaginal specimens up to 8 weeks post-inoculation. As expected, MG was not detected in any of the 8 PBS-inoculated pockets at any time point or in the cervical/vaginal specimens collected pre-inoculation. Anti-MG antibodies were detected at 3 weeks post-inoculation.
Conclusions: The pigtail macaque may serve as a valuable animal model for the study of MG infection. Clearly, future studies are warranted.

OS1.7.03

CUMULATIVE EXPERIENCE WITH EXPERIMENTAL INFECTION WITH HAEMOPHILUS DUCREYI IN HUMAN VOLUNTEERS

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Objective: Haemophilus ducreyi is a strict human pathogen that causes chancroid. We analyzed the cumulative outcomes data of the volunteers who participated in human challenge studies since inception of the model in 1993.
Methods: We infected 267 volunteers (162 females, 105 males; 212 whites, 49 blacks, 6 Asians; age range 18 to 68 years) with H. ducreyi. For analysis of initial infections, we included 220 subjects who achieved endpoint after infection at 2 or 3 sites with the parent strain. Papule and pustule formation rates based on dose, gender, and race were predicted using logistic regression with generalized estimating equations; observed outcomes were compared to expected numbers under the assumption of site independence. We analyzed the outcomes of 41 subjects who were infected a second time and the results of 22 mutant-parent comparison trials.
Results: The outcome (pustule formation or resolution) of infected sites within a subject was not independent; determinants of pustule formation included host and gender. Upon second infection, subjects segregated towards their first outcome, confirming a host effect. Subjects with pustules developed local symptoms, requiring treatment after a mean of 8.6d. Hypertrophic scars developed in 16.2% of volunteers who were biopsied. Mutant-parent comparison trials showed that mutants lacking expression of OMPs involved in serum resistance (DsrA, DltA), adherence to collagen (NcaA), fibrinogen binding (FgbA), or secreted proteins that are antiphagocytic (LspA1, LspA2) are attenuated in vivo. Acquisition of Hgb by HgbA is required for virulence.
Conclusions: Experimental infection with H. ducreyi is safe, with minimal risk. The clinical and histological course of disease in the model mirrors natural infection. Isogenic mutant-parent comparison trials validated key steps in pathogenesis and identified putative vaccine candidates. The model has also contributed to the discovery the differential human susceptibility to H. ducreyi infection.

OS1.7.04

A NOVEL MATHEMATICAL MODEL OF MUCOSAL HERPES SIMPLEX VIRUS-2 PATHOGENESIS

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Background: Recent studies support a dynamic state of Herpes Simplex Virus-2 (HSV-2) replication and of localized CD8+ lymphocyte response to infected cells in the genital tract. We designed a mathematical

model of HSV-2 pathogenesis to define mucosal viral and immune dynamics.
Methods: We fit a deterministic model to data generated from serial swabs of herpetic ulcers using a sensitive quantitative HSV PCR assay. Daily swabs were performed on 88 immunocompetent, untreated persons who were enrolled in a cohort study. The parameters derived from model fittings were applied to a stochastic stage-structured model of a two-centimeter diameter circular area in the genital tract, and run 5 times for each set of parameters over 365 days to generate relevant outcomes regarding HSV-2 shedding frequency and disease.
Results: Our stochastic simulations replicate the true morphologic pattern of HSV-2 shedding, while producing accurate outcome ranges for number of clinical recurrences per year, percent of time with detectable shedding, and ulcer diameter. Table 1 describes one model simulation; the model predicts low, medium and high-copy shedding episodes in the genital tract that can be differentiated by HSV-2 copy number, presence or absence of a genital lesion based on number of cells infected, and need for CD8+ replenishment. The CD8+ lymphocyte density (cells per centimeter^2) when a single epithelial cell is infected determines which type of episode is most likely to occur by influencing infected cell lifespan. Only tiny amounts of virus (~50 HSV-2 copies per day in a 2-centimeter diameter area) need to be released from the neurons to initiate frequent shedding. The mean amount of viruses released per day rather than the frequency of viral introduction impacts shedding and recurrence rate.
Conclusion: Our model suggests that neuronal viral production is a nearly constant, low-grade process and that peripheral CD8+ lymphocyte dynamics have a critical impact on disease severity.

	Low copy	Medium copy	High copy
Number of episodes	45	11	3
Peak instantaneous viral load (log): Median (Range)	2.3 (1.7 - 3.2)	5.0 (4.2 - 5.4)	6.6 (6.0 - 6.8)
Number of virions shed per episode (log): (Range)	1.7 - 3.9	5.6 - 6.5	6.9 - 7.6
Peak instantaneous infected cells: Median (Range)	1 (1 - 4)	55 (20 - 248)	3584 (797 - 5006)
Number of infected cells per episode (Range)	1 - 56	2353 - 17300	45969 - 225455
Peak diameter (millimeters): Median (Range)	0	0.4 (0 - 0.8)	3.0 (1.5 - 3.5)
CD8+ density / cm2 at episode onset: Median (Range)	11400 (3938 - 27770)	7668 (5389 - 9948)	3109 (2902 - 3928)
Infected cell lifespan at episode onset (minutes): Median (Range)	19 (8 - 53)	29 (22 - 41)	66 (53 - 71)
CD8+ lymphocyte replenishment during an episode	No	Yes	Yes
Infected cell evasion of CD8+ lymphocyte lysis during an episode	Never	1.5-2.0%	1.5-2.0%

OS1.7.05

INTRACELLULAR MYCOPLASMA GENITALIUM INFECTION OF VAGINAL AND CERVICAL EPITHELIA RESULTS IN INFLAMMATION AND PROTECTION FROM MACROPHAGE PHAGOCYTOSIS
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Background: Mycoplasma genitalium (MG) is an emerging sexually transmitted pathogen that has been associated with inflammatory reproductive tract syndromes in women. In addition, the strong association between severity of MG infection and cervical HIV-1 shedding suggests that innate responses to MG may influence pathogenesis of other STI.
Methods: Using polarized and non-polarized cell culture models, we first investigated the dynamics of intracellular localization and resultant innate immune responses from human vaginal, ecto- and endocervical epithelial cells (EC) to MG type strain G37 and low-pass clinical isolates. We next determined the susceptibility of MG to phagocytosis by human monocyte-derived macrophages and determined whether EC infection provides protection from macrophage responses.
Results: Following inoculation, MG was localized to intracellular vacuoles in non-polarized and polarized EC cultures. Following attachment and entry, MG preferentially targeted intracellular sites and, in polarized vaginal EC, completely transmigrated the multilayer with minimal disruption to epithelial integrity. MG also elicited significant pro-inflammatory cytokine secretion from each tested cell type in a pattern consistent with recruitment and stimulation of monocytes and macrophages. In human macrophages, MG was rapidly phagocytosed and induced a potent pro-inflammatory response that

included significant secretion of IL-6 and other cytokines associated with enhanced HIV-1 replication. Importantly, intracellular localization in reproductive tract EC protected MG from macrophage phagocytosis.
Conclusions: These findings indicate that MG can establish intracellular infection of human genital EC resulting in inflammation and also may exploit intracellular survival to evade host immune responses.

OS1.7.06

THE SAP TRANSPORTER CONTRIBUTES TO ANTIMICROBIAL PEPTIDE RESISTANCE OF HAEMOPHILUS DUCREYI
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Background: During infection, Haemophilus ducreyi is exposed to several human antimicrobial peptides (APs), including cathelicidin and alpha- and beta-defensins. We have shown that H. ducreyi resists killing by these APs in vitro, through unknown mechanisms. The H. ducreyi genome contains a homolog of the Sap influx transporter, which is involved in AP resistance in other gram-negative pathogens. We therefore tested the hypothesis that the H. ducreyi Sap transporter conferred resistance to human APs.
Methods: We introduced a nonpolar insertion/deletion mutation in the sapA gene of H. ducreyi 35000HP to generate the isogenic sapA mutant 35000HPsapA. To determine whether phenotypic differences between 35000HPsapA and 35000HP were specifically due to the sapA mutation, we trans-complemented 35000HPsapA with the sapA gene under its native promoter to generate 35000HPsapA/psapA. 35000HPsapA and 35000HPsapA/psapA were then tested alongside 35000HP for their susceptibility to a panel of human APs.
Results: 35000HPsapA showed a 25% reduction compared with 35000HP for survival against the human cathelicidin, LL37, across a range of peptide concentrations. This difference was statistically significant ($P<0.01$) and eliminated in 35000HPsapA/psapA. A similar, significant decrease in resistance was observed between 35000HP and 35000HPsapA against human beta-defensin (HBD)-3, which was restored by trans-complementation. No parent-mutant differences were observedfor resistance to HBD-2, HBD-4, or alpha-defensins.
Conclusions: The Sap transporter plays a significant role in H. ducreyi resistance to cathelicidin LL37 and HBD-3. The less than 2-fold differences between 35000HP and 35000HPsapA suggest that H. ducreyi may contain redundant mechanisms to resist these peptides. Similarly, our data indicate the presence of additional survival mechanisms against other human APs for which Sap played no measurable role.

OS1.8.01

PARTNERSHIP LENGTHS, CONCURRENCY, AND GAPS BETWEEN CONSECUTIVE PARTNERSHIPS IN A MALAWIAN STI CLINIC
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Objectives: Sexual partnership lengths, concurrency, and gaps between consecutive partners are important determinants of STI transmission, but are poorly understood in many populations. We analyzed these parameters at an STI clinic in Lilongwe, Malawi.
Methods: Participants received HIV tests and answered questions about their last 3 sexual partners in the previous 2 months. We classified HIV-seronegative patients with detectable HIV RNA as acutely HIV infected (AHI), HIV-seronegative patients with undetectable HIV RNA as HIV-negative, and HIV-seropositive patients as having established (post-acute) HIV infection (EHI). We calculated *partnership length* (PL) as the time between the first and most recent sexual contact with a partner, and *gap length* (GL) as the time between the most recent contact with one partner and the first contact with the next partner. We defined *concurrent* and *consecutive* partnerships as GL<0 and GL>0, respectively. We used generalized estimating equations to estimate mean PL and GL, and to assess differences by demographics, HIV status, and partner type.
Results: The study population (n=183: 16 AHI, 37 EHI, 130 HIV-negative) had mean PL=734 days. Female sex, older age, being married, and spousal/live-in relationships were associated with longer PL (Table 1). AHI was associated with shorter PL (Table 1), but the difference was not statistically significant in this small set of AHI cases. Among the 35 patients (19%) with >1 partner in 2 months, 19 (54%) had concurrent partnerships (GL<0), and 16 (46%) had consecutive partnerships with mean GL=22 days. The proportion with GL<0 did not differ significantly across subgroups.

CHARACTERISTIC	PARTNERSHIP LENGTH IN DAYS (95% CI)
SEX:	

Male	511 (355, 735)
Female	1212 (767, 1917)
AGE:	
18-24 years	300 (206, 436)
25-29 years	731 (496, 1079)
30+ years	1256 (781, 2020)
MARITAL STATUS:	
Unmarried	220 (138, 350)
Married	1310 (966, 1777)
PARTNER TYPE:	
Spouse / live-in partner	1473 (1117, 1944)
Non-cohabiting girlfriend/boyfriend	172 (92, 319)
Transactional partner	41 (7, 253)
Casual acquaintance	11 (4, 29)
HIV STATUS:	
Acute HIV	407 (181, 917)
Established HIV	698 (408, 1194)
HIV-negative	703 (492, 1005)

Conclusions: PL and GL are important predictors of STI transmission. Female sex, older age, being married, and spousal/live-in relationships were associated with longer PL in this STI clinic. Few participants reported overlapping partnerships, but the mean GL was short (22 days), enabling rapid STI spread even among those with gaps between partners.

OS1.8.02

RESPONDENT-DRIVEN SAMPLING TO ASSESS HIV AND STI AMONG INJECTION DRUG USERS IN ZANZIBAR (UNGUJA), TANZANIA

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Background: In Zanzibar HIV prevalence is <1%. A 2005 snowball survey found 26% of IDU participants were infected with HIV and highlighted the need for more generalizable and routine data collection on IDU. In 2007, a sero-prevalence survey used respondent-driven sampling (RDS) to investigate the prevalence of HIV, STI, and risk factors among IDUs in Unguja, Zanzibar.
Methods: We used RDS to recruit IDUs aged ≥15 years living in Zanzibar and who reported injecting drugs in the past three months. Participants were interviewed about injection drug use and sexual risk behaviors and tested for HIV and Hepatitis B and C. Proportion estimates and 95% confidence intervals (CI) were calculated using RDSAT 6.0.
Results: From August to September 2007, 499 IDUs were enrolled. The mean age was 32 years (range: 15-66) and 97% were male. Prevalence of HIV was 16.1% (95%CI:11.6-20.9); HCV 26% (CI:20.7-32.6); and HBV 6.5% (CI:3.7-9.9). Over half of IDUs (53.1%, CI. 47.5, 58.3) reported sharing needles in the last month. Among the 43% of IDUs who reported non-paid anal or vaginal sex in the past month (CI:38.2-49.8), 72.1% (CI:60.3-82.2) reported never using a condom. Of 16.5% (CI:12.7-20.6) who reported being paid for anal or vaginal sex in the last month, 73.3% (CI:59.5-93.0) never used condoms. In the last month, among IDUs reporting any anal or vaginal sex (n=253), 62.5% (CI:48.9-70.5) reported ≥2 sexual partners.
Conclusions: HIV prevalence among IDUs on Unguja is 16 times higher than in the general population. Given high rates of needle-sharing, potential for HIV and HCV spread is alarming. High risk sexual practices pose further risk of HIV and STI transmission to the general population. IDUs in Unguja urgently need harm reduction education and services integrated with HIV testing, prevention, care and treatment. This survey shows RDS to be an effective sampling method for IDUs in Unguja. Future surveillance should use RDS to monitor HIV and STI and inform targeted program and policy responses.

OS1.8.03

HIGHER LEVELS OF HIV-RELATED RISKY BEHAVIOUR IN POLLING BOOTH SURVEYS COMPARED TO FACE-TO-FACE INTERVIEWS IN A GENERAL POPULATION SURVEY IN COTONOU

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Background: A study on HIV/STI prevalence and related behaviours in a randomly selected sample of the general population of Cotonou was performed in 2007-2008. Face-to-face interviews (FTFI) were carried out to assess risky behaviours for HIV and STIs. We compared the sexual behaviours reported in the FTFI with those reported in Polling Booth Surveys (PBS) carried out in an independent random sample of the same population.
Methods: In PBS, a group of respondents answer a simple set of yes/no/not applicable questions by putting voting cards in different boxes corresponding to each answer. Responses are completely anonymous and not traceable to individuals, and the data are subsequently analysed for the group as a whole rather than for each individual. Between 14 and 19 questions were asked to separate groups of 8-10 unmarried and married men and women (4 groups). We compared the results obtained in 1089 participants to the PBS [274 married men (MM), 277 non-married men (NMM), 266 married women (MW) and 272 non-married women (NMW)] to those obtained in 2576 FTFI.
Results: Consistently higher rates of risky behaviour were reported in the PBS, compared to the FTFI (all p-values<0.05). For example, 41.6% of MM reported ever having sex with a sex worker in the PBS compared to 19.6% in the FTFI, with corresponding figures for NMM of 25.5% and 13.0%, respectively; 17.5 % of MM reported ever having had anal sex with women in the PBS vs. 3.5 % in FTFI; 8.2% of NMM reported ever having had sex with other men in the PBS vs. 0.0 % in FTFI; 21.1 % of MW reported extra-marital sex in the last 12 months in the PBS vs. 3.0% in FTFI; 57.9% of NMW reported having had sex in the last 12 months in the PBS vs. 12.1% in FTFI; and 16.1% of NMW reported ever having been paid for sex in the PBS vs. 3.9% in FTFI.
Conclusion: FTFI under-estimates risky sexual behaviour at the population level. PBS appears as a promising tool to monitor HIV/STI-related behaviour and its use should be expanded

OS1.8.04

USING PARTICIPATORY METHODS TO ASSESS COMMUNITY NORMS AND ATTITUDES TO MULTIPLE AND CONCURRENT SEXUAL PARTNERING IN RURAL ZIMBABWE

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Objective: Concurrent sexual partnerships are important in the evolution and maintenance of the HIV heterosexual epidemic in sub-Saharan Africa. This study used a novel participatory approach to collect data on community norms in order to explore the acceptability of concurrency. It was conducted alongside the Zimbabwe National Behaviour Change Strategy baseline survey.
Methods: Six questions exploring general concurrency concepts and 28 scenarios in which multiple-partnerships might take place were developed in English and translated into Shona. An approach adapted from participatory wealth ranking was used to run group discussions (n=24) where scenarios were ranked according to their acceptability and discussed. Data analysis followed grounded theory principles. These qualitative data were compared with quantitative survey data from a representative sample of 18-44 year olds.
Results: Discussants indicated that concurrency was common while survey data showed that 9.2% of males and 2.4% of females were in concurrent relationships. Extremely low self-reporting of this behaviour by women suggests their consciousness of the gender bias around its acceptability. Concurrency is an accepted community norm but is considered more acceptable in specific cultural contexts (see Table 1). Acceptability of concurrency differs by gender. Additionally, using condoms with a concurrent partner does not appear to render this behaviour more acceptable.
Conclusions: Participatory techniques were useful in providing quantitative ranking of community norms, backed up by rich qualitative data collected from a representative sample of individuals. Through them, we managed to have a better understanding of socially-sanctioned concurrency; knowledge that may be useful for improving behaviour change interventions.

Context	Scenario summary	Acceptability mean score	Qualitative quotes

		(100=acceptable; 0=unacceptable)	
Infertility	Married man, childless, impregnated wife's sister	78	'The couple did not have a child and a man's wife's young sister is just as good as his wife' [sic] (District B, male, adult).
Infertility	Married man, childless, had child with extramarital partner	72.2	'In this case, a small house [long term sexual partner] is acceptable because there was no child' (District A, female, adult).
Wanting male heir	Married man, three children (girls), had a boy with extramarital partner	59.5	Participants said it was acceptable and blamed the wife: 'The woman has failed to conceive a son…' (Dist B, male&female youth).
Polygamy	Polygamous, apostolic man married young, third wife	73.3	'There is nothing bad [about having three wives]; it's the church's requirement' (Dist D, male&female, youth).

OS1.8.05

BIOMARKERS OF REPORTED CONDOM USE HIGHLIGHT LIMITS IN WIDELY USED BEHAVIORAL ASSESSMENTS

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Background: Challenges in accurate measurement of self-reported condom use in STI/HIV prevention research are well-documented and prompt discussion about whether valid assessments are even possible.
Methods: In two studies of HIV negative Zimbabwean women, we used biomarkers of unprotected sexual activity to validate self-reported condom use. One was a randomized, cross-sectional study that assessed self-reported condom use with ACASI or face-to-face interviewing (FTFI) and validated these data with prostate-specific antigen (PSA), an objective biomarker of recent semen exposure. The other was a prospective cohort study with quarterly visits over two years that compared three measures of condom use (any use, use at last sex, and consistent use) assessed through FTFIs and evaluated how well these measures predicted pregnancy, bacterial STIs (chlamydia/gonorrhea), and HIV incidence.
Results: Of 910 participants in the PSA biomarker study, 196 (22%) tested positive for PSA, indicating semen exposure during the previous 48 hrs. Only 52% of these women reported unprotected sex during this period, with no differences by interview mode. In the cohort study of 2,296 women, 19% became pregnant; 10% had an STI; and 6% acquired HIV infection. In multivariate analyses, all three self-reported condom use measures were significantly associated with lower pregnancy incidence. In contrast, use at last sex and consistent use were associated with a significant modest increased risk for bacterial STI (hazard ratios =1.43 and 1.45, respectively; $p<0.05$) and none were associated with HIV infection.
Conclusions: Although self-reported condom use predicted decreased risk of pregnancy, it was a poor predictor of other biomarkers (PSA, STIs or HIV) regardless of data collection mode (ACASI or FTFI) or how the condom use was evaluated. Novel, objective measures of condom use are needed urgently; the value of continuing to collect condom use behavioral data in STI/HIV research is questionable.

OS1.8.06

IMPROVING EPIDEMIOLOGICAL SURVEYS OF SEXUAL BEHAVIOR CONDUCTED BY TELEPHONE

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Objectives: This study assesses the impact of Telephone Audio Computer-Assisted Self Interviewing (T-ACASI) on the reporting of sensitive (mainly heterosexual) behaviors.
Methods: A randomized experiment was embedded in a telephone survey that drew probability samples of the populations of the United States (N = 1543) and Baltimore city (N = 744). Respondents were

randomly assigned to have questions asked either by a T-ACASI computer or by a human telephone interviewer.
Results: Compared to interviewer-administered telephone surveys, T-ACASI obtained more frequent reporting of a range of mainly heterosexual behaviors that were presumed to be sensitive including recency of: anal sex (adjusted odds ratio [A-OR] = 2.00, $p < 0.001$), sex during menstrual period (A-OR = 1.49, $p < 0.001$), giving oral sex (A-OR = 1.40, $p = 0.001$), receiving oral sex (A-OR = 1.36, $p = 0.002$); and sexual difficulties for the respondent (A-OR = 1.45, $p = 0.034$) and their main sex partner (A-OR = 1.48, $p = 0.05$). T-ACASI also obtained less frequent reporting that respondent had a "main sex partner" (A-OR = 0.56, $p = 0.011$) and had discussed contraception prior to first sex with that sex partner (A-OR = 0.82, $p = 0.094$). For both males and females, T-ACASI obtained more frequent reports of first vaginal sex occurring at early ages (before ages 12 through 15). For males only, T-ACASI also elicited more frequent reports that first vaginal sex had not occurred at later ages (i.e., by ages 20 through 24).
Conclusions: Compared to traditional, interviewer-administered telephone surveys, T-ACASI increases the likelihood that survey respondents will report sensitive heterosexual behaviors.

OS1.9.01

ADULT MALE CIRCUMCISION AND RISK OF INCIDENT NON-ULCERATIVE SEXUALLY TRANSMITTED INFECTIONS: RESULTS FROM A RANDOMIZED CONTROLLED TRIAL IN KENYA
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Objectives: We examined whether male circumcision decreases risk of acquisition of non-ulcerative sexually transmitted infections (STIs).
Methods: We evaluated non-ulcerative STI incidence among men aged 18-24 enrolled in a randomized, controlled trial of adult male circumcision to prevent HIV infection in Kisumu, Kenya. The outcome was first incident non-ulcerative STI over a maximum of two years of follow-up, comparing men randomized to circumcision with controls. The outcomes for analysis were laboratory detected urogenital infection with Neisseria gonorrhoeae (NG), Chlamydia trachomatis (CT) or Trichomonas vaginalis (TV). STI testing and personal interview to elicit socio-demographic and behavioral characteristics were conducted at baseline and every 6 months thereafter, up to 24 months. Other time-varying covariates assessed as potential predictors of infection included sexual risk behaviors and condom use.
Results: There were 342 incident infections among 2,655 men over the follow-up period. The incidences of infection per 100 person-years (PYs) was: 3.48 for NG; 4.55 for CT, and 1.32 for TV. The combined incidence of NG or CT infection was 7.26 per 100 PYs (95% CI: 6.49 - 8.13). The incidence of these STIs, individually or combined, did not differ by circumcision status as a time dependent variable, or as a fixed variable based on assignment. In multivariate Cox proportional hazards regression, increased risks for NG or CT infection included multiple recent sex partners, baseline NG or CT infection, and having sex with a woman during her menses. Reported condom use was protective of infection.
Conclusions: Adult male circumcision did not decrease risk of non-ulcerative STIs. Improved STI control will require more effective STI treatment, including partner treatment, and behavioral risk reduction counseling.

OS1.9.03

OPTIONS FOR THE INTEGRATION OF MALE CIRCUMCISION INTO THE COMPREHENSIVE HIV PREVENTION PACKAGE – A POLICY ANALYSIS FOR THE EAST AFRICAN COMMUNITY
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Background: Voluntary Medical Male Circumcision (VMMC) is efficacious in the prevention of female-to-male HIV-1 transmission.
Methods: Using the Patton and Sawicki model, we analyzed the policy options for MC in the East African Community countries of Kenya, Uganda, Tanzania, Rwanda and Burundi.
Results: Despite similar HIV prevalence rates, Tanzania and Burundi have different budgetary allocations for HIV prevention. Rwanda and Burundi have the lowest MC coverage. Rwanda is undertaking a countrywide MC sensitization campaign while Uganda, Burundi and Tanzania are in the process of developing their MC policy guidelines. Kenya prioritized its implementation with a health facility situation analysis in Nyanza province. No single medical facility in Nyanza Province had all the necessary equipment to routinely perform VMMC. In 7 districts and in 20 health facilities, close to 100 nurses and 60 clinical officers have been trained. Female enrolled nurses have only been trained as

theatre assistants. National AIDS and STI Control Program (NASCOP) will be releasing Kenyan guidelines by May 2009 allowing nurses to perform MC. HIV risk reduction counseling will be integrated in the pre and post operative counseling by the female nurses. The role of mothers and female sexual partners in decision making is expected to postively influence MC uptake among the non-circumcising communities. However, the gender imbalance in negotiation of safer sexual practices and potential risk compensation may impact negatively on the gains in MC scale up.
Neonatal MC is an appropriate approach but grossly lacks feasibility data. Kenya advocates for VMMC instead of traditional circumcision.
Conclusions: Easier and quicker MC methods are desirable. The strengthening of human and infrastructural capacity for MC scale up will ensure safe and sanitary MC procedures. The efficacy of VMMC in the prevention of male to female HIV prevention needs further research to advice policy.

OS2.1.01

INCIDENCE AND CORRELATES OF ASYMPTOMATIC CHLAMYDIA AND GONORRHEA/
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Objectives: Effective control of gonorrhea (GC) and Chlamydia trachomatis (CT) infection depends on treatment of both symptomatic and asymptomatic infections. This study determined the incidence and correlates of asymptomatic GC and CT infections in five countries.
Methods: The target populations included market vendors in Fuzhou, China; wine shop patrons in Chennai, India; marginalized groups in coastal Peru; vocational school dormitory students in St. Petersburg, Russia; and individuals congregating in rural population centers in Zimbabwe. Symptoms (painful urination and/or genital discharge) and infection status (PCR of urine or cervix for GC and CT) were determined at baseline, 12 months, and 24 months.
Results: Among 17,784 participants who at baseline were CT PCR-negative or were treated at baseline for CT, 436 (2.5%) had CT at the 12-month visit. Of these, 387 (89%) reported no symptoms at follow-up. Among 17,888 participants who were GC-negative at enrollment or were treated at baseline for gonorrhea, 102 (0.6%) were GC PCR-positive at follow-up. Of these, 87 (85%) reported no symptoms. Women comprised a higher proportion of those infected with either GC or CT among those reporting no symptoms. Those infected with GC only among those without symptoms were more likely to be unmarried and less than 25 years of age. Multivariate analyses for factors associated with incident asymptomatic infections are underway.
Conclusions: The majority of incident CT and GC infections are asymptomatic. Thus, to assure control of GC and CT in developing countries, STD programs need to target persons with asymptomatic infections, the majority of whom are unlikely to seek treatment, and are women, under 25 years old, and unmarried. Reliance on STD clinics and dependence on syndromic management will be inadequate to control CT and GC. Routine STD screening and treatment programs targeting groups likely to be at high risk should be implemented and evaluated.

OS2.1.02

APPLICATION OF CHLAMYDIA (CT) SCREENING CRITERIA TO THE NHANES SAMPLE, 1999-2006: WHICH ARE THE BEST PERFORMING CRITERIA?
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Background: Previous analyses of selective screening criteria for CT have suggested that age-based screening of sexually active (SA) US women is the most appropriate strategy, however these were not based on population level data.
Methods: We applied CDC and USPSTF criteria (and variations) for CT screening on nonpregnant females aged 14-39yrs from the NHANES, 1999-2006 (n=5735). NHANES is a probability sample-based survey of the U.S. populations. Results of the survey are weighted to represent the US civilian, non-institutionalized population. Sensitivity (Sn), fraction screened (FS, of nonpregnant females aged 14-39yrs) were measured for the following five sets of criteria: 1.CDC=age<26yrs and SA; 2.CDC-AgeOnly=age<26yrs; 3. USPSTF= age<25yrs and SA; 4. USPSTF+1RF= (age<25yrs and SA) or >1 sex partner in last 12 months; 5. USPSTF+2RF= (age<25yrs and SA) or >1 sex partner in last 12 months, or history of CT, gonorrhea, genital warts or genital herpes. We calculated incremental ratios to show the increase in the FS compared to the increase in Sn when the criteria sets were listed in order of increasing Sn.
Results: (see Table 1) While CDC and USPSTF have similar characteristics, the incremental FS/Sn shows that CDC is relatively inefficient compared to USPSTF+1RF. The incremental FS/Sn for CDC-AgeOnly is very large, showing that a substantial increase in FS yields only a limited improvement in Sn.

USPSTF+2RF is preferable over CDC-AgeOnly if the FS can be accomodated (i.e. resources can be allocated). USPSTF+2RF is similar to CDC's current CT screening guidelines for all ages.

Criteria Sets	Sensitivity (Sn)	Fraction Screened (FS)	Incremental Ratio (FS/Sn)
USPSTF	0.49	0.26	n/a
CDC	0.52	0.29	1.00
USPSTF+1RF	0.65	0.34	0.38
CDC-AgeOnly	0.66	0.46	12.00
USPSTF+2RF	0.83	0.55	0.53

Conclusions: Our analyses suggest that, if feasible, CT screening of all younger sexually active females as well as older females with risk factors appears to be the most efficient strategy.

OS2.1.03

WHO IS BEING TESTED BY THE ENGLISH NATIONAL CHLAMYDIA SCREENING PROGRAMME? A COMPARISON OF THOSE TESTED IN 2007/8 TO A POPULATION-BASED SURVEY.

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Objectives: In 2007/08, the National Chlamydia Screening Programme (NCSP) tested approximately 5% of the 16-24 year old population. The programme recommends testing for all sexually active <25 year olds, however the relatively high positivity (2007/8: 9.5%) amongst tests suggests testing is biased towards higher risk individuals.
We compared the population tested through the NCSP with the population surveyed in the National Survey of Sexual Attitudes and Lifestyles in 2000 (NATSAL) (chlamydia prevalence in 18-24 year olds: 2.7% male, 3.0% female) to describe differences in demographic and behavioural profiles that may be of importance for understanding who the NCSP is reaching and the interpretation of chlamydia positivity.
Methods: Analyses compared demographic and behavioural variables collected for 316,141 individuals tested by the NCSP in 2007/08 and 2,938 16-24 year old participants in NATSAL (DataArchive).
Results: Among those in the NCSP there were more women (70% vs 53%), more 16-19 year olds (58% vs 45%), and more individuals with two or more sexual partners in the last year (52% vs 30%; $p<0.0001$) compared to the NATSAL population-based sample. Among a subset with available data, young people tested through the NCSP were less likely to have used a condom during their last sexual encounter (35% vs 45%; $p<0.0001$) and more likely to have been diagnosed with an STI in the last 12 months (6% vs 3%; $p<0.0001$). In both datasets there was a significant association between having two or more sexual partners in the last year and chlamydia infection. Differences in the frequencies of these and other variables could partially account for the higher positivity of chlamydia found in the NSCP population.
Conclusions: The NCSP has tested individuals at higher risk of chlamydia than the general population. This has been evidenced by comparisons to a population based survey. The impact of this 'selection bias' has on increasing the effectiveness of the programme should be evaluated.

OS2.1.04

LOW UPTAKE OF ANNUAL CHLAMYDIA SCREENING IN US WOMEN

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Background: Regular testing is required for a sustained impact of chlamydia screening. The US CDC recommends annual chlamydia testing for sexually active women ≤25 years. Data from the Healthcare Effectiveness Data and Information Set (HEDIS) estimate coverage at about 50% in any year. We aimed to estimate annual chlamydia screening uptake and the average screening interval.
Methods: We used a database of large employer-based health insurance plans across the US. We constructed a cohort of female enrolees aged 15-25 years from 2002-2006 and records of claims made for any reason (to indicate health service use). We considered chlamydia tests taken at least 28 days apart as separate testing occasions. We used survival analysis to estimate the percentage of women tested at least once and every year. We used the 2002 National Survey of Family Growth to adjust for sexual activity.
Results: We included 2,632,289 women born from 1977–1991 with a mean enrolment period of 1.6

years (SD 1.2 year). Of all women enrolled, 9.0% (95% CI 8.9–9.0) were tested at least once. Of women who had accessed health services (75%), this figure increased to 10.4% (95% CI 10.4–10.5); ranging from 1.9% (95% CI 1.8–1.9) of 15 year olds to 18.7% (95% CI 18.5–18.9) of 25 year olds. After adjusting these percentages for sexual activity, 9.5% (95% CI 9.2–9.7) of 15 year olds and 20.3% (95% CI 20.1–20.5) of 25 year olds had been screened. Of 66,815 women with more than one chlamydia test (6.6% of all women enrolled for at least one year), the mean screening interval was 278 days (95% CI 277–280).
Conclusions: The uptake of chlamydia screening in women in the US is likely lower than previously thought. The HEDIS denominator of sexually active women might be an underestimate. Repeat testing also appears low. However, women screened more than once are tested, on average, every year. Screening coverage at this level would be expected to have a limited effect on chlamydia transmission.

OS2.1.05

COMPUTER REMINDERS FOR CHLAMYDIA SCREENING IN GENERAL PRACTICE: A RANDOMISED CONTROLLED TRIAL
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Objectives: To determine whether a computer alert can prompt general practitioners (GPs) to increase chlamydia testing in women aged 16 to 24 years.
Methods: General practice clinics (n=68) were cluster randomised to have either a computer alert inserted into their medical records software or no intervention. The alert was programmed to appear whenever a women aged 16 to 24 year was seen by a GP advising the GP to discuss chlamydia testing with the patient. Clinic staff in both study groups received a chlamydia educational package. The numbers of chlamydia tests and consultations conducted by each GP for 16 to 24 year old females were collected for 2 time periods – the 12 months prior to the trial and the 12 months of the trial. All GPs completed a questionnaire at the beginning and end of the intervention period to ascertain their knowledge, practice and management of chlamydia. A mixed effects logistic regression model to adjust for differences in rates of testing between individual GPs, GP gender and patient age was used to assess the impact of the intervention.
Results: The baseline chlamydia testing rate across all GPs was 8.3% per year. Chlamydia testing rates increased significantly in both groups from 8.0% to 11.9% in the intervention group ($p<0.01$) and from 8.7% to 10.7% in the control group ($p<0.01$). After adjustment, the intervention group had a 30% (OR= 1.3 95%CI: 1.1, 1.4) greater increase in chlamydia testing rates. Testing rates were higher among female GPs in both the control and intervention groups (OR=3.4 95%CI: 2.7, 4.4). Older women (20 to 24 years old) were more likely to be tested than the younger group (16 to 19 year olds) (OR, 1.6 CI:1.5, 1.8).
Conclusions: A computer alert in to remind GPs to test young women for chlamydia is beneficial in increasing chlamydia test rates. However, other interventions will be needed to increase chlamydia testing rates to levels sufficient enough to have any impact on chlamydia transmission in the population.

OS2.1.06

ARE WE REDUCING INEQUALITIES? THE TARGETING OF THE NATIONAL CHLAMYDIA SCREENING PROGRAMME (NCSP) IN THE SOUTH EAST OF ENGLAND
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Background: The NCSP provides opportunistic Chlamydia screening to individuals under 25. For effective disease control, testing should be targeted at high risk populations and venues that have shown high positivity, such as general practice and family planning. The aim of the study was to identify determinants of NCSP coverage and test positivity, and thus inform implementation plans and reduce health inequalities.
Methods: NCSP screening data for the year April 2006 to March 2007 was mapped, using postcode of residence to population denominators and demographic information. This included Index of Multiple Deprivation and urban/rural status.
Results: Coverage analysis showed screening was highest in urban deprived areas among females, but not males. For females and males coverage was highest in the 15-19 year olds compared to 20-24 year olds.
Overall, 25% of all tests were in males. A fifth (of whom 5.3% were positive) of all male and 1% (7.8% positive) of all female tests were from military settings. In contrast, 14% (9.4% positive) male and 17% (8.2% positive) female tests were from general practice. Positivity was lowest in universities (3.0%

males, 4.3% females) which provided 27% of all male and 11% of all female screens.
Clinic types can be categorised into either healthcare or non-healthcare settings. Females have more screens done in healthcare settings and a similar proportion of positives identified to the numbers screened (Table 1). For males 72% of screens are in non-healthcare settings which identified only 56% of total male positives.
Table 1: Number and percentage of tests and positives by sex.

Setting	Males		Females	
	Number of tests (% of total)	Number of positives (% of total positives)	Number of tests (% of total)	Number of positives (% of total positives)
Healthcare	1,833 (28.3%)	211 (44.0%)	11,667 (59.3%)	1,050 (60.8%)
Non-healthcare	4,634 (71.7%)	269 (56.0%)	8,008 (40.7%)	677 (39.2%)

Conclusions: Targeting higher risk groups in males was less successful than for females and reflected the testing locations. Screening for males in the SE Region needs to be better targeted to high risk populations. The high proportion of male screening within military and college/university settings suggests limited capacity for an increase in screening volumes through these routes.

OS2.11.02

ANALYTICAL SENSITIVITY OF A MOLECULAR ASSAY USING THE AUTOMATED TIGRIS PLATFORM® TO DETECT TRICHOMONAS VAGINALIS

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Background: Nucleic acid amplification testing is not widely employed for detecting *Trichomonas vaginalis* infections. The APTIMA Trichomonas (ATV) molecular assay has proven sensitive and specific for *T. vaginalis* detection. However, since ATV is a manual procedure, we sought to determine the feasibility of testing for *T. vaginalis* using ATV on the automated TIGRIS platform.
Methods: We analyzed two separate serial dilutions of quantitated *T. vaginalis* cultures (Biomed Diagnostics Inc, White City, Oregon) and determined the highest detectable dilution. Specimens were tested for *T. vaginalis* using ATV on the TIGRIS System (Gen-Probe, Inc., San Diego, CA). Analyte specific reagents were added to the general-purpose reagents prior to transcription-mediated amplification (Gen-Probe, Inc). Known-negative urine spiked with fluid from in-vitro cultured *T. vaginalis* were used as positive controls. Diluted specimens were also analyzed by a multiplex polymerase chain reaction (PCR) assay (Seegene Inc., Rockville, MD).
Results: In the first and second series, we detected a dilution of 1×10^{-7} corresponding to 0.36 and 0.184 *T. vaginalis* organisms per milliliter (ml) of sample, respectively. The estimated analytical sensitivity was 0.05 and 0.03 organisms per reaction. The PCR assay detected a maximal dilution of 2×10^{-5} *T. vaginalis* organisms (71 organisms per ml). ATV as performed on the TIGRIS was approximately 200-fold more sensitive than the multiplex PCR assay.
Conclusions: Compared to PCR, the TIGRIS System provided an automated, highly sensitive platform for the detection of *T. vaginalis*. Further studies are needed to determine if ATV might be a useful diagnostic modality for *T. vaginalis* detection in clinical and public health laboratories.

OS2.11.03

RANDOM AMPLIFIED POLYMORPHIC DNA (RAPD) APPROACH TO CHARACTERIZING CLINICAL ISOLATES OF TRICHOMONAS VAGINALIS-RESULTS OF A PILOT STUDY

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Objectives: Trichomoniasis is caused by the protozoan *Trichomonas vaginalis* (Tvag) and is strongly associated with preterm birth and HIV acquisition. Tvag genetics is very complicated given that around two-thirds of the organism's genome is composed of repeating DNA elements and transposons, making strain characterization very difficult. In an effort to further our research focused on epidemiological and surveillance questions concerning Tvag, we are developing a methodological approach to 'fingerprint' Tvag clinical isolates by using the RAPD technique-a method independent of knowing the sequences/polymorphisms of an organism's genome.

Methods: A selection of Tvag cultures was prepared from our library of cyropreserved clinical isolates. Bacteria, mycoplasma, and yeast were removed by successive passing through appropriately supplemented Diamond's media, and confirmed by molecular genetic testing. 'Clean' cultures were extracted, diluted to usable concentrations for RAPD testing and amplified in separate PCR reactions using one of six RAPD primers. Amplicons were photodocumented and banding patterns recorded for analysis. Exact 2-tailed p-values (P), odds ratios (OR) and 95% confidence intervals (CI) are presented for significant observations.
Results: Of all bands accounted for in this analysis, 31.8% are shared by 75% of the isolates, with 13.6% of observed bands shared by all isolates. Unique and low number (25% or less) bands comprise 52.3% of observed bands in the patterns. Isolates fell into two dendogram loci clusters based on a key band of approximately 564 base pairs produced by Primer 3. A set of bands produced by Primer 6 of approximately 670 and 620 base pairs was observed in only 20% of drug resistant isolates and 80% of drug susceptible (P = 0.038, OR 0.07, CI 0.01-0.86; P = 0.017, OR 0.04, CI 0.002-0.591, respectively).
Conclusion: Under controlled conditions, we have demonstrated that RAPD is a valid tool for Tvag basic and epidemiological research.

OS2.11.04

DIFFERENCES IN VAGINAL BACTERIAL COMMUNITIES OF WOMEN IN NORTH AMERICA: IMPLICATIONS FOR DISEASE DIAGNOSIS AND PREVENTION

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Background: We hypothesize that differences in the species composition of vaginal bacterial communities in healthy women may affect the risk of developing bacterial vaginosis or acquiring communicable diseases. Characterizing differences in vaginal community composition in women within and between racial groups was a first step toward testing this.
Methods: A total of 418 North American healthy women from four ethnic groups (White, Black, Hispanic and Asian) self-collected two vaginal swabs that were used to determine Nugent scores, and characterize the composition and structure of the resident bacterial communities. Vaginal pH was measured using the Inverness VpH glove. Community analysis was done by terminal restriction fragment length polymorphism (T-RFLP) analysis of the 16S rRNA genes that were amplified from genomic DNA isolated from each sample.
Results: Cluster analysis of the T-RFLP data showed there were nine types of communities that differed in terms of species composition and structure that account for all those commonly found in these racial groups, and their relative frequencies significantly varied between racial groups (Pearson chi-square = 61.5, 24 df, Monte Carlo P < .0001). Among these communities there were significant differences in the mean Nugent score and vaginal pH. While the overall mean vaginal pH was 4.6±0.7, the pH was >5.2 for women with three of the nine community types, and these account for 25% of the women sampled.
Conclusions: Fundamental differences exist in the microbial diversity of vaginal communities present in reproductive age women of different racial groups. These inherent differences have important consequences that should be taken into account in risk assessment and disease diagnosis. Sequence analysis of 16S rRNA genes is ongoing that will provide an in-depth view of each type of microbial community identified.

OS2.111.01

IS EARLY LATENT SYPHILIS MORE LIKELY IN PATIENTS WITH A PRIOR SYPHILIS INFECTION?

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Objectives: We sought to determine if persons with a history of treated syphilis were more likely to be diagnosed with early latent (EL) syphilis (vs. primary or secondary [P&S] syphilis) when experiencing a subsequent infection than infected persons without a syphilis history.
Methods: Using county and state syphilis surveillance data collected since 1969, we used generalized estimating equations to identify predictors of EL infection among early syphilis cases in an urban county, from 1992 through November, 2008.
Results: 1274 patients accounted for 1445 cases of reported early syphilis from 1992-2008. The 1445 cases included 308 primary, 715 secondary, and 422 EL cases; 254 (17.6%) cases occurred in persons with a history of treated syphilis. 113 of 254 early syphilis cases among persons with a history of syphilis and 309 of 1191 cases without such a history were EL infections. On multivariate analyses, EL infection was related to prior infection (OR=2.1, 95% CI:1.5-2.8), later year of diagnosis (OR=1.1, 95% CI=1.0-

1.1), and female gender (OR=2.9, 95% CI;1.7-5.0) but not HIV-infection (OR=1.2, 95% CI=0.9-1.5). Among persons with >1 episode of syphilis, EL (vs. P&S) was associated with later syphilis stage at most recent previous infection (OR for EL=4.7, 95% CI 2.6-8.5, OR for late infection=2.8 95% CI 1.3-6.2). The risk of EL (vs. P&S) declined with years since most recent infection (OR=0.95, 95% CI:0.91-0.99). Both later stage of and shorter time since last infection were independently associated with EL on multivariate analysis.
Conclusions: Repeat syphilitic infections are more likely to be diagnosed at a later stage than initial infections, an observation consistent with the idea that syphilis induces partial immunity, diminishing P&S symptoms in subsequent infections. Routine syphilis screening for those who have been recently treated for syphilis and those with a previous EL or late infection may be useful in identifying early latent cases.

OS2.111.02

REINFECTION WITH GONORRHOEA: PREDICTABLE AND PREVENTABLE?
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Background: Reinfection with gonorrhoea represents a failure of prevention activities within the treatment setting. It may contribute significantly to infection persistence and health service workload. We aimed to determine whether there are certain determinants of gonorrhoea reinfection which could be used to tailor more intensive interventions.
Methods: Data on patient attendances for gonorrhoea between 2004 and 2008 with associated area of residence and risk factor information, were extracted from a large urban STD clinic in the UK. Patients were grouped into lower-level super output areas of residence then mapped to Index of Multiple Deprivation scores. Kaplan-Meier survival curves were used to estimate gonorrhoea reinfection rates and a Cox proportional hazard model was used to investigate associated risk factors. Reinfection was defined as having two or more attendances for gonorrhoea > 6 weeks apart.
Results: Of 1650 patients who presented with gonorrhoea in this STD clinic, 7.7% [95% CI 6.5 – 9.1] were estimated to return with a repeat infection within one year. Re-infection was highest in teenagers, men who have sex with men (MSM), those of black or mixed ethnic origin, those living in the most deprived areas of the city and those first diagnosed in earlier years. After adjustment for other variables, reinfection was significantly and independently associated with living in a deprived area of the city, MSM and earlier year of first diagnosis (table).
Conclusions: Reinfection with gonorrhoea is common in deprived urban areas and among MSM. There is a need to enhance service provision for gonorrhoea diagnosis and management and to better define patient care pathways for these communities.
Table: Adjusted Hazard ratios with 95% confidence intervals (CI) for gonorrhoea reinfection by patient characteristic estimated from multivariable Cox regression.

Patient characteristic	Level	Adjusted Hazard Ratio	[95% CI]	p-value
Deprivation score	1 (least deprived)	1		
	2	1.620	[0.924,2.838]	
	3	1.627	[0.917,2.886]	
	4	1.367	[0.768,2.432]	
	5 (most deprived)	2.369	[1.315,4.079]	p=0.02
Sexual orientation	Heterosexual men	1		
	MSM	2.184	[1.264,3.773]	
	Heterosexual women	0.267	[0.044,1.616]	p=0.01
Year of first diagnosis	2004	1		
	2005	0.596	[0.390,0.910]	
	2006	0.646	[0.409,1.020]	
	2007	0.557	[0.336,0.922]	
	2008	0.140	[0.034,0.574]	p=0.001

OS2.111.03

EARLY REPEAT CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE INFECTIONS AMONG HETEROSEXUAL MEN
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Background: Men with repeat CT and GC infections may act as reservoirs of infection for women, thus perpetuating these epidemics. Expedited partner treatment (EPT) has been recommended for heterosexual men but male rescreening has not. The objective was to examine the likely origin of reinfection among heterosexual men.
Methods: Men with urethritis at an STD clinic in New Orleans, LA, US who were enrolled in a RCT for EPT and who retested at 1 month were included. Detailed behavioral information was collected.
Results: Of 198 men CT and/or GC positive at baseline (17 co-infected), 58 (29.3%) rescreened CT or GC positive. Of these, 74.1% retested positive with the same organism (i.e., repeat infection) and 25.9% tested positive with a new organism. Repeat infections were 24/73 (32.9%) CT and 21/142 (14.8%) GC (P<0.001). Re-exposure histories were similar between the two groups. Of the repeat infections that were not attributed to incorrect treatment (n=2) or missing sexual histories (n=2), 20/39 (51.3%) had sex with a baseline partner, 4/39 (10.3%) had sex with a new partner only, and 15/39 denied sex during follow up.
Conclusion: CT and GC rescreening yields high infection rates. While largely driven by reinfection, treatment failure and new infections were also likely contributors. A possibility of increased treatment failure rates in the CT group was found and should be explored further. Rescreening of CT or GC infected men with urethritis may be needed in addition to the provision of EPT.

OS2.111.04

PREVALENCE AND INCIDENCE OF C. TRACHOMATIS (CT), N. GONORRHOEAE (NG), T. VAGINALIS (TV), AND HUMAN PAPILLOMAVIRUS (HPV) AMONG ADOLESCENTS IN AT

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Objective: To describe the prevalence and incidence of CT, NG, TV, and HPV among a cohort of urban adolescent girls.
Methods: Sexually active, non-pregnant, HIV-negative female adolescents aged 13-19 years attending a primary care clinic were enrolled into a prospective study. CT and NG were detected using a NAAT, TV using culture, wet mount, or Affirm, and detection and typing of 27 mucosal HPV types using the prototype Roche line probe assay.
Results: Among the 744 participants, the mean age at enrollment was 16.6 and mean number of sex partners was 5.1 (median 3); 207 (28%) had CT, 81 (11%) had NG, 82 (11%) had TV, and 442 (59%) had any HPV detected. Of the 534 with a mean of 12 months of follow up, cumulative prevalence of CT, NG, TV, and HPV were 46%, 25%, 25%, and 76%. Cumulative incidence among those negative at baseline was 32% for any HPV vaccine-type; 13% for HPV-6 and/or HPV-11; 24% for HPV-16 and/or HPV-18. No participant had all four vaccine-types at baseline or follow-up.
Conclusions: These urban adolescent girls have high prevalence and incidence of several sexually transmitted infections, highlighting the importance of screening in this population and of HPV vaccination prior to onset of sexual activity.

OS2.2.01

INCIDENCE OF NEONATAL HERPES SIMPLEX VIRUS IN THE UNITED STATES, 2006

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Objectives: To estimate the incidence and geographic distribution of neonatal herpes simplex virus (nHSV) infections, and examine variations by demographic factors and healthcare resource utilization.
Methods: We examined inpatient records of infants 60 days of age or less at admission in 2006 using the Healthcare Cost and Utilization Project Kids' Inpatient Database. Cases were identified using discharge International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9) codes for herpes simplex (054.0-054.9). Hospital transfers were identified by matching records based on discharge ICD-9 codes consistent with herpes simplex, age at discharge and subsequent admission, other demographic factors, and geographic proximity of hospitals; transfer records were excluded from case counts but included in resource utilization totals. Statistical analyses accounted for the sampling design to yield population-based estimates.
Results: We identified 673 nHSV cases, for an overall US incidence of 16.4 per 100,000 births (95% confidence limits 14.1-18.6) based on the 4,106,488 infants born in 2006. Rates per 100,000 births among US regions were 14.4 in the Northeast, 20.4 Midwest, 15.8 South, and 15.1 West. Rates were slightly higher among males (18.1) than females (14.7); 56% of cases were male. Highest rates were reported for African-Americans (21.2) compared to whites (16.6) and Hispanics (13.9). Rates also were

higher among cases in the lowest income quartile (20.4) compared to other levels (16.7, 13.2, and 15.1 for the second, third, and highest quartiles, respectively). Median age at admission was 11 days, with 25% of admissions on the day of birth. Total hospital charges exceeded US $ 38,220,000.
Conclusions: This is the first description of regional and demographic differences in nHSV incidence rates for the entire US, providing important new information on the extent of this potentially devastating disease and its impact on healthcare resources.

OS2.2.02

FROM NHANES 2001-2006: PREVALENCE OF SAME-SEX SEXUAL BEHAVIOR AND HSV-2 INFECTION IN WOMEN IN THE UNITED STATES--THE IMPORTANCE OF SEXUAL ORIENTATION
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Objectives: To estimate the prevalence of same-sex sexual behavior in women in the United States; to describe demographic and behavioral characteristics and the prevalence of herpes simplex virus type 2 (HSV-2) infection by sexual orientation.
Methods: As part of the National Health and Nutrition Examination Surveys during 2001-2006, a questionnaire about sexual behaviors was administered to women aged 18 to 59 years using audio computer assisted self-interview. Serum samples were collected and tested for antibodies to HSV-2.
Results: Among sexually experienced women aged 18-59 years, 7.1% (95% CI 6.1-8.2) reported ever having had sex with a woman (WSW-ever) and 2.7% in the past year (WSW-pastyear). The prevalence of WSW-ever correlated negatively with age, highest (9.4%) in 18-29-year-olds and lowest (5.5%) in the 50-59-year-olds. Among WSW-ever, 52.6% self-identified as heterosexual/straight, 19.1% as homosexual/lesbian and 28.3% as bisexual. Among WSW-ever, demographic characteristics, including age, race/ethnicity, education and poverty level, were similar by sexual orientation. Sexual behaviors were different: 31.3% of heterosexuals, 38.9% of bisexuals, and 12.9% of homosexuals reported first sex at age 14 or younger ($p=0.005$); the median number of lifetime male partners was 10.7, 17.6 and 2.9 respectively, and the mean number of lifetime female partners was 1.6, 5.2, and 8.3 respectively (both $p<0.0001$). The prevalence of HSV-2 also varied by sexual orientation: 45.6% in heterosexuals, 35.9% in bisexuals and 8.2% in homosexuals ($p=0.001$). In comparison, among women who reported no same-sex sexual contact, the prevalence of HSV-2 was 23.8%.
Conclusions: In this population-based sample of women, self-reported same-sex behaviors were increasingly common in younger birth cohorts. Among women who had same-sex sexual behavior, heterosexual and bisexual women had higher sexual risk and higher prevalence of HSV-2 infection.

OS2.2.03

TRENDS OF ANOGENITAL HSV-1 AND HSV-2 INFECTION IN BRITISH COLUMBIA, 1997-2005
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Objective: The importance of genital HSV-2 in facilitating HIV transmission and the introduction of type-specific serology mandates regional understanding of the epidemiology of genital HSV. We used laboratory data to describe trends in viral identifications of anogenital HSV and assess the utility of this data for future surveillance in the province of British Columbia (4.3 million people).
Methods: Records of laboratory diagnosis of HSV (cell culture, PCR) were extracted from the Provincial Public Health Reference Laboratory database from 1997-2005 (>90% of all HSV tests in BC). Cases were classified as anogenital or other sites from documentation on requisition forms. Descriptive analysis of trends over time, stratified by age, sex, and proportion of HSV-1 and HSV-2 was conducted.
Results: The majority of 48183 viral identifications were anogenital (52.3%) followed by skin (13.3%) and oral-labial (8.1%); site was unknown for 22.9%. The provincial rate of anogenital herpes increased from 53.9 to 70.6 per 100,000 population over the study period. The proportion of anogenital herpes due to HSV-1 increased over time, from 32.8% in 1997 to 45.1% in 2005, and was greater among females (49.4%) than males (31.7%) and at younger ages (15-29 yrs 54.6%, 30-44 yrs 36.6%, 45+ yrs 28.9%; in 2005).
Conclusions: Our analysis of population-level laboratory data demonstrates that the proportion of anogenital herpes due to HSV-1 is increasing in BC and is greatest among women and younger age groups; this has implications for clinical practice and utilization of laboratory testing including type-specific serology. Surveillance for anogenital herpes may be enhanced through efforts to improve clinician documentation of specimen site, or through examination of trends in cohorts with well-described risk and behavioural characteristics (e.g., STI clinic attendees).

OS2.2.04

EPISODIC THERAPY FOR GENITAL HERPES IN SUB-SAHARAN AFRICA: A POOLED ANALYSIS FROM THREE RANDOMISED CONTROLLED TRIALS

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Background: Acyclovir is not widely used to treat genital herpes in sub-Saharan Africa. Three recent randomised controlled trials evaluated the impact of acyclovir on genital HIV-1 RNA and ulcer healing in Africa. In the South African trial, treatment was associated with faster ulcer healing, but no effect was seen in the other trials.
Methods: We pooled data on the impact of acyclovir (400mg tid in Ghana, Central African Republic and South Africa; 800mg bid in Malawi) on ulcer healing 7 days after randomisation. Data were stratified by HIV status, ulcer aetiology, ulcer size and duration before presentation. Risk ratios (RR) were estimated with Poisson regression with robust standard errors, and Kaplan-Meier analysis for time-to-ulcer-healing.
Results: Overall, 1478 genital ulcer patients were included in the trials (928 males, 550 females). The majority (64%) presented with herpetic ulcers (16% with first episode HSV-2 ulcers), 29% unknown aetiology, 3% chancroid, 2% syphilis. 58% were HIV-1 seropositive, and 37% had an AIDS defining condition. Overall, patients on acyclovir were more likely to have a healed ulcer on Day 7 (63% vs 57%, RR=1.10, 95%CI 1.00-1.21) and a shorter time to ulcer healing (p=0.04). The benefit of acyclovir was largely confined to patients with HSV-2 ulcers (RR=1.22, 95%CI 1.0-1.4), with little effect among those without HSV-2 ulcers (RR=1.05, 95%CI 0.8-1.3). There was some evidence of a stronger impact among HIV-1 positive than HIV negative patients (RR=1.17; RR=1.02, respectively). Small ulcers (<50mm2) responded better to treatment, but there was no difference by time before presentation.
Conclusion: The greatest impact was observed in HIV-1 positive patients, those with HSV-2 ulcers, primary genital herpes and small ulcers. However, these factors did not explain the differential results in South Africa. Genital ulcer patients may provide an entry point for HIV testing and care, and possibly for HSV suppressive therapy.

OS2.2.05

APOE 4 HAS NO EFFECT ON GENITAL HSV SHEDDING OR LESIONS BUT IS ASSOCIATED WITH INCREASED ORAL LESIONS IN HSV-1 SEROPOSITIVE PERSONS

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Background: Apolipoprotein genotypes appear associated with severity of HSV infections; ApoE 4 is more common in those with higher rates of recurrent oral herpes, and genital herpes in HIV+ persons. We examined the association of ApoE genotypes with frequency of genital and oral HSV detection in a cohort of HSV+, HIV-persons.
Methods: Persons with HSV-2 infection performed daily genital swabs for HSV and those with HSV-1 infection collected oral swabs. All participants reported presence or absence of lesions each day. ApoE genotyping was performed using standard PCR. We compared HSV shedding and lesion rates by ApoE genotype using Poisson regression.
Results: 239 HSV-2+ persons collected genital swabs for a mean of 57 days (range 30-156). Overall, HSV was detected on 2431 of 13,592 days (18%). Most participants had ApoE alleles 2/3 (12%), 3/3 (55%), or 3/4 (28%); 30% had at least 1 ApoE4 allele. Neither the genital shedding rates (RR=.81, p=.15) nor the genital lesion rates (RR=.94, p=.75) differed between those with vs. without ApoE4. 81 HSV-1+ persons provided oral swabs for a mean of 48 days (range 30-102). Overall, HSV was detected on 150 of 3909 days (4%). Frequencies of ApoE genotypes were similar to above; 31% had at least 1 ApoE4 allele. Persons with at least 1 copy of ApoE4 allele had a 7.6-fold increase in the rate of oral lesions relative to those without, 8.2% vs. 1.1%, p<.001. Adjustment for gender and HSV-2 status increased the magnitude of this association (RR=14.9, p<.001). No differences in oral shedding rates were observed (p=.75).
Conclusions: Our prospectively collected virological and clinical data showed no interactions between ApoE alleles and genital viral shedding or lesions, but confirmed the association of ApoE4 allele with high oral lesion rates. Possible mechanisms include type-specific interactions of ApoE4 with the HSV life cycle or a virus type-specific influence on host factors controlling lesion formation.

OS2.2.06

ESTIMATING THE PUBLIC HEALTH IMPACT OF THE EFFECT OF HSV SUPPRESSIVE THERAPY ON HIV-1 PLASMA VIRAL LOAD

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Objectives: Trials of herpes simplex virus (HSV) suppressive therapy among HSV-2/HIV-1-infected individuals have reported an impact on plasma HIV-1 viral loads (PVL). Our aim was to estimate the population-level impact of suppressive therapy on female-to-male HIV-1 sexual transmission.
Methods: By comparing pre- and post-randomisation individual-level PVL data from two HSV suppressive therapy randomised controlled trials in sub-Saharan Africa, we estimated the effect of treatment on duration of HIV-1 asymptomatic infection and number of HIV-1 transmission events for each trial.
Results: Assuming that a reduction in PVL is accompanied by an increased duration of HIV-1 asymptomatic infection, 4-6 years of HSV suppressive therapy produce a one year increase in the duration of this stage. To avert one HIV-1 transmission requires 8.8 (95%CI 5.9-14.9) and 11.4 (95%CI 7.8-27.5) women to be treated from half-way through their HIV-1 asymptomatic period, using results from Burkina Faso and South Africa trials respectively. Regardless of the timing of treatment initiation, 51.6 (95%CI 30.4-137.0) and 66.5 (95%CI 36.7-222.6) treatment-years are required to avert one HIV-1 infection. Distributions of set-point PVL values from sub-Saharan African populations suggest that unintended adverse consequences of therapy at the population level (i.e. increased HIV-1 transmission due to increased duration of infection) are unlikely to occur in these settings.
Conclusions: HSV suppressive therapy may avert relatively few HIV-1 transmission events per person-year of treatment. Its use as a prevention intervention may be limited; however further research into its effect on rate of CD4 decline and the impact of higher dosing schedules is warranted.

OS2.3.03

HIGH RATES OF HIV AND BISEXUALITY AMONG MSM IN JAMAICA ACT AS A BRIDGE FOR HIV INTO THE GENERAL POPULATION

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Background: Adult HIV prevalence in Jamaica is 1.5% since 1996 with significantly higher HIV rates among MSM. Most persons with HIV are heterosexual. However the sexual orientation of 40% of males is unknown. The objective of this study was to explore the level of bisexuality among MSM and the extent to which this group may be contributing to new HIV infections in the population.
Methods: With the help of influential MSM, an experienced research nurse invited MSM in 4 parishes to participate in a cross-sectional survey between March 2007 and January 2008. MSM were interviewed and tested for HIV. Sensitive behavioural data was interviewer administered and self-completed. Confidential results were given to participants with treatment as indicated.
Results: 32% of 201 MSM were HIV positive. Most subjects were under 30 years of age and 60% of those HIV positive were under 25. HIV positive MSM were more likely to ever have a STI (37.5% vs 19.0%, p=0.004) and to be receptive (73.4% vs 59.1%, p=0.005). 33% of MSM identified themselves as being homosexual, 65% as bisexual and 2% as heterosexual. 33% of MSM reported sex with a woman in the past 4 weeks and 65% reported ever having sex with a woman. Nearly 60% of HIV positive MSM had not disclosed their status to their partner. MSM who were of low socio-economic status, ever homeless and victims of physical violence were significantly more likely to be HIV positive.
Conclusions: HIV prevalence among MSM is very high and MSM are more socially vulnerable than the general population. The majority of MSM reported having sex with a woman and did not disclose their HIV status to their partner. MSM are likely to act as a bridge for HIV into the general population. Prevention efforts among MSM need to be scaled up urgently and measures taken to reduce their social vulnerability including stigma and discrimination.

OS2.3.04

THE DESCRIPTIVE EPIDEMIOLOGY OF MALE SEX WORKERS IN PAKISTAN: AN INTEGRATED BIOLOGICAL AND BEHAVIOURAL INVESTIGATION

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Objectives: There is a dearth of published information on the characteristics of male sex workers (MSW) in Pakistan. Given the potential for HIV to spread into MSW and other high-risk populations, this study sought to characterise and compare MSWs from eight cities in Pakistan. It has been estimated that MSW in these eight cities are responsible for over 758,000 monthly sex contacts.
Methods: MSW were described on demographic, sex-work, and risk behaviour variables using a cross-sectional integrated biological and behavioural quantitative survey. Chi-square and Kruskal-Wallis tests, and multivariable logistic regression were used where appropriate.
Results: Data on 2,608 MSWs were available. The average age of respondents was 24.0 years (SD: 6.2); average duration of sex work was 7.4 years (SD: 5.8). Education was extremely low, with fewer than 2% of respondents having more than secondary school education, and 41% never receiving any formal education. Respondents averaged 30.9 (SD: 2.7) paid receptive anal sex acts in the month prior to their interview, while 23% reported using a condom during their last occurrence of paid anal sex. HIV prevalence was 6.5 per 1,000 in this population; notably, none of these HIV-positive respondents reported any injection drug use. Finally, inter-city heterogeneity was observed on demographic, sex work and risk behaviour characteristics, with almost all characteristics differing at the $p<.01$ level.
Conclusion: Low levels of education, high volume of sex acts and sub-optimal condom use makes for a potentially volatile situation. Baseline information provided by this study can play an important role in designing effective prevention programs, particularly in capturing heterogeneity in sex work between cities, and as evidence is accumulating that a shift in epidemic phase, as well as affected populations is occurring in Pakistan. Given the currently low levels of HIV in this population, now may be an ideal time to intervene.

OS2.3.05

"INFECTED AGAIN?!": REPEAT SEXUALLY TRANSMITTED INFECTIONS AMONG PERFORMERS OF THE ADULT FILM INDUSTRY

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Background: The adult film industry (AFI) is an international industry that is largely unregulated. Performers of this industry may work both domestically and internationally. They often engage in prolonged and repeated sexual acts with multiple partners, creating ideal conditions for transmission of HIV and other sexually transmitted infections (STI) especially with the common practice of no condom use. Our objective is to estimate the repeat of infection with chlamydia (CT) and gonorrhea (GC) in performers of the AFI in Los Angeles, California (USA), the world's center for this industry.
Methods: We reviewed cases of CT and GC reported to the Los Angeles County Department of Public Health STI registry between April 2004 and March 2008 from locations that were known to provide performer testing services. The association between gender and risk of repeat infection was assessed by logistic regression.
Results: During this four-year period, 1,868 performers were diagnosed with 2,629 infection episodes (57% with CT only, 34% with GC only, and 8% co-infected with CT and GC); of these infections, 72% (n=1,884) occurred in female performers. Of the 2,629 infections, 608 (23%) were repeat infections within a year, and 761 (29%) were repeat infections within the four-year period. Infections among female performers were 40% more likely to have a repeat infection within one year than those among male performers (OR=1.40, 95% CI=1.13-1.73).
Conclusions: The STI burden among workers in this industry is likely to be underestimated due to underreporting and lack of industry compliance with medical monitoring. Even when underestimated, repeat infection and overall burden of STIs are unacceptably high among AFI performers despite safety standards required by California law to protect workers under the bloodborne pathogen standard. Better compliance among production companies and improved enforcement are necessary.

OS2.3.06

IDENTIFICATION OF STD SPREAD WITHIN A SEXUAL NETWORK OF SWINGERS: SWAP STUDY

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Background: Swingers, heterosexual couples whom as a couple have sex with others, form an elusive risk group for STD. Aim of our prospective cohort study SWAP (Swingers World Attitude and Practice), is to map sexual networks of swingers in relation to the spread of STD.
Methods: From January 2007 through June 2008 a group of swingers, whom had sex within this group,

was followed using (network) questionnaires, STD consultations and STD tests. We used social network analyses and measured indicators for STD spread. Serotyping of Chlamydia Trachomatis (CT) is ongoing to identify the network in more detail.
Results: From 13 couples (26 swingers), STD test results and network questionnaires were obtained. Next to the partners within their group, they reported 62 other sexual swing partners. Thus the whole network comprised 88 swingers. Of these, 40 regularly came for STD testing at our STD clinic in the study period. Of tested swingers, 23 (57.5%) were at least once diagnosed with CT. Table shows the rate of Ct positive diagnoses. Table shows number of tests and positive CT per quarter.

	Quarter 1 2007	Quarter 2 2007	Quarter 3 2007	Quarter 4 2007	Quarter 1 2008	Quarter 2 2008	2007	2008	Total
Number of tests	11	34	18	25	18	17	88	35	123
CT positive	2	13	6	3	1	2	24	3	27
CT rate (%)	18.2	38.2	33.3	12.0	5.6	11.8	27.3	8.6	22.0

Median age (n=26) was 48 (range 32-57). 17% of men and 83% of women reported to have bisexual contact. During 92% of the swinging relations recreational drugs were used regularly. For the whole network, we measured two types of network indicators for STD transmission risk: (1) degree, the number of relations one person has in the network, mean was 6.1 (range 36-1), and (2) eigenvector, the extent to which a given person is connected (read: has sex with) to other well-connected persons, mean was 0.074. One man in the network tested positive for CT three times. He and his wife had high degrees (21 and 36) and the highest eigenvector (0.247 and 0.389 respectively).
Conclusions: High prevalence for CT show that swingers, by their sexual behavior, high multi-drug use and large sexual networks, form a risk group for STD. Network analyses are useful to define persons at high risk for STD transmission and acquisition.

OS2.4.01

SEX IN THE CITY, SAFE OR NOT? 100 GENOME COPY- 30 SECOND STD SENSING PLATFORM
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Objectives: To develop a rapid and quantitative Point-of-Care Test (POCT) based on DNA hybridization for diagnosis of *Chlamydia trachomatis*, which was chosen as a first pilot organism for STD sensing.
Background: There is a significant need to develop acceptable and more easily available POCT for diagnosing *C. trachomatis* for all high-risk populations. Existing POCT is complex, time consuming and can have high cost per test.
Methods: Microwave-Accelerated Metal-Enhanced Fluorescence (MAMEF)-based three piece DNA hybridization assay was used. A short oligonucleotide sequence (anchor probe) specific to *C. trachomatis* was attached to silver nanoparticle-coated glass support. A mixture of target *C. trachomatis* oligonucleotide and fluorescent probe was incubated on silver nanoparticle-coated glass slides and exposed to 30 second of microwave heating or incubated at room temperature without the microwave heating.
Results: With the MAMEF-based three piece DNA hybridization assay 100 genomic DNA copies of *C. trachomatis* can be detected in 30 seconds. An identical assay carried out at room temperature took 3 hours with significantly less sensitivity.
Conclusions: Successful application of MAMEF-based three piece DNA hybridization assay to *C. trachomatis* sensing has demonstrated the potential of the MAMEF technique for becoming the next generation POCT for rapid and quantitative diagnosis of STDs.

OS2.4.02

DEVELOPMENT AND VALIDATION OF A MICROARRAY ENABLING SIMULTANEOUS DETECTION OF MULTIPLE SEXUALLY TRANSMITTED INFECTIONS
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Objectives: To establish a proof of concept that microarrays coupled to PCR enable simultaneous detection of multiple sexually transmitted pathogens.

Methods: A panel of twenty two pathogenic and commensal organisms relevant to sexual health were selected for inclusion in a microarray diagnostic panel. Ten polymerase chain reaction (PCR) primer pairs targeting genomic regions specific to each of these organisms were designed and screened for reproducibility and sensitivity, with the best performing selected to form a final multiplex reaction. A microarray consisting of multiple oligonucleotide probes targeting each of these PCR products was synthesized. Multiplex PCR coupled to product discrimination by microarray hybridisation was tested using reference organisms and artificially spiked samples, demonstrating successful amplification and detection of up to 20 PCR products in a multiplex reaction containing 100 primer pairs. Clinical validation of the technique was performed using 66 first-void urine samples (av. Age 29 / 54% female) collected from consenting patients presenting to the St George's NHS Trust Genitourinary Medicine clinic. Microarray results were compared with routine diagnostic investigations and available clinical data.
Results: Good concordance with diagnostic and clinical data was observed. In addition to this, the microarray enabled simultaneous detection of multiple organisms in specimens, demonstrating the presence of potential co-infection or co-colonisation.
Conclusions: The data obtained in this proof-of-principle study demonstrates that multiplex PCR-linked microarrays are a suitable platform to facilitate rapid multiple pathogen detection within the genitourinary medicine clinic.

OS2.4.03

COMPETITIVE INHIBITION RESULTING IN A FALSE NEGATIVE CHLAMYDIA NAAT IN CLINICAL PRACTICE

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Background: Competitive inhibition affecting the performance of duplex nucleic acid amplification tests (NAAT) for Neisseria gonorrhoeae (NG) and Chlamydia trachomatis (CT) has been described during rigorous laboratory evaluation of these assays. However, there are few published cases of this rare phenomenon in clinical practice. We describe the investigation of a case which highlights this potential problem. A 27 year old man presented with persistent urethritis. He had been treated 17 days previously for urethral gonorrhoea following unprotected fellatio with a casual partner. He denied further sexual contact. The first-void urine (FVU) from his initial presentation was positive for NG, and negative for CT using the Roche Amplicor PCR NAAT.
Methods: A second FVU sample was obtained, and the original and second FVU samples were subsequently retested in parallel with both the Amplicor CT NAAT and with a second, monoplex, real-time NAAT. Conventional gel-based PCR was used to identify variant CT strains possessing a 377 bp deletion of the Roche assay target site.
Results: The second FVU Amplicor NAAT result was positive for CT and negative for NG. The original FVU was repeatedly negative for CT using the Amplicor NAAT, but the monoplex NAAT was positive for CT in both samples. Gel-based PCR confirmed wild-type CT presence in both samples indicating the initial CT NAAT result was falsely negative.
Conclusion: We infer a high NG infectious load in the original sample by both the low cycle number (26) for test positivity in the monoplex NAAT and the heavy growth of NG on culture. In contrast, the high CT cycle number (38) in the monoplex assay on the original urine sample indicated a low infective inoculum and the probability of competitive inhibition of amplification of the CT DNA in the presence of a disproportionate NG load. This highlights the importance of retesting those diagnosed with NG yet initially negative for CT in duplex assays if symptoms of urethritis persist.

OS2.4.04

ELECTROCHEMICAL DETECTION OF *CHLAMYDIA TRACHOMATIS* IN CLINICAL SAMPLES USING A NOVEL FERROCENE-BASED ELECTROCHEMICAL LABEL

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Objectives: To demonstrate the use of a novel ferrocene-based electrochemical label in a highly sensitive assay for *Chlamydia trachomatis* (CT) and its suitability for testing clinical samples in a point-of-care setting.
Methods: DNA extracted from CT Elementary Bodies (EBs) was asymmetrically amplified using PCR with a CT-specific primer set. Following PCR, the amplified product was hybridised to an amplicon-specific probe synthesised with a ferrocene-based electrochemical label linked to the 5' phosphate. The reaction mix was incubated with a double-stranded DNA exonuclease, thus cleaving the label. The cleaved label

was detected using differential pulse voltammetry and screen-printed carbon electrodes. The same methodology was used to investigate the efficacy of the assay using discard clinical samples previously typed as positive or negative for CT using the BD ProbeTec ET assay.
Results: A limit of detection experiment using triplicate serial dilutions of CT EBs demonstrated detection down to a single EB (as indicated by a clear signal at the known oxidation potential for the electrochemical moiety) and zero signal for negative samples (no-EB and water-only), see table below.

Sample	Oxidation potential (milli Volts)	Mean electrochemical measurement (nano Amps)	Standard Deviation	%CV
10,000 CT EBs	191	256.70	4.26	1.66
1,000 CT EBs	191	210.07	7.00	3.33
100 CT EBs	193	90.07	3.59	3.99
10 CT EBs	191	68.89	14.13	20.51
1 CT EB	221	4.16	0.12	2.93
No EB/water-only control	-	0.00	-	-

The assay also demonstrated 100% inclusivity with all 15 CT serotypes and exclusivity when evaluated against human DNA and a panel of 90 bacterial and fungal species. When a total of 102 discard clinical samples (52 positive for CT and 50 negative) was tested, the electrochemical detection method correctly identified 50 out of 52 samples as positive and 49 out of 50 samples as negative.
Conclusions: Using discard clinical samples the electrochemical assay demonstrates 96% sensitivity and 98% specificity when compared to the results obtained using the BD ProbeTec ET assay and indicates the ability of our assay to detect CT in samples in the presence of sample matrix. Work is currently underway to transfer the assay to a format suitable for a point-of-care test for CT.

OS2.4.05

DEVELOPMENT OF AN IMMUNOFILTRATION DEVICE FOR THE SIMULTANEOUS DETECTION OF NON-TREPONEMAL AND TREPONEMAL ANTIBODIES IN PATIENTS WITH SYPHILIS
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Objectives: To evaluate the performance of a novel, rapid immunofiltration (flow-through) test for the simultaneous detection of non treponemal and treponemal antibodies in the sera of patients with syphilis.
Methods: A total of 504 banked serum samples were examined by the flow-through, immunofiltration test, the rapid plasma reagin (RPR) test and the Treponema pallidum Passive Particle Agglutination Assay (TP-PA). The new assay is rapid, inexpensive, and requires limited expertise in interpreting results. The test is based on the principle of immunofiltration or immunoconcentration, with two antigens and control material dotted onto the membrane of the device. A positive test is characterized by the appearance of three red/magenta spots within two minutes.
Results: The sensitivity and specificity of the nontreponemal spot were 94.6% and 97.3% respectively when compared to the RPR test and the sensitivity and specificity of the treponemal spot were 98% and 97.2% respectively when compared to the TP-PA test. When compared to the classical laboratory approach to inform the need for therapy, namely a reactive RPR test confirmed by a positive TPPA test, the rapid test had a sensitivity of 96.8% and a specificity of 97.9%.
Conclusions: These results indicate that the dual rapid flow-through test could be used for the serological diagnosis of syphilis in resource poor settings. Modification of the device to test whole blood specimens is currently under development.

OS2.4.06

DIAGNOSIS OF PHARYNGEAL GONORRHOEA BY TWO NAAT TESTS COMPARED WITH CULTURE
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Background: In our STD outpatient clinic, pharyngeal gonorrhoea was diagnosed by culture until 2008. Due to overgowth of 6% of pharyngeal cultures by a *Capnocytophaga* species, it was decided to use

nucleid acid amplification techniques (NAAT) for this diagnosis. The objective of this study is to assess validity of NAAT for diagnosing pharyngeal gonorrhoea.
Methods: Patients tested in the last six months of 2008 were compared with a historical control group tested in 2007. In the 2008 group, pharyngeal samples were subjected to a transcription mediated assay (TMA, Aptima Combo 2); an in-house PCR targeting the opa gene was used as a confirmatory test. Cultures used for pharyngeal swabs in 2007 and for swabs from other body sites throughout the entire study period, were optimized by direct application of samples from the patients onto GC-lect plates. Plates were put in an incubator within 10' after sample collection.
Results: The frequency of positive pharyngeal cultures for *N.gonorrhoeae* was 1.0% (98/9709) in the 2007 control group compared to 4.2% (228/5485) positive pharyngeal TMA results in the 2008 group ($p<0.001$). In contrast, the frequency of positive cultures from urethra (3.6% in both periods) and proctum (2.8 and 3.0%, $p=0.56$, ns) remained similar and the frequency of positive cervical cultures decreased slightly from 1.5 to 1.1% ($p=0.11$, ns). In 2007, pharyngeal cultures were positive and culture specimens from other body sites negative in 42 patients (0.3% of all patients), compared to 120 patients (1.6% of all patients) with a positive pharyngeal TMA combined with negative cultures from other body sites. Confirmatory PCR was positive in 130/185 samples (70%); 43 samples were not available for confirmation.
Conclusion: For the detection of pharyngeal gonorrhoea, NAAT detects more positive samples in comparison to culture. A concomitant TMA/PCR versus culture comparison is required to appreciate all test characteristics in the diagnostics of pharyngeal gonorrhoea.

OS2.5.02

INTERPRETING HIV SURVEILLANCE: WHY WE NEED INCIDENCE & MORTALITY DATA
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Background: Interpretation of HIV surveillance data is not straightforward. In Lilongwe, Malawi, HIV prevalence among ANC attendees participating in sentinel surveillance declined from 30% in 1996 to 17% in 2003. A smaller decline was observed in Blantyre, Malawi (34% to 27%). What is the most appropriate method to determine retrospectively whether the difference in prevalence was real and the causes of any decline?
Methods: The validity of the observed difference in prevalence between ANC patients in Lilongwe and Blantyre was assessed by: 1) reanalysis of ANC surveillance data adjusting for age and gravidity; 2) analysis of the 2004 Demographic and Health Survey (DHS) HIV prevalence data from Lilongwe and Blantyre; 3) comparison of HIV screening data obtained by PMTCT programs; and 4) investigation of ANC surveillance implementation. Potential causal factors such as differences in HIV incidence, in-migration, syphilis as a co-factor, and sexual behavior were assessed using through re-analysis of HIV incidence data from a 2001-2003 research study; analysis of data from a family planning patient cohort; and re-analysis of DHS data.
Results: Standardizing the prevalence by age and gravidity did not remove the differences. DHS analysis and analysis of PMTCT screening data confirmed the difference. Exploration of causal factors showed: 1) higher HIV incidence among family planning patients under 25 in Blantyre, (6.1 vs 4.5 per 100 py) ;lower age at first sex in Blantyre; a longer gap between age at first sex and first marriage; a higher proportion of women reporting sex with a non-cohabitating partner in DHS surveys in 1996, 2000, and 2004; and a shorter duration of marriage in Blantyre.
Conclusion: The difference in prevalence between the two cities apparent in the comparison of ANC surveillance data is confirmed by other sources of HIV prevalence data. Differences in sexual behavior may be responsible.

OS2.5.03

CONDOM USE DECSION-MAKING BY HIV-POSITIVE BLACK CARIBBEANS BEFORE AND AFTER HIV DIAGNOSIS
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Objectives: To understand decision-making around condom use of HIV-positive black Caribbeans before and after diagnosis.
Methods: In-depth, semi-structured interviews with 25 of 250 HIV-positive participants in the LIVITY study on the impact of HIV among black Caribbeans in south London, based on a quota-based sample according to gender, age, sexuality and country of birth.
Results: Ten patients were homosexual/bisexual men, five heterosexual men, and ten heterosexual

women. Sixty-four percent were born in the Caribbean. Patients report inconsistent or no condom use before diagnosis for reasons of pleasure, trust and intimacy, ignorance of risk, partner's wishes, loss of self-control, and the identification of safe partners through physical/behavioural cues. While desire to please the partner and fear of perceived promiscuity are mentioned particularly in women's accounts; loss of self-control (through passion/drugs/alcohol) is a feature of men's accounts. Post-diagnosis, lack of condom use is linked to lack of self-control (self-reported by men), pleasure, fear of reaction to disclosure and/or request for condom use, the perceived responsibility of the sexual partner to request condom use/ask about HIV status, the partner's wishes, and the partner's HIV status. The withdrawal method may be used to compensate for non-condom use.
Conclusions: Pre-diagnosis, emotional and sensual considerations, ignorance of HIV, and assumptions based on physicality and behaviour contribute to unsafe sex more than conscious risk-taking. Post-diagnosis, patients take risks for similar reasons: however, avoidance of stigma is a further factor. Unsafe sex is justified by attempts made to minimise risk and by relying on the partner to ensure safe sex.

OS2.5.04

POLICING HIV: HOW POLICE FORCES AND SEXUAL HEALTH CLINICS INTERACTED DURING CRIMINAL INVESTIGATIONS OF HIV TRANSMISSION IN ENGLAND, 2004-2007
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Background: Prosecutions for reckless transmission of HIV have taken place in England since 2003. Far more investigations take place than come to court, but clinic staff, particularly doctors, are frequently approached by police during investigations to provide evidence and information. A number of clinicians, alongside HIV organisations and people with HIV, expressed concern about how cases were being investigated.
Methods:THT approached community liaison contacts in the police who agreed to cooperate with research. Together, THT, the Association of Chief Police Officers and the Metropolitan Police (London's force) set up a Community Advisory Panel with experience of cases, including people with HIV and affected communities. The Panel examined case reports compiled by the police liaison staff from contemporaneous police notes on investigations. Good and problematical practice was examined and a series of recommendations made for future policing of HIV transmission allegations.
Results: Extensive misunderstanding about HIV and poor procedure was identified. Clinics were excellent sources of support and information, but underused. Inappropriate behaviour included attemps to breach confidentiality without patient consent and an attempt to enter a hospice to arrest a mentally distressed patient against clinical advice. Clinics were also important in offering PEP for recent sexual encounters, accurate information on transmission and advising on testing for complainants. In all, 19 recommendations were made to police in a published report which ACPO has agreed to act on.
Conclusions: STI & HIV clinics have a major role to play in ensuring that police improve their understanding of HIV and act appropriately in handling allegations and accessing evidence. Clinicians need a clear understanding of how the law operates in this area and how to accede to legal demands for evidence without damaging patient and community trust and safer sex support work.

OS2.5.05

THE EFFECT OF HIV INFECTION ON TIME OFF WORK IN A LARGE COHORT OF GOLD MINERS WITH KNOWN DATES OF SEROCONVERSION
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Background: With disease progression, HIV positive individuals have increasing morbidity and mortality. Economic and actuarial models of HIV/AIDS require robust estimates of the effects on time off work and productivity, yet empirical data, and the relationship with duration of infection, are lacking.
Methods: A retrospective cohort study of gold miners with known dates of seroconversion to HIV, and an HIV negative comparison group, used routinely collected data to estimate the proportion of time off work by calendar period (1992-2002, prior to the introduction of ART), age, time since seroconversion and period before death. We calculated Odds Ratios (OR) for overall time off work and relative risk ratios (RRR, using multinomial logistic regression) for reasons off work relative to being at work.
Results: 1703 HIV positive and 4859 HIV-negative men were followed for 34,424 person-years. HIV positive miners spent a higher proportion of time off work than negative miners (20.7% vs 16.1%) due to greater medical and unauthorised absence. Compared with HIV negative miners, overall time off work increased in the first two years after seroconversion (adjusted OR 1.40 (95%CI 1.36–1.45) and then

remained broadly stable for a number years, reaching 38.8% in the final year before death (adjusted OR 3.27, 95%CI 2.95-3.63). Absence for medical reasons showed the strongest link to HIV infection increasing from an adjusted RRR of 2.66 (95%CI 2.45–2.90) for the first two years since seroconversion to 13.6 (95%CI 11.8-15.6) in the year prior to death.
Conclusion: This study provides baseline estimates for evaluation of ART and other workplace interventions. HIV/AIDS affects both labour supply (increased time off work) and demand for health services (increased medical absence). The effects occur soon after seroconversion, reaching very high levels in the period prior to death. Time off work also provides a quantifiable measure of the effect of HIV on overall functioning and morbidity.

OS2.5.06

IMPLEMENTING 'COMBINED PREVENTION' FOR HIV – WHAT ARE THE CHALLENGES IN THE REAL WORLD?
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Background: Calls from leading international health and HIV organisations for the effective immediate implementation of "combination prevention" involving biomedical, pharmacological, sexual health, structural and behavioural interventions, alongside earlier introduction of HIV treatment, are timely and welcome.
Methods: Review of recently published and ongoing intervention studies evaluating complex combined prevention in resource poor contexts with specific consideration given to evaluation design, appropriateness of outcomes, control conditions, process evaluations and ethical considerations.
Results: The challenge facing policy-makers charged with implementing combination prevention based on existing evidence is significant. While the effectiveness of early treatment can be easily demonstrated, doing so for combination prevention is less straight forward. Many of the prevention interventions have demonstrated effectiveness individually, in rigorously conducted randomised controlled trials (RCT) (e.g. circumcision), but evaluations of multi-paradigm combinations (e.g. circumcision, individual behaviour and community development programmes focusing on women) are few and now urgently needed. In reality little is known about the relative contribution of individual interventions in roll-out contexts, or what appropriate levels of resource weighting deliver optimal results in the context of weak health systems, and the broad range of human rights, ethical and political concerns.
Conclusions: In parallel with any large scale deployment of combination prevention there must be systematic investigation and evaluation of the social and public health benefits that draw specifically on the skills of social and behavioural scientists. Researchers, scientists and funders must work, discuss and debate together the real world evaluation challenges presented by implementing combination prevention.

OS2.6.01

UROGENITAL TRACT MICROBIAL COMMUNITIES IN MALE STD CLINIC PATIENTS
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Objective: Environmental microflora may play a role in STI susceptibility. While data exist regarding vaginal microflora, less is known about the male urogenital tract. The goal of this study was to improve our understanding of this microflora using genomic analysis methods.
Methods: We used 16S rRNA sequencing to characterize bacteria in first catch urine collected from a convenience sample of 20 men attending an STI clinic. Routine STI diagnostic PCR was performed for chlamydia and gonorrhea. DNA was extracted from urine, amplified with degenerate 16S primers, cloned and sequenced. Assembled sequences were sorted into operational taxonomic (OTU) units using Bellerphon and DOTUR software.
Results: 1 patient was infected with CT and another with GC. Taxonomic assignments for 5,370 quality (>1250 bp) sequences (range 80-349 per specimen) were designated using Green Genes and NCBI designations. The 5,370 sequences represented 116 taxa with 20 common taxa representing 87.4% of sequences. Firmicutes (53.6%), Actinobacteria (19.1%) and Fusobacteria (9.1%) were the most commonly observed flora. No organism was common to all urine samples, but distinct communities were present in many. 4 samples were dominated by Streptococci and 2 urines were dominated by Corynebacterium pseudogenitalium. The remaining 12 urines contained high levels of bacteria similar to either known strains of vaginal Lactobacilli or communities of BV-associated bacteria including Leptotricihia, Sneathia, Prevotella, Gemella, Veillonella and Atopobium spp.
Conclusions: Our data suggest the male urethra can harbor flora of unappreciated complexity. Whether

this flora is persistent, associated with specific sexual exposures, or related to STI transmission, remains unknown. This study demonstrates greater potential interchange of urethral and vaginal organisms than previously known, and the ability to use genomic methods for study of urethrogenital microbial communities associated with STI.

OS2.6.02

THE EFFECT OF METRONIDAZOLE ON THE RETURN RATE AMONG PATIENTS TREATED FOR URETHRAL DISCHARGE AT KAMUZU CENTRAL HOSPITAL, LILONGWE, MALAWI

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Background: Treatment of sexually transmitted infections using the syndromic management approach is cost-effective in settings with limited resources. In Malawi, urethritis is a major syndrome among male STI clinic attendees. The initial standard treatment for urethritis in Malawi was single dose Gentamycin 240mg IM and Doxycycline 100mg BID x 7. A study in the same setting demonstrated the prevalence of 20% for Trichomonas vaginalis in males, causing persistent symptoms of urethritis. Based on these findings, in 2007 the national treatment guidelines changed to add metronidazole 2 grams stat to the standard treatment of urethritis.
Methods: All clinic visits between 1 January 2006 and 31 December 2008 to the Kamuzu Central Hospital STI Unit were entered into a database capturing demographics, symptoms, syndromic diagnosis, and treatment. We looked at the number and percentage of patients returning with persistent symptoms amongst patients treated with gentamicin and doxycline and those treated with gentamicin, doxycline and metronidazole. Persistent symptoms included dysuria and/or discharge within 5-30 days of the initial diagnosis of urethral discharge.
Results: A total of 28,574 clinic visits were recorded, including 9,925 males. 2845 (29%) were diagnosed with the syndrome urethral discharge and the majority were treated with gentamicin and doxycline alone (n=1395, 49%), or gentamicin, doxycline and metronidazole (n=1152, 40.5%). Overall return rate was higher among those treated with gentamicin and doxycycline alone compared to gentamicin, doxycline and metronidazole (19.1% vs. 14.2%, p=0.001).Continued symptoms were also higher among those treated with gentamicin and doxycline alone compared to those treated with gentamicin, doxycline and metronidazole (7.8% vs. 5.0%, p=0.005).
Conclusions: The addition of metronidazole to patients with urethritis reduced the overall return rate by about 25% and appears to reduce persistent symptoms by about one-third.

OS2.6.03

TO WHAT EXTENT DOES URETHRAL DISCHARGE IDENTIFY LABORATORY CONFIRMED GONORRHEAL AND CHLAMYDIAL INFECTION IN KISUMU, KENYA

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Objectives: We examined the ability of urethral discharge (UD) to identify urogenital gonorrheal (NG) and chlamydial (CT) infection among 18-24 year-old men enrolled in a randomized trial of circumcision to prevent HIV, in Kisumu, Kenya.
Methods: All men underwent medical history, exam, and NG/CT testing by urine PCR at study visits 6, 12, 18, and 24 months after enrollment. Men were also tested for NG/CT if they presented with a complaint of UD between study visits. We used generalized estimating equation analysis to estimate the predicted probability of each measure. Lab confirmed NG and CT infection were analyzed as a single outcome.
Results: Among 2,655 men and 8,347 follow-up visits, there were 313 incident NG and/or CT infections. UD was reported or detected on exam at 142 (1.7%) visits. Overall, 82% of all confirmed infections were asymptomatic; of confirmed infections, only 10% were associated with UD in the past 6 months, 6% with current reported UD, and 5% with UD detected on exam. At 6-month follow-up visits, confirmed infection was predicted best by current report of UD (87%), followed by UD on exam (67%), and UD reported in the past 6 months (43%). Treatment based on UD on exam alone would treat 23% (n=13) of infections that could be identified by exam or history (n=56). Expanding treatment to include current complaint of UD would increase infections treated to 30% (n=17); the remaining 39 infections would be covered by treating those with a history of UD in the past 6 months.
Conclusions: In this general population of young men, the great majority of urethral infections were asymptomatic. Current complaint of UD is highly predictive of confirmed infection, and expanding treatment to men reporting a history of UD in the past 6 months would more than triple the number of

infections treated, and thus may have value as a treatment guideline at point of care. However, to pick up the majority of (asymptomatic) infections, screening would be required.

OS2.6.04

BACTERIOROGICAL EFFICACY OF GATIFLOXACIN FOR MALE NON-GONOCOCCAL URETHRITIS: A JAPANESE CLINICAL TRIAL

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Objective: To examine the bacteriological efficacy of gatifloxacin (GAT) for the treatment of male non-gonococcal urethritis (NGU).
Methods: This open clinical trial involved male patients, over the age of 20 years, with NGU who were diagnosed at the Urological Department of 23 medical faculties in Japan. Patients were treated with 200 mg of GAT, twice a day for 7 days. Before and 3-4 weeks after treatment, patient's first voided urine was collected for detection of bacterial genes of Neisseria gonorrhoeae, Chlamydia trachomatis, Mycoplasma genitalium, Ureaplasma urealyticum, Ureaplasma parvum, and Mycoplasma hominis. N. gonorrhoeae and C. trachomatis were detected by APTIMA COMBO2. The genes of the other 4 bacteria were identified using in-house real-time PCR. All patients gave their written informed consent for this study and agreed to no sexual behavior without condoms.
Results: Between March and September 2008, 214 men were recruited; of these, 192 were eligible for evaluation of GAT efficacy. The prevalence rates of C. trachomatis, M. genitalium, U. urealyticum, U. parvum, and M. hominis before treatment were 52.1%, 10.9%, 14.1%, 7.8%, and 7.3%, respectively. Eighty patients were excluded because they were lost to follow-up, engaged in prohibited sexual behavior, or other reasons. GAT bacteriological efficacy was determined based on the disappearance of the target genes. The GAT efficacy rates against C. trachomatis, M. genitalium, U. urealyticum, U. parvum, and M. hominis were 100%, 83.3%, 95.2%, 78.6%, and 88.9%, respectively. M. genitalium was detected in 18 patients; after treatment, 3 were positive, but DNA copies of M. genitalium from 2 men decreased markedly (167,020□¨10, 23,373□¨11). After treatment, U. urealyticum (1), U. parvum (6), and M hominis (3) were newly detected in 9 men.
Conclusion: The efficacy of GAT treatment in male patients with NGU was comparable to that of azithromycin in previous reports.

OS2.6.05

HOW WELL IS PELVIC INFLAMMATORY DISEASE MANAGED IN PRIMARY CARE? PRELIMINARY RESULTS FROM A LARGE UK PRIMARY-CARE DATABASE

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Objectives: Primary care has an important role in treating pelvic inflammatory disease (PID). Management guidelines exist, but it is uncertain whether these are followed in practice. Electronic patient records (EPR) are increasingly used for health services research but their use requires critical evaluation. This project uses electronic primary care records to describe the management of PID, including appropriate treatment and testing, and to investigate the patient factors associated with management.
Methods: The General Practice Research Database (GPRD) is an anonymised primary care database covering 5% of the UK population and containing both coded data and free text. In preliminary analyses using one quarter of GPRD data, we identified women, aged 15 to 40 years, with a first episode of PID, based on the presence of a diagnostic code, occurring between 2003 and 2007. The records within 28 days either side of the diagnosis date for these women were analysed by cross-tabulations and logistic regression.
Results: 1,209 women with a first recorded episode of PID were identified. The median age was 25 years (interquartile range 21-31).

MANAGEMENT WITHIN 28 DAYS OF FIRST CODED DIAGNOSIS	Number n	% all cases. N=1209	% excluding cases with diagnostic code only. N=840
TREATMENT			
Treatment with any approved anti Chlamydial drug + metronidazole	260	21%	31%

Treatment with any approved anti Chlamydial drug	427	35%	51%
INVESTIGATION			
Evidence of diagnostic testing (specific Chlamydia test or diagnosis)	383	32%	46%
Evidence of specific Chlamydia test only	181	15%	22%
Evidence of Chlamydia diagnosis only (proxy for test)	118	10%	14%
Evidence of non-specific test only (eg HVS, microscopy / culture)	169	14%	20%
Evidence of any testing	552	46%	66%
REFERRAL			
Evidence of referral / treated elsewhere	274	23%	33%

Management with treatment and/or investigation was more common in younger age –groups (p=0.04) and when more than one diagnostic code had been recorded (p<0.01). Management was less complete for the 146 women where the diagnostic code was only indicative of PID (p<0.01). 369 (30%) of women had a diagnostic code for PID with no other coded record of treatment, investigation or referral, perhaps indicating hospital care. Analyses were repeated with these cases excluded.
Conclusions: These results confirm a substantial PID caseload in primary care but indicate that care may be suboptimal in many cases. The high proportion with no coded evidence of management suggests that information may be concealed in the electronic patient records. A review of free text in a subsample of patients is planned to confirm these findings and inform future surveillance.

OS2.6.06

CHLAMYDIA AND GONORRHEA SCREENING, AND PELVIC INFLAMMATORY DISEASE DIAGNOSES: CAN SIMPLE TIME SERIES ANALYSES PROVIDE SOME INSIGHTS?
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Objective: To examine the association between chlamydia and gonorrhea screening trends and PID diagnoses trends for a cohort of employer-sponsored privately insured women in the United States.
Methods: We extracted monthly screening data for chlamydia (CT) and gonorrhea (GC), and pelvic inflammatory disease (PID) diagnoses data for a cohort of continuously enrolled privately-insured women (aged 15 - 39 years in 2001) in the United States over a 72-month period (January 2001 to December 2006) from the MarketScan database. We then fit an autoregressive integrated moving average (ARIMA) model to the PID series which included CT and GC screening rates in previous months.
Results: Screening rates (number per 100,000 each month) increased from about 300 to almost 700 for CT and from about 250 to almost 650 for GC. Additionally, the rates for CT and GC screening were highly contemporaneously correlated with a correlation coefficient of 0.97 (p <0.01). Monthly PID diagnoses rates (number per 100,000) declined from about 40 to 20 over the same period. Changes in current PID diagnosis rates were inversely correlated with changes in the four-month lag of CT and GC screening rates (e.g., changes in PID rates in May were correlated with changes in screening in January). On average, a unit increase in the growth rate of CT and GC screening rates were significantly associated with a 0.36 (p <0.05) and 0.32 (p<0.10) decrease in the growth rate of PID diagnoses rate, respectively.
Conclusions: Our results show statistically significant inverse correlations between past CT and GC screening rates and PID diagnosis rates, but do not prove causality. However, they are consistent with results reported in previous studies. Our results provide an estimate of the minimum time (four months) between increases in CT and GC screening rates and decreases in PID diagnoses. Our findings are limited by the small number of data points and the non-specificity of PID diagnoses.

OS2.7.01

MOLECULAR ANALYSIS OF QUINOLONE RESISTANT GONOCOCCI IN SOUTH AFRICA
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Objectives: To assess the degree of clonality of quinolone resistant gonococci isolated in three South African cities using gyrA and parC DNA sequence analysis and NG-MAST typing.

Methods: Gonococci were isolated from men with urethritis attending primary healthcare clinics in Kimberley, Cape Town and Johannesburg as part of the national STI surveillance programme. The quinolone resistant determining regions (QRDR) of gyrA and parC genes were sequenced from a random sample of 49 isolates (35 resistant, 2 reduced susceptibility, 12 susceptible; susceptibility based on NCCLS criteria). In order to assess clonality, Neisseria gonorrhoeae multi-antigen sequence typing (NG-MAST) typing was utilized.
Results: All 35 quinolone resistant isolates (QRNG) had identical mutations; for gyrA, Ser (TCC) to Phe (TTC) at amino acid (AA) position 91 and Asp (GAC) to Gly (GGC) at AA position 95, and for parC Asp (GAC) to Asn (AAC) at AA position 86. The two intermediate isolates had the same two gyrA mutations but no mutations in the parC gene. The 12 susceptible isolates had wild type gyrA and parC genes. Genotyping DNA extracted from QRNG by NG-MAST demonstrated that the Johannesburg and Cape Town isolates were heterogeneous, with sequence type (ST) 217 being most prevalent in both cities (5/16, Johannesburg; 7/11, Cape Town). In contrast, all eight QRNG isolates from Kimberley were ST 533.
Conclusions: Using the highly discriminatory NG-MAST typing method, QRNG appear heterogeneous in the large cities of Johannesburg and Cape Town, but homogeneous in the more remote city of Kimberley. The high prevalence of ST 533 and ST217 argues for clonal spread of QRNG across the country.

OS2.7.02

SEQUENCE TYPING OF LYMPHOGRANULOMA VENEREUM SPECIMENS FROM THE UNITED KINGDOM: ARE THEY ALL THE SAME?
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Background: The UK has the highest number of LGV cases in Europe. To date 846 LGV positive specimens have been detected and where genotyping was possible almost all have identified as L2. This study aimed to investigate if genetic variation exists within the LGV strains circulating in the UK by sequencing of the outer membrane protein (omp1) gene.
Methods: A 1.1Kb fragment of the ompI gene was sequenced in 374 specimens [from a random selection of the total collection] which had previously been confirmed as LGV positive using a pmpH real-time PCR. Where enhanced surveillance information was available, all but one specimen examined (373) was sourced from MSM.
Results: Sequencing of the ompI gene revealed that the vast majority (90.1%) of LGV isolates circulating in the UK are of the type L2b, which is consistent with the European outbreak. However variation was found, with 4 variants being identified all of which varied from L2b as a result of a single nucleotide polymorphism (SNP) (Table 1). One patient was found to be infected with two LGV types (L2b and SV1). In addition a L1/L2 ompI hybrid sequence was detected from a genital ulcer specimen taken from a black male heterosexual patient who reported only vaginal sex, with one partner in the UK in the last three months.
Conclusions: This study set out to address if genetic variability was present in LGV specimens circulating within the UK. Whilst the majority of specimens examined were found to be type L2b, variation was observed in 10% of specimens. A small cluster of specimens (8.6%) were identified from several different UK regions and differed from L2b buy a SNP (SV1). With the exception of a single specimen from a heterosexual patient there was no obvious correlation between sequence type and enhanced surveillance or clinical information. As the majority of strains examined are indisguishable, a more discriminatory typing system is required to determine if these strains are indeed truly clonal.

Sequence Variants	Single Nucleotide Polymorphism and position (In relation to L2b)	Relative Proportion of Types (No.)	Source Location
L2b	-	90.1% (337/374)	Geographically widespread throughout the UK
SV1	A to G (485bp)	8.6% (32/374)	Manchester, London, Exeter
SV2	A to C (563bp)	0.3% (1/374)	London
SV3	G to A (612bp)	0.3% (1/374)	London
SV4	G to A (993bp)	0.3% (1/374)	London
L1/L2 hybrid	Multiple sites	0.3% (1/374)	London

OS2.7.03

GENETIC VARIATION IN LYMPHOGRANULOMA VENEREUM STRAINS FROM MEN WHO HAVE SEX WITH MEN DETERMINED BY MULTI LOCUS SEQUENCE TYPING
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Objectives: To investigate the genetic variation in lymphogranuloma venereum (LGV) specimens from Europe and USA with a high resolution multi locus sequence typing (MLST) system.
Methods: LGV has been reported in Europe among men who have sex with men (MSM) since 2004. The infections are caused by the Chlamydia trachomatis L2b strain which has also been found among MSM in the 1980s in San Francisco, USA. Thirty-eight LGV-positive samples collected from MSM in Denmark, France, Germany, Netherlands, Norway, Spain and Sweden in 2004-2008, and ten samples collected in San Francisco in 1979-1985, were analyzed by amplifying and sequencing the five target regions of the MLST system previously described by Klint et al, 2007.
Results: All but one of the 38 European samples were of the L2b serotype and identical in ompA (AM884177.1). One sample from Spain had a single C □¨ T point mutation at position 517 compared to AM884177.1. All 38 samples from Europe generated a MLST genotype which was identical. The ten samples from San Francisco could be separated into four different MLST genotypes and three ompA-genotypes. Five of these ten San Francisco samples were of the L2b serotype and contained a 108 nt deletion in the hctB target of the MLST system. This hctB variant has not been found in other Chlamydia trachomatis specimens of serovars A to L3 and is unique in the MLST database.
Conclusion: The LGV infections among MSM in Europe are monoclonal in ompA as well as in the five target regions of the high resolution MLST system. The LGV isolates from MSM in the 1980s in San Francisco show genetic variation in both ompA and the MLST system and are different from the European strain.

OS2.7.04

GENETIC CHARACTERIZATION OF HAEMOPHILUS DUCREYI ISOLATES FROM DIFFERENT GEOGRAPHIC REGIONS

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Background: Haemophilus ducreyi is a pathogenic Gram-negative coccobacillus and the etiologic agent of chancroid, a sexually transmitted infection. No typing method for strain characterization has been established and proven to be epidemiologically useful.
Methods: Genetic analysis was performed on 55 isolates of H. ducreyi from different geographic regions including Kenya, Gambia, France, Canada, Thailand, Sweden, the Netherlands and the United States. Pulsed-field gel electrophoreses (PFGE) was performed on NotI and SalI restricted genomic DNA. Partial gene sequencing was carried out on the sodA and sodC genes, which encode the enzymes manganese superoxide dismutase and copper/zinc superoxide dismutase, respectively.
Results: PFGE was performed on 53 isolates, while two isolates failed to give useable results. There were 31 different DNA fingerprint patterns when digested with NotI with an overall similarity of 42%. Twenty-eight different patterns were observed when digested with SalI showing an overall similarity of 54%. Point mutations were observed in two isolates for both the sodA and sodC gene sequences, while the rest of the isolates were identical. The two isolates that showed variations in their sodA and sodC genes were identical to each other.
Conclusions: PFGE provides a more discriminatory method to examine the genetic relationship between strains. The number of DNA fingerprint patterns observed may indicate a possible way to characterize the isolates. In contrast, both the sodA and sodC gene sequences were highly conserved and do not appear to be suitable for typing of H. ducreyi.

OS2.7.05

MULTILOCUS SEQUENCE TYPING OF CHLAMYDIA TRACHOMATIS GIVES HIGHER RESOLUTION THAN ompA SEQUENCING

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Objectives: A multilocus sequence typing (MLST) system for Chlamydia trachomatis, comprising five target regions, was published in 2007 by Klint et al. After analysis of different sample collections we here describe the resolution of MLST compared to ompA genotyping and the obtained database.
Methods: MLST data are stored in an excel database together with information such as origin, collection date and ompA genotype. Of the 346 clinical specimens in the MLST database, 199 are from Sweden and the remaining 147 are from Europe, Africa, North America and Australia. Different clinical manifestations

are represented including LGV with 31 specimens from 7 countries and trachoma with 29 specimens. The database also includes 65 specimens of the Swedish variant nvCT.
Results: The 346 clinical specimens and the 16 reference strains in the MLST database represent 142 MLST types in the database. The number of variants for each MLST target is: 40 for hctB and pbpB, 36 for CT058, 22 for CT144 and 15 for CT172. A subset of 230 specimens in the database has been genotyped with both ompA sequencing and MLST giving 38 ompA variants compared to 112 with MLST. The combined information of ompA genotyping and MLST result in 117 variants. The dominating ompA genotype in Sweden is found in reference strain E/Bour as well as the Swedish mutant. The 86 samples in the MLST database with this ompA genotype are typed into 28 variants with MLST.
Conclusion: The resolution with MLST is threefold higher compared to ompA sequencing. Previous Swedish genotyping studies of non-selected populations have had limited resolution due to one dominating ompA genotype detected in almost 50% of the cases. The introduction of the Swedish variant has resulted in that around 70% of the specimens are indistinguishable with ompA genotyping in Sweden. The MLST system has higher resolution compared to ompA genotyping overall and especially within serotype E.

OS2.7.06

THE EMERGENCE OF HCV AMONG HIV-POSITIVE MEN WHO HAVE SEX WITH MEN IS CAUSED BY HIGH-RISK SEXUAL BEHAVIOUR RATHER THAN HCV VIRAL CHANGE
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Background: Since 2000 sexually transmitted HCV emerges among HIV-infected men who have sex with men (MSM), but not among MSM without HIV. It remains unclear whether this rise is caused by increased sexual risk-taking of MSM, or whether it is due to change of HCV itself.
Methods: From May 2007 to April 2008, 3125 attendees of the STI clinic Amsterdam participated in an anonymous bi-annual cross-sectional survey. Participants were interviewed about risk factors for blood-borne and sexually transmitted infections, and screened for HIV and HCV antibodies. All HIV-positive subjects regardless of anti-HCV, and all anti-HCV positive subjects were tested for HCV RNA. If HCV RNA was present, part of the HCV NS5B region (436 bp) was sequenced. Using phylogenetic analysis, HCV strains of STI-clinic visitors were compared to those isolated from 57 MSM with acute HCV in the period 2000-2007.
Results: HCV infection was detected in 7/2436 (0.3%) heterosexuals, 2/532 (0.4%) HIV-negative MSM, and 28/157 (17.8%) HIV-infected MSM visiting the STI-clinic. In HIV-infected MSM HCV prevalence increased from 15% in May 2007, 17% in November 2007 to 21% in April 2008. HCV RNA was detected in 22/28 HIV-positive MSM (including 6 MSM without HCV-antibodies), 2 HIV-negative MSM and 6 heterosexuals. In MSM, HIV status, IDU, fisting and the use of GHB were associated with HCV infection. Phylogenetic analysis revealed 5 distinct MSM-specific clusters of genotype 1a and 4d. These 5 clusters contained one HIV-negative MSM, 20/22 (91%) HIV-positive MSM, 48/57 (84%) MSM cases with acute HCV, but none of the heterosexuals.
Conclusions: Using phylogenetic analysis we could distinguish between MSM-specific transmission and parenteral transmission of HCV among other risk groups. The fact that 5 separate HCV lineages circulate among MSM, suggests that the emergence of HCV among HIV-positive MSM is caused by behavioural change rather than evolution of a more virulent HCV variant.

OS2.8.01

SEXUALLY TRANSMITTED INFECTIONS: IS CONTEXT INDEPENDENTLY ASSOCIATED WITH INDIVIDUAL LEVEL INFECTION?
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Background: STI programs and research have assumed that the average person living in hyperendemic areas is at greater risk for an STI. Our objective was to determine whether individuals living in areas with hyperendemic gonorrhea rates were at greater risk for an STI diagnosis than individuals living in non-endemic areas, adjusting for known individual level risk factors.
Methods: The target population included English-speaking, sexually active 15-24 year olds residing in Baltimore, MD. Among 486 eligible census block groups (CBGs), a sample of 65 was selected using a stratified, systematic, probability proportional to size sampling strategy. Within the 65, 13,873 households were selected for study inclusion. From 4/2004 to 4/2007, research assistants administered an audio-CASI and collected biologic samples for gonorrhea and chlamydia testing. Additional indata including public health surveillance and U.S. 2000 Census data were obtained to generate gonorrhea rate from 2004 to 2005 per 15-49 year olds per 100,000 per CBG. Multilevel probability models tested

whether gonorrhea rate (high vs. low) was associated with STI diagnosis (chlamydia and/or gonorrhea) adjusting for age, gender, maternal education, condom use at last sex and number of sex partner in the last 90 days.
Results: The final sample size included 556 participants from 63 CBGs. In a means-as-outcomes model residing in a high gonorrhea rate area was significantly associated (p value < 0.05) with a greater likelihood of a current STI. After adjusting for individual level factors, individuals living in high gonorrhea rate areas were 2.6 times (95% CI: 1.10, 6.13;p value < 0.05) more likely than individuals living in low rate areas to have a current STI.
Conclusions: Living in a hyperendemic urban area is independently associated with a current STI among adolescents and young adults. This study represents the first step in unraveling the relationship between context and individual risk for an STI

OS2.8.02

GEOGRAPHIC AND GENETIC CLUSTERS OF COUPLES WITH GONORRHEA
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Objective: The population genetics of gonorrhea is affected by clusters of people linked directly or indirectly by sexual intercourse, within which STI are transmitted. As people within a sexual network tend to live more closely than those in less intimate relationships, and as it is difficult to ascertain sexual links between them, we hypothesised that people with closely related strains would form geographic clusters and differ from the larger study population.
Methods: At the Shanghai Skin Disease and STD Hospital we recruited 348 symptomatic males positive for gonorrhea and amplified the entire porB gene. porB genotypes were assigned to porB1a or porB1b, based on the presence or absence of two nucleotide sequences in loop V coding region. The average distance trees of porB1a and porB1b were constructed. A map of the 19 Shanghai districts was imported into ArcGIS, and clusters around the district centroids were defined as higher than expected numbers of closely related genotypes using a Poisson model. Once clusters had been identified, characteristics of members were compared with the remaining study population.
Results: Gonorrhea cases were clustered in six small central and two large southern districts where the number of cases exceeded those expected. Three clusters of closely related genotypes were found in three small districts of Shanghai. Members of one of these clusters were significantly younger than the sample population, (p=0.04) while another group was less likely to; pay for sex, drink before sex, have high numbers of sex partners. (p=0.04,0.04,0.05, respectively).
Conclusions: Defining subpopulations of people with closely related gonorrhea genotypes who also form geographic clusters may be valuable in designing interventions. Not only does the geographic analysis provide information on the possible location of prevention programs, but also such groups may have distinct characteristics for which effective interventions can be adapted.

OS2.8.03

THE GEOGRAPHIC DISTRIBUTION OF THREE STDs IN THE UNITED STATES
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Objectives: To examine differences in the geographic distribution of chlamydia, gonorrhea, and syphilis in the United States through the use of Gini coefficients.
Methods: We examined the distribution of three sexually transmitted diseases (chlamydia, gonorrhea, and primary and secondary syphilis) across states and counties in the United States in 2007, based on reported case numbers. We calculated Gini coefficients, which can range from 0 (equality in STD rates across geographic units) to 1 (complete inequality such that all STDs occur in one geographic unit).
Results: When examining the distribution of STDs by US states in 2007, the Gini coefficients for chlamydia, gonorrhea, and syphilis were: 0.121, 0.255, and 0.334 overall; 0.141, 0.240, 0.333 for males; and 0.123, 0.273, and 0.547 for females. When focusing on US counties in 2007, the Gini coefficients for chlamydia, gonorrhea, and syphilis were: 0.321, 0.495 and 0.631 overall; 0.372, 0.506, 0.633 for males; and 0.311, 0.498, and 0.799 for females.
Conclusions: For 2007, Gini coefficients for three STDs in the US followed two well-established patterns. First, more common STDs (such as chlamydia) tend to be more evenly distributed geographically than less common STDs (such as syphilis). Second, as the unit of analysis decreases (e.g., county rather than state), the Gini coefficients tend to increase. The use of Gini coefficients can help to assess inequalities in the geographic distribution of STDs and to gauge the suitability of geographically-targeted interventions.

In general, as the Gini coefficient increases (indicating greater inequality in geographic distribution of STD cases), the appropriateness of geographically-targeted interventions likely increases as well.

OS2.8.04

MODELING A SYPHILIS OUTBREAK IN NORTH CAROLINA USING THE BMEGUI TOOL OF MODERN SPACE/TIME GEOSTATISTICS

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Objective: In 2000 and 2001, a seven county region of southeastern North Carolina experienced a significant syphilis outbreak. The outbreak was identified in Robeson County and moving to neighboring Columbus County. We examined the movement of this outbreak through space and time using the Bayesian Maximum Entropy Graphical User Interface (BMEGUI) tool.
Methods: Incidence rates of all syphilis cases at the time of diagnosis were calculated for each census tract of the region by quarter from 1999 to 2008. We used BMEGUI to obtain a covariance function modeling the composite space/time variability of syphilis rates, and to calculate statistical estimates of the incidence rate at space/time points of interest. These estimates were then used to construct smooth maps depicting the spatial distribution of rates across time.
Results and Conclusions: The space/time covariance model obtained with BMEGUI indicates that syphilis rates correlated over distances of 6.22 km and durations of 900 days. In 2000, the outbreak involved most of Robeson County spatially. In quarter 4 of 2000, the focus shifted to the northwestern portion of Robeson. Nearly simultaneously, a new focus developed in neighboring Columbus County, located to the southeast, which persisted throughout 2001. This focus arose adjacent to a high rate area in the next county to the south, Brunswick. BMEGUI is a very useful tool in mapping outbreaks and visualizing how they move. This epidemic occurred over rather well-defined and compact areas, but persisted over a long period of time. The outbreak does not appear to have spread through contiguous space from Robeson to Columbus Counties, but rather to have "jumped" across the county line. Visualizing the movement of an outbreak through space and time can be very useful for public health interventions and when studying corresponding sexual networks.

OS2.8.05

WHERE WAS THE OUTBREAK? USE OF NUMBER OF CASES, INCIDENCE RATES, AND SEXUAL NETWORKS TO ASSESS A SYPHILIS OUTBREAK IN NORTH CAROLINA

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Background: Public health practitioners often rely on incidence rates to assess the impact of an STD epidemic. The structure of sexual networks plays a pivotal role in the speed of STD transmission and may be useful in evaluating and controlling the epidemic. We examine surveillance methods and sexual network characteristics to understand an outbreak of syphilis in NC.
Methods: To construct the sexual networks, we used electronic surveillance records to identify cases diagnosed with early stage syphilis during Oct 98-Dec 2002 from central and eastern NC. For the 4 counties in the region most affected by the outbreak, with at least 50 infected persons, we examined the 2000 or 2001 annual syphilis incidence rate and structural assessments of the sexual networks.
Results and Conclusions: A total of 1419 syphilis cases resided in 40 counties. The sexual network included 1234 sexual partnerships distributed across 387 components. The largest components involved 241, 59, and 46 persons (24% of cases). In County A, the apparent epicenter of the outbreak, the annual incidence rate (IR) peaked at 116 cases/100,000 person-years in 2001. Of the 341 cases diagnosed in County A over the observation period, 191 (49%) were in the largest component. The IR for County B was 99/100,000. Of 82 cases in County B, 56 (95%) were part of the 59-person component. In County C, 113 cases were identified, but the IR was only 18/100,000. Also, the networks in County C were sparsely connected; half the cases were dyadic partnerships, and all were in components of ≤ 10 people. In County D, the outbreak involved only 68 cases, but the IR peaked at 194/100,000 in 2000, when there were only 38 cases. The 241-sized component included 37 people from County D, signaling spread of the outbreak from County A to County D. Ongoing assessment of the structure and propagation of sexual networks should complement surveillance activities to inform decisions for allocating resources for disease control.

OS2.8.06

SEXUAL RISK BEHAVIOURS AMONG CENTRAL AND EASTERN EUROPEAN MIGRANTS IN LONDON

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Background: In May 2004, ten Central and Eastern European (CEE) countries joined the European Union, leading to a large influx of CEE migrants to the United Kingdom. This paper compares sexual risk behaviours among CEE migrants and the general population in London in order to understand the health education and service needs of these communities.
Methods: A survey of the Sexual Attitudes and Lifestyles of London's Eastern European migrants (SALLEE) was conducted between July and December 2008. The responses were compared with data from the most recent National Survey of Sexual Attitudes and Lifestyles for the general population in London.
Results: The CEE sample (n=1525) was younger (27.4 vs 31.8 yrs, $p \leq 0.01$) than the general population sample (n=1526), more likely to be single (42.7% vs 35.0%, $p \leq 0.01$), and less likely to have a degree (31.3% vs 35.8%, $p \leq 0.01$). Among those reporting heterosexual sex ever, CEE respondents were more likely to have had two or more partners in the past year (30.9% vs 22.6%, $p \leq 0.01$) and in the past five years (62.6% vs 50.0%, $p \leq 0.01$) but were less likely to report an STI diagnosis (10.0% vs 15.9%, $p \leq 0.01$). Consistent condom use in the past four weeks was higher in the CEE sample (32.9% vs 25.4%, $p \leq 0.01$). CEE men were more likely to have paid for sex with a woman (35.1% vs 15.8%, $p \leq 0.01$) and the CEE sample were more likely to have injected non-prescribed drugs (4.5% vs 1.5%, $p \leq 0.01$). These significant differences between samples remained after adjusting for socio-demographic variables in multivariate analyses.
Conclusions: Whilst reports of prior STIs are lower than the general population, CEE migrants report high rates of behaviours associated with increased risk of HIV and STI transmission. The benefits of more consistent condom use may be offset by higher rates of partner acquisition, paying for sex and injecting drug use. These communities may require specific targeting to promote appropriate risk reduction strategies.

OS2.9.01

PROSPECTIVE STUDY OF ANOGENITAL WARTS, HIV INFECTION AND IMMUNOSUPPRESSION IN A COHORT OF HIGH-RISK WOMEN IN BURKINA FASO

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Background: Prospective data on the epidemiology of anogenital warts (GW) in relation to HIV are lacking in Africa.
Methods: 765 high-risk women were followed at 4 monthly intervals for 27 months in Bobo-Dioulasso, Burkina Faso. Associations of HIV-1 status (including CD4 count) and other potential risk factors with GW were assessed both at enrolment and throughout follow-up. We used Poisson regression and survival analysis techniques to identify factors associated with prevalent and incident GW.
Results: At enrolment, GW prevalence was 1.6% (8/492) among HIV seronegative, and 6.6% (18/273) among HIV-1 seropositive women ($p<0.001$). There were no cases of prevalent GW among women taking HAART (n=26). Over time, 42 women (5.5%) experienced at least one episode of incident GW. GW incidence was 1.0 per 100 person-year (py) among HIV negative women, 8.3 per 100 py among HIV-1 positive women with a CD4 count >200 cells/µl and 15.6 per 100 py among HIV-1 positive women with a CD4 count≤200 cells/µl ($p_{trend}<0.001$). Incidence was 3.6 per 100 py for women on HAART.
At baseline, prevalent GW were strongly associated with smoking (adjusted OR 4.78, 95% CI 1.53-14.97; p=0.007). During follow-up, being HIV-1 infected with baseline CD4 ≤200/cells/µl was the factor most strongly associated with incident GW (adjusted incidence rate ratio [aIRR] 11.82, 95% CI 3.74-37.38; $p<0.001$). Concurrent bacterial vaginosis (aIRR 2.38, 95% CI 1.35-4.19; p=0.003), and genital ulceration (aIRR 3.34, 95% CI 1.49-7.49; p=0.003) were also associated with incident GW. There was weak evidence that concurrent HAART was protective against incident GW (aIRR 0.50, 95%CI 0.19-1.29; p=0.15).
Conclusions: Genital warts occur much more frequently among HIV-1 infected women, particularly those with lower CD4 counts. HAART may be protective against GW.

OS2.9.02

RAPID DECLINE IN GENITAL WARTS AFTER THE IMPLEMENTATION OF A NATIONAL QUADRIVALENT HUMAN PAPILLOMAVIRUS VACCINATION PROGRAM FOR YOUNG WOMEN

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Background: Australia provided free quadrivalent human papillomavirus (HPV) vaccine to 12-18 year old girls in a school-based program from April 2007, and to women ≤26 years through general practices from July 2007.
Objective: To determine if the Australian HPV vaccination program has had a population impact on presentations of genital warts. Methods: The proportion of new clients with genital warts at Melbourne Sexual Health Centre (MSHC) from January 2004 to December 2008.
Results: 36,055 new clients attended MSHC between 2004-2008 and genital warts were diagnosed in 3,826 (10.6%; 95% confidence intervals(CI): 10.3-10.9). Clinical prevalence ratios (RR), and 95% CIs were calculated for the proportion of new clients with genital warts for 2004-2007 combined compared to 2008. The proportion of new clients with genital warts was significantly lower in 2008 than 2004-7 for men (RR=0.82 (95% CI, 0.75-0.90)) and women (RR=0.62 (95% CI, 0.54-0.72)). Analysis of subgroups found only women <28 years (RR=0.52 (95% CI, 0.44-0.63)) and heterosexual men (RR=0.83 (95% CI, 0.74-0.92)) but not homosexual men (RR= 0.93 (95% CI, 0.73-1.17) or women ≥28 years(RR=0.91 (95% CI 0.70-1.17)) not had a significant fall in genital warts in 2008 compared to 2004-7. From January to December 2008 there was a significant decline in the monthly presentations for warts among women <28 years (p for trend=0.03).
Conclusions: Our data suggest a rapid and marked reduction in the incidence of genital warts among vaccinated women may be achievable through an HPV vaccination program targeting women, and supports some benefit being conferred to men. A reduction in genital wart diagnoses in heterosexual but not homosexual men is consistent with reduced heterosexual transmission of HPV as a result of female vaccination.

OS2.9.03

NATURAL HISTORY OF GENITAL WARTS: ANALYSIS OF THE PLACEBO ARM OF 2 RANDOMIZED PHASE 3 TRIALS OF A QUADRIVALENT HPV 6, 11, 16, 18 VACCINE

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Objectives: The placebo arms of two Phase 3 efficacy studies designed to be of 4 years duration of an HPV-6/11/16/18 vaccine were used to define the natural history of genital warts. (GWs)
Methods: Women (n=8,800) were comprehensively examined in the anogenital region for the presence of GWs which were biopsied for histology (read by a blinded panel of histopathologists) and tested for 14 HPV genotypes (6/11/16/18/31/33/35/39/45/51/52/56/58/59) using a PCR-based assay. Risk factors for GWs were assessed.
Results and Conclusions: Overall, 520 distinct lesions were diagnosed as GWs. HPV DNA was detected in 90.8%: of these, 94.7% harbored HPV6 and/or HPV11. Overall 3.4% of women became a case of HPV6- or HPV11-related GWs (incidence rate of 0.87/100 person-years-at-risk). We found high-risk (HR) HPV in 31% of lesions. There was little difference in the time to development of HPV6 (6.0 months) and HPV11 (4.9 months) GWs. Risk factors for HPV6/11-related GWs included respective HPV infection at baseline, higher number of lifetime and new sexual partners, and baseline DNA positivity to an HR type. Seropositivity at baseline did not predict risk of development of a HPV6 or HPV11-related GW. We confirm the major role played by HPV6 and HPV11 in GWs, plus associated risk factors. Our data indicate that prophylactic vaccination with an HPV vaccine that includes HPV6 and 11 will be highly effective in preventing the majority of GW cases, plus eliminate HR types which are commonly observed as co-infections and which cause the majority of HPV-associated cervical and other anogenital cancers.

OS2.9.04

DYNAMICAL MODELING OF HPV VACCINE EFFECTIVENESS: IMPACT OF UNCERTAINTY IN BIOLOGICAL AND BEHAVIORAL PARAMETER ASSUMPTIONS AND MODEL STRUCTURE

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Background: Mathematical models of HPV vaccine effectiveness and cost-effectiveness have produced conflicting results, due to differences in assumptions regarding the natural history of HPV infection and the behavioral process leading to its transmission.
Objectives: To examine the impact of the following structural assumptions on population-level HPV vaccine effectiveness against infection: herd immunity (static vs dynamic models), natural immunity (SIR vs SIS), grouping HPV-types, duration of partnerships (vs instantaneous sequential relationships).

Methods: An individual-based model of sequential partnership formation/dissolution, and HPV transmission in a population stratified by age, gender, sexual activity and HPV type-specific infection status was developed. Our model represents the baseline structure (dynamic, SIR,5 types, partnership duration) and structural simplifications. For each structural assumption, we identified multiple parameter sets that fitted the same sexual behavior and epidemiological data and compared age/type-specific predicted population-level vaccine effectiveness.
Results: Omitting herd immunity effects from models can lead to a significant underestimation of vaccine effectiveness. Under our model assumptions, models with different groupings of HPV-types, produce similar predictions of vaccine effectiveness against infection if fit to the same sexual behavior and epidemiological data. Finally, models that account for partnership duration produce better vaccine effectiveness estimates and higher mean age at infection than models with instantaneous sequential relationships.
Conclusion: Ideally, models should be as parsimonious as possible and complexity should be increased only if it produces significant gains in validity of predictions. Quantifying the impact of different model structures on HPV vaccine effectiveness will help to better understand HPV epidemiology, the impact of structural assumptions, and differences in results across HPV models

OS3.1.01

STI RISK, PERCEPTIONS AND RELATIONSHIPS AMONG ETHNIC MINORITY YOUTH IN NORTHWEST LONDON
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Background: The Young Brent Project tested the hypothesis that the pragmatic accelerated development of a culturally specific STI reduction intervention for young black-Caribbean women in the UK could be achieved by translating an intervention of proven efficacy, Project SAFE (Sexual Awareness For Everyone). The circumstances in which young women experience and conceptualise their STI risk were explored to assess the relevance of Project SAFE to young women in northwest London.
Methods: One-to-one in-depth interviews (n=31) and focus groups (n=10, 2-10 participants per group) were conducted with young people aged 15-27 years from different ethnic backgrounds recruited from youth and sexual health clinic settings in northwest London.
Results: Young women's risk reduction strategies were undermined by underestimated personal risk perceptions, exposure to different forms of concurrency, mismatched perceptions and expectations and subjective partner risk assessment. Infection risk arose from a reluctance to use condoms in long-term relationships and power imbalances particularly in early relationships that led women to give up or not be in control of condom use. While men described making conscious decisions, women reported experiencing persuasion, deceit and difficulty in requesting condom use. Low self-esteem, poor expectations of partner behaviour and weak communication skills also created barriers to risk reduction as high-risk relationships were maintained.
Conclusions: Sexual health interventions need to be delivered by skilled facilitators over time rather than in written form or as one-off events. In addition to STI knowledge and condom use skills, they need to address the impact on risk behaviour of power imbalances, low self-esteem, concurrency, alcohol and gender based expectations of fidelity. Gender based variations in experience of risk, power and communication provide strong support for the relevance of gender specific interventions such as Project SAFE.

OS3.1.02

RELATIONSHIP QUALITY, PARTNER CHANGE AND STI ACQUISITION IN ADOLESCENT WOMEN
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Objectives: Although new sex partners are associated with STI risk, little is known about why young women change partners. We prospectively examined associations between baseline relationship quality and subsequent partner change and STI.
Methods: 332 young women from a community with high rates of STI were interviewed about sexual behaviors and tested for Gonorrhea (GC), Chlamydia (CT) and Trichomonas (TV) every 3 months for up to 7 years. At interviews, subjects (ss.) listed partners, and answered partner-specific questions on relationship quality, social networks, sexual behavior and condom use. We used logistic regressions with a random subject intercept to control for multiple interviews from each ss. To separate partner change from concurrency, we limited analyses to interview pairs where ss. reported 1 partner in both the current

(Time 1, or T1) and subsequent (Time 2, or T2) interviews (53% of interview pairs). We defined partner change as a new partner at T2, compared to T1. We first examined associations between relationship factors at T1 and partner change at T2. We then examined associations between partner change at T2 and STI at T2. Analyses controlled for age, STI at T1, coital frequency and condom use.
Results: 332 ss. (88% African American) contributed 2339 interviews. Mean age was 18.1 years. At T1, younger age ($p<.001$), lower relationship quality ($p<.001$), and lower levels of partner closeness to friends ($p<.05$) and family ($p<.001$) predicted partner change from T1 to T2. In turn, partner change was associated with acquisition of a new STI at T2 ($p<.001$). Relationship factors did not exert a direct effect on STI at T2. Similar patterns were seen with each organism (GC, CT and TV).
Conclusion: Relationship factors drive partner change, which in turn contributes to STI acquisition. Clinicians may be able to better target STI prevention efforts by inquiring about relationships and targeting those most likely to lead to partner change.

OS3.1.03

THE REGAI DZIVE SHIRI PROJECT: RESULTS OF A CLUSTER RANDOMISED TRIAL OF A MULTI-COMPONENT HIV PREVENTION INTERVENTION FOR RURAL ZIMBABWEAN ADOLESCENTS

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Background: HIV prevention among young people in southern Africa is a public health priority. There is relatively scant evidence about the relative effectiveness of different intervention approaches. The aim of this cluster randomised trial was to assess the effectiveness of a community-based, multi-component HIV and reproductive health intervention for adolescents in rural south-east Zimbabwe.
Methods: Thirty rural communities were randomised to early or deferred implementation of the intervention in 2003. Impact was assessed in a representative house-to-house population-based survey of 18-22 year olds after 4 years of intervention implementation. Participants self-completed a questionnaire and had a dried blood spot sample taken for HIV and HSV-2 antibody testing. Young women provided urine for pregnancy testing. Analysis was by intention to treat. All analyses were adjusted for cluster randomisation.
Results: 4,672 18-22 year olds took part in the survey (96.9% of those eligible, 55.5% were female). Just over 40% of survey participants had been exposed to at least 10 sessions of the intervention. There were modest increases in knowledge and attitudes among young men and women in intervention communities. There was no impact on self-reported sexual behaviour but women in intervention communities were less likely to report past or current pregnancy and unmarried women were less likely to report current, unwanted or past pregnancy. There was no impact of the intervention on prevalence of HIV or HSV-2. **Conclusions:** Despite an impact on knowledge, some attitudes and some aspects of self efficacy (particularly in young women) there was no impact of this intervention on HIV or HSV-2 end points.

OS3.1.04

WEB 2.0 AND NEXOPIA.COM: DIRECT-TO-TEEN STI INTERACTION VIA A SOCIAL NETWORKING SITE

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Objectives: to investigate the feasibility of accessing teens at risk for STI through the vehicle of a teen-specific social networking website.
Methods: One of the investigators (RR) joined the site using the screen name "STDdoc" and began interaction with teens directly using the various features of the site, including creation of an informative profile page, confidential question/answer via a private message (PM) mailbox, and group discussions in a variety of public and private forums within Nexopia.com.
Results: This pilot study demonstrated the feasibility of direct and meaningful interaction with teens and young adults via a teen-specific website. The owners of the website were instrumental in lending credibility to the investigator, and the manner of investigator behaviour on the site was informed by online discussions directly with users of the site. Over a 2 year trial period, the STDdoc profile page registered 23,257 discrete "hits". An average of 18.7 +/- 4.2 questions per week were received and answered though the PM mailbox. Variable rates of information posting in private sex-related forums allowed direct discussion with site users and amplification of messaging (each thread has 8-10 times more "views" than "posts", indicating a larger silent readership). As the visibility of "STDdoc" increased

on the site, users began referring friends and associates to visit the profile page and bring their sexual health questions. The time commitment to maintain a credible presence on this site is about 2 hours per day.
Conclusions: Direct-to-teen sexual health messaging using a teen-specific website is possible and productive, and allows a public health intervention "on their own turf". Disadvantages include a large time commitment and need to maintain a constant presence on the site to maintain interest and credibility.

OS3.1.05

DOES AGE MATTER? COMPARISON OF DIFFERENT AGE GROUPS ATTENDING GERMAN STD-SENTINEL INSTITUTIONS

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Objectives: Younger people seem to be at higher risk for acquiring STIs and many screening programmes have been implemented. However, do we target the right people?
Methods: In the end of 2002 the German STD-sentinel was founded and ever since selected health care providers voluntarily report demographic, examination and infection data. Moreover patients report their sexual behaviour, which is linked to doctor's reports. Only for patients with STIs further data have been provided. Gender-specific age-stratified analyses were made to show differences in infection-rates and potential self-reported risk behaviours were correlated.
Results: Doctors diagnosed STIs in 9096 patients. Overall, women were younger than men. In the age group 50-59 years, syphilis was the most common STI in infected men (41%, 105/254), compared to 28% (1348/4801) in all other age groups. For 50-59 year-old syphilis patients, it was less likely to be infected through MSM contact than for other men with syphilis (73% vs. 82%, Chi2 =5.29, $p<0.05$), but more likely through sex worker contact (10% vs. 3%, $p<0.001$). Only 4% of syphilis patients aged 50-59 years perceived their regular partner to be the source of infection (17% overall, $p<0.05$) unlike sex worker contacts (17% vs. 4%, $p<0.001$). 47% of 50-59-year-old and 24% of all syphilis infected men never used condoms with casual partners ($p<0.05$). Chlamydia was the most common STI in 20-24-year old women, namely 55% (610/1111) versus 39% (1126/2914) overall. Women aged 20-24 years were more likely to have been infected with chlamydia through heterosexual contacts apart from sex work (28% vs. 23%, $p<0.05$). 12% of 20-24-year-olds ever had a re-infection with chlamydia, 8% of them within the last 12 months.
Conclusions: For prevention campaigns men and women in different age groups should be targeted differently, as their risk behaviour varies. Individual risk assessment is indispensable and STI-screening strategies should be based thereon.

OS3.1.06

TRENDS IN AGE DISPARITIES BETWEEN YOUNGER AND OLDER ADULTS AMONG REPORTED RATES OF CHLAMYDIA, GONORRHEA AND INFECTIOUS SYPHILIS INFECTIONS IN CANADA

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Objectives: The objective was to determine trends in age disparities between reported rates of chlamydia, gonorrhea, and infectious syphilis among younger versus older Canadians.
Methods: We examined age- and sex-specific rates of chlamydia, gonorrhea, and infectious syphilis between 1997 and 2007. Sexually transmitted infection (STI) rates in the older age group (40-59 years) were compared to the younger age group (15-29 years) over the 10 year period. We used regression analyses to examine trends in age rate ratios.
Results: Between 1997 and 2007, both the number and rate of reported cases increased for all three nationally notifiable STIs. Although chlamydia and gonorrhea rates continued to be higher among younger adults, rates of all three STIs increased more dramatically among older adults. Between 1997 and 2007, chlamydia rates increased by 86.8% among adults aged 15-29 ($p<0.0001$) and 165.9% among adults 40-59 years old ($p<0.0001$). The corresponding increases for gonorrhea were 133.3% ($p<0.0001$) and 210.2% ($p<0.0001$). In contrast, infectious syphilis rates were higher among older adults in 2007 and increased 11-fold ($p<0.0001$) since 1997, compared to a five-fold increase among younger adults ($p<0.0001$). The reported rate ratios decreased over time for chlamydia ($p<0.0001$), gonorrhea ($p=0.003$), and syphilis ($p=0.02$). Males were disproportionately represented among reported chlamydia, gonorrhea, and infectious syphilis cases, constituting 59.8%, 87.6%, and 93.0% of older adult cases, respectively, in 2007.
Table 1. Percent increase in reported rates of bacterial sexually transmitted infections in 2007 when compared to 1997.

	Overall	Overall	Male	Male	Female	Female
	Younger	Older	Younger	Older	Younger	Older
Chlamydia	86.8	165.9	152.0	227.6	67.5	107.5
Gonorrhea	133.3	210.2	132.9	205.3	133.8	248.7
Infectious Syphilis	530.1	1113.2	1241.1	1374.3	174.5	262.2

Conclusions: Older adults may be increasingly affected by chlamydia, gonorrhea and infectious syphilis. There is a need for sexual health information targeting Canada's older adults and their health care providers.

OS3.2.01

ANTIMICROBIAL SUSCEPTIBILITY OF VARIOUS ANTIBIOTICS AGAINST *NEISSERIA GONORRHOEAE* ISOLATES IN WESTERN PART OF JAPAN

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Background: We have reported that the *N. gonorrhoeae* isolates from clinical failure cases treated with oral 3rd generation cephems including 400mg cefixime in Japan. These isolates had PBP-2 alteration. We have also reported against these resistant isolates the MIC of cefozopran showed more than 2 mg/L. To research the prevalence of these cefozopran resistant isolates, we examined the susceptibility of *N. gonorrhoeae*isolates to various antimicrobial agents.
Methods: During 2007 to 2008, 239 *N. gonorrhoeae* isolates from individual patients in Western part of Japan were used. The MICs of various antimicrobials were determined by agar dilution method in accordance with CLSI.
Results: 151 of 239 patients (63.2%) were male. Ceftriaxone and cefodizime inhibited growth of all isolates at 0.25 and 0.5 mg/L, respectively. The MIC range of spectinomycin was 4 to 32 mg/L. These 3 agents had no resistant isolates. The ratio of penicillin susceptibile (≤0.06 mg/L) and high resistant (≥2 mg/L) isolates were 3.3 and 40.2%, respectively. Penicillinase producing isolate was only 3 isolate. Cefozopran resistant isolates accounted for 51.9 % (124/239). The raitos of levofloxacin, tetracycline, and erythromycin susceptible isolates (≤ 0.25 mg/L) were 25.1, 20.1, and 6.7%, and high resistant isolates (≥2 mg/L) accounted for 73.2, 50.6, and 53.1%, respectively. The result showed that most of cefozopran resistant isolates was multi-drug resistant.
Conclusion: Cefozopran resistant isolates that correlate to isolates having chimera PBP-2 accounted for more than half. Most of the isolates having chimera PBP-2 were resistant to oral cephalosporin, such as cefixime, cefpodoxime, etc. And the susceptibility ratio of the non-beta-lactam oral agents was less than 30%. Therefore in Japan, no effective oral agents exist against gonococcal infections. It is a serious problem in Japan. Only three parenteral agents, ceftriaxone, cefodizime, and spectinomycin, are recommended for gonococcal infection in Japan.

OS3.2.02

MUTATION OF NEISSERIA GONORRHOEAE ISOLATES WITH MOSAIC PENA GENES TO HIGHER LEVELS OF CEPHALOSPORIN RESISTANCE

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Objective: To investigate the potential for isolates of *N. gonorrhoeae* with elevated MIC values to both penicillin and cephalosporins to mutate to higher MIC values.
Methods: Mutations in the *penA* and *ponA* genes of eleven gonococcal isolates were determined by DNA sequencing of PCR products. MIC values were determined by agar dilution. Mutants exhibiting higher MIC values were selected on GC base agar that contained either a gradient or a single concentration of cefpodoxime or ceftriaxone.
Results: All four isolates that showed elevated MIC values to the cephalosporins possessed mosaic *penA* genes. The *penA* sequences in two of the isolates appeared unique when compared to previously reported sequences. Strains that exhibited elevated MIC values for penicillin only showed the insertion of a single Asp residue and three additional amino acid substitutions. The *ponA* sequences in all eleven

isolates showed a single Pro substitution. MIC values to hydrophobic agents indicated mutations in *mtrR*. Upon selection on medium with cefpodoxime, all four of the isolates with mosaic *penA* genes gave rise to mutants that demonstrated elevated resistance to cefpodoxime. The MIC values of these mutants for cefpodoxime, ceftriaxone, and cefixime increased at least 4-fold (>8 ug/ml for cefpodoxime and 1.0 ug/ml for ceftriaxone). Only one isolate tested gave detectable numbers of mutants upon selection on GC agar based medium containing ceftriaxone. Mutants with increased MICs to cefpodoxime occurred at a frequency of 1.3×10^{-10} mutants/cfu. Identical experiments performed with strains that lacked the mosaic *penA* gene yielded no such mutants.
Conclusions: Isolates of *N. gonorrhoeae* that possess a mosaic *penA* gene demonstrated a potential to mutate to higher levels of *in vitro* resistance to cephalosporins. Significantly, selected resistance to cefpodoxime led to increased MIC values for at least two other cephalosporins.

OS3.2.03

SINGLE POINT MUTATIONS IN THE 23S rRNA GENE CONFER HIGH-LEVEL RESISTANCE TO AZITHROMYCIN IN NEISSERIA GONORRHOEAE

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Objectives: To determine, for the first time, the mechanism of high-level Az resistance (AzHR), defined as a minimum inhibitory concentration (MIC) of ≥256 mg/L, which emerged in *Neisseria gonorrhoeae* in Scotland in 2004 and in England and Wales in 2007.
Methods: Partial sequences of 23S rRNA alleles 1-4 were determined for 22 isolates from Scotland, England and Wales, comprising 12 AzHR isolates (Sequence types -STs- 470, 649, 1443, 1704, 2152, 2153), four sensitive (AzS) isolates (MICs 0.12-0.25 mg/L; STs 470, 649, 1443, 1704) and six moderately resistant (AzR) isolates (MICs 3-8 mg/L; STs 359, 1195, 2322). Single colonies of four AzS isolates were cultured on medium containing erythromycin (0.5–8.0 mg/L) and 23S alleles of resistant mutant colonies sequenced. Experiments to transform laboratory AzS strains with DNA or 23S rRNA amplicon from AzHR strains were conducted.
Results: All AzHR isolates contained mutation A2059G (*Escherichia coli* numbering) in three (n=1) or four (n=11) 23S rRNA alleles. All low-level AzR and 1/4 AzS isolates possessed four wild-type (WT) 23S rRNA sequences, while one allele was mutated in 3/4 AzS isolates. Transformation of laboratory AzS strains to an AzHR phenotype potentially requires three recombination events, so was unsuccessful. Serial passage of AzS isolates on erythromycin-containing medium selected AzHR if the AzS isolates contained one mutated 23S rRNA allele and the mutant strains contained four mutated alleles. A mutant strain arose from the AzS isolate with four WT 23S rRNA alleles, but had an Az MIC of 3.0 mg/L and four WT alleles.
Conclusions: This is the first evidence that the AzHR phenotype in *N. gonorrhoeae* results from a single point mutation (A2059G) in the peptidyltransterase loop in domain V of the 23S rRNA gene. Mutation of a single allele is insufficient to confer AzHR, but this can develop under selection pressure. The description of a novel resistance mechanism will aid screening for the AzHR phenotype.

OS3.2.04

APPROPRIATE ANTIMICROBIAL THERAPY FOR GONORRHOEA ACROSS EUROPE

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Background: The European Surveillance of Sexually Transmitted Infections (ESSTI) project consists of a network of laboratories across 20 countries. As part of ESSTI, Euro-GASP (European Gonococcal Antimicrobial Surveillance Programme) informs appropriate therapy for gonorrhoea by performing sentinel surveillance studies and ensures comparability of data by a quality assurance programme and training courses.
Methods: A sentinel surveillance study ran from 2006 to 2008 and involved up to 16 participating laboratories that collected 110 consecutive isolates each year. Susceptibility testing was performed using the agar dilution breakpoint technique or Etests for therapeutic antimicrobial agents.
Results: Over the three years a total of 3537 *Neisseria gonorrhoeae* isolates were collected and tested. For ciprofloxacin, the overall incidence of resistant isolates increased from 42% in 2006 to 51% in 2008. High level plasmid mediated resistance to tetracycline and penicillin remained fairly constant at around 16% and 12% respectively. Azithromycin resistance was quite variable at 3%, 7% and 2% in 2006, 2007 and 2008 respectively. There was no resistance to ceftriaxone demonstrated. In addition high level azithromycin resistant isolates (MIC >256 mg/l) from Scotland and Ireland were detected and this study has highlighted a concerning upward shift in the ceftriaxone MIC distribution.

Conclusions: High levels of resistance to agents such ciprofloxacin which are commonly used for the treatment of gonorrhoea in Europe have been detected. This shows the importance of antimicrobial susceptibility studies to inform local, national and European guidelines for therapy and prevent the spread of infection. It is of particular importance that the surveillance of antimicrobial resistance in Neisseria gonorrhoea is continued to monitor emerging resistance to third generation cephalosporins, such as ceftriaxone, which are the mainstay of treatment for gonorrhoea across Europe.

OS3.2.05

CONTINUED SUSCEPTIBILITY TO GENTAMICIN AFTER 14 YEARS AS FIRST LINE THERAPY: N. GONORRHOEAE ANTIMICROBIAL SUSCEPTIBILITY IN MALAWI, 1993-2007

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Background: Malawi adopted syndromic management of sexually transmitted infections in 1993. Based on clinical efficacy and cost, gentamicin 240mg IM and doxycycline 100 mg BID x 7 days was selected as the first line regimen to treat urethritis. Trials determining clinical cure rates and/or laboratory based susceptibility data for men with gonoccocal urethritis in Malawi were conducted in 1993, 1996, 1998, and 2001-2. We sought to establish current laboratory-based N. gonorrhoeae antibiotic susceptibility patterns for Malawi and describe the pattern of susceptibility since syndromic management began.
Methods: Between May 15 and August 10, 2007 126 men with urethritis attending the STD clinic at Kamuzu Central Hospital in Lilongwe had history, genital exam, and urethral swabs taken. All were treated with gentamicin and doxycycline in accordance with Malawi guidelines. Gonorrhea was diagnosed by gram stain and culture. Antimicrobial susceptibility patterns in gonococcal isolates were determined by disk diffusion and E-test minimum inhibitory concentration (MIC) determination (in Malawi) and agar dilution MIC determination (at UNC).
Results: 106 isolates were cultured, and MICs were determined for 100. High levels of resistance to tetracycline and penicillin were observed, but isolates were uniformly susceptible to both gentamicin and ciprofloxacin. Susceptibility patterns identified by the agar dilution MICs, E-test MICs, and disk diffusion results correlated highly. Both the clinical cure rate and the proportion of isolates with high or moderate susceptibility to gentamicin has remained high (>90%) in every susceptibility survey since 1993.
Conclusions: The most recent study continues the trend of high susceptibility of gonococcal isolates to gentamicin in Malawi after 14 years of use. MIC's can be substituted with the simpler disk diffusion and E-test methods in future susceptibility testing.

OS3.3.03

ROLE OF CO-INFECTIONS IN HIV EPIDEMIC TRAJECTORY AND POSITIVE PREVENTION: A SYSTEMATIC REVIEW AND META-ANALYSIS OF MALARIA, HSV-2 AND TB CO-INFECTIONS

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Background: The reason for the unique severity of sub-Saharan HIV epidemics is not fully understood but may be partly due to common, recurrent or persistent co-infections increasing person-time with HIV viral load (VL) above the threshold necessary for HIV transmission, thus increasing HIV incidence compared to regions with a lower co-infection burden. We systematically reviewed epidemiological studies examining the association of malaria, HSV-2 and TB with HIV VL.
Methods: Cochrane review guidelines were used to identify studies of the impact of co-infections on HIV VL among ART naïve adults. Random effects meta-analysis was used to estimate a summary measure for the association of each co-infection with VL, controlling for time since HIV infection, when known, or CD4 count.
Results: 32 studies, including 22 from sub-Saharan Africa, reported the impact of co-infections on HIV VL (7 for malaria, 12 for HSV-2, 13 for TB). Six studies were randomized controlled trials; 26 were observational (15 cohort, 7 nested case-control, 1 challenge & 3 cross-sectional). Acute malaria was significantly associated with increased VL (mean increase=0.40 log10 copies/mL; 95% CI: 0.23-0.58). Malaria therapy was associated with significantly decreased VL (mean decrease=0.22 log10 copies/mL; 95% CI: 0.08-0.36). A smaller, but significant, increase in HIV VL was seen for HSV-2 (mean increase=0.09 log10 copies/mL; 95% CI: 0.04-0.13), with a corresponding decrease associated with HSV-2 therapy (mean decrease=0.14 log10 copies/mL; 95% CI: 0.07-0.21). There was no association of TB with VL but TB therapy was associated with a small decrease in VL (mean decrease=0.15 log10 copies/mL; 95% CI: 0.05-0.25).
Conclusions: Acute malaria and HSV-2 were associated with increases in HIV VL, suggesting that these

co-infections increase HIV transmission. Treatment may help control HIV epidemic trajectory, but may require different regimens from those for clinical management.

OS3.3.04

MAKING REALISTIC IMPACT PROJECTIONS FOR NEW HIV PREVENTION TECHNOLOGIES: LOOKING BEYOND A PRODUCT'S EFFICACY.

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Background: Vaginal microbicides are investigational products that woman can use to hinder sexual transmission of HIV. Currently, several microbicide candidates are in phase I to III safety and effectiveness trials. Once such products become available, policy and key decision makers will need to decide how best they may be used as part of an intervention strategy.
Methods: An age-structured mathematical model of HIV/STI transmission was parameterised and fitted using data from Gauteng; South Africa. For a range of different efficacy, introduction and regulatory scenarios, the model was used to project the impact on HIV transmission of introducing a microbicide. The model was also used to examine the influence of assuming simplistic versus realistic intervention uptake trajectories.
Results: In the most optimistic introduction scenario, the model projected 6.8% of all HIV infections would be averted over 15 years, with impact increasing over time, from 0.3% by year 5 and 2.5% by year 10. The gradual increase being due to the gradual uptake of the product over the first ten years (to a maximum of 30% coverage in the general population). This was for a microbicide with 85% efficacy (similar to that of the condom) used with 80% consistency. These impact projections are eroded by reduced uptake, consistency of use, efficacy and long regulatory periods. Changing assumptions relating to the form of the uptake curve had a considerable effect; with 13.3% infections averted by year 15 if the product was assumed to attain target coverage from day one of the intervention.
Conclusions: Defining accurate intervention uptake trajectories is essential for providing more realistic intervention impact estimates. After product launch, a sustained and vigorous effort over many years is required, in order to maximise impact. Beyond the efficacy of the microbicide and its ease of use, a range of additional factors will determine the realisable impact of this new prevention technology.

OS3.3.05

COMBINING HIV-PREVENTION INTERVENTIONS TO MAXIMISE (COST-)EFFECTIVENESS BY ACHIEVING SYNERGY AND AVOIDING REDUNANCY

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Background: Limited HIV-prevention resources need to be optimised. We need to understand interactions between different interventions to determine if, when, and how they should be combined and targeted.
Methods: Using analytic and simulation methods, we explore how interventions applied individually or in combination, with variable coverage, interact with heterogeneity in risk behaviour to affect transmission. We identify where interventions interact synergistically (increasing each other's effect) and where there is redundancy (reducing each other's effect).
Results: When interventions are combined they can diminish each other's incremental reduction of the basic reproductive number (R0) - but they can be synergistic, due to the non-linear relationship between R0 and incidence and prevalence. Unfortunately, under some circumstances there can be wasteful redundancy. Synergy increases as R0 approaches 1 and then declines sharply. Heterogeneity in risk means synergy is often lost if interventions are spread throughout the population, as additional interventions reduce R0 in lower-risk people increasingly far below 1 (where infection is eliminated), causing redundancy in that group. But when interventions are targeted at higher-risk individuals synergy re-emerges. The degree of synergy varies with time, as HIV prevalence changes. Cost-savings may be achieved by co-delivering interventions (which maximises coverage overlap), but in some cases minimising overlap is more effective - complicating optimisation of cost-effectiveness. Synergy may mean that interventions which are individually ineffective may be effective in combination.
Conclusions: To maximise impact, interventions need to combined effectively, which often involves differential targeting, and we have developed criteria to assist in planning. Population-level intervention trials should consider combining interventions, to maximise effect size, and using modelling to estimate the contributions of each intervention.

OS3.4.02

SEX WORK,SYPHILIS AND SEEKING TREATMENT: AN OPPORTUNITY FOR INTERVENTION IN HIV PREVENTION PROGRAMMING IN KARNATAKA, SOUTH INDIA

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Objectives: To measure the determinants of syphilis infection among female sex workers (FSWs) in the state of Karnataka, South India.
Methods: During 2004-2006, cross-sectional surveys were administered to 2,312 FSWs across five districts in the state, in the context of a large-scale HIV preventive intervention program, supported by AVAHAN-the India AIDS Initiative of the Bill & Melinda Gates Foundation. Demographic and behavioral information, as well as serum (for syphilis, HSV-2 and HIV) and urine specimens (for Neisseria gonorrhoea and Chlamydia trachomatis) were obtained.
Results: The prevalences of lifetime (TPHA positive) and active (RPR and TPHA positive) syphilis were 25.3% and 9.6% respectively. There was considerable variation in the prevalence between districts, ranging from 10.9% to 37.4% lifetime, and 3.4% to 24.9% active infection. Factors associated with lifetime syphilis were older age, longer duration of sex work, illiteracy, client volume, practising sex work in >1 city, and sex work typology (public solicitation followed by brothel or lodge-based sex). The same sex work typology, client volume, illiteracy, and having been widowed, divorced or deserted, were predictive of active infection. Of the 976 women who had symptoms of an STI, 78.8% had sought medical treatment, behaviour that was protective for both outcomes. HIV infection was strongly associated with lifetime (OR 2.0; 95% CI 1.6-2.6) and active syphilis (OR 2.1; 95% CI 1.5-2.9).
Conclusion: Despite reasonable treatment seeking behaviour, the high prevalence of syphilis has necessitated enhanced outreach efforts for FSWs, and acceleration of the implementation of routine syphilis screening. Mobilizing resources to enhance syphilis control will not only reduce the burden of syphilis morbidity, but should impact in reducing HIV transmission.

OS3.4.03

IMPACT OF AN INTENSIVE, TARGETED HIV PREVENTION PROGRAM ON HIV PREVALENCE IN THE GENERAL POPULATION IN KARNATAKA STATE, INDIA: AN ECOLOGICAL ANALYSIS

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Background: Targeted HIV preventive interventions among high-risk groups should have substantial impact on overall community HIV transmission. An intensive preventive intervention (IPI) was initiated among female sex workers in 18 of the 27 districts in Karnataka, supported by the India AIDS Initiative of the Bill & Melinda Gates Foundation. Prevention programs began in 2003 and were generally at scale in the 18 districts by the end of 2004, covering over 80% of the urban FSW population.
Methods: We examined trends over time in HIV prevalence from annual HIV surveillance conducted among antenatal clinic (ANC) attenders in Karnataka under the age of 25 from 2003 to 2007. Using a random effects multivariate logistic regression model, trends in HIV prevalence were compared between the 18 IPI districts and the other 9 districts, controlling for district HIV prevalence at baseline, rural/urban location and other factors.
Results: Overall, HIV prevalence among ANC attenders under 25 declined from 1.4% to 0.77%. Standardized HIV prevalence at baseline in the IPI districts was 1.44% in 2003, declining steadily to 0.64% in 2007; in the other districts, standardized HIV prevalence was 1.15% in 2003 and 1.09% in 2007. In the multivariate model, the decline in HIV prevalence in the IPI districts compared to the other districts was statistically significant (P=0.01), with an adjusted odds ratio of 0.88 (95% CI 0.79-0.97).
Conclusions: Although this analysis is limited by lack of precise data on the variability in coverage and changes in intervention intensity over time, it supports the notion that scaled-up, intensive, targeted HIV preventive interventions among high risk groups can have a measurable and relatively rapid impact on HIV transmission in the general population, as represented by young ANC clinic attenders. Such focused intervention programs should be rapidly taken to scale in all HIV epidemics, and especially in concentrated epidemics such as India's.

OS3.4.04

EXPLORING HETEROGENEITY IN CLIENTS OF FEMALE SEX WORKERS IN KARNATAKA, SOUTH INDIA

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Background: Effective interventions to reduce HIV transmission in the context of female sex work are needed to control HIV epidemics in many settings. Mathematical models have indicated that the patterns of sexual partnering between clients and female sex workers (FSWs) affect the trajectory and size of STI epidemics in these populations and the general population.
Methods: Data were collected in four cities in Karnataka, through a cross-sectional biological and behavioural survey of FSW clients, supported by the India AIDS Initiative of the Bill & Melinda Gates Foundation. Clients were sampled from public places, brothels, lodges, and other locations. Multivariable logistic and Poisson regression were used to analyse determinants of FSW visitation patterns, sex acts and other types of sexual relationships.
Results: Data were available for 1,938 men. The average age of clients was 30 and most clients (60.4%) were married. Almost 1/3 of clients first visited an FSW before age 20 and the median duration of visiting FSWs was 6 years. Approximately 25% of clients visited FSWs 5+ times in the past 6 months, and less than 15% visited only once. In all cities, clients who visited FSWs most frequently tended to visit different ones, whereas infrequent clients in two cities were most likely to visit the same FSW repeatedly. Clients who most frequently visited home-based FSWs were less likely to visit occasional FSWs ($p<.01$). HIV positivity ($p<.05$), and having frequent FSW contacts ($p<.01$) were both positively associated with occasionally visiting FSWs. Approximately 6% of clients reported having anal sex with another man in the previous six months, and this was associated with young age ($p<.05$), frequent travelling ($p<.01$), and more frequent FSW contacts ($p<.01$).
Conclusions: This study describes the heterogeneity of risk behaviours and partnering patterns among FSW clients, indicating the potential strategic value of targeting client subsets to maximize intervention impact.

OS3.4.05

A NOVEL APPROACH TO DEVELOPING A FEMALE SEX WORK TYPOLOGY USING DATA FROM KARNATAKA, SOUTH INDIA

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Objective: We propose a method for developing a female sex work (FSW) typology classification in the context of HIV infection, based on variation in risk for HIV.
Methods: The proposed method has four stages: 1) identifying main places of solicitation and of sexual contact; 2) constructing possible FSW typologies based on either or both of these criteria; 3) analysing variations in indicators of risk, such as HIV/STI prevalence and client volume, across the categories of the typologies; and 4) identifying the simplest typology which captures the risk variation experienced across different settings. Analysis is based on data from 2,312 participants in integrated biological and behavioural assessments (IBBA) of FSWs conducted in Karnataka, India in 2004-2006, supported by India AIDS Initiative of the Bill & Melinda Gates Foundation. Logistic regression was used to predict HIV/STI status (syphilis, gonorrhea, chlamydia) and linear regression to predict client volume.
Results: Our analysis suggests that the most appropriate FSW typology in Karnataka consists of the following categories: brothel to brothel, i.e. solicit and have sex in brothels (11% of FSWs); home to home (33%); street to home (13%); street to rented room (9%); street to lodge (18%); street to street (6%) and other (9%). This typology distinguishes between FSWs by place of solicitation and sex, and captures risk variation between groups of FSWs better than typologies distinguishing by place of solicitation or by place of sex alone. HIV and STI prevalence and client volume varied by typology: street to lodge FSWs (HIV prevalence 26%, STI prevalence 26%, monthly client volume 49); brothel to brothel (26%, 14%, 82); home to home (12%, 9%, 34).
Conclusion: The proposed typology identifies 'street to lodge' FSWs as being at highest risk, which was obscured by the existing typology that distinguishes between FSWs based on place of solicitation alone. The proposed method will be tested using data from other Indian states.

OS3.4.06

IS THE INDIAN HIV EPIDEMIC MAINLY DUE TO HIGH RISK GROUPS? A MODELLING ANALYSIS FROM SOUTH INDIA

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Background: In South India, HIV prevalence estimates from general population surveys (GPS) range from 0.5-3%. For determining where to focus HIV prevention efforts, it is important to understand the degree to which HIV transmission only occurs amongst high risk groups and their main/casual partners.
Methods: A dynamic mathematical model of HIV/STI transmission was parameterised using data from Belgaum and Mysore in southern India. The model was fit to STI/HIV data from FSWs and their clients for each district by extensively sampling from parameter uncertainty ranges (n>300,000). Through comparing non-context specific HIV/STI biological parameters, the number of model fits was reduced to only include those with common biological parameters. The model fits were used to estimate the degree to which prevalent HIV infections in each district could be attributed to HIV transmission between current and former FSWs and their clients, and bridging infections from FSWs/clients.
Results: 1775 model fits were obtained for Belgaum and 872 for Mysore. Without incorporating any HIV transmission between low risk partners, the model projections agreed quite well with general population HIV prevalence for Mysore/Belgaum (Table). However, uncertainty in the FSW/client population size and degree to which clients form non-commercial partnerships with non-FSWs reduced the accuracy of the projections. Overall, 55-60% of all HIV infections are due to commercial sex between FSWs and clients, 35-45% due to non-commercial main partnerships of FSWs/clients and <10% due to their non-commercial casual partnerships. For males, most HIV infections (~90%) are amongst clients of FSWs, whereas for females most are bridging infections from these clients (60-80%).

Table: Comparison of data and model derived general HIV prevalence estimates.		Model HIV prevalence estimate	Model HIV prevalence estimate
	Data HIV prevalence estimate	without bridging infections	with bridging infections
Mysore males	1.1% (0.4-1.8%)	1.1% (0.4-2.2%)	1.2% (0.4-2.3%)
Mysore females	0.8% (0.4-1.3%)	0.3% (0.1-0.6%)	1.0% (0.3-1.8%)
Belgaum males	1.3% (0.5-2.1%)	2.1% (0.8-3.8%)	2.3% (0.8-4.1%)
Belgaum females	1.6% (0.9-2.2%)	0.4% (0.1-0.6%)	2.0% (0.6-3.8%)

Conclusion: Most HIV transmission in Southern India occurs amongst FSWs/clients, or is due to their bridging infections. HIV prevention interventions should focus on FSWs/clients with attention also being given to their non-commercial partnerships.

P1.1

SAFETY AND COLONISATION POTENTIAL OF A NEW MULTI-PARTICULATE PELLET FORMULATION FOR VAGINAL ADMINISTRATION OF PROBIOTIC LACTOBACILLI

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Objectives: Exogenous supplementation of probiotic strains of *L. crispatus* and *L. jensenii*, the predominant H2O2-producing vaginal lactobacilli, could restore the vaginal microflora (VMF) when suffering from bacterial vaginosis. Objectives were to assess the safety of a new multi-particulate formulation for vaginal delivery and to evaluate the colonisation potential of selected vaginal *Lactobacillus* strains.
Methods: In a 3 arm randomized parallel study with 18 women with normal VMF the safety of the carrier was investigated trough gynaecological and bacteriological assessment of the VMF during a 6 weeks follow-up. The influence on the VMF was studied by pH measurement, Gram stain and presence of H2O2-producing lactobacilli. In a 2-way randomized parallel study with 16 women the colonisation potential of two *L. crispatus* strains and a *L. jensenii* strain administered at 5log6 cfu/capsule for 5 days and packed in capsules loaded with starch pellets respectively with lyophilised powder was documented by RAPD and qPCR.
Results: Although shortly after menses 7/18 women had either an elevated pH, and/or a disturbed microflora and/or lacked H2O2-producing lactobacilli, at midcycle all had H2O2-producing lactobacilli and a normal vaginal pH, and all but two had normal Gram stains. Strains *L. jensenii* PB204, *L. crispatus*

PB128 and *L. crispatus* PB125 colonized respectively 65%, 37% and 6% of the women. 66% of the women colonised by *L. jensenii* still harbored this strain after menses.
Conclusion: Starch-based pellets, a new vaginal delivery form with efficient distribution and long retention time, are considered safe and well tolerated since changes in VMF were due to the period in the menstrual cycle and not due to treatment. This study demonstrated the feasibility of colonising the VMF with a probiotic strain of *L. jensenii* and its persistence after menses.

P1.11

PREVALENCE AND ANTIMICROBIAL SUSCEPTIBILITY OF *NEISSERIA GONORRHOEA* AMONG MEN PRESENTING WITH URETHRAL DISCHARGE IN KAMPALA, UGANDA.
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Background/Objective: *Neisseria gonorrhoea* remains a major sexually transmitted infection that is believed to be associated with increased risk of HIV transmission. It has shown an ever evolving pattern of increasing resistance to antimicrobial therapy. The current prevalence of *Neisseria gonorrhoea* infections and its antimicrobial susceptibility pattern in Uganda are largely unknown. To determine the prevalence and antimicrobial susceptibility pattern of *Neisseria gonorrhea* among men presenting with urethral discharge at selected outpatient clinics in Uganda
Method: Descriptive cross-sectional study conducted at an STD clinic and hospital-based out-patient clinic in Uganda between October 2007 and July 2008. A total of 216 males, aged 18 years and older with complaints of urethral discharge were consented and enrolled into the study. Urethral swabs were collected and cultured for *Neisseria gonorrhoea*.
Results: Of the 216 participants, 190 (88%) were from the STD clinic and 26 (12%) from the hospital-based out-patient clinic. A total of 119 (55%) of the 216 participants were culture positive for *Neisseria gonorrhoea*. Risk factors for gonorrhoea infection included age below 29 years, being married and being a civil servant. The isolates showed high rates of resistance to ciprofloxacin (31%) and co-trimoxazole (83%). All isolates were susceptible to ceftriaxone and imipenem.
Conclusion: This study has revealed that *Neisseria gonorrhoea* is still a major cause of urethral discharge among males in Kampala and has demonstrated the emergence of high rates of QRNG.

P1.12

ANTIMICROBIAL RESISTANCE PATTERN OF NEISSERIA GONORRHOEAE ISOLATES FROM WOMEN INVOLVED IN SEX WORK IN KAMPALA, UGANDA
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Objectives: To describe the antimicrobial susceptibility pattern of *Neisseria gonorrhoeae* isolates obtained from women involved in sex work and enrolled in a new established cohort in Kampala, Uganda.
Methods: Between April and November 2008, 116 strains of *N. gonorrhoeae* were isolated and tested. Minimum inhibitory concentrations (MIC) of penicillin, azithromycin, cefixim, ciprofloxacin, ceftriaxon, amoxicillin-clavulanic acid and trimethoprim-sulfamethoxazole were determined using E – test. Penicillinase producing *N. gonorrhoeae* (PPNG) were identified by Nitrocefin method (Oxoid).
Results: Of the 116 strains tested, 82 (70.7%) were found to be penicillinase producing *N. gonorrhoeae* (PPNG). Only 4 (3.4%) strains were sensitive to penicillin and all 79 penicillin fully resistant strains were PPNG. All isolates were sensitive to amoxicillin-clavulanic acid and trimethoprim-sulfamethoxazole (CTX). One hundred fifteen (99.1%) strains were fully sensitive to azithromycin, 114 (98.3%) to cefixime and 114 (98.3%) to ceftriaxon. Resistance to ciprofloxacin was detected in 91 (78.4%) isolates. Additional sensitivity testing against spectinomycin and tetracycline is currently being carried out against these isolates and will be reported.
Conclusions: The preliminary results of this study, conducted among female sex workers, show high-level resistance to ciprofloxacin, which is currently recommended as first line treatment for gonorrhoea in Uganda. Monitoring of antimicrobial resistance to *N. gonorrhoea* is needed in different population subgroups in order to update the national treatment recommendations.

P1.13

TRENDS IN THE ANTIMICROBIAL RESISTANCE AND RESISTANCE DETERMINANTS OF NEISSERIA GONORRHOEAE FROM SHANGHAI (2005 AND 2008)
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Objectives: The susceptibility to 5 antimicrobial agents and mutations in the quinolone resistance determining regions (QRDRs) were determined for Neisseria gonorrhoeae isolated in Shanghai in 2008 and compared to results from 2005.
Methods: N. gonorrhoeae isolates were consecutively collected from male patients in 2008 (n=71) at the Shanghai Skin Disease and STD Hospital. MICs were determined to 5 antimicrobial agents by the agar dilution method and were interpreted using criteria of the CLSI. Mutations in QRDRs were determined by DNA sequence analysis.
Results: Isolates were resistant to ciprofloxacin (Cip; 100%), penicillin (Pen, 88.7%) and Tet (64.8%) and were susceptible to spectinomycin (Spe) and ceftriaxone (Cex). However, 54.9% of the isolates had Cex MIC values of 0.06 (35.2%) or 0.12 (19.7%) mg/L. 78.8% of the isolates carried plasmid-mediated resistance (PPNG - 22.5%, TRNG - 22.5%, PP/TRNG - 33.8%). Isolates with chromosomal resistance to Pen (CMPR), Tet (CMTR) or both antibiotics (CMRNG) accounted for 32.4%, 8.5% and 5.6% of those tested, respectively.
The QRDR region in 2008 isolates (n=64) all carried a GyrA S91F mutation with mutations in D95 (D95G=73.4%, D95A=20.3% and D95N=6.3%). Most isolates (75%) also carried a ParC S87R/N mutation, while 5 isolates had a S88P mutation. The S88 mutation in ParC was only observed in 2008 isolates.
Conclusions: As compared isolates collected in 2005, the 2008 isolates retained high percentages of isolates resistant to Pen (Resistance- 88.7%); more isolates were resistant to Tet (56.5% in 2005) with higher percentages of TRNG (20.1% in 2005; 56.3% in 2008). All TRNG plasmids for both periods were Dutch-type as determined by PCR typing methods. The Cex MIC50 (mg/L) increased from 0.03 in 2005 to 0.06 in 2008. Predominant QRDR mutations remained unchanged between 2005 and 2008 surveillance. With diminishing susceptibility to Cex, these results highlight the importance of on-going monitoring of antimicrobial susceptibility in N. gonorrhoeae.

P1.14

NEISSERIA GONORRHOEAE ISOLATES WITH REDUCED SUSCEPTIBILITY TO BROAD - SPECTRUM CEPHALOSPORINS IN BILBAO, SPAIN

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Background: Recently, the emergence of N. gonorrhoeae isolates with reduced susceptibility in vitro to broad-spectrum cephalosporins has been reported. This reduced susceptibility has been proposed to be associated with polymorphisms in several genes and especially with certain penA mosaic alleles. The aim of this study was to correlate different polymorphisms in penA, mtrR and ponA of N. gonorrhoeae with reduced susceptibility to cephalosporins (NGRC).
Methods: Four NGRC and four clinical isolates susceptible to cephalosporins were examined. ß-Lactamase production was analysed using nitrocefin test, and the antibiotic susceptibility profiles were analysed using the CLSI reference method and the Etest method. Identification and multiantigen sequence typing (NG-MAST) were performed. A multiplex real-time PCR assay using hybridization probes was performed in a LightCycler 2.0. to distinguish the wild type from the described variant of the ponA gene and to detect the aspartic acid residue in the penA gene. The promoter and coding regions of mtrR and ponA were amplified using a LightCycler as above. All the PCR products were purified and sequenced using the BigDye Terminator v.3.1 Cycle Sequencing kit in a 3130 Genetic Analyzer.
Results: The real-time PCR assay successfully detected variations in melting temperatures of ponA and penA genes from NGRC isolates. These results were in complete agreement with the sequencing data. The ranges of MICs of cephalosporins and penicillin G of all NGRC isolates were markedly higher than the MICs of the susceptible strains, but none of the isolates produced a ß-lactamase.
Conclusions: It is necessary to enhance the antimicrobial susceptibility surveillance system. Besides, nucleic acid amplification tests are replacing culture for diagnosis of gonorrhoea, so a comprehensive knowledge of molecular basis of reduced susceptibility and resistance to many antimicrobials are crucial to develop fast and accurate diagnostic assays.

P1.15

INCREASING TREND IN GONOCOCCAL RESISTANCE TO ANTIMICROBIALS IN THE NETHERLANDS, 2006-2008

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Objectives: The rapid development of resistance of *Neisseria gonorrhoeae* against a wide range of antimicrobials in the past years threatens successful treatment and secondary prevention efforts. The objectives of the Gonococcal Resistance to Antimicrobials Surveillance (GRAS) are to monitor the emergence of resistance patterns and to get more insight in networks and determinants to prevent further spread of resistant *N. gonorrhoeae* in the Netherlands.
Methods: GRAS was implemented within the Dutch national STI surveillance network. From July 2006 onwards, participating STI centres collected a culture from each gonorrhoea patient. Each isolate was tested for penicillin, tetracycline, ciprofloxacin and cefotaxime using Etest®. Logistic regression was used to determine risk factors for ciprofloxacin resistance.
Results: Between July 2006-July 2008 the prevalence of resistance to penicillin was 13%, to tetracycline 32% and to ciprofloxacin 43%. Resistance to cefotaxime was not found, although an upward drift among MIC values of 0.19 and higher was observed between 2006 and 2008 ($p<0.05$). Ciprofloxacin resistance increased from 37% in 2006 up to 46% in 2008 ($p<0.05$). The prevalence of ciprofloxacin resistance was significantly higher in men having sex with men (MSM) than in heterosexual men (OR:2.1, 95%CI: 1.6-2.8), and was also higher in female sex workers (OR:25.0, 95%CI: 7.7-78.2) and women aged above 35 years (OR:8.2, 95%CI: 3.0-22.7) as compared to other women.
Conclusions: The prevalence of ciprofloxacin resistance in the Netherlands has increased considerably and is particularly high in MSM, older women and female sex workers. Resistance to current primary therapy was not found, but strong alertness for clinical failures is essential since MIC values for cefotaxime showed an increasing trend. By merging epidemiological and microbiological data, GRAS identifies specific risk groups and provides data to adjust policy and guidelines for these groups when needed.

P1.16

RUSSIAN GONOCOCCAL ANTIMICROBIAL SUSCEPTIBILITY PROGRAMME FROM 2005 TO 2007 - CURRENT RESISTANCE, TRENDS, AND RECOMMENDED GONORRHOEA TREATMENT
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Objectives: To nationally describe the antimicrobial susceptibility of Neisseria gonorrhoeae in 2005-2007 and recommend first line gonorrhoea treatment, i.e. activities of the Russian Gonococcal Antimicrobial Susceptibility Programme (RU-GASP).
Methods: N. gonorrhoeae isolates were obtained from 24 surveillance sites (2005) and 36 sites (2006 and 2007, respectively), selected to appropriately represent all the Federal Districts of Russia, from January 2005 through December 2007. In total, 1690 N. gonorrhoeae isolates were examined, i.e. in 2005 (n=509), 2006 (n=521), and 2007 (n=660). The susceptibility of N. gonorrhoeae to penicillin G, tetracycline, ciprofloxacin, azithromycin, spectinomycin, and ceftriaxone was determined by agar dilution method according to the CLSI.
Results: The proportions of isolates displaying resistance or intermediate susceptibility (in parentheses) to the antimicrobials in 2007 were as follows: penicillin G 18.6% (53.8%), tetracycline 42.5% (24.7%), ciprofloxacin 49.6% (5.5%), azithromycin 1.1% (0%), spectinomycin 0.9% (3.6%), and ceftriaxone 0% (0%). During 2005-2007, the proportion of isolates displaying resistance increased from 0% to 0.9% to spectinomycin, 13.6% to 18.6% to penicillin G, 40.0% to 42.5% to tetracycline, and 49.2% to 49.6% to ciprofloxacin. However, all isolates (100%) were susceptible to ceftriaxone. Significant regional differences in antimicrobial resistance patterns among isolates originating from different regions of Russia were observed.
Conclusions: The antimicrobial resistance of N. gonorrhoeae in Russia is high and increasing. The results of the RU-GASP strongly emphasize that penicillins, tetracycline and ciprofloxacin should not be used for empirical treatment of N. gonorrhoeae infections in Russia and advice using exclusively ceftriaxone. If not access to ceftriaxone or in case of severe beta-lactam antimicrobial allergy, spectinomycin ought to be used. *Correspondeance: Prof. Nataliya Frigo frigo@cnikvi.ru

P1.17

CEPHALOSPORIN SUSCEPTIBILITY OF NEISSERIA GONORRHOEAE IN THE US PACIFIC NORTHWEST: IS ANYTHING CHANGING?
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Objectives: Examine recent gonococcal susceptibility patterns to ceftriaxone and characterize isolates with modestly decreased susceptibility (MIC ≥ 0.03).

Methods: During 2006-2008, isolates were obtained from STD clinics and other clinical facilities in Seattle and Portland. The identity of gonococci was confirmed by biochemical methods and antimicrobial susceptibilities determined on a sample (n=890) by agar dilution method recommended by CLSI. A random sample of isolates with ceftriaxone MIC ≥ 0.03 (Seattle, n=10, Portland, n=8) was characterized by pulsed field gel electrophoresis (PFGE) using NheI and SpeI. Isolates differing by <3 bands were considered highly related.
Results: The maximum ceftriaxone MIC was 0.125 µg/ml. In Portland, the prevalence of gonococci with ceftriaxone MIC ≥ 0.03 increased from 5.8% in 2006 to 27.3% in 2008 and in Seattle, prevalence increased from 2.0% in 2006 to 16.6% in 2008 (P<0.001, each comparison). These gonococci had median MICs of 2 µg/ml each to penicillin, tetracycline and erythromycin; 98% (80/82) were also resistant to ciprofloxacin (median MIC 16 µg/ml). Six distinct PFGE types were identified in the two cities, with the dominant type (type A) accounting for 40% and 38% of the typed isolates from Seattle and Portland, respectively. The PFGE type B was found in both Seattle (20%) and Portland (37%) while types C and D were only identified in Seattle, and types E and F were found in one isolate each from Portland.
Conclusions: In both Seattle and Portland, the proportion of isolates with modestly decreased susceptibility to ceftriaxone increased during the past three years. Although similar genotypes were identified in two cities separated by 145 miles, gonococci with ceftriaxone MIC ≥ 0.03 were diverse and typically multi-drug resistant. The potential for further decrease in susceptibility of these genotypes remains to be determined.

P1.18

MOLECULAR ANALYSIS OF ANTIMICROBIAL RESISTANCE MECHANISMS IN NEISSERIA GONORRHOEAE (NG) FROM ONTARIO, CANADA
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Objective: To characterize the antimicrobial resistance mechanisms in *Ng* from Ontario, Canada.
Methods: A sample of 148 consecutive non-redundant *Ng* isolates, received during a 1 month period (Oct. 15-Nov. 15, 2008) at the Ontario Public Health Laboratories, was investigated. MICs were determined according to CLSI guidelines. The molecular bases of resistance (R) to penicillin (PEN), tetracycline (TET), erythromycin (ERY) and ciprofloxacin (CIP) were determined by PCR and sequencing of general and specific targets in all the resistant isolates. The sequence type (ST) was determined by multi antigen sequence typing (NG-MAST).
Results: The percentage of resistant isolates was as follows: PEN, 12% (n=18); TET, 25.3% (37); ERY, 22.7% (34) and CIP, 28% (43). All the strains were susceptible to 3rd generation cephalosporins and spectinomycin. Between PEN^R isolates, 5 were positive for bla_{TEM}; *ponA* and *penA* mutations were low. The single *penA* mutant contained multiple substitutions in a mosaic-like structure, sharing a 70% of amino acid identity with *Ng* PBP 2, but was 100% identical to those of *N. meningitidis*. TET^R was due mostly to a single amino acid mutation in the ribosomal protein S10 (M57V, n=30). Six isolates were positive for *tet(M)* gene. No positive results were obtained when specific ERY^R mechanisms were tested. CIP^R was mainly due to simultaneous chromosomal mutations in *gyrA* and *parC* genes (n=37, 80.9% were $GyrA_{S87R}$/$ParC_{S91F-D95G}$). A high rate of mutations in the *mtrR* promoter was found between resistant isolates. All the isolates tested were wild-type for *pilQ* gene. High percentage of isolates displayed new STs (73/144 isolates, 50.7%).
Conclusions: These results confirm previously described resistance mechanisms in *Ng*. However, mechanisms were not detected in some isolates and are under further investigation. The *Ng* population studied showed a heterogeneous genotyping pattern, with a high percentage of new STs.

P1.19

INDEPENDENT CONFIRMATION OF NEISSERIA GONORRHOEAE POSITIVE BD PROBETEC STRAND DISPLACEMENT ASSAY SPECIMENS
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Background: The widespread use of Nucleic Acid Amplification Tests (NAATs) for the detection of *Neisseria gonorrhoeae* (GC), raises concerns regarding the lack of specificity of some commercial platforms. To increase the positive predicative value, confirmatory testing using different targets has been recommend, however in practise this is difficult to achieve. This study set out to examine the percentage correlation between specimens examined by the BDProbeTec Strand displacement assay (SDA) and two independent real-time PCRs.
Methods: 253 specimens which were initially examined using the SDA test were sent for confirmatory testing using 2 previously published in-house real-time PCR assays which targeted the opa and the porA pseudogene respectively. Specimens examined were sourced from both male and female GUM patients

and included urines and genital swabs.
Results: Of the 138 reproducibly positive SDA specimens (including low positives) examined, 82% could be confirmed using both real-time PCR assays, 89% could be confirmed with one assay and the remaining 11% of specimens were negative with both in-house assays. All 109 SDA negative specimens were determined to be negative using both the real-time PCR assays. The porA assay was found to be more sensitive that the opa assay as it could confirm a greater number of the SDA positive specimens.
Conclusion: High rates of correlation between different GC NAATs can be achieved, even at different laboratories. However the small -but significant number of specimens- that were SDA positive that could not be confirmed highlights the problems associated with using GC NAATs and the complexities of interpretation required to resolve discordant specimens within a confirmatory testing algorithm. Further sequencing work must be undertaken to determine the true gonorrhoea status of these specimens.

SDA Result 1st	SDA Result 2nd	PorA Real-Time PCR	opa Real-time PCR	No. of Specimens (Total = 253)
NEG	NEG	NEG	NEG	109
POS	POS	POS	POS	104
POS	POS	POS	NEG	7
POS	POS	NEG	POS	3
POS	POS	NEG	NEG	8
LOW POS	POS	NEG	NEG	5
LOW POS	POS	POS	POS	3
LOW POS	NEG	NEG	NEG	6
LOW POS	LOW POS	POS	POS	6
LOW POS	LOW POS	NEG	NEG	2

P1.2

DSRA IS THE MAJOR FIBRINOGEN-BINDING PROTEIN IN HAEMOPHILUS DUCREYI STRAIN 35000HP

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Background: DsrA, a trimeric autotransporter protein of *Haemophilus ducreyi*, plays a major role in serum resistance by preventing binding of IgM at the surface of *H. ducreyi*. We hypothesize that DsrA shields surface epitopes from IgM by binding large serum proteins. Although we previously reported that DsrA binds the large serum proteins fibronectin and vitronectin, we have also shown that binding these two serum proteins is not necessary for expression of serum resistance by *H. ducreyi*. *H. ducreyi* also binds fibrinogen in vitro and associates with fibrinogen in vivo. We sought to determine if DsrA is an adhesin for fibrinogen and if fibrinogen binding is involved in serum resistance.
Methods: Identification of putative ligands for fibrinogen was determined using a ligand blot assay with digoxigenin-labeled fibrinogen. Fibrinogen binding by whole cells was assessed using parent and mutant comparisons and cloning *dsrA* in *H. influenzae* strain Rd.
Results: A ligand blot of parent strain 35000HP and the isogenic *dsrA* mutant strain 35000HP*dsrA* showed that DsrA bound fibrinogen. Fibrinogen binding by whole cells revealed that 35000HP*dsrA* bound 80% less fibrinogen than parent strain 35000HP. Furthermore, expression of *dsrA* in *H. influenzae* strain Rd rendered this non-fibrinogen binding strain capable of binding fibrinogen. Binding of *H. ducreyi dsrA* mutants expressing truncated proteins indicates that fibrinogen binding is located in the N-terminal portion of DsrA.
Conclusions: DsrA is the major fibrinogen-binding protein of *H. ducreyi*; however, fibrinogen binding is not required for serum resistance.

P1.20

METRONIDAZOLE- AND TINIDAZOLE-RESISTANT TRICHOMONAS VAGINALIS: PREVALENCE IN A COHORT OF URBAN ADOLESCENT GIRLS, 2001-2005

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Objectives: To determine the prevalence of trichomoniasis and *in vitro* metronidazole- and tinidazole-resistant *Trichomonas vaginalis* (TV) in urban adolescent girls.
Methods: Non-pregnant, HIV-negative, sexually active girls (12-19 years old) seeking care at a primary care clinic were enrolled in a cohort study and tested for TV by wet mount and culture every six months. Isolates from positive TV cultures were tested for *in vitro* resistance to metronidazole and tinidazole. Resistance was defined as an isolate with an aerobic minimal lethal concentration (MLC) > 50 µg/mL at 48 hours of culture.
Results: From 2001 to 2005, 463 girls (mean age and years sexual activity at first visit, 16.8 and 2.7, respectively) were tested for TV infection. At first visit, 48 girls (10.4%) had TV by wet mount, 58 (12.5%) by culture, and 65 (14.0%) overall. Resistance testing was completed for 79 isolates: 36 at first visit and 43 during return visits. Of the 36 first-visit isolates, 1 (2.8%) was resistant to metronidazole, (MLC = 200 µg/mL, moderate resistance). The patient was cured with a single 2-g dose of metronidazole. Of the 43 isolates obtained during return visits, 1 was resistant to metronidazole (MLC = 200 µg/mL) and 2 had borderline resistance (MLC = 50 µg/mL). One of the patients with a borderline resistant strain returned to clinic with TV; the other two patients were lost to follow-up. There was no *in vitro* resistance to tinidazole.
Conclusions: This study found that trichomoniasis and *in vitro* drug-resistant TV prevalences among adolescent girls were similar to that of adult women. Although case reports of resistance highlight the need for a new class of antitrichomonal drugs, *in vitro* resistance was low in this study. Areas for further research include establishing a laboratory test for clinically important drug resistance and conducting multi-regional surveillance of drug-resistant TV.

P1.21

METRONIDAZOLE (MET) AND TINIDAZOLE (TIN) DRUG LEVELS IN THE VAGINAL VAULT
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Objectives: The objective of this study was to characterize the levels of MET and TIN in the vaginal vault of women receiving treatment for BV; this study presents a small dataset of drug concentrations from a larger blinded study investigating MET and TIN on BV treatment outcome.
Methods: Women were recruited from the Jefferson County Department of Health, Sexually Transmitted Diseases Clinic in Birmingham, AL. BV was diagnosed via Amsel criteria in clinic. Women were randomized into two overall treatment groups: MET or TIN. Participants were asked to self-collect a vaginal swab specimen post 4-hours (4H) and 8-hours (8H) of initial treatment and return to the clinic 24 hours later (24H) for the collection of an additional swab and blood sample. Drugs were extracted from serum and vaginal swabs using standard methanol precipitation, and concentrations determined by HPLC/MS. Data were analyzed with non-parametric methods (Wilcoxon/Kruskall-Wallis Rank Sum Test; Spearman's r). P-values (P) at α 0.05, median, interquartile range, and r are reported.
Results: Drug concentrations are presented in the following table. The total number of subjects assessed was 44 (13 MET, 32 TIN). Values for 4H, 8H, and 24H are drug concentrations presented in nG/µG specimen. For the 24H serum, drug concentrations are presented in µG/mL.

Drug	4H	8H	24H	24H Serum
MET	0.91 (0.66-2.91)	2.25 (1.00-4.91)	2.53 (1.93-5.13)	5.96 (4.37-10.31)
TIN	1.13 (0.46-4.28)	2.97 (0.80-5.88)	2.82 (1.39-6.36)	11.14 (8.19-16.29)
P	0.937	0.813	0.874	0.006

The 24 H correlations between serum and vaginal vault were r = 0.25, P = 0.443 for patients receiving MET and r = 0.38, P = 0.032 for patients receiving TIN.
Conclusions: Although the 24H serum and vaginal levels of each drug cannot be correlated with each other in a predictable pattern, it is apparent that the vaginal levels of the two drugs do not differ significantly across the 24H collection period.

P1.22

PREVALENCE OF CHLAMYDIA TRACHOMATIS, NEISSERIA GONORRHOEAE AND TRICHOMONAS VAGINALIS IN YOUNG WOMEN IN KENYA USING THE GEN-PROBE APTIMA® ASSAYS
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Objective: Data on STD rates in Kenya for sex workers and high risk populations are generally available. However, there are few prevalence studies using nucleic acid amplified tests (NAATs) in young, low risk adults. Using PCR, Hawken et al found 1.9% and 0.7% for Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (NG) in women, respectively (JAIDS, 2002, 31: 529-535). As part of a randomized placebo controlled trial of the safety and tolerability of VivaGel™, we screened for the presence of CT, NG and Trichomonas vaginalis (TV) among young women in Kisumu, Kenya using the Gen-Probe's APTIMA COMBO 2 Assay (AC2) (San Diego, CA) and their TV (ASR, analyte specific reagent) assay. Of the commercially available NAATs for CT and NG, the Gen-Probe assays are the most sensitive and are highly specific.
Methods: Non-pregnant, sexually active females (18-24 years old) were recruited from IMPACT, a well-established NGO that works with youth groups in and around Kisumu, Kenya. Clinicians obtained a cervico-vaginal swab using the AC2 collection kit. Swabs were kept refrigerated at 4°C, sent to the laboratory and tested within 30 days of collection. We followed the package insert for the AC2 assay. The TV ASR assay also targets the 16s rRNA and is generally similar to the other APTIMA assays' target capture and amplification protocol.
Results: We screened 221 subjects. Overall, 15.8% (35 females) were infected with an STD. Prevalences were 6.3% for CT, 0.9% for NG and 10.4% for TV. Four dual infections (CT and TV) were detected.
Conclusions: Compared to Hawken et al study, we found a higher prevalence of CT (6.3%) and a similar prevalence of NG (0.9%) using the APTIMA assays. Rates for TV were also high (10.4%) in our population. The majority of females had single infections, but dual infections were seen with CT and TV. Routine screening and treatment should be done as these STDs are strongly associated with increased risk for HIV infection.

P1.23

ETIOLOGY OF GENITAL ULCER DISEASE IN A STI REFERENCE CENTER IN AMAZONAS, BRAZIL
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Background: The major etiologic agents of genital ulcer disease (GUD) worldwide are herpes simplex viruses (HSV-1/HSV-2), and the bacteria *Treponema pallidum* (TP) and *Haemophilus ducreyi* (HD). In order to investigate the etiology of GUD in Manaus, Amazonas, Brazil, we evaluated a total of 125 male genital ulcer swabs taken from patients attending a STI reference center between May to December 2008.
Methods: All specimens were processed for DNA isolation and submitted to a modified protocol in a conventional multiplex PCR format, followed by agarose gel electrophoresis for detection of HSV-1/2, TP and HD specific-products. Amplicons expected sizes for HSV-1, HSV-2 or HD were equal or similar (432bp for HSV-1 or HSV-2 and 437bp for HD) and were differentiated by restriction endonuclease digestion with *Hae*III. All patients participating in the study gave informed consent according to the guidelines of the local ethical committee.
Results: Eight-four (67.2%) specimens were positive for at least one of the four pathogens tested. Among these positive specimens, 74 (88.1%) were HSV-2, 1 (1.2%) HSV-1, 6 (7.1%) TP, while 3 (3.6%) were HSV-2/TP dual infections; none of the 125 tested specimens was HD positive. All of the 41 (32.8%) specimens negative in the multiplex PCR were amplified in a singleplex reaction for a human housekeeping gene (beta-actin), as a control for false-negative results due to PCR inhibition.
Conclusions: Herpes simplex virus type 2 was the predominant etiologic agent of GUD detected in the patients of this study. These results suggest an epidemiological situation different from that observed in other developing countries, with a decrease in the proportion of syphilis and chancroid cases and an increase in genital herpes. Our data further suggest the need of a review on the syndromic approach flowchart for GUD in Amazonas.

P1.24

ASSESSING POTENTIAL CONTRIBUTIONS OF THE CHLAMYDIAL T3S INJECTISOME TO HOST IMMUNITY
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Objectives: To test whether human adaptive immune responses to chlamydial infections include antibody reactivities to surface-exposed T3SS proteins.
Methods: Venous blood was acquired from individuals attending a STD clinic, and antibody reactivity to selected chlamydial antigens was tested by immunoblot.
Results: Immunoblot profiling of peripheral serum from Chlamydia infected patients revealed a wide range of general reactivities with C. trachomatis infectious particle proteins. These Chlamydia-reactive sera were capable of reacting with recombinant T3S proteins CdsC, CopN, and CT694. Engineered

polyclonal antibodies specific for CdsC, but not CopN, reacted with intact chlamydial infectious particles in dot-blot assays. Finally, CdsC-specific antibodies mediated a complement-dependent decrease in chlamydial infectivity in a tissue culture model.
Conclusions: Chlamydiae express a virulence-associated type III secretion system (T3SS) that is essential for Chlamydia development, and we have identified components of this complex apparatus that are exposed on the surface of infectious particles. These data indicate that the surface-localized protein CdsC is antigenic during human infection and raise the possibility that antibodies could contribute to a productive immune response. Given the current absence of an efficacious, Chlamydia-specific vaccine, these studies could lead to an enhanced understanding of Chlamydia-mediated disease and have the potential to yield novel preventative therapies.

P1.26

ELUCIDATION OF THE CD8 T CELL CYTOLYTIC REPERTOIRE IN HUMAN ENDOCERVIX DURING CHLAMYDIA TRACHOMATIS INFECTION
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Objectives: To characterise the human endocervical CD8 cytolytic repertoire and determine the role of perforin-mediated cytolysis in controlling *Chlamydia trachomatis* infection.
Methods: *Ex vivo* immunophenotying of endocervical and peripheral blood CD8 T cells from *Chlamydia trachomatis* infected (CT+) and uninfected (CT-) women using multiparameter flow cytometry, and intracellular staining for perforin and granzyme.
Results: We report that the endocervix is primarily populated by CCR7- effector memory (TEM) and terminally differentiated effector memory (TEMRA) CD8 T cells, and compared to their peripheral counterparts a significantly lower percentage of these cells express perforin in both CT- ($p=0.03$, $n=6$) and CT+ ($p=0.004$, $n=9$) women. A discordant expression of perforin and granzyme was also observed in CCR7- CD8 T cells in CT+ women, with perforin expressed at significantly lower levels than granzyme ($p=0.0002$). Furthermore, the percentage of perforin-expressing CCR7- CD8 T cells in the endocervix of CT+ women was significantly lower than in CT- women ($p=0.0095$) suggesting that *C. trachomatis* infection further augments the low cytolytic potential of CD8 T cells at this site. The diminished cytolytic potential was not due to T cell exhaustion, as PD-1 was not upregulated in perforin deficient cells.
Conclusions: Our results indicate that low perforin expression is an inherent characteristic of CD8 T cells in the human endocervix and that *C. trachomatis* infection further augments this limited cytolytic repertoire. This suggests local CD8 T cell activity against infected endocervical epithelial cells may not be mediated by a perforin-dependent pathway *in vivo*, and hypothesize this deficiency may be to protect the integrity of the genital mucosa.

P1.27

MYCOPLASMA GENITALIUM MGPA ADHESIN SEQUENCE VARIATION IN RELATION TO IMMUNO-REACTIVITY OF RECOMBINANT PROTEIN FRAGMENTS
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Background: *Mycoplasma genitalium* cause urethritis in men and cervicitis in women. The cytadhesin MgPa is a major immunogen and, consequently, a target of interest for serodiagnosis. The aim of this study was to examine the immuno-reactivity of recombinant MgPa fragments, and to correlate reactivity with knowledge about the inter-strain sequence variability of MgPa.
Methods: Recombinant proteins covering parts of the MgPa protein were screened for reactivity with rabbit antibodies against *M. genitalium* and sera from 18 infertile women using immunoblotting and/or ELISA. The immuno-reactivity of each recombinant MgPa fragment was correlated with the MgPa sequence of 12 unrelated *M. genitalium isolates*.
Results: Three recombinant proteins covering N-terminal (amino acids 77-320), middle (aa 830-1009) and C-terminal (aa 1075-1444) regions of MgPa were produced. The N-terminal and middle recombinant MgPa fragments did not react with rabbit or human sera. In agreement with previous findings the C-terminal part was very immuno-reactive. Sequence analyses revealed that the N-terminal and middle recombinant fragments contained hypervariable regions of MgPa, whereas the C-terminal fragment was composed of a conserved part and a region with high variability. Two sub-fragments of the C-terminal recombinant proteins covering the variable (1075-1247) and stable part (1248-1364), respectively, failed to react in immunoblotting and ELISA with human and rabbit sera. However, a combination of both recombinant proteins showed a strong reaction in ELISA. The reaction was stronger and more specific than with a fragment covering the two smaller recombinant proteins (aa 1075-1364).
Conclusion: Knowledge about sequence variation of MgPa and the surprising finding that two non-

reactive recombinant fragments produced strong and specific reactions in ELISA when combined raises new hope for sensitive and specific tools for serodiagnosis of M. genitalium infections.

P1.28

TIME COURSE AND IMMUNOSUPPRESSION DEFINE THE CLINICAL, HISTOPATHOLOGICAL AND MOLECULAR DISEASE ACTIVITY OF SECONDARY SYPHILITIC SKIN LESIONS

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Background: While it is generally assumed that cell-mediated immunity is of critical importance in anti-syphilitic host defense, the exact mechanisms leading to the elimination of *T. pallidum* are still unknown. This is particularly true for HIV-infected persons with a deficit in CD4<STARTSUP< SUP> helper T cells.
Methods: To better understand the mechanisms of natural pathogen clearance, we obtained lesional skin samples from patients with secondary syphilis and attempted to characterize the inflammatory infiltrate by histopathology, immunohistology and quantitative RT-PCR.
Results: Our results show that the cellular immune response, dominated by T cells, differed between HIV-infected and non-infected patients: in HIV-infected patients, (i) the epidermal and dermal T cell infiltrate was denser, (ii) the CD8/CD4 T cell ratio was higher, (iii) $CD25^{+}FoxP3^{+}$ regulatory T cells and (iv) epidermal Langerhans cells were reduced. Consequently, we observed elevated inflammatory (IFN-γ and IL-23p19) and reduced regulatory cytokines (IL-10 and TGF-β) in syphilitic skin lesions of HIV-infected patients. Even though plasma cells comprised a substantial fraction of the inflammatory infiltrate of late lesions, we found no differences in regard to patients HIV status.
Conclusions: Our data suggest that $CD8^{+}$ IFN-γ-producing cells could contribute to the protective immunity in patients with secondary syphilis and the expansion of this subset from HIV^{+} patients could be due to the reduction of Langerhans Cells and/or regulatory T cells in such lesions.

P1.29

HPV INFECTION IN SOUTH AFRICAN STI CLINIC ATTENDEES: ASSOCIATIONS BETWEEN MULTIPLE HPV TYPES, HIV AND CIRCUMCISION STATUS

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Objectives: To investigate the distribution of HPV genotypes as well as determine the associations between HIV infection and HPV co-infection in heterosexual men with anogenital warts or male urethral discharge, or men without STI symptoms/signs in Johannesburg, South Africa.
Methods: Valid swab specimens for HPV genotyping were obtained from 214 sexually active heterosexual men, including 108 men with anogenital warts (GW), 56 men with urethral discharge syndrome (MUS) and 50 asymptomatic men attending for HIV voluntary counselling and testing (VCT). The Linear Array HPV Genotyping Test (Roche Molecular Systems, Inc., Branchburg, NJ, USA) was used to determine the HPV genotype distribution among all study participants. In addition, sera were tested for HIV antibodies using two commercial rapid tests.
Results: The overall prevalence of anogenital HPV among study participants was 78%. HPV DNA was detected in 100% of GW, 48% of MUS and 62% of VCT participants. HPV-positive participants were mostly infected with multiple HPV types in a combination of high and low risk HPV genotypes. The HPV types 6, 11, 16 and 18 were prevalent either as a single infection or as a combined infection and were detected in 81% of all HPV-positive study participants. Detection of HPV types 6 and/or 11 was significantly higher among GW patients ($p<0.0001$). In all study participants, HIV positivity was significantly associated with HPV positivity ($p<0.0001$), with having multiple HPV infections ($p=0.0220$) and with the presence of a foreskin ($p=0.0379$).
Conclusions: Infections with HPV are prevalent among sexually active heterosexual men in South Africa. Associations were observed between HIV co-infection and having multiple HPV infections and not being circumcised. Given the high prevalence rates of HPV types 6, 11, 16 and 18 among all study participants, consideration should be given to incorporate men in any future national HPV vaccination programme in South Africa.

P1.3

IMMUNOGENIC AND ADJUVANT PROPERTIES OF HAEMOPHILUS DUCREYI LIPOOLIGOSACCHARIDES

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Background: Haemophilus ducreyi, a gram-negative bacterium causing the sexually transmitted infection, chancroid, a disease common in developing countries and contributing to the spread of HIV.
Objectives: To investigate the immunogenic and adjuvant activity of H. ducreyi lipooligosaccharides (HdLOS) and to evaluate the biological activity of anti-LOS antibodies.
Methods: Mice: outbred; NMRI, inbred; BALB/c, C57BL/6, nu/nu (athymic mice), TLR4-KO and MyD88-KO (Toll-like receptor 4 and adaptor deficient) were immunised subcutaneously with 5 microgram of HdLOS purified from H. ducreyi strains 4438 and 7470. The antibody response and the specificity of antibodies were investigated by ELISA, absorption studies and immune thin-layer chromatography. The ability to inhibit TNF-alfa release from human mononuclear cells and the bactericidal activity was estimated. The adjuvant activity was assessed in mice immunised with bovine serum albumin (BSA) or H. ducreyi cytolethal distending toxin (HdCDT) with the addition of HdLOS.
Results: HdLOS induced high levels of specific IgG antibodies. The responses were dependent upon Toll-like receptor 4/MyD88 signalling pathways and required an intact lipid A moiety. The majority of antibodies were specific for the inner core of the LOS. Antibodies to HdLOS failed to inhibit LOS induced TNF-alfa release and exerted no bactericidal activity. The addition of HdLOS resulted in a 10-fold increase in the total BSA and HdCDT IgG levels. The highest increase was noted for IgG2b, which contrasted with the predominantly IgG1 subclass response to immunisation with BSA alone.
Conclusion: H. ducreyi LOS is immunogenic and induce high levels of antibodies specific to the inner core of LOS. These antibodies do not exert bactericidal activity. HdLOS demonstrate adjuvant properties, enhance and modulate the antibody response to protein antigens. The benefits of the LOS activities in chancroid and the influence of other components e.g., HdCDT require further evaluation.

P1.30

INFECTION WITH HUMAN PAPILLOMAVIRUS (HPV) 6 AND 11, AND ASSOCIATIONS WITH GENITAL WARTS, HIV AND OTHER RISK FACTORS IN HIGH-RISK WOMEN IN BURKINA FASO
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Objectives: Human papillomavirus (HPV) types 6 and 11 are known causative agents of genital warts (GW) but little is known about their epidemiology in Africa. We describe the prevalence of cervical HPV 6/11 DNA among high-risk women in Burkina Faso, and their association with GW, HIV, and other risk factors.
Methods: 306 women were enrolled. HIV status and CD4 counts were determined. Among other genital samples, a cervical sample was collected for liquid-based cytology using a Cervex swab and the ThinPrep 2000 processor and HPV genotyping using INNO-LiPA genotyping v2. Statistical analysis was conducted using logistic regression.
Results: HIV-1 prevalence was 40% (123/306). HPV DNA was detected in 55% (100/183) of HIV-uninfected women, 84% (78/93) of HIV-1 infected women with CD4 counts>200 cells/µl and 97% (29/30) of women with CD4 counts≤200 cells/µl($p<0.001$).
18 (6%) women were infected by HPV 6 and 13 (4%) were infected by HPV 11. Prevalence of HPV 6/11 was 7% (13/183) in HIV-uninfected women, 10% (9/93) in HIV-1 infected women with CD4 count>200 cells/µl, and 20% (6/30) in women with CD4 counts≤200 cells/µl($p_{trend}=0.04$). 18 women (6%) had GW; there was a strong association between HPV 6 and GW (adjusted OR=6.16, 95%CI: 1.25-30.88, p=0.03) but none between HPV 11 and GW.
In multivariable analysis, cervical HPV 6/11 was detected more frequently in women who had genital ulcers (aOR=5.22, 95%CI: 1.21-22.57, p=0.03), or whose last menses was more than 15 days prior to examination (aOR=2.71, 95%CI: 1.07-6.98, p=0.03). Regular vaginal douching was protective (aOR=0.25, 95%CI: 0.07-0.88, p=0.03). There were no associations with HIV-1 plasma viral load, other STI or bacterial vaginosis.
Conclusions: Prevalence of HPV 6 and 11 was high in this population and occurred more frequently in HIV-1-infected immunosuppressed women. Vaginal douching and follicular phase of menstrual cycle were protective, which might be secondary to mechanical or hormonal factor, decreasing DNA detection.

P1.32

PREVALENCE, GENOTYPE AND INTEGRATION OF ONCOGENIC HPV IN HIV POSITIVE WOMEN
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Objectives: This prospective study assesses the relationship between integration of oncogenic HPV and cervical abnormality in a cohort of HIV positive women. Relationship to CD4 count, viral load, ethnicity, smoking status and antiretroviral use was also asessed.
Methods: From Feburary 2007 to Janurary 2009, Thin Prep® cervical specimens from 258 HIV positive

women were collected. Cytological diagnosis was made according to the BSCC guidelines. High risk HPV DNA was detected using Hybrid Capture II assay (hc2, Digene Ld., UK). HR HCII positive samples were tested for integrated HPV E6/E7 mRNA from HPV16; 18; 31; 33; and 45 using the PreTect HPV-Proofer Asay (Norchip). Data was collected on age; ethnicity; smoking status; antiretroviral therapy(ART); HIV viral load and CD4 count.
Results: 63/258 (24%) had abnormal baseline smears. 88 of 173 (51%) samples tested for HR HPV DNA were positive. 31/88 (35%) tested positive for HPV E6/E7 mRNA. Specific subtype analysis of the women with integrated HPV DNA showed: 17/31(55%) multiple subtypes present; 20/31 (65%) non-16/18 subtypes detected. mRNA E6/E7 HPV 16= 7; 18= 9; 31= 4; 33= 12; 45=15. 23/31(74%) E6/E7 positive cases had abnormal cytology v's 22/57 (38%) E6/E7 negative (p=0.002, 95% CI 1.8-11.8). 46/77 (60%) of women with detectable HIV viral loads v's 26/96 (27%) of virally suppressed on ART women were positive for HPV DNA (p<.0001, CI 2.2-3.08). HPV detection was more common in those with CD4 counts <200x 10 ^{6}/L, 9/12 (75%) v's 76/161 (47%) with CD4 counts >200x 10^{6} , (p=0.04, CI 1.7-19.6).
Conclusions: There is a significant relationship between integrated HPV and cytological abnormalities in this multiethnic cohort. There is a significant correlation between detectable plasma HIV virus, CD4 count and detection of HPV DNA. Importantly, commercially available HPV vaccinations do not cover the multiple HPV subtypes found in this population.

P1.33

RELATIVE RISK OF CERVICAL CANCER IN INDIGENOUS WOMEN IN AUSTRALIA, CANADA, NEW ZEALAND, AND THE UNITED STATES: A SYSTEMATIC REVIEW AND META-ANALYSIS
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Background: Cervical cancer is directly linked to infection with human papillomavirus and is the second most commonly diagnosed cancer worldwide. Screening has markedly reduced cervical cancer incidence in developed countries, but these health gains have not been equally distributed. Indigenous (Aboriginal) minorities in the United States, Canada, Australia and New Zealand experience disenfranchisement and poor health status, and some reports suggest an increased risk of cervical cancer. We performed a systematic review to evaluate differences in cervical neoplasia risk between indigenous and non-indigenous women in these four countries.
Methods: We performed a systematic review of the available biomedical literature covering the period from 1950-2008, using MEDLINE, CINAHL and EMBASE databases. We used a random-effects model to generate a pooled summary estimate of the relative incidence and mortality of cervical cancer among indigenous and non-indigenous populations. We explored sources of between-study heterogeneity with meta-regression models.
Results: We identified 27 studies published from 1969 to 2008. Indigenous populations did not have an elevated risk of carcinoma in situ relative to non-indigenous populations (pooled RR 1.14, 95% CI 0.90 to 1.45), but did have elevated risks of invasive cervical cancer (RR 1.78, 95% CI 1.49 to 2.13) and cervical cancer mortality (RR 2.62, 95% CI 1.92 to 3.57). Meta-regression models demonstrated an increase in RR over time (RR per year 1.023 (95% CI 1.005 to 1.041)).
Conclusions: Based on the best available data, indigenous women in four major developed countries have a markedly higher risk of cervical cancer morbidity and mortality than non-indigenous women. The magnitude of this excess risk increases with the severity of the outcome under study, suggesting that lack of access to routine screening services, rather than baseline risk of HPV infection or oncogenic cofactors, determines these poor health outcomes.

P1.34

ESTIMATES OF THE TIMING OF POPULATION-LEVEL REDUCTIONS IN HPV-RELATED HEALTH OUTCOMES AFTER ONSET OF HPV VACCINATION IN THE UNITED STATES
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Objectives: To estimate the number of years after onset of an HPV vaccination program before notable, population-level reductions in genital warts, cervical intraepithelial neoplasia (CIN), and cervical cancer occur.
Methods: We applied a spreadsheet-based model of the impact of HPV vaccination of females aged 12 to 26 years in the US. The benefits of vaccination after age 12 years were adjusted for the probability of HPV acquisition prior to vaccination. HPV acquisition probabilities and incidence rates of HPV-related health outcomes were obtained from the literature. Vaccine coverage of 12-year-olds was assumed to reach 45% (range: 28% to 60%) in year 5. The annual probability of receiving catch-up vaccination was

assumed to be 0.075 (range: 0.037 to 0.095) for ages 13 to 18 years and was assumed to be 50% lower for ages 19 to 26 years.
Results: A 10% decrease in the annual number of HPV-related health outcomes among females aged 12 to 99 years was estimated to occur by year 7 for genital warts (range: 6-10 years), year 11 for CIN 2/3 (range: 10-15 years), and year 25 for cervical cancer (range: 23-31 years). Among females aged 15 to 29 years, a 10% decrease in the annual number of HPV-related health outcomes was estimated to occur by year 5 for genital warts (range: 4-7 years), year 9 for CIN 2/3 (range: 8-12 years), and year 13 for cervical cancer (range: 12-15 years).
Conclusions: The preliminary model results suggest that notable, population-level impacts of HPV vaccination on genital warts and CIN 2/3 can occur within 11 years of onset of vaccination. The range of estimates we present shows how vaccine coverage can influence the timing of the impact of HPV vaccination. Changes in other model assumptions (not reported) can also impact the results. Because our model does not account for indirect effects of vaccination (herd immunity), our results may overestimate the length of time before benefits of HPV vaccination are observed.

P1.35

PHYSICIANS' ATTITUDES TOWARD HPV VACCINATION AND INTENTION TO RECOMMEND IMMUNIZATION OF ADOLESCENT GIRLS IN MYSORE, INDIA
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Objective: The Government of India has recently approved an optional HPV vaccine for adolescent girls 9-15 years of age. This study examined knowledge and attitudes about HPV vaccination and intention to recommend HPV vaccination by Pediatricians, ObGyn, General Practitioners, and Family Practitioners in Mysore, India.
Methods: Twenty in-depth semi-structured interviews were conducted between June and August 2008 with physicians from a mix of specialties serving adolescent girl patients. Interviewees were identified through snowball sampling and referrals from professional organizations. Data were coded and subjected to thematic and quantitative analysis.
Results: Of the interviewees, 6 (30%) specialized in ObGyn, 9 (45%) in Pediatrics, and 5 (25%) in either Family or General practice. Eight of the physicians (40%) owned their own practice, 3 (15%) worked in government hospitals, and the remainder (9, 45%) in private hospitals. Most (15, 75%) had urban practices with the remainder (5, 25%) working in peri-urban and rural areas. More than half of participants (13, 65%) said they had little or no information about the relationship between HPV infection and cervical cancer. Several cited lack of knowledge as the main reason for not recommending vaccination. Intention to recommend HPV vaccination varied with specialty with most pediatricians (8, 89%) stating they intend to recommend the HPV vaccine followed by Family and General Practitioners (3, 60%), and ObGyn (1, 16%). The high cost of the HPV vaccine was most often mentioned (16, 80%) as the main obstacle to vaccine uptake. The second most mentioned reason (8, 40%) was that patients might not elect vaccination because of the misplaced conviction that their daughters were not sexually active.
Conclusions: This is the first study of its kind in India. Uptake of HPV vaccination will be low in India without further training and health promotion on HPV vaccination among physicians and the public.

P1.36

ACCEPTABILITY OF HPV VACCINATION AMONG PARENTS OF ADOLESCENT GIRLS AND COMMUNITY STAKEHOLDERS IN MYSORE, INDIA
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Objective: The Government of India has recently approved an optional HPV vaccine for adolescent girls. The objective of the study was to investigate acceptability of HPV vaccination among parents and community stakeholders in Mysore, India.
Methods: Ten focus group discussions stratified by sex; religion and urban/rural setting were conducted between April and August 2008. Data were transcribed, translated, coded and thematically analyzed using ATLAS.ti software. An ecological approach framed the analysis: interrelationships between individuals, families, and environment were considered in analyzing whether HPV vaccination of adolescent girls would be acceptable in different communities.
Results: Acceptability of HPV vaccination was high in all groups. This appeared to be related more to the positive feelings about government vaccine programs than knowledge about HPV or cervical cancer. While many parents believed that some girls were at risk for HPV infection, few felt their own daughters would be sexually active before marriage. Fear of cancer was the biggest motivator for vaccine uptake. Decision making on vaccines appeared centered in the family. Fathers felt both parents were equal

decision makers, while mothers believed the mother-in-law was primary decision maker. Most parents felt that girls should be immunized between 14 to 18 years of age. Middle class and rural parents were most likely to state intention to vaccinate daughters. Upper SES parents viewed the vaccine as an investment in reproductive health, while poorer rural parents measured the cost against the expense of future medical procedures such as hysterectomies. In general, there were few differences in findings among parents of different religions and urban/rural settings.
Conclusions: Introduction of an optional HPV vaccine should leverage positive feelings for current government vaccine programs. HPV vaccination will be more successful targeting girls after puberty in India.

P1.37

KNOWLEDGE AND PERCEPTION OF RISK FOR HUMAN PAPILLOMAVIRUS (HPV) AND HPV-RELATED CANCER AMONG MEN WHO HAVE SEX WITH MEN ATTENDING AN STD CLINIC
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Objective: Men who have sex with men (MSM) are at risk for HPV-related anal, penile and oropharyngeal cancers. We assessed HPV knowledge and risk perception among a high-risk group: MSM at an STD Clinic.
Methods: An interviewer-administered survey collected data on demographics, knowledge of HPV and HPV-related cancers, and risk perception among males who reported oral/anal sex with men. Logistic regression analyses identified predictors of risk perception for HPV infection and HPV-related cancers.
Results: For 116 MSM (median age: 25), median age of sexual debut was 17 years. Respondents were: 46% White, 13% Black, 20% Hispanic, 10% Asian, 13% 'Other race'. Almost half (56/116, 48%) reported history of STD; 12 (10%) reported a history of genital warts. 13% (15/116) reported female partners in the last year. Over a quarter (26/98, 26%) were unaware that HPV could be transmitted via anal sex; 76% (75/98) were unaware of its link with anal cancer. 60% (70/116) perceived themselves at-risk for HPV; 35% (41/116) perceived themselves at-risk for anal cancer. Older age, having female and male partners and more years since sexual debut were associated with increased HPV risk perception. Having only male partners, genital warts history, knowing persons with HPV infection/genital warts and having providers discuss HPV were associated with increased perceived risk for anal cancer. Controlling for race/ethnicity and age, MSM reporting male and female partners had less perceived risk for HPV (odds ratio (OR) 0.05; confidence interval (CI) 0.01, 0.29) and MSM knowing persons with HPV/genital warts were more likely to perceive risk for anal cancer (OR 6.2; CI 2.3, 16.7).
Conclusions: Many respondents were unaware of the link between MSM sexual practices and HPV infection, and potential sequelae. MSM with both male and female partners had low perceived HPV risk and are at-risk to transmit HPV to women. There is a need for health education regarding HPV transmission and related risks for MSM.

P1.38

HORMONAL CONTRACEPTIVE USE AND THE DETECTION OF HPV AND PAPANICOLAOU SMEAR ABNORMALITIES
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Objectives: To determine if current use of oral contraceptive pills (OCP) or depo-medroxyprogesterone acetate (DMPA) was associated with increased detection of HPV types and Papanicolaou (Pap) smear abnormalities.
Methods: This is a secondary analysis from the HPV Sentinel Surveillance, a cross-sectional study conducted among women who received routine cervical screening in 26 STD, family planning, and primary care clinics in 6 U.S. cities from 2003 to 2005. The associations between HPV detection and Pap smear abnormalities with type of hormonal contraceptives (HC) were assessed using generalized estimating equations to account for the correlated variance structure. Odds ratios (OR) with 95% confidence intervals (CI) are presented.
Results: Of the 9657 women included in the original study, 7419 (80%) had HC data available: 1490 (20.1%) were current OCP users and 478 (6.4%) used DMPA. The overall prevalence of any HPV type was 32.5%. After adjusting for potential confounders (age, condom use, smoking, gestational history, number of sex partners, HIV) there was no overall association between HPV and current OCP use (OR 0.95, 95%CI: 0.83-1.09) or current DMPA use (OR 1.11, 0.90-1.38). There was a significant association

between HPV-16 detection in both current OCP users (1.32, 1.02-1.70) and DMPA users (1.48; 1.01-2.16). HC use did not appear to influence the detection of Pap smear abnormalities.
Conclusions: There may be a type-specific association between HPV detection and HC use. Longitudinal studies are needed to confirm this finding and its clinical significance.

P1.39

TEST PERFORMANCE OF ANAL CYTOLOGY AND HUMAN PAPILLOMAVIRUS DNA TESTING TO DETECT ANAL INTRAEPITHELIAL NEOPLASIA IN MEN WHO HAVE SEX WITH MEN

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Objectives: Anal cytology is increasingly used to screen for human papillomavirus (HPV)-related anal intraepithelial neoplasia (AIN) and cancer in high-risk populations, including men who have sex with men (MSM). Because anal cytology has limited sensitivity to detect AIN, it is important to explore the possible role of HPV testing as an adjunct to cytology to improve detection of AIN. We conducted this study to determine the effect of HPV-testing on use of anal cytology to detect AIN in HIV+ and HIV- MSM.
Methods: Baseline cross-sectional analysis within a prospective cohort study. Participants underwent testing for anal cytology, HPV DNA with L1 consensus PCR, and high resolution anoscopy (HRA) with biopsy if indicated. The gold standard was based on HRA findings and histology. Thresholds for abnormal cytology and histology were: atypical squamous cells of undetermined significance (ASCUS) or worse and AIN 1 or worse, respectively. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) were computed for anal cytology ± HPV status. HPV status categories were: any oncogenic HPV type (+ vs -) and HPV16 (+ vs -).
Results: 357 HIV+, 207 HIV- participants (N=564) were enrolled at baseline. 80% of HIV+ and 39% of HIV- MSM had infection with ≥ 1 oncogenic HPV type. In both HIV+ (Table 1) and HIV- MSM, HPV16 status as an adjunct to cytology increased specificity and PPV but somewhat lowered sensitivity. Increases in specificity and PPV were not seen when HPV status was expanded to include other oncogenic subtypes.
Conclusions: In HIV+ and HIV- MSM addition of HPV16 status improved specificity and PPV of cytology but decreased sensitivity. The effect on PPV should be interpreted in the context of a high prevalence of AIN in our study population.

HIV+ MSM	Cytology (N=357)	Cytology + HPV16 (N=185)
	% (95% CI)	% (95% CI)
Sensitivity	86.2 (80.9-90.3)	73.6 (65.0-81.0)
Specificity	61.0 (49.2-71.7)	94.6 (84.2-98.6)
PPV	86.6 (81.3-90.6)	96.9 (90.7-99.2)
NPV	60.3 (48.5-70.8)	60.9 (49.8-71.0)

P1.40

RELIABLE DIAGNOSIS OF HIGH-GRADE ANAL INTREPITHELIAL NEOPLASIA

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Background: There is emerging consensus that high-grade anal intraepithelial neoplasia (AIN2/3) can lead to invasive squamous carcinoma in high-risk groups. Several researchers have attempted to find ways of screening the at-risk groups for AIN2/3. However, at present the final arbiter in the diagnosis of AIN2/3 remains as histology. We attempt here to compare repeat biopsies and minichromosome maintenance protein (Mcm) detection in order to establish the reliability of AIN2/3 diagnosis through histology.
Methods: We compared the histology data from 2 institutions for the same individuals taken within a 12 month period. Overall agreement between the 2 institutions in terms of high-grade AIN was evaluated. In addition, we compared the AIN2/3 histology from the 2 institutions with Mcm detection undertaken in one of the institutions (institution H).
Results: Of the 49 patients who had paired biopsies, 4 patients yielded inadequate samples for Mcm detection and were excluded (one patient with AIN2/3 on histology). Eighteen cases had AIN2/3 diagnosed by histology in institution H of which 4 cases (who had AIN2) were negative by Mcm. Nineteen cases were diagnosed of AIN2/3 from institution B, of which 3 were negative by Mcm (but histology positive for AIN2). All 4 cases of AIN3 from institutions H and B were positive for Mcm. However, there

was poor concordance of the histological AIN2/3 diagnoses between the 2 institutions.
Conclusion: Our results may reflect the difficulty in interpretation on AIN2 histologically, adequacy of the biopsy sample or the small number of patients involved. Further work is needed to improve the reproducibility of high-grade diagnosis.

P1.41

HPV GENOTYPING IN ARCHIVED SPECIMENS OF SQUAMOUS CELL (SCC) AND ADENOCARCINOMA OF THE ANUS IN QUEBEC

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Background: Few studies have explored the clinical and epidemiologic profile of patients affected by HPV- positive or HPV-negative anal cancer, the very subject of our research.
Objectives: Estimate the prevalence of HPV infection in new cases of anal cancer; Compare HPV prevalence and genotyping by histological type; Examine other risk factors such as VIH status
Methods: Chart review of tumour and epidemiologic characteristics for new cases diagnosed from 1995 to 2008 in hospitals around Montreal and Quebec City where at least 5 cases were treated during the study period; HPV extraction and genotyping in 130 SCCs and 200 adenocarcinomas
Results: Cases were selected from 33 eligible hospitals and one radiotherapy center and all provided IRB approval. Cases were identified by topography from hospital registries. Excluded were melanomas and recurrent disease; a total of 538 charts were audited and 332 patients were interviewed in person. Predominant histology was SCC (76%). ICD-9 distribution: 154.2: 24%, 154.3: 31%, 154.8: 9%, 35% NF. 60% were female, 30% men were single vs 14% of women (p=0.001); age ranged 25-96; with a median of yrs. 60% had ever smoked. Most frequently noted symptoms were bleeding (42%), pain (30%), hemorrhoid (18%) and mass (14%). Polyps were noted 10 times more often in women (0.5% vs 5.4%, p=0.003) and warts were noted twice as much in men (8.3 vs 4.6%, p=0.07). 7% of patients had a clear concomitant diagnosis of other HPV-related disease (genital warts, CIN, VIN, VaIN, AIN or PIN); 4.5% were men and 8% were women; another 1% of men and 7.5% of women had documented procedures that suggested the presence of other HPV-related disease. Genotyping results will be included in the final presentation.
Conclusions: To date this is the largest study of cases of anal cancer with HPV detection and genotyping.

P1.42

CAN HCV PREVALENCE BE USED AS A MEASURE OF INJECTION-RELATED HIV-RISK AMONGST INJECTING DRUG USERS? AN ECOLOGICAL ANALYSIS

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Background: HIV outbreaks and high HIV prevalence have occurred among injecting drug users (IDUs), but where HIV prevalence is low insight is required into the potential future risk of rapid increase in transmission. The objective of this study is to analyse the relationship between HIV and HCV prevalence across IDU populations to determine whether HCV prevalence may form an indicator of HIV-risk.
Methods: Review of IDU HIV/HCV prevalence data from multiple settings and regression analysis using weighted prevalence estimates for different settings.
Results: Weighted IDU HIV/HCV prevalence estimates were obtained for 239 different settings in 56 countries. A positive relationship exists between the HIV and HCV prevalence in different IDU populations. In settings other than South America/sub-Saharan Africa, two regression models fit the data. Either the mean HIV prevalence is proportional to the cubed HCV prevalence (regression coefficient $\beta=0.43$, $R^2=0.68$), or is negligible if HCV prevalence<38% (95% confidence interval 30-46%) and thereafter increases linearly with HCV prevalence ($\beta=0.51$, $R^2=0.68$) but with more variability. In South America/sub-Saharan Africa there appears to be a linear relationship between HCV and HIV prevalence ($\beta=0.84$, $R^2=0.99$).
Conclusion: An IDU population's HCV prevalence can be used to assess its injection related HIV-risk. Outside South America/sub-Saharan Africa, the HCV prevalence threshold could be considered as an intervention target for HIV prevention. Beyond this "threshold" an outbreak and increased HIV prevalence can occur.

P1.43

SIMPLE POINT-OF-CARE TESTS ARE MORE EFFECTIVE THAN SYNDROMIC APPROACH IN MANAGING VAGINAL INFECTIONS IN RESOURCE-CONSTRAINED SETTINGS

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Objective: The syndromic approach to management of vaginal discharge has been found to have poor performance. We describe a method utilizing simple inexpensive point-of-care tests which result in improved diagnoses of Bacterial Vaginosis (BV), T. vaginalis infection (TV) and vaginal candidiasis (VC).
Methods: Between November 2005 and March 2006, 898 sexually active women attending a reproductive health clinic in Mysore, India were recruited into a cohort study investigating the relationship between lower reproductive tract infections and seroconversion to HSV-2 infection. Participants were first interviewed, and then screened for RTI using TV and Candida cultures, Nugent-scored Gram stains of vaginal smears, vaginal pH, and Whiff test for detection of amines.
Results: Of the 898 participants, 411 (45.7%, 95% confidence interval [95%CI]: 42.4%-49.0%) had any laboratory-diagnosed vaginal infection. TV was detected in 76 (8.5%) women, BV in 165 (19.1%), and VC in 277 (30.9%). Using a syndromic approach for management of vaginal discharge, 38% of TV, 20% of BV, and 66% of VC infections would have been treated. In contrast, if two inexpensive point-of-care tests, a Whiff test, and pH test were used, 83%, 82%, and 65% of TV, BV, and VC would have been diagnosed respectively. The majority of TV (63/76) cases would have been correctly identified if either of the two tests were positive ($p<0.001$) as compared to only a third of infections (29/76) if the syndromic approach were used. Similarly, only 33 out of 165 BV cases would have been managed with the syndromic approach as compared to 135 of the 165 cases if point-of-care tests were used ($p<0.001$).
Conclusions: In the absence of onsite laboratory testing, simple inexpensive point-of-care tests can provide improved diagnosis and treatment of vaginal conditions such as TV and BV in resource-constrained settings.

P1.44

A LABORATORY-BASED EVALUATION OF THE BIOSTAR® OPTICAL IMMUNOASSAY (OIA) POINT-OF-CARE TEST (POCT) FOR DIAGNOSING *NEISSERIA GONORRHOEAE* (GC)

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Background: Due to cross-reaction with other *Neisseria* species, the development of any GC diagnostic test is challenging. The BioStar® OIA GC POCT detects the L7/L12 ribosomal protein which according to the manufacturer is specific for GC. We aimed to perform a laboratory based evaluation of this test.
Methods: The POCT was tested blindly against a panel of GC and non-pathogenic *Neisseria* isolates. Bacterial suspensions standardised to 0.5 McFarland's optical density were used to challenge the POCT, following the protocol for endocervical testing. Following unblinding, discrepant samples were repeated. An organism load analysis was performed using serial dilutions of GC and *N. meningitidis* and viable counts were obtained.
Results: The POCT was evaluated against a panel of 220 *Neisseria* isolates: GC (158), *N. cinerea* (18), *N. lactamica* (7), *N. meningitidis* (6), *N. polysaccharea* (3), *N. sicca/subflava* (1) and non-speciated *Neisseria* (27). The POCT cross-reacted with 6 strains of *N. meningitidis* and 1 non-speciated *Neisseria sp*. One GC isolate failed to produce a positive result with the POCT (Table 1). The POCT positively reacted with 99.4% GC isolates and produced no reaction with 88.7% non-GC *Neisseria* isolates. From performing serial dilutions it was determined that the POCT required a minimum of $\sim 1.92 \times 10^4$ colony forming units (cfu) and $\sim 1.86 \times 10^5$ cfu of GC and *N. meningitidis* respectively to produce a positive result.

Table 1

		Bacteriological	Culture	Identification
		GC	Non-gonococcal Neisseria species	Total
Biostar®	+	157	7	164
OIA GC	-	1	55	56
POCT	Total	158	62	220

Conclusions: The BioStar® OIA GC POCT positively reacted with the majority of recent clinical isolates of GC. However the POCT cross-reacted with several *N. meningitidis* isolates, albeit at a higher organism

load (x10). The clinical significance of this may be reduced as *N. meningitidis* is rarely found in the genital tract, and even when present may not be in high enough numbers to cross-react with this POCT. A clinical study is required to analyse its sensitivity and specificity as a POCT for testing female endocervical and male urine samples.

P1.45

EVALUATION OF A NEW POINT OF CARE SOLUTION FOR DIAGNOSIS OF CHLAMYDIA TRACHOMATIS AND IDENTIFICATION OF POSSIBLE VACCINE CANDIDATES

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Background: Though a range of diagnostic tests are available for Chlamydia trachomatis (CT), these are carried out in laboratories by trained personal. Inadequate facilities in developing countries and in remote areas often results in transfer of the samples to regional facilities causing delayed availability of results. If those who were tested did not return or not treated, will not only continue to transmit the disease but will have more severe clinical outcomes. Development of Rapid Point of Care Diagnostic test (RDT) will increase the specificity of the syndromic management algorithms and reduce unnecessary drug intake. High prevalence of CT in patients visiting various gynaecology departments in Delhi (>25%), lack of infrastructural facilities and trained manpower and high cost of sensitive diagnostic methods prompted us to develop a specific and cost-effective RDT for CT.
Method:
• For in house RDT, unique gene sequence of CT was amplified using gDNA isolated from endocervical swabs.
• Calculation of sensitivity, specificity, Positive and negative predictive values (PPV and NPV) using Roche AMPLICOR Micro well plate as gold standard.
• Proteins unique to CT were cloned and purified. Presence of antibodies against these proteins was tested in patient serum.
Results: Validation of the in-house developed RDT was compared with the Roche AMPLICOR Micro well plate CT test. The resolved sensitivity, specificity, PPV and NPV were 97.45%, 93%, 94.7% and 96.6% respectively. Proteins of CT were shown to be highly antigenic by In Silico analysis and may serve as a good diagnostic assay in ELISA parameter. These proteins were cloned, purified and tested as potent immunogenic candidates. Threshold level was decided using sera of healthy individuals and results were also evaluated against in house developed RDT.
Conclusion: In house developed RDT and ELISA are highly sensitive and cost effective, providing an alternative for use in routine diagnosis in developing countries and in remote areas.

P1.46

DEVELOPMENT AND EVALUATION OF AN IMMUNOCHROMATOGRAPHIC TEST FOR THE DETECTION OF BOTH NON-TREPONEMAL AND TREPONEMAL ANTIBODIES IN SYPHILIS

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Objective: A rapid immunochromatographic test for the simultaneous detection of reagin and treponemal antibodies in the sera of patients with syphilis has been developed and evaluated.
Methods: The immunochromatographic test is based on the principle of a dual path platform (DPP). This system has two antigens; one treponemal, one non-treponemal and a control line striped on the surface of a nitrocellulose membrane within the device. The test is able to screen and confirm the results using a hand held reader within fifteen minutes, which provides numerical values of test line intensities and requires no expertise in interpreting results. A cutoff of 7.0 has been used to calculate the comparative sensitivity and specificity of the test. A total of 213 banked serum samples were examined by the rapid test and the results compared to those obtained using a quantitative rapid plasma reagin (RPR) test and the Treponema pallidum passive particle agglutination assay (TP-PA).
Results: The sensitivity and specificity of the non-treponemal line were 95.5% and 99.3% respectively when compared to the RPR test. The sensitivity and specificity of the treponemal test line were 98.9% and 91.4% respectively when compared to the TP-PA test.
Conclusions: These results indicate that the DPP dual test could be used as a point-of- care test for the serological diagnosis of syphilis in primary health care clinics or in resource poor settings. The use of the hand-held reader permits objective reading of the result, even under suboptimal conditions. When used on whole blood specimens the test can be used in non-conventional settings and permit provision of treatment in situations where patients may not return for test results. The test can provide a better indication of active treponemal infection than existing treponemal point-of-care tests.

P1.47

THE SENSITIVITY AND SPECIFICITY OF OSOM® RAPID TRICHOMONAS VAGINALIS AND BACTERIAL VAGINOSIS TESTS

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Background: *Trichomonas vaginalis* (TV) and bacteria vaginosis (BV) are two disorders frequently associated with adverse outcomes including acquisition of HIV. The OSOM® Trichomonas Rapid test and BVBlue® test are two recently available tests for point of care diagnosis of these disorders.
Objective: Compare the OSOM TV and BVBlue test to the most commonly used diagnostic tests for TV and BV in symptomatic and asymptomatic women.
Methods: 242 women age 18 to 52 were enrolled. Seven vaginal swabs were sequentially collected for: (1) BVBlue, (2) OSOM Rapid TV, (3) pH, (4) wet mount for clue cells and TV, and KOH for amine odor, (5) TV culture, (6) Gen-Probe® Aptima® NAAT TV, (7) Nugent score. The OSOM testing personnel were blinded to the results of other tests.

Results: Table - Sensitivity and Specificity

Test	All (N=242) Sens./Spec.	Symptomatic (N=120) Sens./Spec.	Asymptomatic (N=122) Sens./Spec.
BVBlue compared to Gram stain	67%/98%	73%/100%	59%/97%
Amsel's criteria compared to Gram stain	82%/98%	93%/96%	67%/100%
OSOM TV compared to culture	96%/99%	100%/100%	89%/98%
Wet mount compared to culture	41%/99%	39%/99%	44%/100%
Aptima TV compared to culture	100%/95%	100%/96%	100%/95%

Comparison of sensitivity: Amsel's criteria vs. BVBlue: overall ($p=0.007$), symptomatic ($p<0.002$), asymptomatic ($p=0.41$)
OSOM TV vs. wet mount: overall and symptomatic ($p<0.001$), asymptomatic ($p=0.09$)
OSOM TV vs. Aptima: all categories (>0.1)
Conclusions: The OSOM test for TV was superior to wet mount and equivalent to culture and Aptima NAAT for the detection of TV. This test can be performed in a clinic and its use may be preferable to culture in many research and clinical settings. Using Gram stain as diagnostic standard, the BVBlue test was significantly less sensitive than Amsel's criteria for all women. Our findings suggest the BVBlue should not be used as a screening test.

P1.48

A SELF PERFORMED TEST FOR TRICHOMONIASIS IS AS ACCURATE BUT LESS ACCEPTABLE TO YOUNG WOMEN THAN CLINICIAN TESTING

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Objectives: To compare the accuracy and acceptability of a self-performed point-of-care (POC) rapid antigen test for trichomoniasis to clinician-performed tests in young women.
Methods: Sexually experienced females (n=249) collected a vaginal swab and performed a POC test for trichomoniasis. Self test was compared to clinician obtained rapid POC test, wet mount, culture, and transcription mediated amplification (TMA) for trichomoniasis. Acceptability was assessed prior to testing with a 13 item scale measuring comfort, trust in result, and confidence in ability to collect the sample.
Results: The mean age of subjects was 18.3 years (range 14-22 years); 86% were Black; 32% preferred self testing to clinician testing. Over 99% performed and interpreted the self test correctly. Self and clinician POC tests each detected 47 of 52 culture positive infections, for a sensitivity 90% (95% confidence interval: 81-97%) and specificity 97% for either self or clinician POC. Of 214 samples tested with TMA, 71 were positive. Compared to TMA as the reference, the sensitivity of self POC was 59%, similar to that of clinician POC (62%) and culture (61%), and significantly better than wet mount (30%). Sensitivity of the self POC test was not affected by vaginal symptoms or pH. Acceptability scores were significantly higher for clinician testing than self testing regarding trust in results and confidence in ability

to collect the sample. Comfort scores were higher for self testing than clinician testing. Women who preferred self testing had higher total acceptability scores than those who preferred clinician testing ($p<.01$).
Conclusions: Using a self POC test for trichomoniasis, young women detected as many infections as clinician POC test or culture, and twice as many as wet mount. Prior to testing, women perceived self testing as more comfortable but less reliable than clinician testing. If self testing is offered as prevention strategy, women may need reassurance to trust their results.

P1.49

EVALUATION OF THE DETERMINE(TM) HIV-1/2 Ag/Ab COMBO, AN INSTRUMENT FREE RAPID ANTIGEN/ANTIBODY TEST
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Background: The Determine™ HIV-1/2 Combo (Inverness Medical) is a visually read, immunoassay for the separate detection of HIV p24 antigen (Ag) and antibodies (Ab) to HIV-1 and HIV-2 in human serum, plasma and whole blood. The assay needs no special equipment and can be used at Point of Care Rapid Testing Facilities, STD clinics, laboratories with limited facilities and blood bank services in resource-constrained settings with high incidence.
Methods: This study assessed the performance of the Determine Combo assay for specificity and sensitivity by testing plasma specimens from diagnostic patients (n=200), known Ab positive HIV-1 (n=130), HIV-1 group M (n=56), O (n=3), and HIV-2 (n=25) infections. Its antigen sensitivity was assessed by testing HIV seroconversion panels (n=10) and primary HIV infection (PHI) specimens (n=57). In addition the influence of the genetic variability of HIV-1 on Ag detection was evaluated using culture supernatants infected with different subtypes (n=43). The results were compared with these of the Vironostika® HIV Uni-Form II Ag/Ab test (Vironostika).
Results: The Determine Combo demonstrated 100% specificity (200/200) and 100% Ab sensitivity (192/192) with HIV-1, HIV-1 group M, N, O and HIV-2 specimens. The observed antigen sensitivity was 86.6% (58/67) in comparison to 92.5% (62/67) for the Vironostika. The assay could not detect one group O, one subtype F and two subtype H isolates, the Vironostika detected all isolates.
Conclusions: The Determine Combo assay demonstrated a comparable sensitivity in the early diagnosis of HIV infection with the 4th generation reference assay and provides an easy, excellent and fast alternative to detect acute infection in remote areas where essential infrastructure is lacking without losing its capacity of detecting antibodies.

P1.5

QUANTITATIVE ANALYSIS OF EPITHELIAL CELLS IN URINE FROM MEN: IMPLICATIONS FOR STUDYING EPITHELIAL:PATHOGEN INTERACTIONS IN VIVO
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Objectives: To investigate whether single cell suspensions of transitional epithelial cells can be isolated from the male urethra and if they these cells are associated with urethritis or *Chlamydia trachomatis* infection.
Methods: Numbers of epithelial cells in first catch urine (FCU) specimens from 87 men with and without urethritis were quantified. Using morphological characteristics and immunostaining with anti-pan leukocyte and anti-cytokeratin monoclonal antibodies, epithelial cells were broadly categorised into transitional and squamous populations.
Results: The majority (77/87 = 89%) of samples contained epithelial cells with both transitional (76/87 = 87%; range $1x10^4$ (lower limit detection) –$6x10^5$, median $6x10^4$) and squamous (57/87 = 66%; range $1x10^4$–$8x10^5$, median $2x10^4$) morphologies. The number of transitional epithelial cells correlated with the number of squamous epithelial cells (Spearman's rho = 0.697 $p< 0.001$). The overall range of leukocytes (1.0×10^4 - 1.6×10^7, median 4×10^4) was much greater than that for epithelial cells (1.0×10^4 - 8×10^5, median 1×10^5). Although, squamous, but not transitional, cell numbers correlated with leukocyte numbers (Spearman's rho = 0.216 $p = 0.045$ and rho = 0.171 and $p =0.113$, respectively) there was no significant difference in the cell numbers between men with and without urethritis. Nevertheless, some men with urethritis had relatively high numbers of transitional epithelial cells in their FCU. Transitional cells were morphologically heterogeneous and appeared to display complex cytokeratin phenotypes.
Conclusion: Further studies are required to explore the complexity of epithelial cell populations in men. These would provide novel opportunities for studying cellular interactions of *C. trachomatis* in vivo. Our results also suggest studies of chlamydial load which express the copy number of organisms per copy number of eukaryotic cells derived by real-time quantitative PCR should be interpreted with caution.

P1.50

EVALUATION OF THE URI-SWAB SPONGE COLLECTION FOR DETECTION OF CHLAMYDIA TRACHOMATIS IN URINE

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Objective: As STI screening programs attempt to improve testing coverage by offering services to men in non-clinical settings, alternatives to transporting large quantities of urine are needed. The goal of this study was to determine the feasibility of using a sponge-based swab collection device for STI testing.
Methods: We collected paired urine samples using standard urine cups and the UriSwab sponge collection device from young men attending an adolescent clinic and men attending a Fast Track STI screening clinic. Samples were tested for C. trachomatis (CT), N. gonorrhoeae (GC) and T. vaginalis (TV) using PCR. Kappa scores measuring agreement of results and McNemar's chi-square statistics were used to compare the performance of the 2 samples.
Results: 228 men provided samples for analysis. 18 (7.9%) urine samples were positive for CT, 15/18 (83.3%) were also positive using the sponge device. No sponge samples were positive for CT when the urine sample was negative. Thus, the agreement was very high: kappa=.92, p<.001. There was no statistical difference in the performance of these two methods of urine collection (p=.25) Only 4 (1.8%) samples were positive for GC: 3 using urine and 3 using the sponge device. kappa=.66, p<.001 (suggesting moderate agreement) and there was no statistical difference in performance. No samples were positive for TV in the study population.
Conclusions: This sample collection device that absorbs the urine to facilitate transport performed very well for detection of CT. Too few data from infected individuals were available to make recommendations for testing of GC and TV. However this preliminary data appears promising for GC. Use of a sample collection device that can be easily transported as a "dry" sample will facilitate expanded screening and further evaluation of this device is warranted.

P1.51

PREVALENCE AND, PHENOTYPIC AND GENETIC CHARACTERISTICS OF PROLYLIMINOPEPTIDASE (PIP)-NEGATIVE NEISSERIA GONORRHOEAE IN SWEDEN DURING 2000 TO 2007

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Objectives: In diagnostic culture of Neisseria gonorrhoeae, species confirmation is commonly performed using commercial biochemical tests such as API NH, RapID NH, Gonochek II, Bacticard Neisseria and Neisseria Preformed Enzyme Test (PET). These tests partly or almost entirely rely on presence and activity of the enzyme prolyliminopeptidase (PIP), which is encoded by the pip gene. It has been previously shown that at least one PIP-negative strain was more or less globally transmitted during 2000-2004 (Unemo M, et al. STI 2007). Aim: To investigate the prevalence, and phenotypic and genetic characteristics of PIP-negative N. gonorrhoeae isolates in Sweden during 2000 to 2007.
Methods: N. gonorrhoeae isolates (n=1230) cultured in Sweden from 2000 through 2007 were characterized with PIP screening using Pro-A disc, antibiogram, serovar determination, sequencing of the pip and porB gene, and N. gonorrhoeae multiantigen sequence typing (NG-MAST), and compared with typing profiles obtained previously on PIP-negative N. gonorrhoeae isolates.
Results: During 2000 to 2007 in Sweden, only 1.2% (n=15, all cultured 2000-2005) of all examined N. gonorrhoeae isolates were PIP-negative. Of those, 13 (87%) were highly similar or identical to the previously reported globally transmitted PIP-negative strain, i.e. with similar antibiograms, identical serovar (IB-4, Bpyvut), single nucleotide deletion (bp 110) in the pip gene, and identical NG-MAST ST (ST210 (n=10) or ST292 (n=3)). The remaining PIP-negative isolates (n=2) were of serovar IB-3 (ST3369) and IB-21 (ST457).
Conclusions: During 2000 to 2007, PIP-negative N. gonorrhoeae isolates were rare in Sweden (1.2%). Most (87%) of these represented the previously described globally transmitted PIP-negative N. gonorrhoeae strain, which however was not identified in Sweden after 2005. Ideally, at least two different species confirmatory assays, based on different principles, should be used for sensitive and specific N. gonorrhoeae diagnostics.

P1.53

CLEARANCE OF CHLAMYDIAL RIBOSOMAL RNA BY APTIMA COMBO 2® TESTING IN WOMEN WITH CHLAMYDIA TREATED WITH AZITHROMYCIN

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Background: The U.S. Centers for Disease Control and Prevention recommend that pregnant women treated for *Chlamydia trachomatis* (CT) wait at least 3 weeks before obtaining a test for cure. This recommendation is based on expert opinion, as the duration of CT detection following treatment is uncertain. Prior studies have demonstrated that DNA-based tests may remain positive for up to 2 weeks following treatment. The objective of our study was to determine the time to clearance of CT ribosomal RNA (rRNA) following treatment for urogenital chlamydial infection in reproductive-aged women.
Methods: We enrolled women with a CT positive urine screening test (APTIMA Combo 2 (Gen-Probe, Inc, San Diego, CA)) at adolescent clinics in northern California. Participants were treated with directly-observed azithromycin 1 g by mouth and instructed to self-collect a vaginal swab on the day of treatment and on days 3, 7, 10 and 14 after treatment. We calculated the percentage of women with a negative APTIMA test result at each time point. Women who failed to abstain from sexual intercourse for 14 days or failed to provide all specimens were excluded from the analysis.
Results: A total of 61 women reported abstinence and returned all four follow-up swabs. The median age of these participants was 18 years (range 16-43) and 51% were Latina, 13% Asian, 13% black, 10% Pacific Islander, 8% white and 5% mixed. Of the 61 women, 48 (79%) had a negative swab at day 14. Results were as follows:

Time point	Number of APTIMA negative (n=61) (%)
Day of treatment	0 (0%)
Day 3	7 (12%)
Day 7	28 (46%)
Day 10	40 (66%)
Day 14	48 (79%)

Conclusions: After treatment, CT rRNA detected by APTIMA Combo 2 declined with time. As rRNA was still detectable in 21% of the women fourteen days after treatment, APTIMA Combo 2 should not be used as a test-of-cure in the fourteen-day period following treatment. When using highly sensitive assays for CT rRNA, no less than 2 weeks should elapse before a test-of-cure is performed.

P1.54

STABILITY OF SEEDED SWAB SPECIMENS FOR THE DETECTION OF CHLAMYDIA TRACHOMATIS IN THE GEN-PROBE APTIMA® TEST

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Objectives: There are many potential uses of nucleic acid amplification tests (NAATs) that are hindered by the manufacturer's strict transport and storage conditions for specimens (e.g., in developing countries or for mailed samples). To see if dry swabs would be suitable for such uses we evaluated the stability of seeded swab specimens in the APTIMA *Chlamydia trachomatis* (ACT, Gen-Probe Inc. San Diego, CA) test.
Methods: We inoculated Dacron swabs with titrated *C. trachomatis* (CT) isolates and PBS (negative control). The seeded swabs were inserted into sterile tubes (dry group) and into Aptima transport tubes (wet group). Swabs were then stored at room temperature (23°C), in refrigerator (4°C) and in incubator (36°C). At day 0 and weekly through day 84, samples held at the 3 temperatures were tested by ACT. For the dry swabs, we added 1.0 ml of M4 medium (Remel Inc, Lenexa, KS) to the tube, vortexed, and transferred 200 µl to an Aptima tube for testing.
Results: The performance of the dry and wet swabs were similar, even though dry samples were more dilute (1/5 original volume tested). The rlu readings for both groups remained relatively high (~8700 rlu) for 21 days with a ~35% signal reduction (to ~5500 rlu) observed by day 28. Samples were positive at day 84, with a slight drop in rlu between days 28 to 84. Results for specimens stored at 36°C were comparable to those stored at 4°C and 23°C.
Conclusions: Our results show that the RNA target is very stable. Specimens stored longer, and above the temperatures recommended in the package insert (60 days at 2-30°C) were not compromised, and the CT target could be detected ≥84 days. These preliminary findings with seeded specimens extend Gaydos' finding that dry swabs may be suitable for the Gen-Probe NAATs. Further studies are needed with matched clinical specimens to confirm the relevance of these findings.

P1.55

EVALUATION OF THE BD VIPER SYSTEM AND THE BD PROBETEC CTQx AMPLIFIED DNA ASSAY FOR DETECTION OF THE NEW CHLAMYDIA TRACHOMATIS VARIANT IN SWEDEN

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Objectives: To evaluate the CTQ DNA amplification assay for detection of the new Chlamydia trachomatis variant (nvCT) in urine specimens from a laboratory in Sweden.
Methods: The nvCT has a 377 bp plasmid deletion that has caused commonly used nucleic acid amplification tests to generate false negative results. In Swedish counties nvCT has been reported to account for up to 65% of all chlamydia cases in 2007. In this study 199 unscreened urine specimens were collected in December 2008 in Uppsala, Sweden, and tested using the BD ProbeTec™ ET CT assay. The samples were shipped to the USA frozen and then tested with the BD ProbeTec™ CTQ assay on the BD Viper System in extracted mode. The CTQ assay targets a region of the Cryptic Plasmid opposite the 377bp deletion found in nvCT strain. An additional 30 urine specimens collected in March 2008 and identified as positive for nvCT with the PCR method of Ripa and Nilsson (Sex Transm Dis 2007; 34:255-6) were also tested on the CTQ assay for verification of detection accuracy. For resolution of discrepant cases the real time PCR of Chen et al was used (Sex Transm Inf 2008; 84:273-276).
Results: Of the 199 unscreened urine samples 34 (17%) were positive in the routine BD ProbeTec™ ET CT assay in Uppsala, Sweden, compared to 36 (18%) tested positive in the CTQ assay. One case previously positive by BD ProbeTec ET CT assay was negative in the CTQ assay. This case was analyzed with the real time PCR of Chen et al and showed up negative. In the collection of 30 urine specimens with nvCT all were detected by the CTQ assay.
Conclusion: The CTQ assay could adequately detect nvCT and wild type strains of C. trachomatis.

P1.56

PLASMID DIVERSITY IN CHLAMYDIA TRACHOMATIS AND THE EMERGENCE IN SWEDEN OF A NEW VARIANT STRAIN

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Background: A new variant of *Chlamydia trachomatis* that escaped routine diagnostic tests recently emerged in Sweden. This variant has spread rapidly across the country and into adjoining nations. It has a mutated plasmid that could not be detected by existing commercial tests. The purpose of the work was to define the nature and extent of plasmid diversity.
Methods: Plasmids from seven *C. trachomatis* serovars, including the new variant strain from Sweden, were sequenced together with two *C. trachomatis* genomes.
Results: Analysis of these sequences together with a further four from sequence databases showed that each plasmid has a unique sequence. Phylogenetic analysis of the SNPs and indels within these eleven plasmids indicated that lymphogranuloma venereum biovars split from the trachoma biovars and was followed by subsequent evolution of these plasmids into the pathways of ocular or genitotropic strains. The plasmid from the Swedish new variant displays a 377 bp deletion in CDS1, abolishing the site used for PCR detection, resulting in negative diagnosis. This plasmid (pSW2) also carries a duplication of 44bp immediately upstream of CDS3 compared with the plasmid of a putative progenitor. The region of the plasmid containing CDS2 is the most highly conserved part of the sequence and thus the optimal choice for developing new nucleic acid amplification tests.
Conclusions: The evolutionary pathways of the chlamydial genome and plasmids are similar, implying that inheritance of the plasmid is tightly linked with its cognate chromosome. These data show that the plasmid is not a highly mobile genetic element and does not transfer readily between isolates. The plasmid is routinely used as a target for chlamydial detection by nucleic acid amplification tests (NAATs). Comparative analysis of the plasmid sequences has revealed the most conserved regions that should be used in the design of future NAATs to avoid diagnostic failures.

P1.57

REPEATABILITY EVALUATION OF SPECIMENS TESTED ON THE BD VIPER SYSTEM WITH THE BD PROBETEC™ CT/GC Qx AMPLIFIED DNA ASSAYS

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Objective: The purpose of this study was to establish the repeatability of clinical specimen results using the BD Viper™ System with XTR™ Technology (Extracted Mode) combined with the BD ProbeTec™ CT/GC Q^x Amplified DNA Assays.
Methods: Urethral, endocervical swabs & urine from 472 males and 993 females (symptomatic & asymptomatic) were collected from 7 geographically diverse, low to high prevalence sites and tested using the BD ProbeTec ET CT/GC/AC (PT) assay and Gen-Probe's APTIMA (AC2) assay for detection of CT/GC to determine patient infected status (PIS). PIS was defined as positive when there was at least one positive test result from both FDA cleared assays (AC2 and PT) regardless of specimen type (endocervical, urethral or urine). A subset of specimens obtained from those subjects were repeat tested with the CT/GC Q^x assays and compared to the initial CT/GC Q^x results as well as the AC2 result from each of the sample types to determine clinical repeatability. All procedures were performed in accordance with GCP, standard laboratory procedures and manufacturer's package insert instructions.
Results: To determine clinical repeatability, each specimen required a PIS result, an initial and repeat CT/GC Q^x result, and an AC2 result.
Table 1. Percent Agreement of Initial Q^x/PIS to Repeated Q^x and AC2 for CT/GC

PIS & Initial Qx Result	GC+ Swab	GC+ Neat	GC+ UPT	GC- Swab	GC - Neat	GC - UPT	CT+ Swab	CT+ Neat	CT+ UPT	CT- Swab	CT- Neat	CT- UPT
N	139	150	151	318	327	326	170	186	185	261	288	281
Qx Agreement	98.6%	99.3%	100%	98.4%	100%	99.7%	98.8%	99.5%	97.8%	97.3%	99.0%	99.3%
AC2 Agreement	100%	96.0%	96.0%	98.7%	99.7%	100%	98.2%	98.9%	98.9%	98.1%	97.2%	98.6%

Swab=Endocervical and urethral swab specimens
Neat=Neat urine specimen (no preservative)
UPT=UPT urine (urine with preservtive)
Conclusions: These data suggest that similar repeatability performance was seen when comparing the Q^x assay repeat result and the AC2 test result to the initial Q^x assay test result using the same instrument and assay or by using another target like the AC2 system.

P1.58

PERFORMANCE OF THE ABBOTT REALTIME CT/NG ASSAY FOR DETECTION OF CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE IN A MULTI-CENTER CLINICAL STUDY
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Objectives: A multi-center clinical study was conducted to evaluate the performance characteristics of the Abbott RealTime CT/NG assay, a multiplex real time PCR assay, for simultaneous detection of Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (NG).
Methods: The specimens were collected from a total of 3,832 male and female subjects at 16 geographically diverse sites. Specimens included male and female urines, male urethral swabs, female endocervical swabs, self-collected and clinician-collected vaginal swabs. Specimens were tested with the automated Abbott RealTime CT/NG assay, APTIMA Combo 2 assay (Gen-Probe), ProbeTecTM ET CT/GC assay (Becton Dickinson), and culture for NG. The APTIMA Combo 2 assay, the ProbeTec assay, and the NG culture were used as the gold standard reference assays.
Results: Overall female prevalence: CT 8.9%; GC 3.8%. Overall male prevalence: CT 18.2%; GC 16.7%. For each subject, a patient infected status (PIS) was determined based on the combined results from the reference assays. The gold standard for the PIS was 2 or more positive specimens from two or more different assay platforms. The overall sensitivity and specificity of the Abbott RealTime CT/NG assay were 92.4% and 99.2% for CT and 96.9% and 99.7% for NG, respectively. In comparison, the sensitivity and specificity were 94.5% and 99.0% for CT and 96.1% and 99.5% for NG for the APTIMA Combo 2 assay, and were 90.3% and 99.5% for CT and 92.0% and 97.3% for NG for the ProbeTecTM assay in this study.
Conclusions: The Abbott RealTime CT/NG assay offers CT and NG detection with high sensitivity and specificity. The automated assay provides a useful alternative NAAT for clinical laboratories and clinicians.

P1.59

SELF- COMPARED TO CLINICIAN-COLLECTED VAGINAL SWABS, CERVICAL SWABS, AND URINES FOR C. TRACHOMATIS AND N. GONORRHOEAE WITH ABBOTT REALTIME CT/NG PCR

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Objectives: The Abbott RealTime CT/NG assay is a multiplex real time PCR assay for detection of CT and NG. Data from a multi-center clinical study were evaluated to compare different sample types for women, including self- and clinician-collected vaginal swabs (SCV and CCV), endocervical swabs, and first-void urine specimens. Sensitivity and specificity were determined for each specimen type for CT and NG, along with relative bacterial loads between SCV versus other specimen types.
Methods: The specimens were collected from a total of 2,014 female subjects. Specimens were tested with the Abbott assay, two other reference NAATs, and culture for NG. Sensitivity of specimen type was calculated based on an infected patient status determined from the combined results from the reference assays. Since the Abbott assay is based on real time PCR, its Delta Cycle (DC) machine outputs were utilized to compare relative CT and NG pathogen loads across different sample types for each infected subject. Difference in DC between SCV and other specimen types from the same subject was calculated to evaluate relative bacterial load in matched samples. A higher DC number is indicative of a greater amount of analyte present in the assayed sample.
Results: Overall prevalence: CT 8.9%; GC 3.8%. The sensitivity of the Abbott RealTime CT/NG assay for SCV, CCV, endocervical swabs, and urine was 90.9%, 90.6%, 85.2%, and 93.7% for CT and 96.2%, 96.3%, 88.9%, and 90.9% for NG, respectively. The specificity was > 99.0% for CT and NG across all 4 specimen types. For CT, median DC was 0.65 cycles higher for SCV when compared to CCV, 3.38 cycles higher than urine, and was lower by 0.39 cycles when compared to endocervical swabs. For NG, the median DC was higher for SCV (range 0.6-2.40 cycles) when compared to all three other specimens.
Conclusions: Self-collected vaginal swabs were an accurate alternative to clinician-collected vaginal swabs, endocervical swabs, or urine specimens in this study.

P1.6

URETHRITIS OF UNKNOWN ETIOLOGY- ANALYSIS BY CULTURE-INDEPENDENT METHODS

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Objectives: To detect unknown pathogens in male non-gonococcal urethritis (NGU).
Methods: Urine samples from 70 male patients with NGU and >10 PMNL/hpf were collected. The patient's age, number of partners within 6 months and lifetime were noted. All samples were tested for Neisseria gonorrhoeae (Ng), Chlamydia trachomatis (Ct), Mycoplasma genitalium (Mg), Urea-plasma urealyticum (Uu), Ureaplasma parvum (Up), Trichomonas vaginalis (Tv), Herpes Simplex Virus (HSV) type 1 and 2 and Adenovirus. T-RFLP and DNA-sequencing were performed with the aim to discover unknown pathogens. Real-time PCR was used to determine the 16S rDNA-quantity from all bacterial agents with primers complementary to conserved regions.
Results: Known or suspected etiology was found in 71%: Ct (31%), Mg (24%), Uu (11%), Up (11%), Tv (0%), HSV (9%) and Adenovirus (3%). 20 cases (29%) had urethritis of unknown etiology (UUE). Whereas Ct-positive men more often had >30 PMNL/hpf (p=0,059), men with UUE were more likely to have 10-30 PMNL/hpf (p=0,01). Men with Ct had more partners within 6 months (median 3), than had men with UUE (median2) (p=0,026), and a trend towards more partners than the Mg-positive men (median 2) (p=0,055). A lower rDNA-quantity was found in UUE (median 4337 copies), than in Mg-positives (median 11551 copies) (p=0,038). No significant difference was found in rDNA-quantity between the other groups. Corynebacterium glucuronolyticum and Streptococcus sp. were detected in both UUE and cases with known etiology using t-RFLP.
Conclusions: UUE accounted for 29% of NGU. The high prevalence of Corynebacterium glucoronolyticum in men with urethritis merits further investigation. The inflammatory response in UUE appeared to be less pronounced than in Ct and MG-positive cases.

P1.60

HIGH REPRODUCIBILITY OF THE APTIMA COMBO 2 CT/GC ASSAY

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Objective: The cut-off for defining positives used by the Aptima Combo 2 CT/GC (AC2) system may result in false positive results. In order to improve the specificity of the assay for use in low prevalence populations, we evaluated the strategy of repeat testing of all samples with an RLU of <1,000 and determined the optimal cut-off for use in our laboratory.

Methods: During the initial validation of the assay compared with other nucleic acid based tests we found that most unconfirmed positive results had RLU <1,000. For the following 20 months we retested all samples with results from 85 (the AC2 cut-off for negative results) to 1,000.
Results: 420 (3.3%) of 12,826 samples fell into the 85-1,000 RLU range. 75 (17.9%) of the 420 samples retested as negative while the remaining 82.1% retested as positive. Therefore, the reliability of the assay using the system cut-off was 99.4%. A cut-off of 700 RLU for reflex testing would have reduced the number of samples to 157 and 65/75 (86.7%) positives which did not repeat would have been identified. A cut-off of 600 RLU would have reduced the number of reflex tests to 137 while still identifying 62/75 (82.7%) positives which did not repeat.
Conclusions: Although the reproducibility of the AC2 assay was quite high using the system settings, in low prevalence populations, 30-40 false positive results per year may be problematic. A balance between cost, in time and dollars, of repeating tests needs to be balanced with the need to verify positive results. In our laboratory, using a cut-off of 600 RLU minimized repeat tests while reducing false positive results to fewer than 10 per year.

P1.61

CLINICAL SPECIMENS TRANSPORTED IN DRY FLOCKED SWABS ARE SUITABLE FOR STD SCREENING WITH THE APTIMA COMBO 2 ASSAY.
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Objectives: Transportation of clinical specimens in liquids is problematic because of leakages. Flocked swabs have been used for professional or self-collection of vaginal specimens for the detection of sexual transmitted diseases (STD's) and were well accepted by the patients. The objective of this study was to compare the Copan flocked swabs (FS)(Copan Italia) to the APTIMA swab (AS) for the ability to preserve nucleic acid in samples transported dry after collection the for CT and GC in the APTIMA Combo 2 (AC2) assay (Gen-Probe Incorporated).
Methods: Cervical FS and AS samples, prepared with ATTC strains of Chlamydia trachomatis (CT) and Neisseria gonorrhoea (GC), were tested dry and after room temperature storage using the AC2 assay. Cervical specimens (n=210), transported dry, were also used in this clinical study. Two cervical specimens were collected with FS from 210 patients, one was tested at collection time for CT using the Nanogen CT real time PCR, the other was transported dry, stored in its own plastic tube at RT and tested after 2 to 3 weeks for CT and GC using the AC2 assay.
Results: The analytical sensitivity of the trial testing of dry FS samples after 1 or 5 week at RT, was higher than the AS samples: After one week, GC 100% versus 88%, CT 88% versus 22%. After 5 weeks GC 22% versus 0%, CT 77% versus 0%. In the 210 clinical specimens, collected with FS and tested for CT at collection by real time PCR, 25/210 (11.9%) were positive; the FS stored dry and tested with the AC2 after 2 or 3 weeks detected 30/210 CT (14.28%) positive and 5/210 (2.3%) GC. Two of the GC positive were also positive in culture.
Conclusions: The analytical sensitivity of the dry FS laboratory prepared samples was better than AS for both GC and CT after one or 5 weeks dry storage at RT. The Copan flocked swabs, stored and transported dry in its own plastic tube and tested with the Gen-Probe APTIMA Combo 2 assay, demonstrated the ability to preserve CT and GC nucleic acids in clinical specimens.

P1.62

COMPARISON OF APTIMA COMBO 2, AMPLICOR AND PROBETEC FOR THE DIAGNOSIS OF C. TRACHOMATIS (CT) AND N. GONORRHOEAE (GC) IN SUREPATH L-PAP SAMPLES
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Objectives: SurePath L-Pap samples have not received FDA clearance for CT or GC testing in approved NAATs. Laboratories are testing SurePath samples using validation protocols. We compared APTIMA Combo 2® [AC2], ProbeTec™ [PT] and AMPLICOR® [AMP] assays to detect CT and GC from SurePath L-Pap samples.
Methods: A total of 304 women consented to collection of a cervical swab [CS] and 2 L-Pap collection vials. In the laboratory the 2 L-Pap samples were pooled to ensure homogeneity before processing for Pap cytology. The remaining L-Pap fluid was tested for CT and GC using published protocols for the 3 assays: [a] transferring l ml into specimen transport media before testing 400 µl in AC2 [Gen-Probe Inc.]; [b] placing 500 µl into 2 ml of PT diluent then testing 150 µl in PT [Becton Dickinson]; [c] pipetting 500 µl into a centrifugation procedure leading to testing of 50 µl in AMP [Roche]. The CS was tested by AC2. To compare the presence of analytes in L-Pap remnant versus the gradient sample left after cytological

processing, both samples were tested by AC2.
Results: The prevalence of CT was 10% [30/304] and GC was 1.3% [4/304]. One patient was infected with both organisms. Twenty-five [83.3%] of the 30 CS-positive women [CT-positives] were positive in the L-Pap sample in all 3 of the CT assays. The sensitivity of AC2 and AMP was 96.6% [29/30] and 76.6% [23/30] for PT. One CT-positive patient was negative by all assays on the L-Pap remnant but positive by AC2 on the gradient after cytology processing. For GC, AC2 and AMP identified all 4 of the infections [100%] while PT missed one [sensitivity 75%].
Conclusions: Using published protocols for CT and GC testing of SurePath L-Pap samples demonstrated very high sensitivity and specificity for the AC2 and AMP assays. The protocol for PT testing of L-Pap samples used in this study can not be recommended. The remnant sample was slightly better than the gradient for CT and GC testing by AC2.

P1.63

EVALUATION OF 3 COMMERCIAL AMPLIFICATION ASSAYS FOR THE DETECTION OF C. TRACHOMATIS AND N. GONORRHEOAE FROM GENITAL SPECIMENS.
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Objectives: To determine the performance of 3 commercial amplification assays for the detection of *C. trachomatis* (CT) and *N. gonorrhoeae* (GC) from self administered vaginal specimens kept dry after collection.
Methods: Archived and anonymized specimens from a study among female sex workers in Ivory Coast were used for the evaluation. Participants collected self-administered vaginal specimens with a culturette EZ swab. The swabs were kept dry and stored at -20°C until shipment and testing overseas. The swabs, after thawing, were eluted in 1200 µl of diluted phosphate buffered saline. The eluted specimens were tested with the Amplicor CT/GC (Roche), ProbeTec ET (Becton-Dickinson), and Aptima Combo 2 (GenProbe), respectively. Sensitivities and specificities of the assays and of the testing strategies, including a sensitive screening test and a specific confirmation test, were calculated. Specimens were considered to be true positive when they showed a reactive result for CT or GC detection in at least 2 individual assays.
Results: A total of 660 specimens were tested. The prevalence for CT and GC was 4.6% and 5.1%, respectively. The table presents the sensitivity (Se) and specificity (Sp) of the amplification assays and testing strategies.

	C. trachomatis		N. gonorrhoeae	
Assay or strategy	Se (%)	Sp (%)	Se (%)	Sp (%)
Amplicor	96.6	99.2	100	96.0
ProbeTec	93.1	99.8	100	97.5
Aptima	93.1	98.7	81.3	100
Amplicor/ProbeTec	89.7	99.5	100	96.0
ProbeTec/Amplicor	89.7	99.8	100	97.5
Amplicor/Aptima	89.7	99.4	84.4	96.0
ProbeTec/Aptima	86.2	99.8	84.4	97.5
Aptima/Amplicor	89.7	98.7	NA	NA
Aptima/ProbeTec	86.2	98.7	NA	NA

NA: not applicable.
Specimens which were reactive in the screening test and not reactive in the confirmation test were considered to be undetermined.
Conclusion: Using self-administered vaginal swabs which were kept dry after collection, we found comparable performances of the 3 assays for the detection of CT. The sensitivity of the Aptima combo 2 assay for the detection of GC was poor, but the specificity was perfect.
Overall, we obtained the best results for the detection of CT and GC by screening the specimens using the ProbeTec assay and confirming the reactive results using the Amplicor assay.

P1.64

FIRST REPORT OF THE PERFORMANCE OF THE VERSANT® CT/GC DNA 1.0 ASSAY COMPARED TO APTIMA COMBO 2® ASSAY

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Objectives: The performance of the VERSANT CT/GC DNA 1.0 Assay*, which can simultaneously detect Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (GC) in swab and first-catch urine (FCU) specimens, was evaluated and compared with that of the commercially available GEN-PROBE® APTIMA Combo 2 (AC 2) Assay.
Methods: Approximately 589 urine and 540 swab specimens were prospectively collected in Siemens VERSANT Urine Transport Kits* (UTK) and the commercially available M4RT Combo collection kit, respectively. These specimens were tested on the VERSANT® kPCR Molecular System* with two lots of VERSANT CT/GC assay reagents* in development. The AC 2 assay was used as a comparative method. Percent concordance of the VERSANT CT/GC DNA 1.0 assay with the AC 2 assay was determined. Specimens with results that were discrepant by the two assays were subjected to DNA sequencing to identify the presence of amplified targets.
Results: This study showed that the overall percent agreement between the VERSANT CT/GC assay and the AC 2 assay for CT and GC detection was greater than 98% in both urine and M4RT. Negative percent agreement between the VERSANT CT/GC assay and the AC 2 assay for CT and GC detection was greater than 99% in both urine and M4RT. Furthermore, positive agreement between the VERSANT CT/GC assay and the AC 2 assay for GC detection was greater than 99% in both urine and M4RT, and positive agreement between the VERSANT CT/GC assay and the AC2 assay for CT detection was at least 94% in both urine and M4RT.
Conclusions: This study demonstrated that the VERSANT CT/GC DNA 1.0 Assay is both sensitive and specific for detecting both CT and GC target in endocervical, urethral swab and urine specimens. The assay's performance is comparable to that of the GEN-PROBE APTIMA Combo 2 assay. * Assay and Urine Transport Kit not commercially available. VERSANT kPCR Molecular System CE marked; not commercially available in the US.

P1.65

INTEREST OF THE SIMULTANEOUS DETECTION OF NEISSEIRIA GONORRHOEAE AND CHLAMYDIA TRACHOMATIS USING A NEW REAL TIME MULTIPLEX PCR SYSTEM

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Objectives To evaluate the interest of simultaneous detection of C. trachomatis (CT) and N. gonorrhoeae (NG) with an automated real time multiplex PCR system.
Methods 1180 first void urine specimens and 33 anorectal swabs were tested for, from January to April 2008, with Abbott RealTime CT/NG PCR system. PCR diagnostic was assessed on samples received in the laboratory for the detection of CT in outpatients, male or female, symptomatic or not, consulting in our STD clinic. Culture of NG was assessed in all symptomatic patients with the appropriate specimen (cervical, urethral or anal swabs).
Results Among the 713 urinary samples from male patients, 41 (5.7%) were positive for CT and 12 (1.7%) for NG. Among the 41 positive patients for CT, 23 (56%) were symptomatic. All the positive results for NG in men were confirmed by culture. All were symptomatic. Among the 33 anorectal specimens, 8 (24.4%) were positive for CT and 2 (6.3%) for NG. Among the 467 urinary samples from female patients, 28 (6%) were positive for CT of whom 24 (86%) were asymptomatic and 4 (0.9%) for NG. Only one positive result for NG was confirmed by culture.
Discussion Diagnostic of CT infection by PCR on first void urine specimens is a validated and widely spread strategy. Results observed in our cohort can be compared to the results commonly observed. As far as NG is concerned, a good correlation between PCR and culture methods in male patients was observed. On the contrary, 3 discordances were observed in female patients, as 3/4 positive samples by PCR were negative with traditional culture methods. All of them had risk factors of STD. Use of Abbott RealTime CT/NG PCR system allows routine application to a large number of samples with a low additional cost. In men this test is of interest when culture cannot be done. Some studies have demonstrated the good specificity of this test. In women, NG testing may improve the detection of infected patients. Analysis of more than 5000 samples is in progress.

P1.66

ISOTHERMAL HELICASE DEPENDENT MULTIPLEX ASSAY FOR DETECTION OF CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE WITH FLUORESCENCE ENDPOINT DETECTION

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Background: *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG) are currently the two most prevalent sexually transmitted infections reported in the US. While several diagnostic tests are currently available for the joint detection of CT and NG, some of which are PCR-based and therefore difficult to automate in a high throughput capacity. Thermophilic helicase dependent amplification (tHDA), (BioHelix Corp.), is a novel isothermal amplification technology allowing a simpler reaction scheme than PCR. tHDA utilizes helicase to unwind double-stranded DNA, thus removing the need for thermocycling. In conjunction with endpoint fluorescence detection, the tHDA isothermal reaction offers a potential alternative to PCR and real-time PCR for easily automatable diagnostic tests.
Objectives: Development of an isothermal multiplex assay for the detection of CT, including mutant variants, and NG, compatible with high throughput automation.
Methods: A tHDA assay was utilized to amplify selected target genes from both pathogens. For CT amplification primers and dual-labeled fluorescent probes targeting regions of cryptic plasmid and genomic DNA sequences were designed. For NG primers and probes specific for multicopy opa genes were used. Endpoint fluorescence detection with dual-labeled probes was utilized for the detection of tHDA products. The detection was performed in a homogeneous format without opening the plate after amplification to avoid amplicon carry-over contamination.
Results: A multiplex tHDA CT/NG prototype assay has been developed allowing for simultaneous amplification and detection of NG and dual target genes from CT in the presence of an amplification control. Our assay has achieved 10-25 copy sensitivity for both pathogens.
Conclusions: tHDA, in conjunction with homogeneous endpoint fluorescence detection, is a suitable technology platform for the development of a multi-target CT/NG detection assay, allowing high analytical sensitivity without the need for thermocycling equipment.

P1.67

DETECTION OF TRICHOMONAS VAGINALIS (TV) FROM URINE SPECIMENS IN A VARIED PATIENT POPULATION USING APTIMA TRICHOMONAS ANALYTE SPECIFIC REAGENTS (ASRS)
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Objective: Trichomonas vaginalis (Tv) is reported to be the most common non-viral STI world-wide with reported yearly estimates of 170 million cases. However, epidemiological statistics vary substantially due to the lack of routinely used highly sensitive tests, as well as inconsistent reporting to public health data bases. This study was undertaken to identify Tv prevalence using APTIMA Trichomonas (ATV) analyte-specific reagents (Gen-Probe, Inc, San Diego) among a population with current prevalence of disease for CT, GC, and HIV of 4.2, 0.7, 0.5 respectively, as well as identify potential risk factors for Tv infection and clarify the need for routine Tv testing.
Methods: A retrospective analysis of 1121 urine specimens from 733 men and 388 women were analyzed. Specimens included 926 from HIV positive patients negative for CT and GC at the time of collection, and 195 specimens from both men and women, with 96 positive and 99 negative for CT or GC, respectively. All urines were analyzed by ATV and by a second APTIMA test targeting different Tv sequences. Comparison with a laboratory-developed PCR test was available for 926 specimens.
Results: Average age of HIV patients was 44 and all others 26. Table 1. summarizes testing results for all specimens analyzed by ATV.
Conclusions: Overall Tv positivity rates for patients assessed were higher in women than men (9.8% vs. 0.4%). Among women with STIs, Tv prevalence was highest in CT/GC positive (14.6%) compared to HIV positive (10.1%) and CT/GC negative (3.8%). Urine sample testing for Tv may allow risk stratification for the presence of other STIs.

		Female		Male		
STI at time of sampling	Total Tested	# tested	# pos Tv (%)	# tested	# pos Tv (%)	Total Tv pos (%)
HIV +	926	288	29 (10.1)	638	2 (0.3)	31 (3.3)
CT/GC +	96	48	7 (14.6)	48	1 (2.1)	8 (8.3)
CT/GC-	99	52	2 (3.8)	47	0 (0)	2 (2.0)
Total	1121	388	38 (9.8)	733	3 (0.4)	41 (3.7)

P1.68

ENDOCERVICAL AND VAGINAL SPECIMENS ARE COMPARABLE FOR DETECTION OF TRICHOMONAS VAGINALIS USING TRANSCRIPTION-MEDIATED AMPLIFICATION (TMA)
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Objectives: Compared to screening for gonococcal (GC) and chlamydial (CT) infections, testing for *T. vaginalis* (TV) remains inadequate in most settings. TV detection in endocervical specimens used for GC/CT testing could lead to improved diagnosis and treatment of trichomoniasis. We compared TV detection in endocervical and vaginal swabs.
Methods: We recruited a convenience sample of 381 women in an STD clinic in North Carolina, US and obtained 1 endocervical and 3 vaginal swabs. Vaginal swabs were tested by wet mount (WM) and InPouch TV culture (Biomed). Vaginal and endocervical swabs were tested by TMA using TV analyte specific reagents (ASR, Gen-Probe, Inc). Endocervical swabs were also tested for GC/CT by APTIMA Combo2 (Gen-Probe). We used nonparametric receiver-operating characteristics (ROC) analysis to assess TV ASR performance in vaginal swabs compared to culture.
Results: TV was detected by WM in 14.6%, by culture in 20.7%, and by TMA in 23.7% of vaginal swabs. Area under the ROC curve for TV ASR was >0.98, indicating excellent test performance. A cutoff of 30,000 RLU jointly maximized sensitivity (100%; 95% CI: 95-100%) and specificity (97%; 95%CI: 94-98%). TV was detected by TMA in 25.2% of endocervical swabs. Agreement between vaginal and endocervical swabs was high (Kappa = 0.95; 95% CI: 0.92-0.98). All women with TV detected in a vaginal swab also had a positive endocervical swab. In 7 women (7.3% of those with any positive TV test), TV was detected only in the cervix. Women with TV detected only in the cervix were more likely to be asymptomatic than women with positive vaginal and cervical swabs (P = 0.027, Fisher exact).
Conclusions: Although trichomoniasis is widely considered a vaginal infection, we detected TV in the endocervix of all infected women. TV testing from endocervical swabs used for GC/CT nucleic acid amplification testing is feasible. The Gen-Probe ASR-based TMA TV assay performs well with endocervical and vaginal swab specimens.

P1.69

ANALYTICAL PERFORMANCE OF THE APTIMA TRICHOMONAS ASSAY ON THE AUTOMATED TIGRIS DTS® SYSTEM
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Background: Trichomoniasis is a sexually transmitted infection caused by the protozoan Trichomonas vaginalis (TV). TV infections are often asymptomatic and cause adverse health consequences, including increased risk of acquiring HIV, pelvic inflammatory disease, and premature labor. Amplified nucleic acid testing has been shown to have higher sensitivity for detection of TV compared to wet-mount/culture methods.
Objective: To evaluate the analytical performance of the fully automated APTIMA® Trichomonas (AT) assay for detecting TV rRNA in freshly prepared and archived clinical samples.
Methods: Analytical sensitivity was evaluated by testing TV cell lysates diluted serially with APTIMA Specimen Transport Medium (STM), negative pooled vaginal swab samples, negative pooled male and female urine samples, and Cytyc PreservCyt® liquid cytology medium. Assay inhibition due to whole blood contamination, and assay cross reactivity with over 25 closely related microorganisms and common urogenital flora, was evaluated. Also assessed was the ability of the AT assay to detect 2 cell-equivalents per reaction of TV rRNA in pooled vaginal swab-STM matrix, pooled male urine-Urine Transport Medium (UTM) and female urine-UTM matrices, and PreservCyt-STM matrix, when stored at -70°C, -20°C, 4°C, 20°C, and 30°C.
Results: The AT assay achieved 100% reactivity at 0.01 cell-equivalents per reaction in all sample types, and did not exhibit cross reactivity with non-target microorganisms. The assay tolerated the presence of up to 15% (v/v) whole blood. TV rRNA was detected in all sample types when archived for a minimum of 36, 75 and 113 days at 30°C, 4°C, and –20°C, respectively.
Conclusions: The APTIMA Trichomonas assay is specific, is highly sensitive for detecting TV rRNA in a variety of clinical samples, and is able to detect TV rRNA in STM- or UTM-modified clinical samples stored for long periods under moderate conditions.

P1.7

IN VITRO INTERFERENCE OF DAPIVIRINE MICROBICIDE GELS, MABGEL AND UNIVERSAL PLACEBO ON REAL TIME PCR METHODS FOR QUANTIFICATION OF LACTOBACILLUS SP.
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Background: Real time-PCR methods will be used for detailed safety assessment of the vaginal flora in phase I microbicide trials. Before we can rely on these quantitative assays we need to explore interference by the study gel.
Objectives: To assess the *in vitro* interference of 2 dapivirine gels (gels 4759 and 4789, both containing 0.05% dapivirine), Mabgel and the universal placebo respectively on real time-PCR methods for

Lactobacillus species.
Methods: Pools of vaginal secretions consisting of Lactobacillus crispatus, L. jensenii, L. gasseri, L. iners were constructed. The pools were spiked with dilutions of each gel (10%, 5%, 2.5%, 1.25%) or maintained untreated (0%). Aliquots of pooled specimens were extracted using the NucliSens extraction from BioMérieux. The extracts were amplified using real time-PCR for the quantification of Lactobacillus species, L. crispatus, L. jensenii, L. gasseri, L. iners. A random slopes linear regression model was fitted over the 5 PCRs in Stata10.
Results: A reduction in Lactobacillus log counts/ml was present with increasing gel concentrations for all gels. We saw the following reduction per 1% increase of gel: placebo 0.9% (p=0.16); dapivirine 4759 21% (p<0.001); dapivirine 4789 2.9% (p<0.001); Mabgel 3.3% (p<0.001). For product gels compared to placebo, the reduction per 1% increase of gel was as follows: dapivirine 4759 20% (p<0.001); dapivirine 4789 2.1% (p<0.026); Mabgel 2.4% (p=0.008).
Table: Log 10E+6 counts per ml for dapivirine 4759

gel concentrations	L. species	L. crispatus	L. iners	L. jensenii	L. gasseri
0%	2000	1090	569	35	9.0
1.25%	1220	662	386	22	5.2
2.5%	924	526	304	17	4.2
5%	526	273	214	11	2.3
10%	145	83	69	3.3	0.7

Conclusions: Interference was clearly present for the dapivirine 4759 gel. We will need to evaluate if the same effect is seen on other assays proposed for use in clinical trials (NG, CT, BV species) *in vitro*, and confirm whether any effects seen are also evident in samples collected *in vivo*, before concluding which assays are acceptable for the safety assessments in planned studies with the gels. We will also explore whether the gel ingredient(s) causing the interference can be identified.

P1.70

MYCOPLASMA GENITALIUM PCR – DOES FREEZING OF SPECIMENS AFFECT SENSITIVITY?
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Objectives: *Mycoplasma genitalium* (Mg) is an established cause of NGU and cervicitis. Studies of disease associations are often performed on archived specimens. We aimed to determine the effect of freezing at -20°C on the recovery of Mg.
Methods: First void urine, cervical, and urethral specimens submitted for detection of Mg by MgPa-gene real-time PCR were tested on the day of receipt. Remnants of Mg positive original specimens as well as DNA preparations were stored at -20°C for up to 18 months. Thawed clinical specimens were subjected to repeat DNA preparation and quantitative PCR as were the corresponding primary DNA preparations.
Results: A total of 284 samples from 102 women aged 16-45 years (130 specimens) and 139 men aged 15-62 years (154 specimens) were available. For 223 specimens, PCR could be repeated after renewed DNA preparation; 22 (9.9%) were negative and had a significantly lower median DNA load in the primary analysis (5.5 geq) than those with a repeat positive test (152 geq)(p<0.001). For 229 specimens, PCR could be repeated on the primary DNA preparation; 14 (6.1%) were negative and those repeating negative had lower median DNA load in the primary analysis (3.8 geq vs 142 geq; p<0.001). For 168 specimens with an initial median DNA load of 95 geq, PCR could be repeated both on the primary DNA preparation and after renewed extraction. Repeat PCR on the primary DNA extract had a sensitivity of 92% and a median DNA load of 32 geq. PCR on the renewed DNA extraction had a sensitivity of 89% and a median DNA load of 22 geq. The median DNA load was lower after renewed DNA extraction than after repeat testing of the stored DNA extract (p<0.001) but no statistically significant difference was found in sensitivity (p=0.15).
Conclusions: The Mg DNA load as well as the detection rate decreased after storage. This was more pronounced in specimens stored frozen than in stored DNA extracts, especially in those with an initial low DNA load

P1.71

EVALUATION OF UREAPLASMA UREALYTICUM (UU) AND UREAPLASMA PARVUM (UP) PCR TESTS AND ANTIMICROBIAL SUSCEPTIBILITY
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Background: The association of *U. urealyticum* and *U. parvum* with reproductive tract disease in men and women is controversial. Several PCR tests have been developed to differentiate these two species, yet their accuracy and relative sensitivities and specificities have not been determined.
Methods: Urine specimens, obtained from 284 men sequentially enrolled in our ongoing case-control and treatment trial studies for NGU were evaluated for the presence of *Ureaplasma* spp. by culture in U broth and by the combined results of the species-specific UU-R and UP-R PCR assays. These PCR assays, targeting polymorphisms within the urease genes of UU and UP as well as the UU-W and UP-W PCRs targeting sequences unique to UU and UP within the genomes of the 14 serovars, were compared and used to speciate ureaplasmas in culture. MICs for UU and UP isolates were determined by the agar plate dilution method.
Results: Of the 284 urine specimens analyzed, ureaplasmas were identified in 104 by culture and 79 by the combined results of the UU-R and UP-R PCRs, equating to 73% sensitivity and 98% specificity of these PCR assays relative to culture. The UU-R and UP-R PCR assays were 93% and 53% sensitive and 97% and 98% specific in the 97 urine specimens available for analysis relative to their performance in positive cultures derived from these specimens. In the 104 ureaplasma cultures analyzed, 52 were positive by the UU-R and UU-W assays (with two discordant, kappa=0.96) and 49 were positive by the UP-R and UP-W PCR assays (no discordants, kappa=1). The susceptibilities of 108 ureaplasma isolates were 0.125-2.0 µg/ml for azithromycin, 0.125-2.0 µg/ml for doxycycline, and 0.25-1.0 µg/ml for moxifloxacin.
Conclusions: The UU/UP-R and UU/UP-W PCR assays accurately differentiate UU and UP in archived cultures. Culture followed by PCR is the most sensitive method for detection and differentiation of these two species using our current methods.

P1.72

MOLECULAR CHARACTERIZATION OF SYPHILIS INFECTION IN CANADA: AZITHROMYCIN RESISTANCE AND DETECTION OF TREPONEMA PALLIDUM DNA IN WHOLE BLOOD VS ULCERS

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Objectives: To study the suitability of different clinical specimens and different Treponema pallidum gene targets for molecular detection and characterization of syphilis infection. Although detection of T. pallidum DNA from whole blood specimens of syphilis patients has been reported, it is uncertain at what stage of the disease such specimens are most suitable for the molecular investigation of syphilis infection. Also few studies have directly compared the different gene targets for laboratory diagnostic usage in PCR assays.
Methods: We examined 87 specimens from 68 patients attending two sexually transmitted disease clinics in Alberta, Canada. Specimen types included: EDTA whole blood, serum, cerebrospinal fluid (CSF), and swabs from ulcers or skin lesions. PCR was used to amplify the T. pallidum tpp47, bmp, and polA genes as well as a specific region of the 23S rRNA gene linked to macrolide antibiotic susceptibility.
Results: The three treponemal gene PCR assays (tpp47, bmp, and polA) gave concordant results in all specimens collected from syphilis patients, regardless of the specimen types (blood or swab) or the stages of disease (primary or secondary). From primary syphilis cases, PCR was positive exclusively (75% sensitivity rate) in ulcerative swabs but not in blood specimens; while from secondary syphilis cases, 50% were positive by PCR in their blood specimens. Four out of 14 (28.6%) of our PCR positive syphilis cases were found to be caused by azithromycin-resistant strains.
Conclusions: Our results confirmed that swabs from primary ulcers are the specimens of choice for laboratory diagnostic purposes. However, further research is required to determine what specimen(s) will be most appropriate for molecular investigation of secondary and latent syphilis. Treatment of infectious syphilis with macrolide antibiotics should be restricted to patient population where resistance is rare and follow up of patients clinically and serologically is possible.

P1.73

THE ROLE OF MULTIPLEX PCR IN MONITORING TREATMENT RESPONSE OF MALE PATIENTS PRESENTING WITH NON-VESICULAR GENITAL ULCERATIONS IN SOUTH AFRICA

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Objectives: To evaluate the performance and application of an in-house multiplex PCR (M-PCR) in detecting etiologies of genital ulcer disease (GUD) and monitoring response to treatment among male patients presenting with non-vesicular genital ulcerations in Johannesburg, South Africa.
Methods: This study included 395 adult male patients presented with non-vesicular genital ulcerations at an STD clinic in Carletonville, South Africa. A cotton swab was used to collect the genital ulcer exudates. The swabs were tested for Hemophilus ducreyi (HD), Treponema pallidum (TP), Herpes simplex virus type 2 (HSV-2). Additional swabs were collected to perform Dark field (DF) microscopy and cultures for HD and HSV at the local laboratory. PCR swabs were repeated at Days 7 and 14 following provision of dual antibiotic therapy for syphilis and chancroid.
Results: Of 395 patients enrolled, 329 (83.3%) were M-PCR positive for at least one pathogen with 15 (3.8%) having mixed etiologies. Among 314 patients with single GUD etiology, HD was detected in 248 (79%) followed by 47 (15%) HSV-2 and 19 (6.1%) TP. When compared to HD and HSV culture results, M-PCR detected 28 additional HD and 21 HSV infections. Of 22 TP positive patients, only 3 (13.6%) were positive on DF microscopy. At the Day-7 post-treatment follow-up visit, all TP positive patients and 213 (93%) HD positive patients were negative by M-PCR. 12 of 17 (71%) patients with persistent HD PCR positive were HD culture positive indicating treatment failure. Of 51 HSV positive patients, 19 (37%) were persistently HSV PCR positive at Day-7.
Conclusions: M-PCR proved sensitive for the detection of GUD pathogens. Retesting following effective therapy indicated clearance of TP and HD by 7 days. Chancroid treatment failure was associated with persistent DNA detection. HSV-2 persistence was high and the inclusion of anti-herpes therapy in syndromic management protocols should be considered for patients with non-vesicular genital ulcerations in South Africa.

P1.74

THE USE OF FTA ELUTE CARDS FOR COLLECTION AND TRANSPORT OF SPECIMENS FOR THE MOLECULAR DIAGNOSIS OF GENITAL ULCER DISEASE
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Objectives: To evaluate potential applications of Whatman Indicating FTA Elute cards for the collection, transport, and storage of genital ulcer specimens for the identification of the etiologic agents of genital ulcer disease using a real-time multiplex PCR
Methods: Ten-fold serial dilutions of purified genomic HSV-2 DNA were spotted onto the FTA Elute cards (ranging from 8 to 8 x 10^4genomic copies per card) and air dried. The cards were stored in pouches without desiccant at ambient (22 - 23°C) or elevated (35-36°C, with humidity) temperatures for up to 2 weeks. One 6-mm sample disc was removed from the center of the card on days 1, 3, 5, 7 and 14. The disc was washed, and the DNA eluted in Tris buffer at 95°C, and quantified using a TaqMan-based real-time PCR. Similarly, genomic DNA from H. ducreyi, T. pallidum, and a limited number of ulcer specimens resuspended in GeneLock or viral transport medium were also applied onto the FTA card, kept at ambient temperature, and the DNA eluted from a 6-mm disc for the detection of GUD etiology using a real-time multiplex PCR.
Results: The limit of detection of HSV DNA was approximately 8-80 genomic copies/6-mm disc whether the cards were stored at ambient or elevated temperature without desiccants. However, storage of FTA cards at elevated temperature in humid conditions for 14 days resulted in a 10-100 fold decrease in sensitivity of detection of HSV DNA. The GUD etiologies were also correctly identified by real-time PCR using FTA cards spiked with known genomic DNA from H. ducreyi, T. pallidum, or ulcer specimens.
Conclusions: The FTA Elute card allows storage of ulcer specimens at room temperature and simple processing for downstream PCR amplification and etiology identification. For long term specimen archiving and/or storage at higher temperature, the use of desiccants may be required. The FTA cards may also provide a cost saving alternative to expensive international shipping of specimens on dry ice.

P1.75

CLINICAL PERFORMANCE OF THE APTIMA® HPV ASSAY FOR DETECTION OF E6/E7 MRNA FROM HIGH-RISK HPV TYPES IN LIQUID BASED CYTOLOGY SPECIMENS
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Background: This study evaluated the clinical performance of the APTIMA HPV (AHPV, Gen-Probe Incorporated) assay, a qualitative nucleic acid test to detect the E6/E7 mRNA of 14 high-risk HPV (hrHPV) types.
Methods: AHPV was compared to the Hybrid Capture 2 (HC2, Qiagen Incorporated) HPV DNA test. Performance of the assays for detection of hrHPV types was determined by comparison with the Linear Array genotyping test (Roche Molecular Diagnostics). Performance was evaluated using 780 LBC (Cytyc)

specimens from women referred to colposcopy. Sensitivity and specificity for detection of disease were calculated based on 753 specimens with histology results defining disease as positive if histology results were CIN2 or greater (CIN2+).
Results: The sensitivity of AHPV and HC2 for hrHPV types was 93.0% and 94.1%, respectively. The specificity of the AHPV assay (99.1%) for hrHPV was significantly higher than HC2 (82.2%). The sensitivity for detection of CIN 2+ disease was 90.8% for AHPV and 95.0% for HC2. The clinical specificity of the AHPV assay (56.2%) was significantly higher than HC2 (47.4%). There was no statistical difference in sensitivity between the AHPV and HC2 assays for detection of disease or high risk HPV.
Conclusions: The AHPV assay is as sensitive but more specific for detection of hrHPV types and cervical disease compared to the HC2 assay. The increased clinical specificity of AHPV is likely due to the detection of HPV mRNA rather than DNA and the lack of cross-reactivity of AHPV with low-risk HPV genotypes. These results show that the AHPV assay will be useful for the detection of cervical disease in LBC specimens from women.

P1.76

CLINICAL CORRELATION OF APTIMA™ HPV ASSAY IN COMPARISON WITH HYBRID CAPTURE 2™ TEST IN CERVICAL CANCER SCREENING
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Background and Objectives: Malignant transformation is induced by HPV E6/E7 oncogene expression, which can be detected through E6/E7 mRNA. Therefore, testing for HPV E6/E7 expression is likely to have greater clinical specificity than testing for HPV DNA. APTIMA HPV assay (Gen-Probe Inc) detects E6/E7 mRNA of 14 oncogenic HPV types. The clinical correlation of this test was assessed in comparison with Hybrid Capture 2 (HC2; Qiagen) which detects DNA of 13 oncogenic types.
Methods: Women with cytologic abnormalities referred to colposcopy and those having routine Pap screening served as the study population. Cytology was performed with ThinPrep™ method (Hologic). Cervical specimens were tested with APTIMA and HC2 tests. APTIMA and HC2 results were correlated with cytologic and histologic grades. Histology confirmed high grade cervical intraepithelial neoplasia or worse (≥CIN2) served as the gold standard.
Results: Of 1154 colposcopy referral cases tested, 363 had normal cytology at enrolment, of which 58 were diagnosed with ≥CIN2; APTIMA was positive in 50/58 cases (86.2%) vs. 48 (82.8%) by HC2. Among 340 with a cytologic grade of atypical squamous cells of undetermined significance, 82 had ≥CIN2; APTIMA was positive in 77/82 (93.9%) vs. 76 (92.7%) by HC2. Among 308 with low-grade squamous intraepithelial lesion (SIL), 100 had ≥CIN2; APTIMA was positive in 97/100 vs. 95 by HC2. Among 143 with high-grade SIL cytology, 116 had ≥CIN2; APTIMA was positive in 110/116 (94.8%) vs. 112 (96.6%) by HC2. Overall, the clinical sensitivity of APTIMA for detection of ≥CIN2 was 93.8% vs. 93.0% for HC2. Among those with ≤CIN1 (n=798), specificity was 44.2% for APTIMA vs. 38.5% for HC2. Of 1120 routine screen population tested, in 1113 with ≤CIN1, specificity was 87.7% for APTIMA vs. 84.5% for HC2.
Conclusions: APTIMA assay showed a higher clinical specificity than HC2 while maintaining a high level of clinical sensitivity similar to HC2 for detection of ≥CIN2.

P1.77

ANALYTICAL PERFORMANCE OF THE GEN-PROBE APTIMA® HPV ASSAY ON THE PANTHER INSTRUMENT
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Gen-Probe Corporation, US

Objectives: The Panther is a new fully automated molecular diagnostic instrument under development at Gen-Probe. The objective of the studies was to assess analytical performance of the APTIMA® HPV Assay on prototype Panther instruments.
Methods: Six positive panels were made by spiking RNA into Swab Transport Media (STM) at concentrations close to the analytical sensitivity for HPV subtypes 16,18, 31, 51, 52 and 68. The negative panel member was unspiked STM. Panels were tested with the Gen-Probe APTIMA HPV Assay on three prototype Panther instruments in replicates of 30/instrument. The total precision for signal output was calculated. Analytical sensitivity was assessed by spiking RNA from 6 HPV subtypes in STM at 4 different concentrations. A Probit analysis was used to calculate the analytical sensitivity as determined by 95%

positivity.
Results: Total precision for signal output was 13% or less for the positive panels and 5% for the internal calibrator in the negative panel. The analytical sensitivity estimates for the detection of the different subtypes in the APTIMA HPV Assay run on the prototype Panthers were: 32copies/reactions for subtype 16; 4copies/reaction for subtype 18; 12 copies/reaction for subtype 45; 39copies/reaction for subtype 51; 191copies/reaction for subtype 52; and 174copies/reaction for subtype 68.
Conclusions: The newly developed, fully automated Panther molecular diagnostic instrument running the APTIMA HPV Assay generates precise results and has excellent analytical sensitivity. In addition to excellent analytical performance, the Panther instrument offers the optimum throughput and workflow that is ideal for the low to mid volume molecular testing laboratory.

P1.78

CHLAMYDIA TRACHOMATIS IgA DETECTION IN SERUM AND SEMEN IN THE MEN WITH CHRONIC PROSTATITIS
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Objectives: Ascending C. trachomatis (CT) infection may result in the inflammatory process in the prostate, although the role of CT in the pathogenesis of chronic prostatitis (CP) is still not clear and better understanding of the body's immune response to CT is of great interest.
The prevalence of CT IgA antibodies in serum (SR) and semen (SM) samples in men with/without CP was investigated.
Methods: From July to December 2008 90 men (16-65 years) with no STIs were enrolled in the study. CP patients were divided into 3 groups based on their CPSI-NIH (pain and urinary disorders) indexing, with mild (0-7), moderate (8-19) and severe (20-35) symptom scale score: 24 CP+, 34 CPm and 7 CPs men.
CT-specific MOMP IgA antibodies were measured with a serology test (pELISA plus, Medac) in SR and SM specimens from 65 men with and 25 without CP. Antibody titres were quantified as photometrical units with all non-negative results considered as positive (CT+).
Results: The results are presented in Table.
Although in many CP- patients CT infection in the past could not be excluded, CT IgA were not found in CP- men. CT IgA were detected in 37.3% SM and 32.3% SR specimens of CP men. Interestingly, likely as we have shown for urethral and prostate specimens in the previously performed studies in Amsterdam, the more severe symptoms CP, the more often positive CT IgA were observed in SM, with 28.6, 35.5 and 66.7% in CP+, CPm and CPs groups for MOMP antibodies ($p < 0.0001$). Men with/without CP had differences neither in age of first sex nor in number of lifetime or last 6 month sex partners.
Conclusions: Serological tests of the SM and SR are useful as a complementary method in the diagnosis of CP, with a CT-specific MOMP serology assay as a very promising one. Our results support the role of CT on CP and its importance in the diagnosis. At the moment we: 1)compare the results with the ones for both urethral and prostate samples, 2)study co-infection factors and 3)define the patients selection criteria.

	CP+	CP-	
Serum (90)	16 (65)	0 (25)	p = 0.0045
Semen (67)	19 (51)	1 (16)	p = 0.0261
	CP symptoms	CP symptoms	CP symptoms
CP symptoms	CP+ (mild)	CPm (moderate)	CPs (severe)
Serum (65)	6 (24); 25%	13 (34); 38.2%	2 (7); 28.6%
Semen (51)	4 (14); 28.6%	11 (31); 35.5%	4 (6); 66.7%
Serum + Semen	4 (14); 28.6%	14 (31); 45.2%	4 (6); 66.7%
Concordance	2 (4)	9(14)	2 (4)

P1.79

ASYMPTOMATIC LGV PROCTITIS DETECTION WITH IgA ANTI-MOMP SEROLOGY
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Background: Lymphogranuloma venereum proctitis (LGVP) causes symptoms in general, but in 1/3 of cases little complaints are present. Standard diagnostics are genovar specific C. trachomatis (CT) NAATs', which are expensive and require specialized collection/lab conditions. Therefore, practical screening methods for (asymptomatic) LGVP cases are needed.
Methods: We evaluated 4 serological tests (IgA or IgG, Medac, Germany) against CT specific proteins (anti-MOMP or anti-LPS) on serum samples from LGVP patients (genovar L, n=20), CT proctitis (genovar D-K, n=20) and proctitis with unknown cause (n=20, CT and gonorrhoea excluded). Asymptomatic patients were identified as: 1. no anal complaints and 2. <10 leucocytes per high power field in anal smears. Samples were collected at time of diagnosis (t0), and up to 52 weeks after treatment. Ab titers were quantified as Photometrical Units (PU). Students' t-test and ROC curve analysis was used for statistics.
Results: At t0, the IgA anti-MOMP test differentiated best between LGVP (PU 6.0) vs CT proctitis (PU 1.2, p=0.000005) and proctitis with unknown cause (PU 1.5, p=0.00002). The PU in LGVP cases dropped quickly after therapy to 3.1 at week 52 (vs. CT proctitis 1.1 and proctitis with unknown cause 1.4, both n.s.). In asymptomatic patients, the IgA anti-MOMP assay was significantly higher in the LGVP group (PU 3.3) than in the CT proctitis group (PU 0.6, p=0.03) and in patients with <10 leucocytes in anal stains, PU were resp 4.5 and 1.4 (p=0.06). ROC analysis for the IgA anti-MOMP assay to diagnose LGVP in asymptomatic patients and with < 10 leucocytes in anal stains was resp. 0,82 and 0,80.
Conclusion: 1. IgA anti-MOMP serology reveals gross differences between patients with LGVP and other forms of proctitis, even in asymptomatic cases. 2. The IgA anti-MOMP production declines rapidly after treatment. This serodynamic characteristic correlates specifically with active infections, not past and treated cases. 3. As diagnostic tool the IgA anti-MOMP assay needs to be further evaluated.

P1.8

FREQUENT HIV-1 GENITAL SHEDDING AMONG HIV AND HSV-2 CO-INFECTED WOMEN, CHIANG RAI, THAILAND

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Background: Herpes simplex virus (HSV) infection is known to increase the risk of HIV transmission but little is known about the natural history of HSV and HIV shedding at the mucosal level where sexual transmission occurs. There are no published data on the frequency of HIV-1 and HSV-2 genital shedding from daily self-collected genital swab (SCS) specimens. Such data could further elucidate HIV-1/HSV-2 genital shedding among co-infected women.
Methods: We evaluated genital self-collected swabs (Dacron swabs in Assay Assure DNA/RNA protect) from 67 HIV-1 and HSV-2-co-infected women with CD4 counts >250 cells/ul. Each woman collected a vaginal/perineal/perianal SCS daily during the placebo month of a randomized clinical trial in Chiang Rai, Thailand. For each participant, an average of 3 SCSs per non-menstrual week were evaluated for HIV-1 RNA and HSV-2 DNA. A descriptive analysis of qualitative viral shedding during the month was conducted using STATA (version 8.0).
Results: Sixty-seven women had 564 SCSs available for analysis (median, 7 SCSs per participant; range, 1-9 SCSs). Valid HIV-1 and HSV-2 results were available for 528 (94%) SCSs. Of these, HIV-1 RNA was detected in 372 (70%) SCSs, HSV-2 DNA in 139 (26%), and both in 114 (22%). Sixty-one (91%) women shed HIV-1 RNA and 46 (69%) women shed HSV-2 DNA at least once during the month. Nineteen (28%) women shed HIV-1 only, 4 (6%) shed HSV-2 only, 42 (63%) shed both viruses, and 2 (3%) shed neither virus during the month. Fifty-two (78%) women shed HIV-1 RNA and 17 (25%) shed HSV-2 DNA at least 4 times during the month.
Conclusions: Genital self-collected swabs provide a method for frequent evaluation of genital viral shedding that is useful to describe the natural history of HIV-1/HSV-2 genital shedding. Genital HIV-1 shedding was common and more frequent than HSV-2 shedding among co-infected women.

P1.80

REVIEW OF THE PERFORMANCE OF COMMERCIALLY AVAILABLE HERPES SIMPLEX VIRUS TYPE-2 TESTS AMONG AFRICAN POPULATIONS

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Background: There are several commercially available type-specific serologic tests for Herpes Simplex Virus type 2 (HSV-2). These tests act by detecting the HSV-2 specific glycoprotein, gG-2, and therefore can distinguish between HSV-1 and HSV-2, and are easier, faster, and cheaper to perform than Western Blot. However poor performance of the tests on on samples from Africa have been reported.
Methods: We searched the PubMed database for papers from sub-Saharan Africa reporting performance of commercially available HSV-2 tests against a gold standard (Western Blot or monoclonal antibody EIA). We summarise the performance of the two most commonly evaluated tests : Kalon gG2 ELISA (Kalon Biologicals, Guilford, UK) and Focus HerpeSelect HSV-2 ELISA (Focus Technologies, Cypress, CA).
Results: We identified 13 studies evaluating the performance of Focus, and 7 of Kalon. Using the manufacturer's cut-off (index value =1.1), Focus had a very high sensitivity (median 100%, range 98-100%) but variable specificity (median 88%, range 22-93%). Kalon had slightly lower sensitivity (median 92%, range 88-95%) but higher and less variable specificity (median 88%, range 79-100%). Performance varied by geographical location, type of study population, and HIV status, with generally lower specificity among HIV seropositive individuals. Four studies evaluated a higher cut-off of 3.5 for Focus, which improved test performance substantially (median 85%; range 80-87%).
Conclusion: Sensitivity and specificity of HSV2 tests used in sub-Saharan Africa varies by setting, and were lower than reported from studies in the USA and Europe. Further research is needed to elucidate possible explanations for this. Differences in local strains or cross-reactivity with unidentified proteins may play a role. Evaluation of test performance prior to widespread use may help in deciding which test is most appropriate in given settings.

P1.82

PHENOTYPIC AND GENETIC CHARACTERIZATION OF THE 2008 WHO NEISSERIA GONORRHOEAE REFERENCE STRAINS FOR GLOBAL QUALITY ASSURANCE AND QUALITY CONTROL

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Objectives: Emergence and spread of antimicrobial resistance (AMR) in Neisseria gonorrhoeae remains a major global problem and expanded, but valid, AMR surveillance is crucial for public health purposes. The WHO Collaborating Centre for STD in Sydney, Australia continually evaluates N. gonorrhoeae strains used in quality assurance and quality control aspects of the national, WHO regional, and international programmes for AMR surveillance it conducts. Aim: To phenotypically and genetically characterize the 2008 WHO N. gonorrhoeae reference strain panel, widely used under existing WHO AMR surveillance protocols.
Methods: The eight current N. gonorrhoeae WHO reference strains were phenotypically characterized by AMR testing, auxotyping, serovar determination, and PIP screening; and genetically in regards of resistance plasmid types, polymorphisms in divergent genetic resistance-mediating loci (n=9), porB sequencing and NG-MAST.
Results: The 2008 WHO reference strains represented all the important susceptible and resistant phenotypes, including corresponding resistance genotypes, and the range of resistances currently seen for antimicrobials used in treatment regimens for gonorrhoea. Several pertinent additional phenotypic and genotypic markers, e.g. epidemiological markers, were also determined.
Conclusions: The 2008 WHO N. gonorrhoeae reference strain panel was extensively characterized, which is crucial for the expansion of gonococcal AMR surveillance nationally and internationally. The panel is available through WHO sources for quality assurance and quality control aspects of current phenotypic testing protocols, to allow valid comparison of AMR data derived by divergent methods, and also for control of present and future molecular assays for AMR detection. Additional WHO reference strains can be included as required by the emergence of additional resistant phenotypes and/or genotypes.

P1.83

THE QUALITY CONTROL SYSTEM OF SYPHILIS SEROLOGICAL DIAGNOSTICS IN RUSSIAN FEDERATION

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Objectives: In 2007 the morbidity of syphilis in the Russia has made 63,2 cases on 100 thousand population. One of possible ways to localize syphilis is maintaining of high level serological diagnostics.

Methods: The State Research Centre of Dermatovenerology of the Russian Ministry of Health developed the System of quality control of syphilis serological diagnostic and supervises quality serological researches in laboratories of Clinics of Dermatovenerology by dispatch of four stabilized human sera with and without antibodies against T. pallidum and comparison the results received from laboratories to results of an estimation of control materials in expert serological laboratory. The methods that were subject of control, were: the reaction of microprecipitation with cardiolipin (RMP - nontreponemal test used in Russia) and some of treponemal tests: TPHA, FTA and ELISA (IgG+M).
Results: In 2004 the control was lead in 31, in 2005 - 59, in 2006 - 70, in 2007 - 30, in 2008 - 85 laboratories. The greatest percent of unsatisfactory results of the control has been received at quality check of performance of nontreponemal test RMP: in 2004, 2005, 2006, 2007, 2008 - 22.6 %, 27.3 %, 26.9 %, 20.8 %, 13.7 % accordingly. At performance of treponemal tests of laboratories have shown smaller percent of unsatisfactory results: in TPHA in 2004, 2005, 2006, 2007, 2008 - 8.4 %, 9.3 %, 2.1 %, 1.1 %, 4.8 % accordingly; in FTA in the same years - 21.7 %, 10.1 %, 2.0 %, 2.3 % and 3.2 % accordingly; in ELISA (IgG+M) - 15.4 %, 1.8 %, 0.8 %, 0.9 % and 0.9 % accordingly.
Conclusions: In Russia there is a significant share of the laboratories admitting mistakes at performance of syphilis serological tests that can influence on parameters of disease. After carrying out of actions on quality assurance the number of laboratories - participants of cycles of the control has considerably increased and the percent of unsatisfactory results of syphilis serological testing has decreased. Correspondeance: rotanov@cnikvi

P1.84

PERFORMANCE OF ANY ANTIMICROBIAL RESISTANCE TESTING OF NEISSERIA GONORRHOEAE IN EAST-EUROPEAN COUNTRIES OF NORTH CAUCASUS AND CENTRAL ASIA?
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Objectives: High levels of antimicrobial resistance (AMR) in *Neisseria gonorrhoeae* are major concerns globally and increased AMR surveillance worldwide is crucial. However, internationally reported AMR data from the geographic region of North Caucasus and Central Asia are entirely lacking. Aim: To perform a survey, regarding current AMR testing activities for *N. gonorrhoeae*, in seven countries of North Caucasus and Central Asia.
Methods: A questionnaire-based survey was conducted. This aimed to investigate the availability of AMR testing, including laboratory facilities, methods and quality assurance used, availability of resistance data, antimicrobials used for testing as well as for gonorrhoea treatment, etc. North Caucasian, i.e. Armenia, Azerbaijan and Georgia, and Central Asian, i.e. Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, East-European regions participated.
Results:

Parameters	Azerbaijan	Armenia	Georgia	Kazakhstan	Kyrgyzstan	Tajikistan	Uzbekistan
AMR nationally	No	No	No	No	Yes	No	Yes
AMR by local institutions	Yes	Yes	Yes	Yes	Yes	No	Yes
Nr of isolates tested in 2007	30	100	900	150	120	0	125
AMR method used*	DD	DD	AD, DD	DD	DD	-	DD
Use of quality control strains	No	No	No	No	Yes	No	Yes
Can culture N gonorrhoeae	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Have AMR data available	No	No	No	No	Yes	No	Yes

* DD, disc diffusion; AD, agar dilution
Most of the countries analysed the susceptibility to ceftriaxone, azithromycin, ciprofloxacin, penicillin G, doxycycline, and tetracycline. First line gonorrhoea treatment was mainly ceftriaxone, azithromycin, ciprofloxacin and spectinomycin.
Conclusions: In North Caucasus and Central Asia, AMR testing and surveillance in *N. gonorrhoeae* are rare. The EE SRH Network evidence-based guidelines for diagnosis of *N. gonorrhoeae* are being introduced and, through the EE SRH Network, initiation of quality assured and quality controlled AMR testing and surveillance under WHO protocols is in progress. This is crucial for gonorrhoea case

management, including effective treatment guidelines, conventional epidemiological and AMR surveillance in a national and international perspective.

P1.85

GUIDELINES FOR THE LABORATORY DIAGNOSIS OF TRICHOMONAS VAGINALIS INFECTIONS IN EASTERN-EUROPEAN COUNTRIES

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Objectives: During the last twenty years, many of the Eastern European (EE) countries have undergone significant economic, social and political changes. However, the diagnosis and management of STIs remains suboptimal.
Methods: In collaboration with international STI experts within the EE-SRH Network, efforts have been made to improve, harmonise, and assure quality control and laboratory methods for the diagnosis of *Trichomonas vaginalis* infections in EE countries.
Results: Diagnosis of *T. vaginalis* infection in EE countries is mainly performed using microscopy of stained (most commonly Gram-stained) smears. Suboptimal conditions of sample transportation and microscopy frequently result in the diagnosis of "atypical" trichomoniasis. Scarce number of laboratories performs microscopy on wet preparations and even a few use culture, i.e. conventional liquid or InPouch method. In some EE countries such as Russia, diagnostic nucleic acid amplification tests (NAATs) have been produced. To improve the current situation, consensus for EE countries has been reached: (i) at clinical settings, the microscopic examination of wet preparations of vaginal exudates should be encouraged. If no trichomonads are detected and there is a strong indication of infection, culture or NAATs could be employed; (ii) culture can be beneficially used to establish a diagnosis, particularly in men; (iii) in screening or high volume testing situations, use of NAATs would be the most ideal. In the absence of internationally recognized commercial NAAT systems, tests developed in-house should be strictly validated using obtainable international standards and appropriate numbers of positive and negative clinical samples.
Conclusions: The present guidelines provide comprehensive, up-to-date information regarding the laboratory diagnosis of genital *T. vaginalis* infections in EE. It is recognized that, for different countries, minor national adjustments of the present guidelines will be needed.

P1.86

PRELIMINARY RECOMMENDATIONS FOR THE LABORATORY IDENTIFICATION OF CHLAMYDIA TRACHOMATIS, NEISSERIA GONORRHOEAE, AND TREPONEMA PALLIDUM INFECTIONS

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Objectives: To develop CDC Laboratory Recommendations for the identification of infections caused by *C. trachomatis*, *N. gonorrhoeae* and *T. pallidum*.
Methods: A panel of experts drawn from various organizations developed areas of emphasis for the recommendations. The panel reviewed published literature and unpublished data to compile tables of evidence. The expert panel met to consider these data for the development of laboratory recommendations.
Results: Rectal chlamydia and gonorrhea infections have been widely reported in at risk populations yet the most used diagnostic tests for these infections in the US, nucleic acid amplification tests (NAATs), have not been cleared by the FDA for rectal specimens. Data from several studies indicate that NAATs are the best choice to test rectal specimens. These tests should also be used when assessing pharyngeal specimens for gonorrhea though laboratory personnel are cautioned to use alternate methods if the NAAT has demonstrated cross reaction with commensal Neisseria species. Routine supplemental testing of urogenital specimens had been previously recommended to improve the positive predicative value of NAATs but recent data suggest that this approach lacked its intended utility. The performance of various specimen types to screen for urogenital chlamydia and gonorrhea infections indicated that vaginal swabs were better than urine specimens. The use of treponemal serologic tests as initial screening tests for syphilis were reviewed and consensus reached regarding the need to recommend reflux RPR/VDRL testing. Additional consideration has been given to further reflux testing with a second treponemal test to confirm reactivity of the initial test.
Conclusions: The plethora of diagnostic tests for the identification of chlamydia, gonorrhea and syphilis

continues to grow with advances in technology. Laboratory Directors can benefit from a review of the performance of available tests to better inform their clinical and programmatic colleagues.

P1.87

CURRENT STD LABORATORY TESTING AND VOLUME IN THE UNITED STATES AMONG PUBLIC HEALTH LABORATORIES, 2007

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Objectives: To describe the methods and volume of STD tests being performed among public health laboratories in the United States in 2007.
Methods: We conducted a web-based survey sent to state and local public health laboratories throughout the US on January 2008. Invitation emails were sent to laboratory directors who were asked to respond within 8 weeks. Follow-up email reminders were sent to all non-responders at week 4 and 7. Analysis of data was done in SAS 9.0.
Results: Of 155 invited laboratories, 96 (62%) completed the survey. 93% of laboratories reported doing chlamydia (CT) testing (total: 3.3 million tests) with 82% being nucleic acid amplification tests (NAATs). 96% of laboratories performed gonorrhea tests (total of 3.2 million tests); of those tests, 81% were NAATs. 4.8% of GC tests were culture. Syphilis testing was reported from 91% of laboratories (1.9 million tests). Of syphilis tests done, 0.07% were direct detection, 90% were non-treponemal, and 9.7% were treponemal tests. Herpes tests were performed in 51% of laboratories; the majority of herpes tests being performed were serology (45%), followed by culture (41%) and other direct detection (14%). Few laboratories reported performing any testing for other STDs.
Conclusions: Comparing these results to published results from a 2004 survey, the percent of NAAT tests used to diagnose CT/GC has increased substantially. In contrast, the numbers of GC tests that are culture have dramatically decreased. The total number of treponemal tests for syphilis has slightly increased and non-treponemal and direct detection tests have remained the same. However, further studies need to include the non-public health laboratories.

P1.88

THE LABORATORY IMPACT OF CHANGING SYPHILIS SCREENING METHODS IN THE GREATER TORONTO AREA, CANADA

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Objectives: After 2005, centralized syphilis screening in the Greater Toronto Area (GTA) was conducted using a treponemal-specific automated enzyme immunoassay (EIA) replacing RPR as the initial test. We reviewed the consequences of this change with respect to laboratory results and testing patterns.
Methods: Laboratory data were reviewed from Jan 1, 2001 - Aug 2, 2005 (RPR screening), and from Aug 3, 2005 - July 31, 2008 (EIA screening), with respect to specimen, demographic, and testing data. For an individual patient, repeat submissions following an initial positive result, and repeat negative submissions < 1 year apart, were excluded. Positive results were defined as reactive on screening and at least 1 confirmatory test.
Results: 2,384,992 submissions were included in our analysis. We observed a positive testing rate of 2.4 per 1000 persons tested per month with RPR screening and a rate of 10.6 per 1000 persons per month with EIA. The majority (79.2%) of the EIA patients had a negative RPR, consistent with latent infection. Compared to EIA positive and RPR reactive patients, EIA positive and RPR negative patients were more likely to be male (IRR 2.3, 95% CI: 1.6-2.5), asymptomatic (IRR 1.8, 95% CI: 1.3-2.8), and older (age > 60 years; IRR 2.4, 95% CI: 1.6-3.5). On subsequent testing within 2 months, 0.09% of EIA positive and RPR negative patients converted to RPR positive, suggesting they had early syphilis. The rate of submissions per month did not significantly change after the introduction of the EIA (p=0.54).
Conclusions: EIA screening has wider implications for the practical implementation of syphilis treatment in latent stage infection, the possible benefit of earlier detection, and laboratory advantages of managing high-throughput screening, but may inflate estimates of syphilis prevalence when used in place of RPR. The implications of this change for the epidemiology of syphilis in the GTA require further study.

P1.9

CYCLIC PEPTIDE PORIN LOOPS ELICIT BROADLY CROSS-REACTIVE AND BACTERICIDAL ANTIBODIES AGAINST NEISSERIA GONORRHOEAE

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Objective: Gonococcal porin is an attractive vaccine target due to its abundance in the outer membrane and role in bacterial invasion and serum resistance. We previously reported that cyclic peptides that correspond to surface-exposed porin (P1A) loops of the *Neisseria gonorrhoeae* (Gc) strain FA19 induce surface-binding antibodies. Here we report a more complete analysis of P1A loop-specific antisera including functional activity against Gc.
Methods: Mouse antisera against cyclic peptides (28-35 residues) that correspond to porin loops 1, 3, 5, 6, 7, and 8 of P1A strain FA19 were tested for recognition of 14 P1A strains of known *porB* variable region (VR) types by western blot and indirect fluorescent antibody staining. Antisera were also tested for the capacity to agglutinate Gc and bactericidal activity in the presence of normal human serum.
Results: P1A-3-specific antiserum recognized a collection of P1A isolates, including those with 1, 3 or 4 amino acid differences compared to FA19. Antiserum to P1A-6, P1A-7, and P1A-8 recognized isolates of the same P1A VR type and closely related P1A VR types, but not strains that differ from the respective loops in FA19 by 3 or 4 residues. P1A-3- and P1A-8-specific antisera recognized the native porin in most of the isolates; recognition of native porin by P1A-7 and P1A-6-specific antisera was more limited or did not occur, respectively. P1A-1- and PIA-5-specific antisera agglutinated bacteria of the homologous porin type and some heterologous types. P1A-1-, P1A-3-, P1A-5- and P1A-8-specific antisera, but not PIA-7 were bactericidal against serum sensitive P1A strains.
Conclusions: Our results support the use of cyclic peptides to preserve the native conformation of porin loops. Cyclic peptides against P1A loops 1, 3, 5, 8 are the most promising in terms of broad reactivity, agglutination ability, and bactericidal activity. Studies to measure the capacity of these antibodies to block porin-mediated functions are underway.

P2.1

SOLVING THE PATIENT CHOICE RIDDLE: IMPOSING A RESTRICTIVE WALK-IN ONLY SERVICE IS NOT NECESSARY TO MEET NHS ATTENDANCE TARGETS

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Background: Prompt treatment is a cornerstone of public health control of STIs and is the basis for the NHS GUM clinic access targets. Although virtually all UK clinics can now offer all patients an appointment within 48 hours of initial contact, difficulties have persisted in meeting the high rates for attendance within 48 hours demanded by some regions. Many clinics have reverted to restrictive walk-in only services thereby removing patient choice of appointment time.
Methods and Results: Patient choice of appointment times was assessed for 10157 consecutive patients requesting new care episodes during a 6 month period to a service assuring all that they could be seen within 48 hours. 25% chose an appointment time >48 hours later. Seeking delayed appointment was more common in females, and significantly higher default occurred with appointments delayed for >5 days. A minor administrative change to appointment booking practice was introduced and attendance rates were reassessed. The introduction of a provisional booking system, requiring re-confirmation within 48 hours of appointment time, by the 6% patients choosing delayed appointments >5 days later, increased patient 48hr attendance rates from 75% to 85% and significantly reduced default rates during the subsequent 3 months.
Conclusion: Unrestricted patient choice of future appointment times can be maintained, patient default reduced, and attendance targets achieved without the need to impose walk-in only services by requiring a small number of patients to reconfirm their appointments.

P2.10

WHAT IS SEXUAL AND REPRODUCTIVE HEALTH AND HIV SERVICE INTEGRATION? KEY INFORMANT UNDERSTANDING OF INTEGRATION AND FEASIBLE INTEGRATION MODELS

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Background: In South Africa, linking and integrating sexual and reproductive health (SRH) with HIV services is important. A range of health issues should be addressed, including high rates of HIV, TB and unplanned pregnancies. In this context, a demonstration project is being conducted in KwaZulu-Natal

Province to develop and evaluate a district-based model for linking SRH and HIV services. We present data on expert key informant understanding on service integration and feasible integration models.
Methods: Semi-structured interviews were conducted with 21 key informants from the South African Health Department, local and international NGOs and universities. Participants were questioned on their perspectives of current approaches to service delivery, understanding of integration between SRH and HIV services, feasible models of integration and challenges to delivering integrated care. Interviews were transcribed and coded for analysis using NVivo.
Results: Data suggest that services and client management are highly verticalised, with opportunities to provide holistic care missed. There was consensus that an integrated approach to SRH and HIV service delivery is urgently required. While some emphasized flexibility, depending on local capacity and needs, others favoured a uniform approach guaranteeing a basic minimum of comprehensive care. Specific models included integrating VCT into family planning services, a continuum of care around pregnancy and PMTCT, and the integration of family planning and cervical cancer screening into HIV care and treatment. A range of challenges to implementing integrated models was identified, including training needs, the need to obtain buy-in from providers and managers, and staff and resource shortages.
Conclusions: Well-designed integrated service structures are urgently required to overcome the verticalised service delivery approach, but a series of service delivery factors needs to be addressed to ensure the sustainability of new approaches.

P2.100

HERPES TESTING IN US PUBLIC HEALTH CLINICS IN 2008: IS THE GLASS 2/3S FULL OR 1/3 EMPTY?

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Background: Of the 17% of the U.S. population infected with herpes simplex virus type 2 (HSV-2), 80-90% do not know and may inadvertently transmit to others. The CDC recommends virologic and serologic tests for all STD clinic attendees. In the U.S., HSV testing is believed to be underutilized, yet little documentation of this exists. This study was designed to answer: 1) What is the frequency of virologic and serologic testing in the largest U.S. city's public health STD clinics? 2) What are the barriers to virologic and serologic testing? 3) Are there regional trends in testing practices?
Methods: A survey to measure rates and types of HSV testing was developed, pilot-tested and revised. Clinic staff of public health/STD clinics in each of the five largest cities within each state, DC and Puerto Rico were contacted, sent study information and interviewed. Interviewers entered the data into Survey Monkey survey software. Data were imported into SPSS for descriptive statistical analysis (frequencies and chi square analyses).
Results: Of the 232 participating clinics, 145 (63%) did some kind of testing for HSV.

Virologic (swab) tests only	87 (37.5%)
Serologic (blood) tests only	7 (3.0%)
Both	51 (22.0%)
Neither	87 (37.5%)

Barriers to virologic testing included: "Don't know" (67.0%) or financial limitations (30.5%), and to serologic testing: "Don't know" (51.7%) or financial limitations (44.0%). Testing was significantly more likely to occur in the West and Northeast compared to the Midwest and South ($X2=42.252$; $p<.001$).
Conclusions: While two-thirds of the largest public STD clinics test for HSV, only 22% offer both virologic and serologic tests, as recommended by the CDC. More than 1/3 do not test at all for HSV. These data suggest that low cost, CLIA waived, rapid tests and concise counseling tools could address many of the barriers to testing.

P2.101

DEVELOPMENTAL OUTCOMES FOLLOWING NEONATAL HERPES INFECTION: RESULTS FROM A COHORT STUDY OF NEONATAL HERPES CASES IN CANADA

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Objectives: To evaluate the developmental consequences of neonatal HSV infection in Canada through a three year cohort study.
Methods: Physicians following all surviving children identified between 2000 and 2003 through a national neonatal herpes surveillance program were contacted once a year for three consecutive years to collect information on age-specific developmental delays.
Results: Fifty-eight cases of neonatal HSV infection were reported (5.9 per 100,000 live births) between 2000 and 2003, with 9 fatalities. Of the surviving 49 cases, 35 were evaluated by at least one survey over the three year follow-up period (71.4%), with 15 (30.6%) evaluated in Year 3. All cases had been treated with IV acyclovir, and 12/35 (34.3%) had received oral acyclovir subsequently. Developmental delay was detected at least once over the three year period among 15/35 children (42.9%) and by 7/15 (46.7%) at Year 3. In Year 3, delays in language (5/15, 33.3%), fine motor adaptive skills (3/15, 20.0%), and gross motor skills (3/15, 20.0%) were most commonly reported. Visual problems were reported among 6/33 children (18.2%), including one child with blindness and bilateral, sensorineural hearing loss. Severe handicap was diagnosed for 6/29 children (20.7%), including epilepsy, spastic quadriparesis, cerebral palsy, and global delay. Delay was not associated with infection type (disseminated versus localized, p=0.086), virus type (p=0.429) or sequelae in the first two months of life (p=0.161).
Conclusions: Physical and developmental sequelae occured in the first three years of life following neonatal HSV infection despite treatment, independent of viral strain and presenting clinical features.

P2.102

SYPHILIS PATIENTS: HALE AND HEARTY?
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Background: In 1952, cardiovascular syphilis accounted for 10% of heart disease in the USA. Since the advent of penicillin the rates of cardiovascular syphilis have fallen dramatically, but BASHH guidelines still recommend a full systems review and examination in all cases of late latent syphilis. In our service we have a weekly syphilis clinic run by the registrar to whom all patients with a diagnosis of late syphilis are referred for examination, investigations and treatment. Where an abnormality is noted on cardiovascular examination or chest x-ray the patient is referred for an echocardiogram.
Method: Retrospective case note review of all patients attending the clinic between June 2008 and January 2009.
Results: Of 36 patients attending the clinic within the time period, 21 received a diagnosis of late latent syphilis. All of these received a full cardiovascular examination, 11 had a chest x-ray, and 4 had an echocardiogram. The table shows results for those with an abnormal examination or x-ray:

Patient No.	Examination	Chest X-ray	Echo
1	Murmur	Normal	Normal
2	Normal	Unfolding of aortic arch	Mild aortic root dilatation (3.87cm)
3	Murmur (flow murmur of pregnancy)	Not done	Not done
4	Murmur	Normal	Moderate MR & TR
5	Murmur	Normal	Mildly thickened AV leaflets

Conclusion: Aortic root dilatation is a consequence of cardiovascular syphilis. The cut-off for further follow-up of aortic root dilatation is normally >4cm, but in view of the history of syphilis this patient is receiving a further echo and possibly more investigations. In addition there was a higher than expected incidence of heart murmurs in this cohort and two of the patients had significant pathology found on echocardiogram. The cohort of people who attend this clinic include many who would not normally access medical services and are being given an opportunistic full examination, which our findings suggest may well pick up significant pathology.

P2.103

A CASE OF CONGENITAL NEUROSYPHILIS FOLLOWING UNTREATED MATERNAL EARLY SYPHILIS – LESSONS LEARNED

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Background: Untreated maternal early syphilis results in congenital infection in 70 to 100% of cases with a stillbirth rate of approximately 30%. Routine antenatal syphilis screening has occurred in London since 2000. However, congenital syphilis is recognised as a re-emerging problem with an estimated 10-20 cases annually in the UK.
Results: We present a case of congenital neurosyphilis following non-treatment of maternal early syphilis and describe the circumstances leading to this outcome. A 22 year old woman attending routine antenatal screening at 11 weeks gestation was found to have positive syphilis serology (total EIA positive, TPPA positive, RPR 1:64). There were multiple missed opportunities for confirmatory testing and treatment during the pregnancy including community midwife review, an admission to hospital for reduced foetal movements at 26 weeks and during admission for preterm spontaneous rupture of membranes which occurred at 30 weeks. The positive serology was also communicated to another centre where the woman was seen for in-utero blood transfusion at 30 weeks. The mother underwent an emergency caesarean section at 30+4 weeks, at which time she remained untreated. The baby had multiple congenital abnormalities including microcephaly, cerebral atrophy on MRI, hydrops foetalis, corneal opacities and neuromuscular deficits. Initial neonatal syphilis serology revealed positive EIA IgM, positive TPPA and RPR 1:64. CSF examination also revealed a positive EIA IgM. Mother and child were treated with penicillin postnatally with a satisfactory serological response. However, the baby remained an inpatient for 4 months and continues to experience significant neurological disability.
Conclusions: We discuss the policy changes implemented following this serious untoward incident. These focus on optimised laboratory protocols, improved referral pathways and enhanced awareness and multidisciplinary education about maternal and congenital syphilis.

P2.104

AZITHROMYCIN TREATMENT FAILURES IN PRIMARY AND SECONDARY SYPHILIS

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Objectives: Although the potential for azithromycin-resistant Treponema pallidum is increased, it has been still used as an alternative treatment for syphilis. We report azithromycin treatment failures in syphilis to emphasize that clinical and laboratory surveillance for azithromycin resistance is necessary.
Methods: 132 cases of primary and secondary syphilis were administered with azithromycin. Treatment failure was defined as failure of epithelialization of ulcers or disappearance of skin and mucosal lesions within one week after treatment, or development of primary syphilis to secondary syphilis, or positive dark-field microscopy for Treponema pallidum after treatment, or serum RPR titers remained within ±1 dilution of the initial RPR titer or increased ≥2 dilutions at three months after treatment.
Results: The average age of 132 patients was 32 years old, 85 of them were male. 42 of 132 had primary syphilis. The highest dose of azithromycin therapy was 30g and the lowest 4g. In primary syphilis 6 had their single chancre developing to multiple lesions, 5 developed to secondary syphilis, the epithelialization of ulcers in 15 cases did not occur within one week after treatment, 10had positive dark-field microscopy for Treponema pallidum and 4 found mutation in the Treponema pallidum 23sRNA. The RPR titers increased ≥2 dilutions at three month or remained within ±1 dilution of the initial RPR titer in the other 16 primary cases. In secondary syphilis, the skin lesions did not disappear in 37 patients within one week after therapy, and serum RPR titers in 90 cases increased ≥2 dilutions or remained within ±1 dilution of the initial RPR titer at months.
Conclusion: The treatment failure of primary and secondary syphilis suggests that azithromycin should not be encouraged as an alternative in China.

P2.105

RANDOMIZED STUDY TO COMPARE THE EFFICACY OF TREATMENT WITH BENZATHINE PENICILLIN OR CEFTRIAXONE IN EARLY SYPHILIS IN HIV INFECTED PATIENT

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Background: The CDC guideline for the treatment of syphilis recommend benzathine penicillin 1x2,4 Mio i.E. i.m for early syphilis regardless of HIV status. Previous studies showed a high risk of treatment failure or development of neurosyphilis in HIV infected patients. Procaine penicillin is not available in Germany. The best treatment option for HIV infected patients with syphilis is not yet determined.
Methods: An open, randomized multicenter study was initiated to proof the efficacy and safety of ceftriaxone 1g i.v.for 10 days (group A), benzathine penicillin 2,4 Mio i.E. i.m. (group B) or 3x2,4 Mio i.E.

i.m. (1 injection per week, group C) in HIV positive patients with early syphilis.
Results: In the current analysis (November 2008) data from 60 patients (group A n=18, group B n=21, group C n=21) were included. After 48 weeks of treatment the response rate was 80% in each group. There were 3 patients in group A, and one patient in group B and C lost-to-follow up. There were no serious adverse events and no cases of neurosyphilis.
Conclusion: There was no difference between the three treatment regimes for early syphilis. Treatment failure and reinfection cannot be distinguished. A high failure rate after week 24 was attributed to reinfection in most cases. If neurosyphilis is excluded by cerebrospinal fluid puncture ceftriaxone treatment or 3x benzathine penicillin shows no advantage over single dose benzathine penicillin treatment.

P2.106

ADEQUATE TREATMENT RESPONSE TO SINGLE DOSE BENZATHINE PENICILLIN INJECTION IN EARLY SYPHILIS INFECTION REGARDLESS OF PATIENT'S HIV STATUS
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Background: Previous BASHH guidelines for syphilis treatment recommended giving 3 doses of Benzathine Penicillin injection for early syphilis infection in HIV positive patients. It has been changed in 2008 to a single dose regardless of HIV status. Our clinic had adopted this policy in early 2007.
Objectives: To compare the treatment response of early syphilis in HIV positive and HIV negative patients at a GUM clinic in the North of England between 2006 and 2007 following a change in policy.
Method: Retrospective case note review of all patients treated for early syphilis between 01/01/2006 and 24/10/2007. Demographics were collected, along with details of treatment and follow up serological tests. Serological cure is defined as four fold decrease in serum rapid plasma reagin test or being serofast at twelve months.
Results: 243 patients were identified (131 in 2006, 112 in 2007), of which 81.7% and 86.6% respectively were white British. 98% of all patients were male, 92.2% were men who have sex with men and 25% were HIV positive. 71% of patients in 2006 and 66.1% in 2007 were serologically cured at 12 months (p=0.062). HIV positive patients were less likely to be documented as cured at twelve months due to re-infections (p=0.049).
Conclusions: There is no difference in treatment response following the change in treatment policy for patients with early syphilis regardless of their HIV status. HIV positive individuals appear to be more likely to be re-infected. Regular routine syphilis testing in HIV affected individuals is recommended.

P2.107

MANAGEMENT DILEMMAS IN SYPHILIS: A SURVEY OF INFECTIOUS DISEASE EXPERTS
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Objectives: Areas of uncertainty exist in the clinical management of syphilis, particularly for patients co-infected with HIV. In addition, diagnostic test availability may be changing. We sought to determine how infectious disease experts manage syphilis when evidence-based guidelines do not exist or cannot be followed using available tests.
Methods: We emailed a web-based survey to 1007 Infectious Disease Society of America (IDSA) members in the Emerging Infections Network. We excluded those not managing syphilis. We compared management by number of syphilis and HIV patients in the past year and by employer type (government, hospital, private, or academic) using chi-square tests.
Results: 465 physicians responded (46%). 390 reported experience managing syphilis. Most (81%) did not have access to Darkfield microscopy. 17% use an initial RPR test to decide whether to treat for primary syphilis. Most (62%) treat secondary syphilis in HIV-positive patients with 3 weekly benzathine penicillin injections; 32% use 1 injection. 43% of those with >5 syphilis patients treated with 1 injection vs. 25% of those with <5 (p=0.001). 35% of those with >50 HIV patients treated with one injection vs. 28% of those with <50 (p=0.150). For secondary syphilis in an HIV-positive man without neurologic or ophthalmologic symptoms, more would obtain lumbar puncture (LP) if CD4 count were 150 (65%) than if CD4 count were 550 (44%). In a patient with CD4 150, those with >20 syphilis patients were less likely to recommend LP (48% vs. 66%, p=0.028). Employer type did not predict Darkfield use or primary syphilis treatment.
Conclusions: Approaches to syphilis management vary among experts. Most IDSA members treat secondary syphilis in HIV-positive patients with 3 injections. Those with more syphilis or HIV patients are more likely than others to treat with 1 injection. Sensitive tests for primary syphilis are not widely available. Some used RPR to decide whether to treat for primary syphilis.

P2.108

CHLAMYDIA AND GONORRHEA INFECTIONS AT THE TIME OF A POSITIVE RPR IN STD CLINIC PATIENTS; IMPLICATIONS FOR PRESUMPTIVE CO-TREATMENT

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Background: At the San Francisco municipal STD clinic, patients diagnosed with syphilis are also routinely tested for gonorrhea (GC) and chlamydia (CT), with results and treatment in a few days. We evaluated whether presumptive GC or CT treatment is warranted in these patients by examining 1) prevalence of GC/CT and 2) current time to treatment of GC/CT.
Methods: VDRL (venereal disease research laboratory) testing performed at the public health lab was used for routine syphilis screening; patients who are contacts, report compatible symptoms or have exam findings also undergo rapid RPR (rRPR) (rapid plasma reagin) testing in clinic. Aptima Combo 2™ (Gen-Probe Inc.) testing for GC and CT was performed at all exposed anatomic sites. Demographics of patients were assessed, as well as the prevalences of GC and CT for patients tested by VDRL only, rRPR and for the subset rRPR-positive. Time to treatment of GC/CT was also examined.
Results: From 2006-2008, 31,164 syphilis tests were performed, including 3021(9.7%) rapid RPRs. Patients undergoing rRPR were more likely to be GC or CT-infected than those tested by VDRL [17.7% vs. 13.7%, PR 1.26 (1.15-1.37)]. Those who were rRPR-positive had an even higher prevalence (28.5%); in that group, GC/CT infection was more common in patients who were HIV-positive (68.8% vs. 31.3%, p=0.006) and younger (median 37 vs. 39 years, p=0.001). The median time to treatment for both GC and CT was zero days (range, 0-291d). A higher proportion of rRPR-tested patients with GC and CT experienced a treatment delay of more than one week compared to VDRL-tested patients (GC: 13.3% vs. 7.6%, p=0.0006; CT: 16.2% vs. 8.6%, p<0.0001).
Conclusions: Nearly 30% of patients diagnosed with syphilis via positive rRPR in the San Francisco municipal STD clinic were co-infected with either GC or CT. Presumptive treatment of these patients is warranted given this high prevalence, and may prevent treatment delays and subsequent ongoing STD transmission.

P2.109

TREPONEMA PALLIDUM REAL-TIME PCR FOR CLINICAL DIAGNOSIS OF SYPHILIS

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Objectives: The diverse clinical manifestations, the low sensitivity of dark-field microscopy (DF), and serological delay make the diagnosis syphilis complex. We aimed to determine the additional clinical value of a *Treponema pallidum* (TP) real-time Taqman PCR (TP PCR) for primary and secondary syphilis.
Methods: STI clinic patients presenting an (ano)genital ulcus (stage 1) or skin lesions (stage 2) were included. The level of agreement (kappa) was determined between the TP PCR and 4 reference methods: *diagnosis syphilis stage 1*: **(1)** DF(+) regardless of the serological results. **(2)** Simulated Practitioners Office: syphilis history(-) and TPPA(+) OR syphilis history (+) and RPR(titre≥1:8). **(3)** Clinical Diagnosis: DF(+) OR syphilis history(-), DF(-), and TPPA(+) OR syphilis history(+), DF(-), and RPR(titre≥1:8). *Diagnosis syphilis stage 2* : **(4)** typical skin lesions plus RPR(titre≥1:8).
Results: From December 2006 to April 2008, 716 (ano)genital ulcera and 133 skin lesions were included. The study population consisted of 289(40%) men who have sex with men, 212(30%) heterosexual men, and 215(30%) women. Only a fair agreement between DF and TP PCR was found (Table 1), possibly reflecting the low sensitivity of DF and the high sensitivity of TP PCR. However, a good agreement was found between the TP PCR and both the simulated Practitioners Office and Clinical Diagnosis. Significantly (Chi^2 P<0.001) more herpes virus 1&2 (HSV) infections were found in the TP PCR negative cases (HSV: n=317) compared to the TP PCR positive cases (HSV: n=1) suggesting that some of the Clinical Diagnosis positives might be false positives.
Conclusions: The TP real-time PCR is a fast and reliable test for the detection of syphilis stage 1 but not for syphilis stage 2 and is a further improvement for the current TP diagnostic arsenal.

Table 1. Sensitivity, specificity, PPV, and NPV of the TP real-time PCR versus 4 reference methods.

		Syphilis stage 1 (n=716)			Syphilis stage 2 (n=133)
		Dark-field	Sim. Practisioners Office	Clinical Diagnosis	RPR

	Sensitivity	87.0%	75.0%	72.8%	43.0%
	Specificity	93.1%	97.0%	95.5%	98.0%
TP real-time PCR	PPV	-	-	89.2%	-
	NPV	-	-	95.0%	-
	Kappa	0.601 (fair agreement)	0.745 (good agreement)	0.769 (good agreement)	0.372 (slight agreement)

P2.11

INTEGRATED SEXUAL HEALTH SERVICE – DOES MORE PROVISION EQUAL MORE SCREENS?

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Objectives: An inner city borough commissions an evolving, integrated sexual health service (ISHS). In addition to the genito-urinary medicine (GUM) clinic, the ISHS comprises community sexual health clinics (COSH), a local enhanced service for general practitioners (GP) providing sexual health care and a national Chlamydia screening programme (NCSP). Our aim was to determine the contribution of each of the different components of this ISHS and assess whether they diagnose additional sexually transmitted infections (STI).
Methods: The number of STI screens performed and STI diagnoses made, between 01/04/2004 and 31/03/2007, were identified from an electronic database. From this, the provision of each component of the ISHS was calculated. The patients attending multiple units within the ISHS were assessed
Results:

	2004								2007							
	SCREENS				STI				SCREENS				STI			
	M		F		M		F		M		F		M		F	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
GUM	6356	99.7	6455	60.0	792	99.7	1386	88.8	5477	78.5	7591	45.5	968	89.1	1694	83.4
GP	0	0	4166	38.8	0	0	162	10.4	776	11.1	6252	37.4	61	5.6	145	7.1
COSH	16	0.3	133	1.2	2	0.3	12	0.8	376	5.4	1810	10.8	26	2.4	95	4.7
NCSP	0	0	0	0	0	0	0	0	349	5.0	1048	6.3	32	2.9	97	4.8
TOTAL	6372	100	10754	100	794	100	1560	100	6978	100	16701	100	1087	100	2031	100

In 2007, 14% of STI screens were repeat screens from the same individual, but only 18% of these repeat screens (2.5% of all screens) occurred in a different venue to the initial screen.
Conclusions: The number of STI screens and diagnoses rose by more than 30% in all venues. The proportion of STI screens occurring in the GUM clinic fell as the ISHS evolved. The number of men screened remained stable, although the number of male STI diagnosed increased by 38%. Less than 3% of screens were due to people attending different components of the ISHS for multiple screens. The ISHS provided additional services and facilitated increased diagnosis in a high risk, inner city borough.

P2.110

TREPONEMAL IMMUNOASSAYS FOR SYPHILIS TESTING: HOW SHOULD WE MANAGE PATIENTS WITH POSITIVE TREPONEMAL BUT NEGATIVE NON-TREPONEMAL SEROLOGY?

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Objective: Use of treponemal immunoassays (enzyme immunoassay-EIA, chemoluminescence immunoassay-CLIA) for syphilis testing in the United States has identified patients with discrepant serology (CLIA+, RPR-) previously unrecognized under non-treponemal test-based algorithms. Management of these patients is a challenge, especially in low risk individuals or those without a known or acknowledged history of syphilis. Because little data are available to guide the management of patients with discrepant serology, we conducted this study to identify 1) demographic/clinical characteristics of this population, 2) prevalence of known risk factors for syphilis, and 3) proportion of

discrepants with a prior history of syphilis.
Methods: Cross-sectional analysis of patients from a large US health maintenance organization. All patients with CLIA+, RPR- serology were reflexively tested with the Treponema pallidum particle agglutination test (TP-PA). Medical and laboratory records were systematically reviewed for relevant clinical and behavioral characteristics including HIV status, gender of sex partners, and prior syphilis history.
Results: Of 165 initial discrepants (CLIA+, RPR-), 95 were TP-PA+ and 70 were TP-PA -. TP-PA+ patients were mostly male (95%), HIV+ (63%), and were men who have sex with men (77%). Half (51%) had a known history of syphilis, of whom 68% had documented previous treatment. TP-PA- patients were mostly female (61%), of whom 40% were pregnant, 20% were HIV+ and 7% had a history of syphilis. Of TP-PA- patients who received repeat testing within 12 months (n=32), 6 reverted to CLIA- (19%), 1 became RPR+.
Conclusion: TP-PA- patients demonstrate fewer risk factors for syphilis than those who are TP-PA+. All patients with discrepant serology should be evaluated for the possibility of early syphilis versus latent untreated syphilis regardless of TP-PA status but only TP-PA+ individuals will likely warrant routine treatment if not previously treated.

P2.111

ACCEPTABILITY AND OPERATIONAL SUITABILITY OF A RAPID POINT-OF-CARE DIAGNOSTIC TEST FOR SYPHILIS IN HIGH-RISK POPULATIONS OF MANAUS, BRAZIL
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Objectives: The implementation of syphilis screening programmes may be hampered by operational and technical difficulties. We evaluated the acceptability and operational characteristics of a rapid point-of-care (POC) diagnostic test for syphilis using fingerprick blood at a red-light district clinic in Manaus, Brazil.
Methods: This qualitative and quantitative study was undertaken within a larger field performance evaluation of a novel POC test for syphilis (VisiTect Syphilis, Omega Diagnostics, Alloa, Scotland). We interviewed all 12 staff involved in using the test and 60 patients (60% women) attending the clinic. We performed time flow analysis on a separate sub-sample of 84 consecutive patients who were not interviewed.
Results: Staff found the POC test easy to use and to interpret. Half had limited confidence in the test results since it does not differentiate between old and recent syphilis. Clinic accessibility, waiting time, and confidence in test results were not identified as obstacles for testing by patients. However, pain caused by fingerprick and patient's preferences for venous blood collection was listed as minor barriers. Table 1 shows patients' satisfaction with the services and testing provided and their syphilis knowledge.

Questions		Responses Number (%)
Satisfaction with clinical attention [Measured on a scale from 0 (totally unsatisfactory) to 5 (totally satisfactory)]	5 out of 5	56 (94)
	4 out of 5	4 (6)
Would recommend rapid test to friends/colleagues	Yes	57 (95)
	No	2 (5)
Information received from clinical staff	Satisfactory	36 (60)
	Difficult to understand	8 (13)
	Did not receive information	16 (27)
Syphilis knowledge (open question)	Is a STI	12 (20)
	Explained some or all of its symptoms	12 (20)
	Explained some of its complications	5 (8)
Syphilis transmission (open question)	Unprotected sex	12 (20)
	Sex regardless of condom use	19 (32)
	Mother to child	6 (10)
	Contaminated blood	13 (22)

	Kisses	6 (10)
	Sitting in the same place	3 (5)
	Skin lesions	2 (3)
Can syphilis be cured?	Yes	53 (89)
	No/don't know	6 (11)

Excluding time spent on receiving treatment for 7 (8.3%) of patients, the average duration spent at the clinic was 51 minutes (standard deviation, 32).
Conclusions: The POC test was found acceptable and operationally suitable as a screening tool in high-risk groups, and it was performed within reasonable waiting time. It could considerably alleviate the burden of syphilis in hard-to-reach populations in the Amazon region of Brazil.

P2.112

HIV MEDICAL RECORDS: WHAT DO PATIENTS WANT?
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Objectives: Within the NHS patient data is increasingly shared between healthcare professionals in different settings using specialist IT systems. We ascertained the views of HIV patients attending our unit on their clinical data being shared on a common IT system.
Methods: HIV patients attending clinic in the period 1 October 2008 to 1 December 2008 completed a questionnaire on their attitudes towards sharing information with GPs and other healthcare professionals via a common IT system. Data were analysed using SPSS.
Results: Of 258 patients who completed the questionnaire 76% (196) agreed to GP's being able to access their records electronically. 48% (124) disagreed with other healthcare professionals seeing their records. If HIV patients medical records were to be shared on a common IT system 42% (108) of patients would use a false name. African patients were significantly less likely to agree to healthcare professionals other than their GP or HIV physician accessing their records ($p<0.05$) and were more likely to use a false name if a common IT system was introduced ($p<0.05$). The main reasons given for refusing access to records were fears over confidentiality and security of information.
Conclusions: Despite ongoing attempts to improve security of information many patients with HIV infection remain concerned about confidentiality and a large proportion of patients would prefer their HIV clinic information to remain separate from other medical records. Introduction of a common IT system storing HIV patient data may encourage use of false identities and possibly discourage patients from attending clinic.

P2.113

HIV AND GENERAL PRACTICE: THE EXPERIENCE AND CONCERNS OF HIV PATIENTS IN A GUM CLINIC
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Objectives: Existing data exploring the relationship between HIV services and primary care from larger HIV centres demonstrates a high level of General Practitioner (GP) involvement. We surveyed the patients attending our HIV service with a view to optimising our own interaction with primary care.
Methods: Patients attending our HIV outpatient centre between June and December 2008 were asked to complete an anonymised questionnaire detailing their experience of Primary Care services.
Results: Questionnaires were completed by 117 out of 296 (40%) patients attending, 89/117 (76%) of whom had informed their GP of their HIV status. These patients were more likely to have been diagnosed with HIV for 3 years or more (74, 83% vs. 16, 61%), be on highly active anti-retroviral therapy (70, 79% vs. 15, 58%) and have other medical conditions (57, 64% vs. 5, 19%) when compared to those who had not informed their GP. There were no differences between those residing in rural versus urban areas. Confidentiality (13, 50%) and perceived lack of need to visit primary care services (8, 31%) were most frequently cited as reasons for not informing GPs. Amongst those who had informed their GP, 22 (25%) had ongoing concerns, especially around confidentiality (10, 45%) and lack of GPs HIV knowledge (6, 27%). Regular HIV management updates for GPs and improved inter-service communication were the most commonly suggested improvements.
Conclusion: A high percentage of our HIV patient's GPs are involved in their care. Enhanced collaboration could establish mechanisms for further improving care of HIV patients in Primary Care.

P2.114

FEASIBILITY AND EFFICACY OF HIGHLY ACTIVE ANTIRETROVIRAL THERAPY AMONG HIGH-RISK AND MARGINALISED HIV-1 INFECTED WOMEN IN WEST AFRICA

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Objective: To describe the feasibility and long-term clinical, immunological and virological outcomes of HAART among HIV-infected female sex workers (FSWs) in Burkina Faso.
Methods: Prospective study of FSWs and non-FSWs initiated on HAART according to WHO recommendations. Follow-up included monthly clinical visits, HAART adherence support and assessment, 6-monthly CD4 cell count and HIV-1 plasma viral load (PVL) measurements.
Results: 95 women, including 47 FSWs, were followed for a median of 32 months (interquartile range [IQR], 20-41 months). At HAART initiation, the median CD4 count was 147 cells/µl (IQR, 79-183) and 144 (100-197) in FSWs and non-FSWs, respectively, and the median PVLs were 5.09 log10 copies/ml (IQR, 4.60-5.43) and 5.24 (4.73-5.61), respectively. 70% of FSWs and 69% of other women were at WHO clinical stages III/IV. Four women (all FSWs) died during follow-up (mortality rate: 1.7 per 100 person-years). At 36 months, the median increase in CD4+ count was 230 cells/µl (IQR, 90-400) and HIV 1 PVL was undetectable for 81.8% (95%CI, 59.7-94.8) of FSWs. At least 95% adherence was reported by 83.3% (95% CI, 67.2-93.6) and 100.0% (54.1-100.0) of FSWs, at 6 and 36 months after HAART initiation, respectively.
Conclusions: This study showed the feasibility of HAART introduction and that the benefits of HAART can be sustained over the long term among FSWs in Africa. Therefore, increased efforts should be invested by national HAART treatment programmes to improve access to care for this high-risk but marginalised population.

P2.115

PSYCHOLOGICAL ASSOCIATIONS WITH SELF REPORTED ADHERENCE AND 12 MONTH FOLLOW UP VIROLOGICAL OUTCOME IN A MULTICLINIC UK STUDY

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Background: Adherence is fundamental to ART success. We examined associations of self-reported non-adherence with demographics, health and behaviour, concurrent and subsequent(1 year follow/up) virological outcome.
Method: 778 patients(5 UK clinics)completed baseline inventory on adherence and HIV/health issues (2005/6), risk behaviour and psychological/physical symptoms. 486respondents were taking ART, non-adherence(previous week)was defined in three ways:A)>=1 dose missed or taken incorrectly(wrong time/circumstances)B)>1 dose missed;C)>2 doses missed. Questionnaire data were linked with routine treatment and virology data for consenting subjects(307/486;63.2%).We assessed three virological outcomes in 307 patients i)VL>50-using VL at questionnaire,excluding patients starting HAART<24 weeks;ii)VL>50 using first VL from 6-12 months post questionnaire iii)any VL>50 from 6-12 months post questionnaire.
Results: Non-adherence was reported by 278(57.2%)102(21.0%) and 49(10.1%)of 486 patients for definitions A,B and C respectively.Non-adherence declined with older age, was more commonly reported by Black patients, those born outside UK,and those with greater psychological symptoms.There was no association with gender/sexuality,education,unemployment,physical symptoms or risk behaviour (p>0.1).Younger age,non-UK birth and psychological symptoms were independent predictors of non-adherence(adjusted risk ratios (95%CI)for non-adherence B:;0.96(0.94,0.99)for every year older age;1.4(1.0,2.3)for non-UK born; 1.5(1.0,2.3)and 1.6(1.0,2.5)for psychological symptom index (2nd/3rd tertiles)compared to first.
Conclusions: Non-adherence was associated with poorer virological outcome; the most consistent association was for definition C. Non-UK birth and psychological symptoms predicted non-adherence, but the most striking association was with younger age.

P2.116

MANAGEMENT OF HIV AND HEPATITIS C CO-INFECTED PATIENTS - OUR EXPERIENCE

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Objective: A combined clinic with consultant hepatologist and consultant HIV physician was started at our hospital to manage HIV and Hepatitis C co-infected patients in 2004. We have reviewed the management of these patients at our provincial clinic.
Methods: A retrospective case note review of all HIV and Hepatitis C co-infected patients attending our clinic from 2004 was undertaken.
Results: Of the 260 HIV patients attending our clinic, 14 (5.4%) patients were found to have Hepatitis C infection with detectable Hep C RNA in blood. 8 patients had acquired the infection through intravenous drug use, 2 through receiving blood products for haemophilia, 2 through homosexual sex and 2 probably through heterosexual sex. 11 patients had genotype 1 virus, 3 had genotype 3 virus. 12 patients were seen in the combined clinic and 2 patients declined hepatology input. 7 patients under went liver biopsy. 5 patients were treated with Pegylated interferon and ribavarin, 4 patients are currently being assessed for future treatment, 4 patients refused treatment and 1 patient was unsuitable for treatment due to advanced liver disease. Of the 5 patients who received treatment, 1 patient has recently completed treatment and is Hep C RNA negative at 3 month follow-up, 1 patient had virological relapse 6 months after completing treatment, 1 patient failed to show satisfactory drop in Hep C viral load after 48 weeks of treatment, 1 patient had to discontinue treatment due to side effects and 1 patient was deported after treatment hence lost to follow-up.
Conclusions: Management of HIV and Hepatitis C co-infected patients is complex. Our experience with the combined clinic has been very positive and has reduced number of hospital visits for the patients. However despite following national guidelines which recommend close liaison between HIV and hepatology specialist, it is interesting to see that so far none of our patients have had sustained virological response to treatment for Hep C.

P2.117

SUICIDAL IDEATION AND ATTEMPTED SUICIDE AFTER HIV DIAGNOSIS: IMPLICATIONS FOR REFERRAL AND INITIATION OF CARE
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Background: Suicidal ideation among individuals with HIV infection is common, especially among those who recently learned their serostatus. Little is known about how suicidal ideation affects timely referral and initiation of HIV-related medical care.
Methods: We conducted a qualitative study of 24 HIV-infected patients attending a southeastern United States clinic who presented with clinically advanced illness. Eligible patients were ≥18 years old, new to HIV primary care, and with a CD4 count <350 cells/µl at entry. In-depth, semi-structured, qualitative interviews focused on reactions to learning their serostatus and barriers and facilitators to starting care.
Results: Most (n=19) participants were male and half were African American. The median time between learning their serostatus and entry to care was 41 days and most (n=16) presented to care with <200 CD4 cells/µl (median=92 cells/µl). Six of 24 (25%) participants reported suicidal ideation after diagnosis and 4 made unsuccessful suicide attempts, all before initiating HIV care. Four of six who reported suicidal ideation had advanced immunosuppression (CD4<200 cells/µl) at diagnosis. Participants described fear and isolation after learning their serostatus. They wanted to be remembered as healthy and not wanting to "suffer". Most were anxious to start care; however, some expressed a willingness to die rather than deal with the medical system. Participants were frustrated with the referral process and their diagnosing healthcare provider's lack of HIV knowledge.
Conclusions: The period after learning one's HIV serostatus is a critical time when the risk of suicidal ideation and attempt may be high. People with HIV infection must cope with the diagnosis of a life threatening illness, the presence of HIV-related symptoms, nondisclosure, and difficulties initiating care. This has important implications for the adoption of routine HIV screening and the role for active, rather than passive, referral programs.

P2.118

THE RELATIONSHIP BETWEEN ZIMBABWEAN HIV-POSITIVE WOMEN'S IMMIGRATION STATUS AND THEIR ACCESS TO CARE IN THE UK: QUALITATIVE RESEARCH FINDINGS
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Background: In 2004, refused asylum applicants lost their entitlement to most secondary health care services. As a result, HIV-positive Zimbabweans with insecure immigration status in the UK occupy a precarious medico-legal position, especially since HAART is not available to most in Zimbabwe. This research aimed to explore the implications of insecure immigration status for HIV positive Zimbabwean women's access to health care and lives in the UK.
Methods: In 2007-2008 qualitative data were collected through semi-structured interviews with 13

Zimbabwean HIV-positive women with insecure immigration status, and 25 key HIV/immigration stakeholders.
Results: Although some women had experienced HIV treatment refusal in the past, most women interviewed were successfully receiving HIV treatment and were not aware of possible restrictions on their entitlement to care. Women's immigration status had consequences for their wellbeing that went beyond entitlement to care, as their status undermined their access to other secondary health and support services, their autonomy and their ability to plan for the future. Women perceived that their health and future wellbeing had become inextricably bound to remaining in the UK and achieving secure immigration status. In this context, clinicians treating women with insecure immigration status were often required to take on a social care role that stretched resources further.
Conclusions: There is a disjuncture between policy on entitlement and clinical practice, which may reflect a conflict between clinicians' duty of care and the NHS or immigration rules. Insecure immigration status undermines women's health and wellbeing. The rules on health care entitlement need to be re-examined to decrease perceived and real policy barriers to HIV treatment access. A temporary immigration amnesty for Zimbabweans would reduce some of their complex social care needs.

P2.119

ASHA MEANS HOPE: EVALUATING A COMMUNITY-BASED INTERVENTION TO IMPROVE THE HEALTH OF PEOPLE LIVING WITH HIV IN GOA, INDIA
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Background: Chronic disease is challenging for health-systems. Strengthening community-based care provides holistic care and reduces the burden on health-facilities. ASHA aimed to improve health of people living with HIV (PLHIV) by supporting informal caregivers, early referral to HIV and mental-health services, food-security, income-generation and empowerment.
Methods: We conducted a longitudinal study of mortality, health and economic outcomes. 275 PLHIV from Goa completed an interviewer-administered questionnaire at baseline and one year into the intervention. Outcome indicators were Quality of Life (QOL), mortality, body mass index (BMI), employment, support-group membership, and receiving antiretroviral (ART) medicine. Multivariate analysis explored determinants of mortality and QOL. The proportion, employed; receiving ART; having a BMI>18.5; and being in a support-group, were compared before and after the intervention.
Results: Outcome data was available on 152(84%) and end-line assessments on 102(57%) of the 180 who had completed one year. The majority were women and non-Goan. 12% had migrated within five years. 73% earned less than $40 per month and 25% spent more than $20 on health in the past-month. 41(71%) of the positive caregivers were women. Two-thirds of the women were unemployed and half were illiterate. Common mental disorders; symptoms and BMI; disclosure and care satisfaction; ability to purchase food and treatment costs, were independently associated with at least one QOL domain at baseline. Death was more likely in those without a CD4 count (adjusted odds ratio (AOR) 7) and low BMI (AOR 6) and less likely for those on ART (AOR 0.1). The proportion employed; receiving ART; having a BMI>18.5; and being in a support group increased one year after enrolment.
Conclusions: Utilising HIV services is an important predictor of mortality. However, psychosocial factors are important for QOL. A comprehensive community-based programme improved health and psychosocial outcomes.

P2.12

JUST SAY YES!: IN-SCHOOL STD TREATMENT IN WASHINGTON, DC
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Objectives: To describe the in-school treatment of *Chlamydia trachomatis (CT)* and *Neisseria gonorrhoeae (GC)* during the piloting of our School Based Screening Program (SBSP).
Methods: During the 2007-2008 academic year, we piloted our SBSP in a large (~1,100 students) charter high school. Those students who tested positive for CT and/or GC were given 3 options for treatment – in-school on designated treatment days, with their primary care provider (PCP), or at the free STD Clinic. In-school treatment occurred in the nurse's suite and the treating clinician collected pertinent data using a standardized questionnaire. CT was treated with 1 gram of Azithromycin and GC was treated with 400 mg of Cefixime.
Results: Of the 987 participating students, 673 (68%) submitted urine specimens; 59 (9%) tested positive for CT (n=49), GC (n=6), or both (n=4); and 57 (97%) were appropriately treated. Of those, 40 (70%) were treated in-school, 6 (11%) were treated by their PCP, and 11 (19%) were treated at the

STD Clinic. Of the 42 students treated in-school with complete information (including 3 sexual contacts), the mean age was 15.9 years (range=14-18), 32 (76%) were female, 6 (14%) had a prior STD, and 23 (55%) did not know their HIV status [19 (45%) were HIV negative]. Of the 32 females, 3 (9%) were on birth control, 4 (13%) admitted to unprotected receptive oral intercourse, and the mean number of male lifetime sexual partners was 2.1 (range=1-8). Of the 10 males, 4 (40%) admitted to unprotected insertive oral intercourse and the mean number of female lifetime sexual partners was 4.9 (range=1-16). Seventeen (40%) students had only 1 sexual partner in their lifetime. No adverse events occurred.
Conclusions: Most students chose to be treated in-school. This treatment is safe and hopefully effective. Even adolescents with only 1 lifetime sexual partner are at risk for acquiring STDs. Our SBSP is considering adding HIV screening to those students who test positive for CT and/or GC.

P2.120

UNDERSTANDING THE SEXUAL AND REPRODUCTIVE HEALTH NEEDS OF WOMEN LIVING WITH HIV

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Objectives: To assess the unmet needs of HIV+ women within a large London HIV outpatient department.
Methods: HIV+ women aged 19 - 45 years attending routine HIV appointments between 1st July and 31st August 2008, completed an anonymous questionnaire on their sexual and reproductive health. Results were analysed using SPSS 16 software.
Results: The response rate was high, 84% (69/82). Regular sexual health screening within the HIV department was performed in 61% of respondents; 67% preferred their future screens there, and it provided 56% of women with contraception. Those considering future contraception would prefer to access it through the HIV clinic 61%, rather than their GP 25%. Long Acting Reversible Contraceptive methods were only used in 10% of sexually active respondents (5/51). Two thirds knew they required annual cervical screening, however only 49% reported having a smear within the last year. Forty-seven women (68%) wished a future pregnancy, the majority of whom (79%) desired pre-conceptual advice. Most respondents, 74% (51/69), were in a regular sexual relationship, but 16% had not disclosed their status despite only 59% of partners being HIV+, and, 41% admitted inconsistent or no condom use. Thirteen women (19%), reported having 1 or more casual partners in the previous year, with greater non-disclosure of their status 38%, more partners of unknown status 46%, and greater inconsistency of condom use, 54%. Overall, 50% of respondents wanted, or, would consider more advice on HIV disclosure.
Conclusion: This study highlights the need for tailoring a 'one-stop' sexual health and contraceptive service for women within HIV departments that includes advice on fertility, planning a safe pregnancy, support around disclosure, and partner testing.

P2.121

PRENATAL CARE AND HIV TESTING DURING PREGNANCY IN A PUBLIC HOSPITAL IN BUENOS AIRES, ARGENTINA

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Background: Prenatal care (PC) and HIV testing to all pregnant women have demonstrated a high impact on the prevention of maternal to child HIV transmission (PMTCT). This is a public institution where most strategies for PMTCT are available. However, there have been 9 cases of HIV vertically infected children during the recent past (2003-2006), the highest rate among 12 hospitals evaluated in this city. Two main issues were identified: the lack of PC and the late diagnosis of maternal HIV status.
Objectives: To evaluate PC and HIV testing circumstances in women admitted to this Maternity.
Methods: Prospective and descriptive study, through interviews to women hospitalized in the Maternity from September 1 to December 31, 2007.
Results: 291 women were interviewed. Main findings are shown in a Table.

Characteristics (n)	Outcomes n (%)
Age in years (286)	26.26 (mean: 14-45)
Level of Education (224)	
Illiterate	4 (1.78)
Primary	137 (61.16)

Secondary	77 (34.37)
University	8 (3.57)
Preadmission Known HIV Status (287)	
Yes	234 (81.53)
Positive	6 (2.56)
Negative	228 (97.43)
No	53 (18.46)
Couples' HIV Status (282)	
Ignored	105 (37.23)
Positive	3 (1.06)
Negative	174 (61.70)
PC (291)	
No	26 (8.93)
Yes	265 (91.06)
Number of visits (255)	
<5	45 (17.64)
≥5	210 (82.35)
Timing (260)	
1st trimester	179 (68.84)
2nd trimester	72 (27.69)
3rd trimester	9 (3.46)
HIV test	
Requested? (265)	
No	17 (6.41)
Yes	248 (93.58)
When? (235)	
1st visit	167 (71.06)
Later	68 (28.93)
Counseling (248)	
Yes	154 (62.09)
No	94 (37.90)
Circumstances related with testing	
1st test in 3rd trimester (215)	
Yes	96 (44.65)
No	119 (55.34)
Availability of result at admission (240)	
Yes	188 (78.33)
No	52 (21.66)
Test done, but result not available. Settings (23)	
Obstetrics consultation	9 (39.13)
Lab	5 (21.73)
Not withdrawn	9 (39.13)

Conclusions: Efforts to improve the quality of PC, the timing of first visit and first test, and coverage of counseling should be done in order to reduce the high incidence of vertical transmission in a setting where most resources are available to PMTCT.

P2.121.1

THE NEEDS OF PEOPLE WITH HIV IN THE UK

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Background: Evidence of need is essential in planning and delivering interventions to support people to live well with HIV. This study aimed to describe the range and extent of medical, social care, support and information needs among people with diagnosed HIV across the UK.
Methods: A self-complete questionnaire was distributed by 110 service providers and was available to complete online. A purposive sample of 1777 people with HIV answered questions on 20 pre-defined needs areas including mental and sexual health, medical and social care and support, education and training, work and immigration issues. For each need area, questions addressed problems in the last year, current feelings and capacity to benefit from further help.
Results: The most frequently reported problems related to anxiety and depression (72%), self-confidence (71%), sleep (70%), and sex (68%). These were also the four most common areas of respondents' unhappiness with their current state, and the areas where the greatest capacity to benefit from further help or support was reported. Less than 3% of all respondents did not report any unmet needs in the last year and a sixth (16%) identified between one and three. Another third (34%) identified between four and seven needs, and a similar proportion (34%) identified between eight and twelve. One-in-eight (14%) reported between thirteen and nineteen of the twenty needs areas asked about.
Conclusions: Needs are complex and dynamic and are shaped by immediate circumstances and personal resources. Respondents turned to a different combination of people and places for help and support with various needs. Informal sources of help and support - especially friends and partners but also other family and parents - remain crucial, as do HIV organisations and HIV (GUM) out-patients clinics and GP surgeries.

P2.122

TIMING-OF-USE OF A MICROBICIDE SURROGATE AMONG YOUNG WOMEN

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Objectives: The effectiveness of a vaginal microbicide may require specific timing of use in relation to coitus. We examined how actual use of a microbicide surrogate related to assigned timing-of-use conditions.
Methods: Women were asked to use a vaginal moisturizer (pre-filled, disposable applicators) every time they had vaginal sex and were randomized to 3 timing-of-use conditions: 1 hour pre-coitus; 10 min. pre-coitus; and 10 min. post-coitus. On a daily diary, women indicated whether the moisturizer was used and noted the time of moisturizer use and the time of coitus.
Results: 103 women (18-22 years old) completed 3 1-month diaries, 1 in each timing condition. Out of a total of 9,544 diary days, coitus was reported on 1,066 days. Moisturizer use was reported on 672 of these days (63%). The median number of minutes between moisturizer use and coitus in the 1 hour pre-coitus, 10 min. pre-coitus, and 10 min. post-coitus conditions were 60 minutes, 11 minutes, and 0 minutes, respectively. In the 1 hour pre-coitus condition 11% of the time the moisturizer was used over 2 hours before sex and 24% of the time it was used less than 30 minutes before sex. In the 10 min. pre-coitus condition 21% of the time it was used more than 30 minutes before sex. In the 10 min. post-coitus condition 55% of the time it was used before sex and 18% of the time it was used over 30 minutes after sex.
Conclusions: Moisturizer use was quite inconsistent. It was used only 63% of the time that coitus occurred. Although median values of actual use accurately reflected assigned pre-coitus timing-of-use conditions, actual use frequently deviated substantially from assigned use across all 3 conditions. Pre-coital timing of use requires accurate estimates of when coitus is likely to occur, which is often difficult. Other challenges clearly exist for post-coital use. Our findings suggest that there may be significant behavioral obstacles to effective use of a vaginal microbicide.

P2.123

ADHERENCE TO PRODUCT USE AMONG FISHERMEN DURING A PHASE 1 TOPICAL MALE MICROBICIDE TRIAL

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Objectives: To assess adherence to study product among fishermen participating in a Phase I topical male microbicide trial.
Methods: In a randomized double-blind placebo-controlled crossover trial we enrolled 34 fishermen with a follow-up period of eight weeks to assess the safety and acceptance of 62% and 15% ethanol in emollient gel. Each study product was used for a two week period with 2 weeks of washout in-between. Participants were instructed to first apply a squeeze of the old Kenyan shilling coin (US-quarter coin size) to cleanse their hands before using the same amount applied to the penis every morning and after each sexual act. Participants were randomly distributed in the order of product use, counseled on product use, adherence and safe sexual practices. Follow-up was on days 7, 14, 35, 42, 56 after product initiation with interim visits as needed. Study product was provided in portable 59ml containers and replaced at every visit when participants returned empty/unused product.
Results: 92 bottles (approximately 3680 squeezes) of the study product was dispersed to the 30 participants who completed follow up. Most, 19 (63%) reported using the product every morning for 28 days as required while the rest (37%) missed up to 5 days of use. Over three-quarters (77%) used the product after each sexual act, 20% did not use the products for up to 3 sexual acts and 1(3%) did not have sex for the duration of the study. After sexual contact, product application was similar for both 62% and 15% ethanol (98.6% vs. 98.9 %;). Product usage every morning differed slightly (93.8% vs. 98.8%; $p<0.157$) for 62% and 15% ethanol respectively. The total estimated product use from reported sexual contacts (553), daily use (809) and cleansing of the hands before each application (1362) was 2724 squeezes (or 4018 ml). Returned product was 673 squeezes. Therefore 283 squeezes(8%) was unused. From expected usage (2786 squeezes) adherence was 97.7%.
Conclusion: Adherence to study product was high.

P2.124

TANZANIAN MEN'S ATTITUDES TOWARDS MICROBICIDES GEL DURING THE MDP PHASE III CLINICAL TRIAL OF A VAGINAL MICROBICIDE GEL
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Background: Microbicide gels, if shown to be effective and safe, will need to be acceptable to both women and men if they are to be used for HIV prevention.
Methods: As part of the Microbicides Development Programme Phase III Clinical Trial to assess the efficacy and safety of PRO2000/5 gel, social science research is being conducted to assess men's perceptions and experiences of the microbicide gels at six sites in sub-Saharan Africa. Four focus group discussions were conducted with men in the community (not partners of trial participants) at the Mwanza, Tanzania site to explore their attitudes towards the gel, HIV prevention and women's participation in the clinical trial.
Results: Most men said they would be supportive of women's participation in the clinical trial, if they asked men for permission and medical care was provided. They were positive about microbicide gels and most indicated that they would prefer to use a safe and effective gel rather than condoms. However, some men expressed concerns that the gels might be spermicidal or cause excessive lubrication of the vagina, which would affect their sexual pleasure. They suggested that women may use gels secretly, and would be angry if they found out about this.
Conclusions: If proven to be safe and effective, microbicide gels could be acceptable to Tanzanian men, particularly if they do not substantially lubricate the vagina or act as a contraceptive. Acceptance may be more likely if men are directly informed about the gels. However this may impact on women's desire to use covertly.

P2.125

HIV TESTING IN GENERAL PRACTICE IN AUSTRALIA
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Objectives: To ascertain how frequently Australian general practitioners (GPs) test patients for HIV and where tests have occurred, to determine GP and patient characteristics.
Methods: Data were derived from the Bettering the Evaluation and Care of Health (BEACH) programme, a continuous cross-sectional, national survey of GP activity. Approximately 1,000 GPs per year, each records the details of 100 consecutive patient encounters. The study period used was 2000-2008. We examined the rate of HIV testing by GP, practice and patients characteristics. Multiple logistic regression was used to measure the independent effect of patient and GP characteristics on testing for HIV.
Results: Data were available for 784,300 encounters from 7,843 GPs. Nineteen percent (n=1,479) of GPs performed at least one HIV test. HIV testing rates remained constant over the study period. On

logistic regression independent predictors of HIV testing included "risk factor" identification (OR 19.9 95% CI 17.6-22.5); screening (OR 11.4 95% CI 9.9- 13.2); younger GP age (under 35 c/f 55+ OR 1.86 95% CI 1.50–2.30); practice in a metropolitan area (OR 1.4 95% CI 1.2-1.6); accredited practice (OR 1.2 95% CI 1.0–1.4) and patient age (highest in 15-24 year olds), sex (males>females OR 3.1 95% CI 2.8-3.5) being new to that practice (OR 2.1 95% CI 1.8-2.4) and being Indigenous (OR 1.7 95% CI 1.2-2.5).
Conclusion: HIV testing rates have remained constant in general practice in Australia over the last 8 years. Although the most important independent predictor of testing was "risk factor" identification, other GP and patient characteristics were also important.

P2.126

TESTING FOR HIV AND OTHER STI'S AMONG GAY MEN IN VICTORIA, AUSTRALIA: DOES CLINICAL PRACTICE MATCH THE GUIDELINES?
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Background: Increasing rates of HIV and STI diagnosis among men who have sex with men (MSM) have been reported over the past few years in most parts of Australia, particularly Victoria. In addition to its clinical benefits, testing for STIs and HIV is an important prevention strategy. The Australian STI testing guidelines for MSM recommend annual HIV/STI tests for all sexually active MSM and 3-6 monthly testing for men at higher risk (multiple sexual partners or unprotected anal sex in the past 12 months). We assessed compliance with the guidelines at four large medical clinics which provide sexual health services to a high proportion of MSM in metropolitan Melbourne.
Methods: We analysed data from the newly established primary care network for sentinel surveillance of STIs and BBVs in the state of Victoria, Australia. The study population was made up of sexually active HIV negative MSM tested for HIV/STIs between April-June 2006 (baseline). The testing practices of these MSM were followed for 12 months at the individual sentinel clinic. Using the guidelines as a standard, men were classified as higher risk according to their self-reported behaviour.
Results: At baseline, risk behaviour data were available for 866 MSM (470 from sexual health clinics, 396 from general practices (GPs); of whom 747 (86%) were classified as higher risk. Of the total sexually active population, 42% were re-tested for HIV within 12 months (44% at sexual health clinics, 40% at general practices). Of those at higher risk, 23% were retested for HIV within 6 months. Retesting rates varied according to the baseline histories reported, but were below 30% at 6 months in the higher risk categories.
Conclusion: This analysis highlights the need to more closely monitor the implications of the guidelines, investigate factors that may lead to lower than anticipated compliance, and modify the guidelines as needed to ensure that they adequately balance public health priorities with clinical pragmatism.

P2.127

WHO ACCEPTS HIV TESTING IN GENITOURINARY MEDICINE CLINICS AND WHAT INFORMATION ARE THEY GIVEN - A REGIONAL AUDIT
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Objectives: The UK national guidelines for HIV testing (BHIVA, 2008) recommend HIV testing for all patients attending genitourinary medicine (GUM) clinics. A regional audit was carried out to investigate whether the standards recommended in these guidelines are being met.
Methods: 11 GUM clinics participated in a retrospective case notes audit of new patients attending from 1st July 2008. p values were calculated using X^2.
Results: 290 patients from 11 centres were included. 272/290 (94%) patients were offered an HIV test (range between centres: 9/20 (45%) to 30/30 (100%)). 209/272 (77%) patients accepted a test (range between centres: 16/26 (62%) to 29/30 (97%)). Patients with high risk behaviours (MSM, IVDUs, patients from high prevalence countries, patients who have paid for sex, partners of the above) were significantly more likely to accept an HIV test than those with no identified high risk (49/54 (91%) cf 160/218 (73%), p= 0.007). A lower proportion of MSM accepted a test compared to other high risk groups, although this difference was not significant (7/9 (78%) cf 42/45 (93%), p=0.14). Patients aged 35-44 were significantly less likely to accept an HIV test than other age groups (24/42 (57%) cf 183/228 (80%), p=0.001). 15/19 (79%) patients with high risk behaviour in the last 3 months were advised to re-test after the window period. 37/172 (22%) patients across the region had a discussion of the benefits of testing documented in their notes. 103/171 (60%) had documentation of how results were to be given (Denominators change due to missing data).

Conclusions: Although uptake of HIV testing in the region was good, there was variability between centres. The reasons why specific groups, such as MSM and those aged 35-45, decline need to be explored. The UK National Guidelines for HIV Testing (2008) suggest that the benefits of testing and how results are to be given should be discussed with patients before testing. In this audit, the documentation of these points was poor.

P2.128

ARE PATIENTS WHO ATTEND DIFFERENT HEALTHCARE SETTINGS WILLING TO BE TESTED FOR HIV?

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Objectives: The UK national guidelines for HIV testing (BHIVA, 2008) state that HIV testing should be routinely offered and recommended to all patients presenting with a condition where HIV enters the differential diagnosis. This study aims to assess patient's attitudes to HIV testing at various healthcare settings in a low prevalence area.
Methods: An un-selected group of 1000 patients from primary care, an acute medical unit and various outpatient departments (neurology, respiratory medicine, gastroenterology, dermatology, eye casualty, gynaecology and unplanned pregnancy) will be given a short information sheet regarding HIV and then asked to complete a questionnaire.
Results: 70 patients had responded by the time of writing. The results are summarised in table 1. Table 1 - Patient's attitudes towards increased HIV testing

Statement	Strongly agree/agree - n (%)	Neither agree or disagree – n (%)	Disagree/strongly disagree - n (%)
HIV testing should be offered to all patients with medical problems known to be associated with HIV	64 (91)	6 (9)	0 (0)
HIV testing should be routinely offered to all patients regardless of their medical problem	40 (57)	23 (33)	7 (10)
I would be willing to be tested for HIV if I had a medical problem known to be associated with HIV	63 (90)	7 (10)	0 (0)
I would be willing to be tested for HIV as part of my routine care	45 (64)	17 (24)	8 (11)
I would be prepared to have my HIV test result in my main medical notes	52 (75)	7 (10)	10 (14)
The information given on the sheet provided would be sufficient prior to an HIV test	54 (78)	9 (13)	6 (9)
I would require further one to one counselling prior to agreeing to a test for HIV	27 (39)	20 (29)	22 (31)

Conclusion: No patients disagreed that HIV testing should be offered as recommended in the national guidelines. Over half felt that HIV testing should be offered routinely even in this low prevalence area. Consideration needs to be given as to how information is given prior to HIV testing.

P2.13

SEXUAL HEALTH ON THE HIGH STREET: TAKING CONT@CT2 INTO CONNEXIONS

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Objectives: Nearly half of UK sexually transmitted infections (STIs) are diagnosed in young people (YP). Connexions offers YP advice on health, education and careers. We introduced a new weekly drop-in at Connexions, offering STI screening, emergency and ongoing contraception and determined the rates of

STIs, contraceptive uptake and pregnancy in those seen.
Methods: Prospective data collected from attendees during the first 16 weeks and user satisfaction survey from the first 4 weeks.
Results: There were 95 attendances pertaining to 86 patients, mean age 18.1 years (13.9 to 23.9), 11.6% (10) were under 16. The cohort was ethnically diverse, 63% (54) female and 84% (72) local residents. Of those who accepted STI screening (53, 62%), 9.4% (5) were diagnosed with Chlamydia. Of 42% (36) who accepted HIV testing, 2.8% (1) was diagnosed HIV positive and commenced on antiretroviral treatment. Seven girls (13%) received emergency contraception and 20 (37%) received hormonal contraception. The pregnancy rate was 11.1% (6), two opted for termination of pregnancy (TOP), two had concurrent Chlamydia and two had had a previous TOP. All survey respondents thought our service met their needs, was friendly and easy to find. The majority would re-use the service, and almost all would recommend it to others. Importantly, 17.5% responded they would not have accessed services elsewhere.
Conclusions: The high rate of pregnancy, Chlamydia and HIV in this vulnerable Connexions cohort, highlights the value of one-stop community approaches for improving YP's access to sexual health services.

P2.130

SEX WORKERS'CLIENTS IN SWITZERLAND: DOES IT MAKE SENSE TO COUNSEL AND TEST CLIENTS FOR HIV ON THE STREET?
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Background: Clients of street sex workers may belong to a population with a higher risk of HIV infection. Furthermore, there is a lack of knowledge concerning HIV testing of sex workers' clients in developed countries.
Method: This pilot study assessed the feasibility and acceptance of HIV rapid testing of street-based sex workers' clients in Lausanne, Switzerland. Clients were stopped in their cars for a face to face interview focusing on sex-related HIV risk behaviours and past HIV testing by trained field staff . Sex workers' customers were then offered a free anonymous rapid HIV test in a bus parked nearby. Rapid HIV testing and counselling were performed by experienced nurse-practitioners. Clients with positive tests were offered confirmatory testing, medical evaluation and care in our HIV clinic.
Results: 144 individuals were intercepted and 112 agreed to be interviewed. Among them, 49 (44.4%) had never done an HIV test. Of the 31 (27,7%) rapid HIV tests performed, none were positive. Nineteen additional clients initially accepted to be tested but failed to do so due to delay in testing (40 minutes waiting time).
Conclusion: This pilot study showed the feasibility of rapid HIV testing in the red light district of Lausanne and an unexpectedly high acceptance rate by sex workers' clients. This setting seems particularly appropriate for targeted screening as more than 40 % of the clients had never undergone HIV testing despite acknowledged sex-related HIV risk behaviours.

P2.131

A RANDOMISED CONTROLLED STUDY OF MOUTH SWAB TESTING VS SAME-DAY BLOOD TESTS FOR HIV INFECTION IN YOUNG PEOPLE ATTENDING A COMMUNITY DRUG SERVICE
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Background: The young person's community drug service in the City engages with young people aged 18 and under and includes sex workers, injecting drug users and young people who either binge or are addicted to alcohol and other drugs. These young people are at risk of STI's and unlikely to access regular STI clinics.
This study was designed to determine if providing an oral swab test in the community for blood borne virus testing leads to an increase in subsequent attendance for STI screening at the STI clinic compared to making appointments for young people to attend the clinic for same day HIV testing and STI screening.
Methods: Participants were recruited from the service and randomised into one of two arms of the study. 1) The control group had a pre-test discussion for HIV followed by a referral to the same-day HIV testing service carried out at the STI clinic. Here they were offered blood tests for syphilis, HIV, Hepatitis B and C as per the clinic protocol and offered screening swab tests for genital infections.

2) The study group had a pre-test discussion for HIV followed by an oral swab test for HIV, Hepatitis B and Hepatitis C. The swab tests were sent to the lab for processing with results available in 2 working days. Participants were also offered an appointment at the STI clinic for screening swab tests for genital infections.
Results: There were 27 participants per arm of study as determined by prior power calculation

	Blood test	Swab Test	chi square
Mean Age	15 years	16 years	NS
Male gender	17	11	p=0.17
Any Drug use	22	20	p=0.7
Alcohol use	22	22	p=0.7
Intravenous drug use	5	4	
HIV test	4	27	p<0.001
Hep B test	1	25	p<0.001
Hep C test	1	27	p<0.001
Hep B Vaccination	3	8	p=0.176
Attends for STI screen	3	6	p=0.2

Conclusion: An oral swab test in the community for blood borne virus testing leads to an increase in the number of young people tested for blood borne infections but not subsequent attendance for STI screening. Services engaging with at risk populations should offer more non-invasive screening tests.

P2.132

SAFE OR SORRY (SOS) SAUNA OUTREACH PROJECT, ARE WE DOING ENOUGH TO DIAGNOSE THE UNDIAGNOSED?
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Background: Significant numbers of men attending gay saunas in our region are identified as heterosexual, bisexual or transsexual. This project aimed at providing an outreach service to those who fail to attend sexual health clinics and are unaware of their HIV status.
Methods: A twelve weeks outreach pilot study was conducted offering HIV and syphilis screening to clients attending gay saunas. Ora-Quick test was used for HIV testing backed up by conventional serology test for HIV and syphilis. Thirty-one clients were seen, of which 28 had both HIV & syphilis screening, one opted for syphilis test only and three declined both tests.
Results: From the 28 clients tested two (7%) were found to be HIV positive (new diagnosis) and 3 (11%) had positive syphilis serology (one new diagnosis and 2 old treated syphilis). One of the 3 clients who declined HIV test was admitted, 4 weeks later, diagnosed with AIDS defining illness. Pre-study questionnaire showed that over 80% of clients would like having sexual advice, STI screening and hepatitis B vaccination available in the saunas. Post study evaluation forms demonstrated the popularity and acceptance of this type of service delivery and unanimous support for extending the service to other venues.
Conclusions: Ora-Quick HIV testing had 100% sensitivity and specificity in this study and was found to be highly acceptable and convenient in outreach venues.The study highlights the benefit of delivering sexual health service in gay saunas providing the hard to reach, high risk group with easy accessibility.

P2.133

IMPACT OF TARGETED USE OF HIV PONT OF CARE TESTS (POCT) ON IDENTIFYING HIV INFECTED PERSONS AND DISSEMINATION OF RESULTS
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Background: The use of HIV POCTs is more time consuming and costly than venous testing. Our clinic selectively offers POCTS routinely to defined higher risk groups (MSM, partner HIV+ve, IVDU, from or sex with partner from country with prevalence >2%). We aimed to assess our selection tool and its impact on patients lost to follow up or unaware of results.

Methods: All patients diagnosed HIV+ve from 1/7/07-31/10/08 were identified from the database. Notes review and database searches were performed to collect demographic data, risk behaviour, form of testing (venous or POCT), eligibility for POCT and reason why POCT was not used where the patient was eligible. Actions to identify patients unaware or with unconfirmed infection were also reviewed.
Results: 203 people were diagnosed HIV+ve. Of these 156 (77%) were using a POCT. 47 had venous testing but 36 (78%) of these met POCT criteria. For most no reason was given as to why POCT was not used. 12 patients required further actions/ recall for results of confirmatory test or for results of initial venous blood sample. Most of these were born outside of UK (92%), male (71%) and black African heterosexual (50%). Strict use of our selection criteria would have successfully identified 97% of new HIV+ve diagnoses.
Conclusions: Targeted POCT testing using our simple higher risk criteria would identify most HIV infections (97%) at initial visit. Only 3% of our new diagnoses came from individuals from non high-risk groups. With time and financial constraints a tool may facilitate appropriate use of POCTs. Clinical underestimation of risk in some people from endemic countries seemed to deny some higher risk patients the option of POCT. Published adult prevalence rates were more useful than clinician discretion. All patients with a reactive POCT were aware of the significance and received confirmatory results. Targeted use of POCT reduces the likelihood of patients becoming uncontactable prior to receiving HIV +ve results.

P2.134

BARRIERS AND FACILITATORS TO SALIVARY RAPID HIV TESTING AMONG STI CLINIC PATIENTS

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Objectives: To identify barriers and facilitators of voluntary Salivary Rapid HIV Testing (SRT) decisions among African Americans in order to develop interventions to improve HIV testing rates and care entry if HIV positive.
Methods: This 1st phase of a 2-phase study used a theory-based semi-structured interview guide to conduct 10 focus groups of African Americans recruited from a large STI Clinic. Thematic content analysis of the focus group transcripts was conducted to identify patterns and meanings in the group discussions. An iterative process of comparison was used to further analyze the data, moving between individual elements of the text specific to participant responses. Common thematic elements of the text were identified.
Results: Of the 38 African American adults recruited, 16 were female (ages 18-49; M =23) with 10 reporting marital status as single and 6 as partnered. There were 22 males (ages 18-49; M=29.5) with 15 reporting marital status as single, 5 as partnered and 2 as married. All self identified as heterosexual with most reporting low income and no health insurance. Within the context of barriers and facilitators to SRT, eight themes emerged: Familiarity, Stigma, Fear, Access, Immediacy, Ease, Degree of Responsibility, and Trust. Each theme was not seen exclusively as a barrier or facilitator but was interpreted to be one or the other depending on the aspect of HIV testing being discussed.
Conclusions: Since there has been no increase in HIV testing rates in African Americans even with newer SRT technology, the findings support the need to assess barriers and facilitators to testing decisions in order to increase testing rates. The themes identified also suggest the need for tailored community based interventions that decrease fear and stigma associated with HIV and STI screening and increase trust in testing methods and providers.

P2.135

CAN STANDARDISING POSITIVITY HELP WITH THE INTERPRETATION OF CHLAMYDIA TESTING RESULTS IN CHLAMYDIA SCREENING PROGRAMMES?

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Objectives: As chlamydia screening is rolled-out to new sites, reaching additional and different individuals, there are inevitably variations in positivity amongst the screened population. We have examined differences in crude and standardised positivity for genital chlamydial infection during the first five years of the National Chlamydia Screening Programme (NCSP) in England.
Methods: Analyses used the NCSP dataset from year 1 (2003/04) to year 5 (2007/08). Crude proportions of positive tests ('positivity') were calculated per year and by Strategic Health Authority. Age- and sex-standardised positivity at national and regional levels was calculated using the Office for National Statistics (ONS) mid-2006 population estimates as the 'reference/standard' population. 95% CI were calculated using the Poisson approximation.

Results: Differences in the demographics of those being tested nationally, and therefore between the crude (CP) and age- and sex-standardised (SP) positivity rates, were minor (see Table below). This standardisation did level out an increase observed in CP when screening numbers increased almost 4-fold between year 1 and 2 of the programme.

Regionally, CP and SP rates and rankings were similar, with CP and SP rates highest in the North West (SP: 12.78, 95% CI 12.52-13.05) and lowest in the South West (SP: 8.30, 95% CI 8.01-8.60).

Year (screens)	Crude Positivity (95% CI)	Age- & Sex- Standarised Positivity (95%CI)	Percent Female	Mean Age (years)
1 (18,561)	11.32 (10.84-11.81)	14.62 (13.40-15.84)	93%	19.5
2 (67,406)	12.07 (11.81-12.34)	13.77 (13.31-14.23)	87%	19.4
3 (116,648)	11.15 (10.96 - 11.34)	11.97 (11.69-12.25)	82%	19.5
4 (164,289)	10.94 (10.78 - 11.10)	11.48 (11.26-11.70)	78%	19.3
5 (336,197)	9.39 (9.29 - 9.50)	9.25 (9.13- 9.37)	71%	19.0

Conclusions: Standardising for age and sex at the national and regional levels made little difference to annual trends and regional differences in chlamydia positivity. Such standardisation should be a more useful tool for comparing smaller sub-populations, (e.g. by collection sites) where variations in the population tested are greater. However, differences in other factors associated with genital chlamydial infection (e.g. behavioural factors, ethnicity and deprivation) are probably more important in determining variations in chlamydia screening positivity. Standardisation for such factors is now being explored.

P2.136

PSYCHOSOCIAL CONCERNS OF WOMEN UNDERGOING ROUTINE TESTING FOR *CHLAMYDIA TRACHOMATIS*

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Objective: Widespread screening for *Chlamydia trachomatis* (Ct) infection is recommended for sexually active young women in the US. However, data are limited with regard to women's psychological and social concerns about Ct at the time of testing.
Methods: Women age ≥16 undergoing routine Ct testing were recruited from 2 US family planning clinics. Study participants were interviewed about psychological and social concerns related to Ct infection. Responses were analyzed with regard to age, race/ethnicity, number of sex partners, and ultimate Ct infection status.
Results: 1808 women were enrolled (response rate 84%); mean age was 24, and 67% of respondents were African-American. Most respondents stated that, if diagnosed with Ct, they would "worry" about exposure to other infections (88%), feel "guilty" about giving Ct to someone else (85%), and find it difficult to "trust" future sex partners (72%). Most also reported they would "not be very proud" of their actions (69%), would feel "angry" (67%), would "feel betrayed" by their partner (61%), and would feel "embarrassed" (61%). A substantial fraction (43%) expressed concern they "might not be able to have children in the future." African-American respondents were less likely than others to report they would feel "scared" to tell their partners (17% vs. 37%, $p<0.001$). Women ultimately testing positive for Ct were more likely than others to state they were generally "concerned" about Ct (48% vs. 32%, $p<0.001$). In general, women who were older, and those who reported fewer sex partners in the past 30 days, expressed less concern about Ct.
Conclusions: Women undergoing routine testing for Ct expressed a variety of psychological and social concerns. Psychosocial parameters varied across demographic and clinical dimensions. These findings may be used to develop pre-test counseling to address Ct-specific concerns during screening.

P2.137

A PROSPECTIVE STUDY OF THE PSYCHOSOCIAL IMPACT OF A POSITIVE CHLAMYDIA TRACHOMATIS LABORATORY TEST

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Objectives: The benefits and costs of widespread screening for *Chlamydia trachomatis* (Ct) have been debated. However, few data exist on potential harms of screening. We assessed the psychosocial impact of a positive Ct test.
Methods: We prospectively studied women aged ≥16 undergoing Ct testing in 2 US family planning clinics. Before testing, we surveyed women using 9 validated scales/subscales, including the Multidimensional Sexual Self-Concept Questionnaire (MSQ), and Ct-specific questions. A month after receiving test results, all Ct-positive women and a random subset of Ct-negative women were resurveyed. Changes in scores were calculated for each woman. Means of paired differences for Ct-positive and Ct-negative women were compared using a t-test.
Results: We enrolled 1808 women (response rate 84%); mean age, 24; 67% were black. Of 1689 women with Ct test results, 149 (8.8%) tested positive. Follow-up data were obtained for 71 (50%) Ct-positives and 280 (49%) Ct-negatives. At follow-up, Ct-positive women had a 30% increase in anxiety about the sexual aspects of their life on the MSQ-Anxiety subscale ($p<.001$), significantly greater ($p=.02$) than the 7% increase among Ct-negatives. Ct-positives were more likely to report breaking up with a main partner at follow-up than at baseline (33% vs 16%, $p=.02$), while Ct-negatives were not (11% vs 11%, $p=1$). At follow-up, more Ct-positive women reported being "concerned" or "thinking a lot" about Ct than at baseline (80% vs 48%, $p<.001$). There was no change among Ct-negatives (41% vs 37%, $p=.07$). Ct-positive women reported a range of Ct-specific concerns; 95% disagreed that Ct "was not a big deal."
Conclusions: One month after receiving Ct test results, Ct-positive women had significant increases in anxiety about the sexual aspects of their life and concern about Ct, and were more likely to break up with a main sex partner, compared with Ct-negative women. Ct-specific concerns may guide counseling messages to minimize psychosocial impact.

P2.138

CHLAMYDIA SCREENING IN OUT-REACH SETTINGS: A STRATEGY TO INCREASE SCREENING IN MEN

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Background: Since the inception of the National Chlamydia Screening Programme (NCSP) fewer men than women have been screened. By the end of the 4th year of the NCSP only 21.1% of those screened were men. We describe our experience of delivering out-reach community based chlamydia screening across 4 Primary Care Trusts to increase the proportion of men accepting screening.
Method: Due to initial slow uptake of screening we focused our efforts at screening in out-reach, non-NHS settings. Key stakeholders and partner organisations were identified and an 'Events Coordinator' was appointed to coordinate the delivery of screening. A number of varied screening sites were identified including educational settings, local authority services, youth organisations, social venues and prisons. Screening is either undertaken by appropriately trained staff of local partner organisations or by Chlamydia Screening Assistants (CSAs) who were specifically recruited to this role and are expected to engage with 10 clients per hour and to have at least a 50% uptake of chlamydia screening.
Results: From 1st April – 31st December 2008 a total of 9,394 chlamydia screens were performed. 7,010 (74.6%) of these were in outreach settings. 4,869 men were screened (52%). 4,308 (88.4%) of these were in outreach settings. Overall chlamydia positivity was 6.7% and was 7% in men.
Conclusions: We have demonstrated the feasibility and success of community based outreach chlamdia screening and have achieved proportions of men screening which are more than twice the national average. Key factors relating to the success of this programme were collaborative working with community partner organisations, the choice of a wide range of outreach settings that were acceptable to young people and the role of the CSA. This unique approach is likely to be as successful in targeting other 'hard to reach' groups and we would recommend it form a key part of any strategy to increase the uptake of chlamydia screening.

P2.139

PROVISION OF URINE-BASED CHLAMYDIA AND GONORRHEA TESTING TO STREET-INVOLVED YOUTH IN NON-CLINICAL VENUES

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Objective: Demonstrate the feasibility of using peer-driven recruitment to provide urine-based chlamydia (CT) and gonorrhea (GC) testing to street-involved youth in non-clinical venues.
Methods: Respondent driven sampling was the primary recruitment method to access youth and advertise the availability of urine-based testing. Youth voluntarily contacted study staff to arrange for an appointment. A urine specimen was collected at this first appointment. A follow-up appointment was

scheduled to provide test results and treatment.
Results: Over a 4 month period (Dec. 2006 to April 2007), 75 males and 83 females (ages 14-24) entered the study and provided a urine specimen. For appointment sites youth chose drop-in centers (50.3%), restaurants (26.0%), malls (18.3%), bars (1.8%), clinics (1.8%), private homes (1.2%) and the street (0.6%). For males, 53% had never undergone CT or GC testing. Four of the six CT infections found in males were in this no-prior-test group (no GC identified in males). For females, 17% had never undergone CT or GC testing. Despite the higher frequency of previous testing, the prevalence of CT/GC in females was higher than males (15 CT and 4 GC infections in females). Seventy-three percent of participants returned for the second follow-up appointment.
Conclusions: Youth will assist in advertising the availability of urine-based testing to their peers. Male street-involved youth who have not previously undergone testing will take advantage of this test when offered in non-clinical venues. Females are more likely to have previously undergone testing, however, the high prevalence of CT/GC in this group suggests that facilitating more frequent testing would be beneficial.

P2.14

IMPLEMENTING TEN HIGH IMPACT CHANGES IN A GENITO-URINARY MEDICINE CLINIC
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Objectives: The Department of Health issued guidance on ten high impact changes to improve waiting times within genito-urinary medicine (GUM) clinics. This study examines the effect adopting these changes had on transit time in one inner city GUM clinic.
Methods: Between July 2008 and January 2009 this walk-in clinic underwent a service redesign, improving flow of patients through clinic and maximizing utilization of space within the department. Multi-disciplinary team members were retrained, ensuring delivery of care by one individual when possible. A fast-track pathway was developed for asymptomatic patients. The clinic adopted a paperless system and purchased an electronic system for the delivery of results, thereby reducing unnecessary clinical activity. The demand and capacity of the local health economy was mapped, ensuring an expansion in GUM provision outside this GUM clinic. Transit times before and after these changes were measured using a paper proforma detailing the number of clinicians seen per patient and the time spent with clinicians.
Results: In July 2008 the mean transit time was 116 minutes (range 25-244): 34 minutes on average seeing a clinician and the rest waiting. Clients saw an average of 2.17 clinicians per visit. In January 2009 the mean time from arrival to departure was 79 minutes (22-155) with an average of 36 minutes per clinician and 1.55 clinicians per visit. This 37 minute reduction in transit time represents a 32% improvement over the 116 minute baseline, (P<0.00001) see table.

	Symptomatic		Asymptomatic	
	M	F	M	F
	Total (range)	Total (range)	Total (range)	Total (range)
July 08	116 (39-220)	136 (62-244)	111 (25-212)	116 (113-154)
Jan 09	90 (40-155)	94 (50-140)	47 (25-62)	30 (22-42)

In July 2008 an average of 62.1 screens were performed per day. In January, this rose to 65.3. The number of staff employed by the GUM clinic did not alter. The number of GU screens performed outside the GUM clinic rose from 1758 in July 2008 to 1984 in December 2008.
Conclusions: Adoption of the changes was associated with a 32% reduction in transit time, and a 5% increase in attendance at the clinic. This occurred in the context of increased service provision outside GUM

P2.140

EVALUATION OF THE POSSIBILITY OF USE OF RAPID TEST IN HOMELESS PEOPLE LIVING IN SÃO PAULO CITY
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Objective: This study is aimed at investigating the possibility of use of rapid test among homeless people as a way of simplifying diagnosis and, therefore, provide immediate, proper and low cost treatment to be used on public health services, preventing the transmission, complications and congenital syphilis among those individuals.
Methods: It was performed in São Paulo city, in places such as shelters, communitarian restaurants and personal care, public places to get nutrition and dress and public cloak rooms. There were found 2110 homeless people and 1484 volunteered to be tested. They answered questionnaires about socio-demographic issues; knowledge, behavior, perceptions and risk practices for sexually transmitted diseases (STD); STD individual history and knowledge of symptoms and manifestations; sexual behavior and search for health services. After that were collected blood samples to perform syphilis tests. The individuals with positive results to rapid test were immediately treated with Penicillin Benzatin or Eritromicin. There was follow up to those people in the nearest health services.
Results: 1270 men and 214 women accepted to participate. Among these, 13,20% were positive to rapid syphilis test and accepted to be treated immediately and followed up after the treatment. The reasons why people didn't want to participate in this study were "I don't want or don't like to talk about myself" (3,84%); "I don't feel comfortable in taking blood exams" (6,49%); "I don't have the time for that" (5,94%); Insufficient personnel to assist the homeless people (9,01%) and "I would only do it if there were other tests, mainly for HIV (4,41%).
Conclusions: Among people who did not participate of the study, almost 70% didn't made it based on their own will. Other reason lack of others tests' availability, mainly for HIV. This demonstrates the large possibility of use of rapid test and treatment for syphilis among homeless people in São Paulo city.

P2.141

CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE SCREENING AND PARTNER MANAGEMENT IN STD CLINICS: PATIENT PREFERENCES
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Objectives: To meet the need for services at STD clinics, self-obtained vaginal swabs or first-catch urine samples, collected at clinic or home, have been proposed as alternative approaches for Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (GC) screening. We measured the acceptability of such an approach and partner delivered therapy for CT and GC by assessing patient preferences.
Methods: Patients seen at STD clinics in three US cities (Jackson, MS, New Orleans, LA and St. Louis, MO) were surveyed in mid-2008 on preferences for methods of CT and GC annual screening, rescreening, and testing under certain circumstances at the clinic. Preferences for partner management were also ascertained.
Results: A total of 2,805 participants completed a self-administered questionnaire that contained multiple choice questions about their preference. The average age was 27 years and 51% were females. Regarding annual screening, 17% preferred to "collect a urine sample or vaginal swab at home and mail it back for testing" and 75% preferred to "come back to the clinic every year for a check up". The percentages were consistent across sites and similar in males and females. For rescreening three months after treatment, 22% preferred home testing. In the event that the clinic has to turn patients away, 41% of patients preferred to "come back the next business day" and 46% preferred to "collect a urine sample or vaginal swab by self for testing". For partner treatment, only 20% (15.5% in males and 23.5% in females, Chisq $p<0.001$) preferred to "bring the medicine home for my partner(s) to take", while 49% preferred to "send my partner(s) to the clinic for treatment".
Conclusions: Self-collected specimens for CT and GC testing and partner delivered therapy were not preferred by most patients who participated in this survey. Our findings emphasized the need for improved education in order for patients to adopt these new approaches.

P2.142

PREVALENCE OF ORAL AND ANAL EXPOSURE IN HETEROSEXUAL MALES AND FEMALES IN THREE SEXUALLY TRANSMITTED DISEASE CLINICS IN THE UNITED STATES
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Objectives: Screening for sexually transmitted diseases (STD) in heterosexuals has primarily focused on genital sites. Anal and oral exposure can be important because the behaviors are related to the acquisition of STDs. The objective of this analysis was to estimate and compare the prevalence of oral and anal exposure among heterosexual men and women from three STD clinics by gender and age.

Methods: All patients seen at three STD clinics (two in the southern United States, and one in the mid-west), were surveyed on Chlamydia screening preferences from May to September 2008. Chart abstractions were conducted to gather information about patient sexual orientation and exposure site. Only those who reported sexual preference with opposite sex partners were included in this analysis. Anal and oral exposure was defined as ever having received anal sex and ever having given oral sex. The predominant race at each site was African American.
Results: A total of 2,454 heterosexual patients were included in this analysis. The average age at all sites was 27 years (ranging from 13-77). Females in the two southern clinics were less likely than females in the mid-western clinic to have ever given oral sex (22% and 19%, vs 58%, respectively, $p<0.0001$). Similarly in males, lower percentages of oral sex were reported in the southern clinics than in the mid-west (14% and 21%, vs 64%, respectively, $p<0.0001$). At all sites, oral sex was most common among 20-25 year olds for both males and females. Anal sex was assessed only in females and was more prevalent in the mid-west (75%) than the south (13% and 12%, $p<0.0001$). Prevalence of anal sex did not differ by age in women over 20 years in the mid-west.
Conclusions: The prevalence of oral and anal exposure in heterosexual STD patients varies by geographical site. Young adults reported the highest oral exposure. The exposure differences by location and age should be further explored to optimize STD screening.

P2.143

INNOVATIVE TEST COLLECTION TO IMPROVE DETECTION OF CHLAMYDIA AND GONORRHEA INFECTIONS AMONG INCARCERATED MEN WHO HAVE SEX WITH MEN
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Background: Studies have reported that screening men who have sex with men (MSM) for chlamydia (CT) and gonorrhea (GC) using non-genital specimens detects more infections compared to testing urine. We evaluated the feasibility and yield of non-genital sampling using nucleic acid amplification tests (NAATs) in a population of incarcerated MSM.
Methods: From February to October 2008, 2,289 MSM inmates were admitted and offered a urine test, pharyngeal swab (collected by a community worker), and self-collected rectal swab. Specimens were tested for CT/GC using a previously validated NAAT (Gen-Probe APTIMA Combo 2): pharyngeal specimens were tested for GC only. McNemar's chi-square statistic was used to compare test results.
Results: A total of 2,231 (97.5%) inmates were tested from at least one anatomic site. More rectal and pharyngeal specimens were collected than urine specimens (90.6% rectal, 96.3% pharyngeal, 88.5% urine). Overall prevalence of CT was 7.3% (162/2,231; 6.3% rectal, 2.5% urine) and GC was 5.5% (123/2,231; 3.9% rectal, 2.3% pharyngeal, 0.9% urine). Among 1,760 individuals tested at all three sites, rectal testing was more likely to detect CT (OR=3.8, $p<0.05$) and GC infections (OR=13.2, $p<0.05$) than urine testing. Pharyngeal testing was also more likely to detect GC infections (OR=3.09, $p<0.05$) than urine testing. Urine testing alone would have missed 100 (71%) of 141 CT cases and 95 (87.2%) of 109 GC cases detected. Of the inmates infected with CT and/or GC who accepted HIV testing, 4% were HIV positive.
Conclusions: Rectal and pharyngeal screening using non-traditional NAAT specimen collection was widely accepted and detected the vast majority of CT and GC in this population. Urine screening alone would have missed 76.5% of all infections. CT/GC screening of MSM should routinely include rectal and pharyngeal specimens.

P2.144

DISPARITIES IN CHLAMYDIA TESTING AMONG YOUNG WOMEN WITH STI SYMPTOMS
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Background: Despite disparities in chlamydia (CT) rates and related complications by race/ethnicity and class, it is unknown whether providers differentially test young women with STI symptoms.
Methods: Retrospective cohort analysis using electronic medical records of women 14 to 25 years old. Visits were included if prior indication of sexual activity using HEDIS criteria and 1+ of the following ICD-9 codes indicating STI symptoms (Hoover et al. Obstet Gyn 2008): PID; cervicitis, vaginitis, vulvitis, endometritis; vaginal discharge; dyspareunia, pelvic or abdominal pain; postcoital or irregular vaginal bleeding; urinary symptoms; and STD symptoms. Random effects logistic regression analysis was performed to assess the odds of CT testing given a woman presented for a non-pregnancy-related visit with STI symptoms. All analyses controlled for history of STI, setting (inpatient, outpatient, or ER), and visit year and adjusted for within-person correlation.
Results: Overall, a CT test was performed in 61% of visits with ICD-9 codes indicating STI symptoms.

Providers were more likely to test minority women (OR 1.68 for black women; OR 1.99 for Latina women) compared to white women. Women were also more likely to be tested if they had public insurance (OR 2.01) or were self-pay (OR 2.89) compared to if they had private insurance. Among women with a prior history of STI, the odds of testing was no longer statistically significant by race/ethnicity or insurance status; and among women with no prior history of STI, the differences were more exaggerated (OR 4.49 for black women and OR 5.89 for Latina women, compared to white women; OR 2.91 for public insurance and OR 5.98 for self-pay, compared to privately insured women).
Conclusions: Provider testing differs by race/ethnicity and insurance status when a woman presents with STI symptoms and no prior history of STI. Biases in testing may contribute to higher reported rates of CT among minority and poor young women.

P2.145

HOW CAN WE MARKET RECOMMENDED CHLAMYDIA TESTING TO SEXUALLY ACTIVE GIRLS & WOMEN IN THE UNITED STATES?
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Objectives: To inform national STD-related infertility prevention efforts, the United States (US) Centers for Disease Control & Prevention (CDC) explored young women's knowledge, beliefs, attitudes and communication preferences regarding Chlamydia (CT) and CT testing.
Methods: Two phases of open, ethnographic interviews were conducted with African-American, Caucasian & Hispanic females across four regions of the US, recruited through market research firms. Phase 1 (phone interview) findings guided Phase 2 (in-person interviews), which included a combination of activities and exercises to further explore messaging preferences. Interviews were transcribed and coded by three independent researchers using NVivo2.
Results: A total of 125 females were interviewed by phone (n=80) and in-person (n=45). Participants tended to dichotomize STDs as curable or incurable, with CT generally viewed as curable. When testing procedures were discussed, a majority reported believing that the Pap test screened for STDs; almost all were unaware of the recommendation for routine CT testing. In addition to this lack of awareness, identified barriers to CT testing were: fear; concerns about confidentiality/stigma & testing procedures; embarrassment; lack of symptoms/perceived susceptibility; access; and sex partner issues. Across demographic and lifestyle segments, certain messages were reported to motivate intentions to seek testing, including those highlighting CT's asymptomatic nature; a simple diagnosis & cure; overcoming embarrassment/stigma to prevent infertility; and empowerment/support. Content emphasizing test confidentiality, and that even regular partners can be carriers of STDs, also emerged as important. Image preferences varied by segment and STD experience/history.
Conclusions: Certain messages may have broad appeal to motivate CT testing across segments. The findings provide direction for CT screening campaign messaging targeting girls and young women.

P2.146

HOW A SERVICE EVALUATION OF DUAL NAAT TESTING FOR N. GONORRHOEAE AND C. TRACHOMATIS CAN INFORM CHANGES IN CLINICAL PRACTICE
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Objectives: To evaluate what proportion of women testing positive for *Neisseria gonorrhoeae* by Aptima Combo 2 (AC2) have specimens taken for *N. gonorrhoeae* culture and of these, what proportion is culture positive?
Methods: The dual nucleic acid amplification test (NAAT) AC2 was introduced 01/04/06 with confirmation of positive *N. gonorrhoeae* results using Aptima GC. We do not undertake direct plating, sending swabs for culture to microbiology. It takes up to 12 hours before sample plating. Case notes of females with *N. gonorrhoeae* positive endocervical or vaginal swabs (AC2 and/ or culture) were reviewed. All cases from 01/04/06 to 31/03/08 in 2 local GU clinics were found using pathology records. Data was collected using a standard pro-forma.
Results: During the study period 16944 women were tested and 105 (0.6%) women were positive for *N. gonorrhoeae*. Of these, 102 case files were located. 33% cases were aged 20-24 with 28% each aged 16-19 and 25-34. 67% were 'white', 14% 'black', 4% of 'mixed' ethnic origin and 15% unknown. Of those who had microscopy performed, 13/64 (20%) demonstrated Gram negative intracellular diplococci. 84/102 (82%) cases had both NAAT and culture samples taken. Only 40 (48%) cases positive for *N. gonorrhoeae* by NAAT were confirmed by culture. All culture positives were confirmed by AC2.
Conclusions: Our patient group with *N. gonorrhoeae* is slightly older than the national average. We are investigating whether age and clinical presentation is associated with AC2 positive, culture negative

samples. Less than half NAAT samples positive for *N. gonorrhoeae* were confirmed by culture. This suggests that delays in sample transport and plating result in reduced sensitivity for culture. Another possibility is false positive *N. gonorrhoeae* results using AC2 with Aptima GC. Currently we are arranging confirmation of AC2 positive samples by a different NAAT. We intend to introduce direct plating for *N. gonorrhoeae* culture and evaluate this prospectively.

P2.147

WHAT IS THE IMPACT OF ELIMINATING NAAT GONORRHEA AND CHLAMYDIA TESTING FOR PATIENTS 30 AND OLDER IN STD CLINICS?

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Objectives: Due to decreased funding at the Ohio Department of Health, nucleic acid amplification testing (NAAT) for patients 30 years and older has been eliminated. Cost for the GC/Chlamydia NAAT is $11.17 per test. Gonorrhea cultures are handled by our local health department lab at nominal costs and highly correlate with NAAT. In comparison, only patient history/ exam and gram staining is otherwise available for Chlamydia infections. In 2007, positivity rates for Chlamydia using NAAT were over 10% for patients aged 30-34 while overall positivity for the over-thirty clinic attendees was 6.5%. By evaluating characteristics of older patients that were identified with Chlamydia infection using NAAT, we will estimate the impact of this programmatic change.
Methods: A retrospective chart review of patients thirty years and older that tested positive for Chlamydia in the second half of 2007 was performed. Gram stain results, treatment and diagnosis at time of visit were recorded.
Results: 2923 individuals 30 or older were screened in 2007 at a cost of $32,650. 164 cases of gonorrhea, 33 cases of dual infections and 156 cases of Chlamydia were identified. 73 of the Chlamydia cases occurred in the second half of 2007. 12 of 73 were women. Male urethral gram stain was negative (< 5 pmns/ hpf) in 21% of cases. 6 patient charts were not available for complete review. 74.6 % (50/67) patients received treatment at their visit based upon test results/case contact. 25.4% (17/67) of patients received no treatment at their time of visit and would have been missed without NAAT screening. 64% of these patients were women.
Conclusions: Age based limits on NAAT screening would miss 25.4 % of Chlamydia cases in patients 30 and older seen in our STD Clinics and disproportionately affect women. While eliminating routine NAAT testing of this age group would lead to an immediate cost savings of over $30,000 to the state, it is unknown what the longer term healthcare cost will be.

P2.148

SCREENING PRACTICES FOR EXTRAGENITAL CHLAMYDIA AND GONORRHEA IN AN URBAN STD CLINIC

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Background: The CDC recommends rectal chlamydial (CT) and gonococcal (GC) testing and oropharyngeal GC testing in persons reporting sexual exposure at these sites. Little is known about provider screening practices at extragenital sites and factors associated with failure to screen. We evaluated how often providers inquired about extragenital sexual exposure, the proportion of subjects reporting extragenital exposure who received site-specific screening, factors associated with failure to perform site-specific testing, and GC and CT prevalence at these sites.
Methods: We retrospectively reviewed data collected May 2006 through April 2008 from 17,885 subjects (9469 males, 8416 females) >16 years of age presenting for routine STD screening at a Birmingham, AL STD clinic. Most chlamydia and gonorrhea tests were culture. Analyses were performed on SAS (version 9.1).
Results: Providers inquired about extragenital sex in 91.6% of subjects (91.9% of males; 91.2% of females). Extragenital sex was reported by 18.4% of subjects (18.9% males; 17.9% females). In subjects reporting oral sex, 62% were tested for GC at the oropharynx (prevalence 0.7%). Of subjects reporting anal sex, 59.9% received rectal testing for GC (prevalence 4.7%) and 11.9% rectal testing for CT (prevalence 11.8%). Failure to have diagnostic testing performed was associated with non-African American race (OR 0.56, 95%CI 0.50-0.64). Gender, age, sexual orientation, and time and day of appointment did not predict screening.
Conclusions: Although the majority of providers inquired about extragenital exposure, testing was done in only about 60%. African American patients were more likely to receive testing than others.

P2.149

SHOULD ALL CASES OF CHLAMYDIA HAVE A TEST OF CURE?

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Objectives: Current BASHH guidelines do not recommend a test of cure (TOC) for Chlamydia. This study aims to assess the persistence of Chlamydia 6-12 weeks after initial infection.
Methods: All clients diagnosed with Chlamydia in one inner city GU clinic between 01/07/08 and 30/09/08 were advised and actively recalled to attend 6-12 weeks after treatment for TOC.
Results: TOC was taken a median of 76 (36-128) days after treatment.

	Total	DNA		NO TOC Result		TOC neg		TOC pos	
		n	%	n	%	n	%	n	%
M	126	79	63	15	12	24	19	8	6
F	138	42	30	51	37	36	26	9	7

17/77 (22%) of individuals receiving a TOC were positive for chlamydia There was no significant difference between non-attenders and attenders in terms of age, ethnicity and number of partners, although among individuals receiving a TOC, those testing positive tended to be younger than those testing negative (22.2 years vs 25.9 years, p=0.09).
Conclusions: 22% of individuals receiving a TOC had persistent Chlamydia (ITT 6%). A large proportion of individuals did not receive a TOC which needs to be addressed. Nonetheless, these figures suggest it may be worth considering TOC for Chlamydia

P2.15

BASHH 2008 NATIONAL AUDIT OF SEXUAL HISTORY TAKING IN UK GENITOURINARY MEDICINE CLINICS: CASE NOTES AUDIT

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Background: A national, web-based audit on sexual history taking in GUM clinics against BASHH Clinical Effectiveness Group standards was conducted in January to March 2008.
Methods and Results: The case notes of 4121 patients in 153 clinics from all BASHH regions (~ 60% of all clinics) were audited against the 2006 BASHH Guidelines on consultations requiring sexual history-taking. Performance data (given as overall national and regional range percentages) against four auditable outcomes were obtained: (a) 94% (85-99%) of new/rebooked cases were asked about the gender of their last sexual partner (96% in bi/homosexual men, and 94% in heterosexual men and women), (target >95%); (b) 85% of heterosexual men and 87% of women (71-95%) and 70% (44-93%) of bi/homosexual men were asked about condom use (for vaginal and anal sex respectively) at last sexual intercourse, (target >95%); (c) 95% (83-100%) of cases notes were deemed completely legible, (target >90%); (d) the following were recorded about the HIV risk assessment (overall target >90%): injecting drug use, 80% (52-95%); sex with another man, 68% of men (46-90%); sex abroad (non-travelling partner), 61% (35-92%); giving money for sex, 32% (10-79%); receiving money for sex 31% (9-79%); and treatment abroad associated with HIV risk, 23% (5-58%).
The following were also obtained: method of giving results, 83% (62-97%); anogenital examination findings, 87% (76-98%); follow-up plan for care, 79%, (61-98%); offer of a chaperone for examination, 54% (21-81%); assessment for hepatitis B vaccination, 47% (34-72%); and assessment for hepatitis C testing, 41%, (22-73). Additionally, information about problems and risk in the last sexual contact was not documented for 62% (35-86%) and 50% (19-75%) respectively.
Conclusions: Interventions are especially required to improve practice documentation in discussing condom use, HIV risk assessment, offer of a chaperone and assessment for hepatitis B vaccination and hepatitis C testing, and risk and problems associated with sexual contacts.

P2.150

ASYMPTOMATIC PATIENTS. DO THEY REQUIRE MORE THAN JUST AN ASYMPTOMATIC SCREEN?

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Background: The DOH paper 'Genitourinary Medicine 48 Hour Access: Getting to target and staying there' advises the development of a separate pathway to screen those at low risk of an STI, citing the presence or absence of symptoms as a major discriminating factor. This approach to triage has not been

formally validated.
Methods: 300 sets of case notes were retrospectively audited. Each new patient is routinely given a form to complete, which asks if the patient has any symptoms. This audit compared the clinical history and whether any intervention was required from the GUM service in patients with and without symptoms. The chi-square test with Yates' correction was applied for statistical comparison.
Results: 57% of patients initially identified themselves as asymptomatic but 28% of this group disclosed symptoms on clinical history.
Those presenting as asymptomatic were significantly less likely to be diagnosed with an STI than those presenting as symptomatic (chi-square = 13.24, p = <0.001).
78% of patients identifying as asymptomatic were documented as being diagnosed with an STI, as a contact of an STI, with an alternative diagnosis of GUM relevance or were provided with an additional service (health promotion, HBV vaccination or contraception).
Overall there was no significant difference in the number of people requiring any clinical intervention between the asymptomatic and symptomatic groups (78% v 80%; chi-square = 0.16, p = 0.69). When separated by sex, this held true for male patients (chi-square = 2.56, p = 0.10), however asymptomatic women were significantly less likely than symptomatic women to require any intervention (72% v 90%; chi-square = 5.898, p = 0.02).
Conclusions: The majority of asymptomatic patients benefited from a clinical intervention within the GUM setting. This audit supports the suggestion that using the criterion of lack of symptoms for streamlining in GUM clinics is questionable.

P2.151

IS THERE STILL A CASE FOR URETHRAL SMEARS IN ASYMPTOMATIC MEN?
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Objective: The national guidelines for the management of non-gonococcal urethritis (BASHH, 2007) do not recommend urethral smears in asymptomatic men. This is due to the low specificity of urethritis, as defined as ≥ 5 polymorpho-neutrophils (PMNLs) per high power field, for Chlamydia trachomatis and/or Mycoplasma genitalium in asymptomatic men. The aim of this study is to investigate whether higher PMNL counts have increased specificity for Chlamydia and whether this could be used to facilitate anticipatory point-of-care treatment.
Method: A retrospective case note review was performed involving 366 men attending a genitourinary medicine clinic. Information was gathered on patient demographics, sexual behaviour, PMNL count per high powered field on microscopy of a gram stained urethral smear and chlamydia urine NAAT result (COBAS TaqMan v2.0: Roche).
Results: 53/366 (14%) of patients were found to be chlamydia positive on NAAT testing.
Table 1: The significance of different PMNL counts in asymptomatic men.

PMNL count	Sensitivity	Specificity	Positive predictive value	Negative predictive value
≥5	26/32 (81%)	148/257 (58%)	26/135 (19%)	148/154 (96%)
≥10	21/32 (66%)	208/257 (81%)	21/70 (30%)	208/219 (95%)
≥20	14/32 (44%)	237/257 (92%)	14/34 (41%)	237/255 (93%)
≥30	7/32 (22%)	249/257 (97%)	7/15 (47%)	249/274 (91%)

The positive predictive value (PPV) of a symptomatic urethritis (defined as the presence of dysuria and/or discharge with a PMNL count ≥5 per high power field) was 14/27 (50%) with a negative predictive value (NPV) of 299/337 (89%).
Conclusion: The PPV of a PMNL count ≥30 in asymptomatic men is similar to that of men with a symptomatic urethritis (PMNL ≥5) in this population. It may therefore be justified to continue performing urethral smears in asymptomatic men and advocate anticipatory treatment for chlamydia when the PMNL count is ≥30. However, in this group and in men with a symptomatic urethritis, only half were found to be chlamydia positive on NAAT.

P2.152

HOW PAINFUL IS A URETHRAL SWAB?
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Background: It has been postulated that painful urethral swabs may be a reason for non-attendance of men at STI clinics. The primary objective of the study was to investigate the intensity of the discomfort felt during the insertion of a urethral swab.
Methods: Male patients over the age of 16 having urethral swabs were invited to participate. They had 3 different swabs (Dacron tipped swab for gonorrhoea, Rayon tipped swab for Chlamydia or a plastic urethral loop swab) taken in a pre-determined random order depending on group allocation. Subjects rated the discomfort felt with a 0-100mm Visual Analogue Scale (VAS) before and after each swab. A planned interim analysis is presented.
Results: Data on the first 90 subjects showed the median age of the men was 26.5 years (IQR 22-32 years) with no difference between the groups (p=0.8). 69 (77.5%) of the subjects were single, 80 (95.2%) were heterosexual, 52 (57.8%) had a previous swab test, 21 (23.3%) had noticed a discharge and 25 (27.7%) had dysuria. The swab order for the 1st, 2nd and 3rd swabs taken were Rayon (30,31,29) Dacron (31,29,30) and loop (29,30,31). The median scores (IQR) on the VAS before and after the first swab were 0 mm (0-0) and 50 mm (24-71) (p<0.001). The median scores before and after the second swab were 8.5 mm (0-29) and 61 mm (45-80) (p<0.001). The median scores before and after the third swab were 10 mm (0-30) and 57 mm (30-76) (p<0.001). Subjects complaining of a urethral discharge and dysuria had higher pre first swab pain scores than those without (p<0.05).

	Rayon Chlamydia swab	Dacron Gonorrhoea swab	Plastic loop swab	P value, comparing all 3 groups
Median Pain score after 1st swab (IQR)	70.5mm (48.7-77)	52mm (24-65)+	25mm (14.5-50)+ *	0.001
Median Pain score after 2nd swab (IQR)	75mm (48-89)	68mm (50-83)	50mm (16-71.5)+*	0.006
Median Pain score after 3rd swab (IQR)	80mm (54.5-100)	51mm (36-75)+	40mm (21-60)+*	<0.001

+ Significantly different compared to Rayon (p<0.05) * Significantly different compared to Dacron (p<0.05)
Conclusions: Urethral swabs can be as painful as labour pains. The Rayon Chlamydia swab is more painful than the Dacron Gonorrhoea swab. They are both more painful than swabs with a plastic loop. The availability of urine PCR testing for Chlamydia and gonorrhoea should mean these cotton-type swabs are no longer used.

P2.153

IS SCREENING ASYMPTOMATIC MEN WHO HAVE SEX WITH MEN FOR URETHRAL GONORRHOEA WORTHWHILE?
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Background: Sexually transmitted infection (STI) screening guidelines for men who have sex with men (MSM) have conflicting recommendations regarding testing asymptomatic MSM for urethral gonorrhoea. While most urethral gonococcal infections in a clinic setting are symptomatic, most infections detected in community based studies are asymptomatic. Studies determining the prevalence of asymptomatic male urethral gonococcal infection in clinic settings have mostly used nucleic acid amplification tests (NAAT) without supplemental assays and very small sample sizes, leading to imprecise estimates. We determined the prevalence of confirmed asymptomatic urethral gonococcal infection among MSM at our Australian sexual health clinic.
Method: Asymptomatic MSM are screened for urethral gonorrhoea using the Roche Amplicor® polymerase chain reaction (PCR) and a supplemental porA pseudogene real-time PCR assay, whereas cultures of urethral samples are used for symptomatic men. We used the clinic database to identify all attendances by MSM where a urine or urethral gonorrhoea test was performed between March 2006 and July 2008, and whether the men had any anogenital symptoms at the time of testing. We calculated the prevalence of symptomatic and asymptomatic urethral gonococcal infection with 95% confidence intervals (95% CI).
Results: There were 4453 attendances by asymptomatic MSM and 2 diagnoses of urethral gonorrhoea in these men. Over this time there were 1213 attendances by symptomatic MSM and 38 diagnoses among these men. Hence the prevalence of asymptomatic urethral gonorrhoea was 0.04% (95% CI 0-0.1). The prevalence of gonorrhoea among MSM with any anogenital symptoms was 3.13% (95% CI 2.3-4.3) over the same period.
Conclusion: Despite a high prevalence of symptomatic infection, asymptomatic urethral gonococcal

infection was extremely uncommon among MSM seen in our sexual health clinic. Screening asymptomatic MSM for urethral gonococcal infection is not warranted.

P2.154

AWARENESS OF RISK: RECTAL SELF-SAMPLING FOR STD DIAGNOSTICS

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Objective: Prevalence of rectal STD among MSM is increasing. This study was designed to demonstrate men's awareness of rectal STD risk.
Methods: 75 men who self-identified as gay or bisexual were enrolled. Data were collected regarding rectal infection awareness, history of STD testing, and rectal sexual exposures. For those participants who agreed to collect a rectal sample, STD diagnostics using a DNA-based assay was performed for those who consented to testing.
Results: 35 White, 27 Black, and 13 Hispanic/Latino men were interviewed. Although 65 of the respondents reported receptive anal intercourse, 34 did not know the rectum could be infected with an STD and 30 did not know that urine testing would not detect rectal infections. While 68 reported previous STD testing, only 29 reported having a rectal sample tested. Additionally, 68 men agreed to collect a sample and 62 men consented to having their rectal samples tested for STD. A total of 5 and 2 were positive for chlamydia and gonorrhea, respectively. Last, 68 men responded that they would be willing to have a rectal swab for STD testing collected in the future.
Conclusions: The rectal infection rates in the study group suggest that this is a population that would benefit from improved STD screening efforts. However, awareness of the issues related to rectal infection was low in these populations. Although the majority of men in the study had been tested previously, the lack of rectal testing underscores the need for improvement in both patient and provider education. The willingness to be tested suggests that sexual health among MSM can be improved with targeted education. Field collection of self-obtained rectal samples is feasible and can identify populations at risk for STD and expand sentinel surveillance efforts.

P2.155

LARGE SCALE IMPLEMENTATION OF NUCLEIC ACID AMPLIFICATION TESTING FOR CHLAMYDIA

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Objective: Direct comparisons of GenProbe's PACE 2 non-amplified nucleic acid test and Aptima nucleic acid amplification (NAAT) test have not been published. The lack of this data makes it difficult for laboratories to predict the change in positive specimens detected if planning a transition to amplified testing. Here we present the change in percent positivity for chlamydia (CT) detected from swab specimens following the implementation of Aptima in Manitoba, Canada.
Methods: Cadham Provincial Laboratory (CPL) conducts all CT testing for the province of Manitoba, Canada, performing approximately 8,000 CT tests per month. Prior to July 2007, PACE 2 was used for detection of CT from swab specimens. Over a 30 day period in July 2007, PACE 2 was replaced with Aptima. In March 2008, the GenProbe CT confirmatory amplified assay was implemented to confirm all Aptima-positive CT specimens.
Results: Prior to implementation of Aptima, use of the PACE 2 test resulted in an average CT positivity from swabs of 3.9%. Using a published sensitivity value of 75% for PACE 2 (and specificity near 100% given the availability of the PACE 2 confirmatory assay), the maximum expected increase in percent positivity following implementation of a NAAT test with sensitivity and specificity near 100% would be 5.2%. In practice, the observed increase in percent positivity following Aptima implementation was higher than this value, increasing to approximately 6.1%. Implementation of the GenProbe CT confirmatory assay had a minimal effect on percent positivity with a decrease of only approximately 0.1%.
Conclusions: Based on the increase in percent positive following implementation of Aptima, a much lower PACE 2 sensitivity of 64% would be required to account for the observed increase in positive specimens detected. Laboratories and disease control programs phasing out PACE 2 may experience higher than expected increases in the number of positives detected from swab specimens.

P2.156

ACCEPTABILITY OF RECTAL SELF-SAMPLING AMONG MSM IN COMMUNITY VENUES: A QUALITATIVE STUDY

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Objectives: We examined the acceptability of rectal STD self-sampling diagnostics in nonclinical settings in a sample of MSM in the Midwestern US.
Methods: 75 self-identified gay and bisexual men were recruited from 7 community venues. Participants completed face-to-face semi-structured interviews and were asked to provide a self-collected rectal swab for STD testing. Participants who agreed to provide a swab were asked open ended questions about self-rectal swabbing, including, "How would you describe your experience of collecting this sample to others?", "If you could have any combination of choices for collecting samples, what would be ideal for you?" and "What are the advantages/disadvantages to this type of testing?" Interviews were conducted in English, audio recorded, and transcribed for analysis. Using a thematic coding approach, we identified recurrent themes within categories, organized these into specific groups, and tested them against subsequently collected data.
Results: The median age of participants was 29 years, race/ethnicity included White (35), Black (27) and Latino (13). A total of 91% (68) men provided a self-collected swab. All participants indicated that they would be willing to be tested for rectal STI at some point in the future. Regardless of venue, 75% (56) of participants said that they would prefer to collect the sample themselves. Advantages to testing in a non-clinical setting included convenience (22), comfort (19), and privacy (12). Almost all participants (61) said that they would recommend this type of testing to their friends.
Conclusions: The majority of participants provided positive feedback regarding both acceptability and comfort-level involved with self-sampling for rectal STD. Self-sampling for rectal STD may assist MSM in overcoming barriers associated with STD screening and increase men's autonomy.

P2.157

ACCEPTABILITY OF URINE SAMPLE COLLECTION USING A SPONGE-BASED DEVICE IN A POPULATION OF YOUNG MEN

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Objectives: Urine samples, while easily obtained, present a problem in specimen transport in field-based research and community-based screening. This study examines the acceptability of using a sponge-based urine collection device for STI testing among adolescent boys.
Methods: Twenty seven 14-16 year old boys provided urine samples for Gonorrhea and Chlamydia PCR testing using both a sponge-based device (urine-swab) and a standard urine specimen cup. Participants were asked to rate each collection method on whether it was easy, messy, embarrassing, physically uncomfortable, and unpleasant. 10 participants provided urine samples directly on the urine-swab and 17 placed the urine-swab into the cup and urinated in the cup.
Results: Mean age was 14.9 years, ethnicity included 24 African American, 2 white, and 1 Latino. Four (15%) were positive for Chlamydia and none had Gonorrhea. Participants found both specimen methods acceptable. Among all participants, 17 (63%) reported that using the sponge based device was no problem at all and 19 (70.4%) said the same using a specimen cup. While 6 (22%) reported the swab as being "messy", 77% said it was "not uncomfortable at all". Both sample collection methods were endorsed as "pleasant" by the majority of respondents: 22 (81%) and 23 (85%) for the urine-swab and cup, respectively. However, participants preferred a standard urine cup over a urine swab. Among the 10 participants urinating directly on the swab, 5 (50%) found it to be "somewhat" or "more difficult" than collecting urine in a cup. 93% of adolescents responded that they would prefer to use a specimen cup for STD testing collected in the future.
Conclusions: Understanding the preferences for specimen collection provides information useful to designing field-based sample collection screening. Future efforts will need to focus on collection methods that are both simple and clean.

P2.158

SELF COLLECTED VAGINAL SAMPLES FOR STI DIAGNOSIS IN ADOLESCENT GIRLS: WHAT DETERMINES ACCEPTABILITY?

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Background: The burden of chlamydial infection falls largely on adolescents. Vaginal swabs achieve higher rates of C. trachomatis and N. gonorrhoeae detection than urine samples. However, evidence on their acceptability is mixed, with negligible research in teenage girls. We investigated factors surrounding the acceptability of self-collected vaginal swabs to 14-19 year old girls attending a specialist sexual

health service.
Methods: Participants were invited to collect both a vaginal swab and a first catch urine specimen. Data on demographic variables, knowledge and attitudes towards the two sampling methods were recorded on a pre-designed study proforma. Semi-structured interviews were conducted with a small subsample of patients, to elicit patients' perspectives and underlying reasons for any preferred sample type.
Results: Data are presented on the first 119 study participants of the final target sample size of 254. The mean participant age was 17.0 (SD 3.2). The majority of patients (102/119;86%) opted to perform both tests, with five (4%) taking swabs only and six (5%) providing urine samples only. 45 (38%) preferred self collected swabs, 41 (35%) had no preference and 22 (19%) preferred urine. A non-statistically significant trend towards younger age and preference for urine samples was observed, which will be formally tested in the adequately powered sample of 254 patients. Interviews generated a rich understanding of patients' expressed preferences, including generally strong negative attitudes towards urine samples because they were perceived to be messy, embarrassing and time consuming.
Conclusions: Self-collected vulvovaginal swabs are acceptable to about three quarters of girls attending sexual health services. However, a minority of girls prefer urine testing and the potential effect of age on this observation, as well as the factors underpinning this preference when it is expressed, is being explored in depth.

P2.159

THE ACCEPTABILITY AND EFFECTIVENESS OF HOME SAMPLING FOR HIV AND OTHER SEXUALLY TRANSMITTED INFECTIONS IN MEN WHO HAVE SEX WITH MEN (MSM)
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Background: There is a need to develop novel strategies to increase HIV testing and STI screening amongst MSM. Home sampling kits (HSKs) may provide an acceptable alternative to conventional STI & HIV testing clinics, and have previously been shown by this group to be comparable in performance to routine clinical testing methods.
Methods: HSKs were offered prospectively to asymptomatic HIV positive MSM attending an HIV outpatient clinic (Gp 1), to all asymptomatic MSM requesting STI testing in an STI clinic (Gp 2) & to HIV negative MSM at a community HIV testing site (Gp 3). Specimens were self collected from the buccal mucosa (Orasure), pharynx & urine and were tested for syphilis (STS) [ICE EIA] & HIV [GACELISA}; Gonorrhoea (GC) & Chlamydia (CT) [APTIMA Combo 2]. Acceptance of the HSK, return rate and STD and HIV diagnoses were recorded. Testing rates & detection of STDs & HIV were compared to historical controls (Gp 1 and 3) and gp 2 decliners.
Results: 574 HSKs were offered to eligible participants. Uptake of HSKs amongst those offered was (n=295/362,81%) in gp 1, (n=80/128,63%) in Gp 2, and (n=55/84,66%) in the Gp 3. HSK return rate amongst accepters was 130(45%), 62(78%), and 9(16%). Uptake of HIV testing in Gp 2 was 86% (n=69/80); no new HIV diagnoses were made (compared to 1/38 of decliners). 22 (11%) had an STI, 14(11%) in Gp 1 (11 CT, 1 GC, 2 STS), 8(13%) in Gp 2 (7 CT, 1 STS), and 1(11%) in Gp 3 (1 GC). 4(10.5%) STIs were diagnosed in the Gp 2 decliners (3% CT, 5% STS 3% HIV). The STI testing rate utilising HSKs increased from 12.8%(139/1086) to 18.9% (220/1164) (P=0.0001) of MSM attending the HIV clinic and from 19.7% to 26% in the community Gp (p=0.1). The cost per STI screen in Gp 2 was higher (£113) by HSK than clinic attendance (£67).
Conclusions: HSKs offer an acceptable though more expensive alternative to conventional clinic STD testing for some MSM, and improves testing for STIs in HIV positive MSM.

P2.16

SEXUAL HISTORY TAKING - SCIENCE OR ART?
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Objective: To assess whether the standard of sexual history taking in Genito-urinary medicine (GUM) units across the South-West met the guidance recommended by the British association of sexual health and HIV (BASHH) in 2006.
Method:A retrospective audit assessing auditable outcome measures outlined in the BASHH 2006 guidelines was carried out across 7 GUM units in the South-West. Questions related to documentation including date of last sexual intercourse (LSI), gender of partner, sites of exposure, sexual partners in last 3 months, past history of Sexually transmitted infections (STIs) and HIV risk-assessment.
Results: A total of 220 responses from 7 units were analysed. Of these 112 were men and 108 women; 3 men identified as having sex with men only (MSM). Date of LSI was documented in 203

(92.27% ,range 80-100%) of cases and gender of partner in 207 (94.09% ,range 73-100%). Documentation of sites of exposure was low: vaginal site in 36.81%, oral site in 15.45% and anal-site in 9.09%. Condom use for sex was documented in 166 cases (75.45%, range 127-98%), details of all sexual partners in last 3 months in 192 (87.27%, range 73-100%) and past sexual history in 1276 (80%, range 60-97%). An HIV risk-assessment was documented in 178 (80.90%, range 57-97%) of cases. There was some variation in all responses betwen clinics and this reflected the variation in pro-formas used for sexual history taking in individual clinics.
Conclusions: This audit demonstrated that across the region, most of the questions recommended in the BASHH 2006 guidance are being asked and documented, although not to the standard set by BASHH. It may be argued that the BASHH guidance is not evidence-based and that consultations often have to be tailored to suit the needs of the individual being seen, appreciating the sensitive nature of the issues discussed.

P2.160

A COMPARISON OF URINE CULTURE OUTCOME AND URINE DIPSTICK TESTING IN A GUM SETTING

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Objective: Symptoms of urinary tract infection (UTI) and sexually transmitted infections (STIs) are similar. UK guidelines do not address detection of urinary tract infections in the GUM setting. We reviewed the results of urine samples collected in our centre with a view to optimising clinical care.
Method: All laboratory records and available case notes of GUM clinic attendees from whom mid-stream urine (MSU) samples were requested and submitted to the microbiology department over a 3-month period between August - November 2008 were reviewed.
Results: In total, 178 urine specimens were processed over the 3 months period, 24 (13.5%) had a pure growth organisms consistent a with urinary tract infection, 23 (13%) grew contaminants and 130 (73%) were classified as "no bacterial growth". Table 1 illustrates the results of urine samples in the 168 patients for whom notes were available according to presence or absence of symptoms suggestive of a UTI (dysuria, frequency and abdominal pain) and urine dipstick result (where done).

Table 1.

	SYMPTOMS OF UTI	SYMPTOMS OF UTI	DIPSTICK RESULT	DIPSTICK RESULT
UTI CONFIRMED ON URINE CULTURE	Yes (122)	No (46)	Positive	Negative
Yes (23)	22	1	11	9
No (145)	100	45	55	77

Of those who had symptoms of a UTI but had a negative urine culture, 41(41%) were diagnosed with an infection other than a UTI which could have accounted for their symptoms, commonest being chlamydia and candida. Commonest dipstick findings were haematuria and proteinuria.
Conclusion: This study supports the use of urine culture alongside routine STI testing in patients with symptoms of UTI attending GUM clinics. The role of near–patient point-of-care (POCT) urine dipstick testing in this setting is unclear. Guidelines addressing the detection and management of UTIs in GUM clinics are required.

P2.161

THE IMPACT OF TEXT MESSAGING ON DNA RATES AND DELIVERING POSITIVE STI RESULTS WITHIN A UK SEXUAL HEALTH CLINIC

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Objective: Did not attend' (DNA) rates at UK sexual health clinics are up to 30% leading to clinics either overbooking or staff waiting for patients to arrive. Delays in delivering a positive result following STI screening can compromise prompt treatment and tracing of sexual partners. Mobile telephone text messaging is widely used by patients attending sexual health clinics and offers an alternative way to communicate with patients. This study assessed 1) the effect of sending appointment reminders by text

on DNA rates; and 2) the effectiveness of text messaging on the time patients take to respond to receiving a positive test result.
Methods: DNA rates were reviewed two months prior (Nov / Dec 2007) and two months following (Feb / March 2008) the introduction of text message reminders. Text messages for positive results were sent to patients by clinic health advisers for one week, and the response rate compared to the use of letters and phone calls.
Results: DNA rates for rebook patients (those re-attending with a new problem) were 19% (736/3886) before appointment reminders and 17% (741/4333) after. Patients attending for a review appointment had a DNA rate of 33% (815/2471) before text reminders and 30% (798/2655) after. The number of patients contacting the clinic within 2 days following delivery of a positive test result was 77% (76/98) for those receiving a text message (66% 65/98 within 12 hours) compared to 43% (37/87) for those receiving a letter and / or phone call. 9% (9/98) did not respond at all following a text message compared to 15% (13/87) following a letter and / or phone call.
Conclusions: Text messaging can reduce DNA rates by 2-3% which may represent a significant amount of activity and associated income, especially for large clinics. Text messaging is nearly twice as effective as traditional methods for delivering positive results and, if linked to the laboratory IT system and automated, also has the potential to reduce costs.

P2.162

THE JOY OF TEXTS: STILL A JOY ONE YEAR ON? ONE YEAR DATA FROM A SATURDAY WALK-IN GUM CLINIC, INCORPORATING ACCESS VIA TEXT TECHNOLOGY.
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Background: The 10 High Impact Changes for GUM have highlighted the need for improved patient access by extending opening hours and innovative use of IT. We report the one year data from a Saturday morning walk-in service with slots allocated via SMS text technology to compliment standard walk-in and Family Planning services.
Method: The database was interrogated to reveal the number of patients accessing the service over a 12 month period, encompassing demographics, method of access, symptomatology, diagnosis and KC60 coding.
Results: Overall, 1470 attendances pertaining to 1177 individuals were recorded. The majority (82%) accessed the service via SMS text. Of those attending, 818 (70%) were new patients. The modal age group (66%) were 20-29 years old. The majority were symptomatic (78%) with KC60 coding revealing over half (55%) had undergone full sexual health screening. In those attending, 453 infections were diagnosed, including 83 cases of Chlamydia, 62 episodes of genital warts and 19 cases of gonorrhoea.
Conclusion: The Saturday service has proven to be a success, highlighting the popularity and need for out-of-hours sexual health services. It has increased patient access and uptake of STI testing, especially within the cohort in whom the major burden of STIs are borne.

P2.163

DELIVERING HIV RESULTS BY PHONE IN A LOW PREVALENCE NORTH AMERICAN POPULATION
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Objective: Since HIV testing began in the mid 1980's, Canada and the United States (and many other countries) have strongly recommended that HIV test results be delivered in person because of the serious nature of the infection and the perceived need to provide face-to-face support to patients. However, the past 2 decades have seen significant changes in HIV and AIDS including increased public awareness and the transformation of this disease into a chronic, manageable condition. Our objective was to determine whether delivering HIV results by phone in a free-of-charge, public STI/HIV clinic in metropolitan Vancouver serving a low prevalence population was safe, feasible and acceptable to patients.
Methods: During March and April 2008, 528 consecutive patients requesting HIV testing were given the option of receiving their HIV test results in approximately 7 days from a health care worker (HCW) by phone or at a follow-up clinic visit; especially high risk patients were encouraged to return in person. Testing was performed using a standard 3rd generation ELISA confirmed by Western blot.
Results: 79% of study participants chose to receive their results by phone mainly because of convenience (time restraints) and excessive travel distance to the clinic. The reasons given by the 21% opting to receive results in person were more confidentiality, less stress, easier to ask questions and they were returning for other reasons. Of the 528 HIV tests, only 2 (0.4%) were positive; one positive result was given in person and one by phone, each without incident. 93% received their result during this pilot compared to 86% pre-pilot ($p<0.0001$). This procedure is now standard practice and the significant

savings in resources has enabled more STI services to be delivered.
Conclusions: Giving HIV results by phone in a low prevalence North American population is safe, feasible and acceptable to a large proportion of patients. This is also one way in which resources can be freed up for other STI services.

P2.164

IMPROVING WORKFLOW AT A SEXUAL HEALTH CLINIC BY USING SHORT MESSAGING SERVICES TO RELEASE TEST RESULTS

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Background: The Department of STI Control Clinic is the national referral centre for the management of sexually transmitted infections in Singapore. The clinic manages ~28 000 patients a year and staffs 8 health advisors. Health advisors spend 6 hours a week releasing results to patients via the phone, a time consuming and inefficient process. Problems faced over the phone include incorrect information for identity verification, inability to recall passwords, calling before results are ready and asking staff for other information. As a large majority of Singaporeans use mobile phones, this study looked to improve the workflow by using short messaging services (SMS) to release test results to patients.
Methods: A computer programme was installed for $4900 where requests for test results by SMS service are tracked and sorted into "normal" and "abnormal" results. Patients were given the option to leave their mobile phone numbers should they prefer this service over the current telephone service. A bulk SMS was sent to patients informing them of their normal results. Patients with abnormal test results were sent an SMS informing them that one of their results was abnormal and to return to the clinic.
Results: Health advisors workload dropped by 72 % as they spent < 2 hours a week releasing results by SMS. There was a $143 saving per month on manpower and administrative costs. Over a 3 month study period there was a 91% uptake of the SMS service resulting in discontinuation of the previous telephone service. Patients were able to receive their HIV results within 3 working days and other results within a week, instead of 2 weeks, alleviating much of their anxiety.
Conclusions: The use of computer assisted technology to release results via SMS has resulted in a more efficient clinic workflow and improved patient satisfaction. A regular review of the clinic's processes enables the clinic to seek new and better ways to operate, better manage resources and improve patient satisfaction.

P2.165

EVALUATION OF THE SMS 2008 PROJECT: ARE TEXT MESSAGES A USEFUL MEDIUM FOR SEXUAL HEALTH PROMOTION TO YOUNG PEOPLE?

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Background: Young people are at risk of acquiring sexually transmitted infections (STIs); a high proportion use condoms inconsistently, have poor STI knowledge and do not have regular STI tests. Innovative methods are required to reach this high risk group. Text messages (SMS) are a promising method of sexual health promotion as most young people own mobile phones. Messages can be sent at low cost to multiple recipients simultaneously with immediate delivery.
Methods: In January 2008 young people aged 16-29 were recruited from a music festival in Melbourne, Australia. They completed a short survey and were asked to provide their mobile phone number. Participants received fortnightly SMS relating to sexual health for four months and then completed an online follow-up survey. Survey data were weighted to account for those lost to follow up. McNemar's test was used to compare changes in survey responses. Eight focus group discussions were held to collect participant's opinions on the content and utlity of the SMS.
Results:1995 (84%) of the 2377 completing the baseline survey provided a valid mobile phone number and began receiving the SMS; 18% (351/1995) withdrew from receiving the SMS during the broadcast period and 41% (676/1644) completed the follow-up survey. The majority reported on the follow-up survey that they found the SMS entertaining (81%), informative (70%) and they showed the SMS to others (76%). Weighted analyses found a significant increase in knowledge ($p<0.01$) and STI testing ($p<0.01$) over time. Focus group participants reported the SMS did not prompt immediate behaviour change, but were an entertaining and useful reminder to use condoms and reduced the perceived barriers to STI testing.
Conclusions: The low withdrawal rate from the SMS, the demonstrated improvement in STI knowledge and testing and the positive feedback received indicate the feasibility, efficacy and acceptability of using text messaging for sexual health promotion to young people.

P2.166

USING GOOGLE ANALYTICS TO ASSESS A LOCAL STD TESTING HEALTH PROMOTION

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Background: Outcomes of Public Health initiatives should be measured and evaluated to assess their effectiveness. Recent advances in web-based technologies have yielded evaluative methods that are inexpensive and easily implemented. One such resource is Google Analytics, a free web analytics service. Here we report on the use of Google Analytics to assess the effectiveness of a local public health campaign.
Methods: 30-second radio ads aired on a popular Denver station 128 times over a 13-day period. The ad invited listeners to go to the Denver Metro Health Clinic's website, denverstdclinic.org, to learn about clinic services and testing options, including the "I Want The Kit" (IWTK) at-home STD testing service. The website featured a page promoting IWTK. Detailed web statistics, including daily site visits and page views, were tracked before, during and after the campaign with Google Analytics. STD testing kits ordered, specimens returned and test results were also recorded.
Results: During the radio campaign there were 683 visits to denverstdclinic.org compared to 313 during baseline, a 118% increase. Page views totaled 3178 during the campaign versus 1011 during baseline, a 214% increase. Views of the site's IWTK page increased 526%, rising from 65 during baseline to 407 during the campaign. Referrals from the site's IWTK page to the main IWantTheKit.org site increased from 15 during the baseline period to 194 during the campaign.
Conclusions: Web analytic tools can provide useful and immediate measures of the effectiveness of health promotion campaigns, and may even anticipate relevant public health outcomes. Incorporating low-cost and easily implemented options, such as Google Analytics, should be considered when developing a health promotion evaluation strategy.

P2.167

USE OF MOBILE DEVICES FOR STI/HIV PREVENTION

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Background: Worldwide, 60% of the population uses a cell phone; that number is expected to increase to 83% by 2013. For many, mobile phones have replaced landlines. A 2007 CDC report approximated that one out of every 6 US households was without a landline but reported having at least one mobile telephone. More importantly, the same priority populations with significant health disparities being targeted by STD/HIV control and prevention are also among those most likely to adopt and use mobile phones. Given the ubiquity and reach of cell phones, the public health community has begun to explore the use of mobile technology as a set of tools for health promotion and disease prevention.
Methods: A review of the literature both in the field of STD/HIV (n=7) and other health fields (n=9) was conducted in addition to a review of current marketing data and popular media regarding mobile use and innovation.
Results: Mobile phones can improve STD health clinic efficiency, improve time to treatment and diagnosis, facilitate partner notification, improve medication and vaccine adherence and serve as a vehicle for providing information about and access to STD/HIV resources. On an international level, mobile phones have been used for HIV data collection and surveillance efforts.
Conclusions: Mobile phones have numerous applications for STD/HIV prevention both for the patient and the health care provider. Using mobile phones for prevention efforts is still in its infancy but current projects have already shown great impact. Further potential exists e.g. mobile videos and mobile coupons, but as of yet remains untapped. The STD/HIV field should look to incorporate mobile devices into their prevention efforts as well as look to other public health fields for other potential uses.

P2.168

JUST GOOGLE IT: FINDING LOCAL STD AND SEXUAL HEALTH RESOURCES ONLINE

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Objectives: Seventy-five percent of 15-24 year olds who have ever gone online report using the Internet to look up health information; sexual health being one of the most frequently searched topics. However, evidence suggests that adolescents and young adults find it difficult to retrieve local sexual

health resources online. This study examines whether local STD/HIV and sexual health resources can be reliably accessed in a standard Google search and how such resources vary by locale. Search results were analyzed for relevance and appropriateness to the search query.
Method: Six cities/towns in 4 US geographical regions were selected. Researchers used Google to search for answers to 11 health topics. Each health topic was queried in 3 formats: a question, a phrase, and key words (e.g. Where can I get an STD test Atlanta?, Get STD test Atlanta, & STD test Atlanta). For each search query, the first 3 websites as well as maps were coded for relevance, site purpose, and informational content.
Results: 176 unique websites were identified in the 6 cities/towns. Of the 109 sites analyzed, 38% did not answer the relevant search question/phrase/key word. Private domains (.com) appeared more frequently than non-profit/CBO (.org) sites (48% vs. 30%); fewer than 13% of the sites linked the user to a public clinic or health department. Overall, sites provided inadequate contact information. Search results varied substantially between large cities and small towns, with large cities yielding more relevant information and websites from search queries (p=.034).
Conclusions: Local sexual health and STD/HIV resources are not easily retrieved through a standard Google search. It is not enough to simply post health information online. Health departments, STD/HIV clinics, and CBOs should optimize their online information through usability testing and search engine optimization to ensure better placement of and access to their websites.

P2.169

A BRAVE NEW WORLD? - EXPERIENCES OF STI TESTING, DIRECT AND ADVANCED PRESCRIBING, AND DISPENSING, VIA THE INTERNET
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DrThom.com, UK

Objectives: As a UK-based organisation/London clinic providing online sexual health services including sexually transmitted infection (STI) screening kits and medication by post, we present our experiences. Our model is being examined by NHS organisations/charities (eg Terrence Higgins) to encourage STI screening in the general population.
Methods: Retrospective analysis of service using patients. Screens (urine/vaginal self swab) for chlamydia and gonorrhoea were processed by nucleic acid amplification tests (NAAT); ureaplasma, mycoplasma, trichomonas tested using PCR.
Results: 6,527 kits ordered Nov 04-Dec 07. 3624 (66%) male, 1618 (30%) female, 191 (4%) not specified. 844 (12.9%) tested positive and offered course of medication by post at no further charge following completion of an online questionnaire. Uptake data unavailable (anecdotally≥75%).
Conclusions: Patients register online then managed/communicate via secure Online Patient Management System (OPMS). Kits processed by partner laboratory. Team includes genitourinary medicine (GUM) trained doctors who review results, assess questionnaires and prescribe medication via an online pharmacy. Feedback favourable quoting 24-hour availability; easy access; rapid, guaranteed next day delivery of medication. Questionnaires are robust/thorough compared to clinician interview. Criticisms include lack of microscopy; NAATs not allowing for culture/sensitivities and lack of face-to-face counselling making it difficult to assess comprehension (patients can refer to OPMS). Liaisons re follow-up/onward referral may be difficult. Despite this the service is patient centred. NHS organisations are interested in the model, particularly in rural areas where providing services can be problematic/patients don't live near to a GUM clinic. Our model lends itself to Advanced Partner Treatment (APT) investigated in the UK/USA(refs). Given other models being studied in the USA and UK we believe this warrants study in other UK settings.

P2.17

PATIENT DELIVERED PARTNER THERAPY AND CHLAMDYIA AND GONORRHEA RE-INFECTION IN SAN FRANCISCO: FROM RESEARCH TO PRACTICE
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Background: Patient delivered partner therapy (PDPT) has demonstrated efficacy in clinical trails. PDPT has been legal in California for chlamydia since 2001 and gonorrhea since 2005. We compared the prevalence of chlamydia (CT) and/or gonorrhea (GC) re-infection between patients at San Francisco City Clinic who did and did not received PDPT.
Methods: Since 2005, PDPT is offered to all patients seen at City Clinic diagnosed with CT and/or GC who report they can find their sex partners again. Provision of PDPT is noted in the patient's medical record. All City Clinic patients diagnosed with CT and/or GC from November 2005 through November 2007 were included in the analysis. Since higher risk patients may be more likely to be offered PDPT and be re-infected, we examined prevalence of 12 month re-infection with CT and/or GC using propensity

scores to account for factors associated with both receiving PDPT and being re-infected. Propensity scores of receiving PDPT were calculated from data regarding age, race/ethnicity, gender of sex partners, HIV status, and number of sex partners in the last 3 months. Adjusted prevalence ratios (PR) (and accompanying 95% CI) were calculated using log-binomial regression models, which included propensity scores.
Results: Between November 2005 and November 2007, 2988 CT and 1442 GC diagnoses were made at City Clinic. 1373 (46.0%) of patients with CT and 749 (52.0%) with GC were given PDPT. Overall, 485 (16.2%) and 218 (15.1%) of patients with CT and GC were re-infected in 12 months, respectively. The adjusted PR for the association between PDPT and GC re-infection was 0.79 (95% CI: 0.61-1.01) and for CT re-infection was 1.09 (95% CI: 0.92-1.29).
Conclusions: After implementation, PDPT was associated with a 21% reduction in the prevalence of re-infection for GC, although this finding was of borderline statistical significance. No association was found between PDPT use and CT re-infection.

P2.170

THE INTRODUCTION OF A COMPLETE ELECTRONIC PATIENT RECORD (EPR) SYSTEM IN A SEXUAL HEALTH CLINIC DOES NOT LEAD TO A REDUCTION IN PATIENT NUMBERS
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Background: A complete electronic patient record system for medical history, examination and results was introduced into the GUM clinic in July 2008 following training. This was done with a planned reduction in activity for the 2 months after introduction for staff to get used to the system. There was a concern that the switch to EPR while making administrative processes easier would result in a decrease in the number of patients seen.
Methods: New patient attendances from October to December 2008, after the introduction of EPR were compared with data from the same time period in the preceding year 2007. The number and duration of clinic sessions carried out by doctors and nurses in the same time period were also recorded and compared to data from 2007.
Results: In Oct to Dec. 2008, 2781 new patient EPR episodes were recorded. This compares with 2896 new episodes with paper records. With EPR, there were 1438.5 hours of clinic time (968.5 hours of doctor time and 470 hours of nurse time) compared to 1560 hours of clinic time with paper records (682.5 hours of doctor time and 878 hours of nurse time). Therefore the new patient per hour ratio with EPR was 1.93/hour compared to 1.85/hour with paper records (p=0.1)
Conclusions: The introduction of EPR was not associated with a reduction in the number of new patients seen per hour after 2 months of familiarisation. Other benefits of EPR include having more readable records with immediate access to results, improved administrative efficiency and ease of auditing.

P2.18

EXPEDITED PARTNER THERAPY FOR GONORRHEA AND CHLAMYDIA DECREASES VISITS FOR REINFECTION AMONG STD CLINIC PATIENTS
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Objective: Expedited partner therapy (EPT), or direct delivery of antibiotics to partners by index patient, is associated with reduced gonorrhea (GC) and chlamydia (CT) reinfection in clinical trials. We evaluated the impact of EPT in STD clinics in Baltimore, Maryland, by comparing reinfection rates between those receiving EPT and historical (pre-EPT) controls.
Methods: Heterosexual patients diagnosed with GC or CT were offered EPT as standard practice from October, 2007. We used the clinic-based electronic medical record system to identify reinfection events in a 15 week follow-up period after treatment. We compared reinfection rates in the EPT group to those of heterosexual patients testing positive for CT or GC in the same time period the previous year. We used Pearson Chi-square test to compare reinfection rates between groups.
Results: 793 patients (392 male, 401 female) received EPT for at least one partner from October, 2007-September, 2008, and 1503 patients (792 male, 711 female) were in the historical cohort the prior year. Visits for reinfection with GC/CT (combined) and GC were reduced in the EPT group compared to the historical cohort (0.9% vs 2.3% for GC/CT, p=0.014; 1.0% vs 2.7% for GC, p=0.028). CT reinfection rates were not significantly different (0.7% for EPT vs 1.3% historical; p=0.40).
Conclusions: In an uncontrolled analysis using historic controls, patients given EPT were less likely to return for treatment of reinfection in the clinic setting. Further analysis will need to control for possible confounders and examine surveillance data to assess complete reinfection rates.

P2.19

ARE ACCELERATED PARTNER THERAPY (APT) PARTNER NOTIFICATION (PN) STRATEGIES COST-EFFECTIVE? RESULTS FROM AN EXPLORATORY TRIAL.

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Background/Objectives: Failure or delays in treating sex partners risks re-infection of the index and onward transmission. Strategies identifying and treating partners the fastest will be the most effective in reducing further transmission. We explored the feasibility of collecting cost, resource and outcome data for use in an economic evaluation which compares APT (PN strategies which reduce time for sex partners to be treated and include assessment by appropriately qualified health care professionals and routine partner notification (patient referral with contact slip).
Methods: Two models of Accelerated Partner Notification (APT), telephone assessment (APT Hotline) and community pharmacist assessment (APT Pharmacy) were compared with routine PN in 2 contrasting GUM clinics. Cost data were collected prospectively from all 3 study strategies and supplemented with standard NHS reference costs where necessary. Data were synthesised in a decision tree model facilitating comparisons of the various strategies. The economic model also included an additional strategy of Expedited Partner Therapy (ExPT) (index is provided with antibiotics to give to their partner without medical evaluation), a policy not currently accepted in the UK.
Results: Final results will be reported in March 2009. Cost results are presented in terms of average cost per contact (for each study strategy and ExPT), including average costs of training, hotline, pharmacy and clinic consultation. Incremental cost-effectiveness ratios based on the relative cost per partner response and cost per partner treated are presented. All results are preliminary since based on an exploratory trial and are thus subject to bias.
Conclusions: The cost-effectiveness of screening programmes for STIs will be miscalculated if screening programmes overlook the cost-effectiveness of feasible and appropriate PN strategies.These results are important both for future studies and policy decisions.

P2.2

WALK-IN CLINIC OR BOOKED APPOINTMENTS, WHAT DO PATIENTS REALLY PREFER?

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Objective: In order to increase patient choice and in an effort to reduce the gap between patients offered an appointment within 48 hours and those seen within 48 hours, walk-in clinics were started at our hospital from August 2008 on 3 days a week. We conducted a survey which aimed to determine patient's preference for walk-in or booked appointment services.
Methods: All patients attending walk-in clinics over a one month period and 100 consecutive patients attending the clinic with a prior booked appointment were asked to complete a questionnaire enquiring their preference for walk-in or booked appointments.
Results: Of 320 patients from walk-in clinics, 138(43%) indicated that they would prefer to have a booked appointment in future, 69(21.5%) preferred walk-in clinic and 113(35.5%) indicated they had no preference. Among the 100 patients attending appointment clinics, 77 preferred an appointment clinic, 4 preferred walk-in clinic for future appointments and 19 did not have a preference.
Conclusion: This study demonstrates only 21.5% of patients attending a walk-in clinic would choose a walk-in clinic again. When walk-in clinics started, initially they were oversubscribed and this led to patients waiting in crowded waiting rooms sometimes for more than 2 hours. In addition patients are unable to 'pop-in' because the clinic is situated away from the city centre and a bus/car ride is necessary to access the clinic. Our patients probably prefer to know approximate time of clinic appointment and plan their hospital visit; arranging time off work, child care and travel in advance and this may not be always possible in a walk in clinic. However some of our patients preferred walk in clinics as it gave them the confidence that they will be seen on a particular day if they were prepared to wait a in the clinic to be seen. Understanding patient's choice is vital for planning GUM services and working towards delivering care to suit patients' preference is of high importance.

P2.20

EFFECTS OF INSPOTLA.ORG PROMOTION EFFORTS: PAID ADVERTISING COMPARED TO FREE MEDIA EXPOSURE

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Background: This analysis aims to assess the effect of both a paid advertising campaign and free media coverage on the use of the inSPOTLA partner notification website. inSPOTLA enables individuals with an STD or HIV to send an e-card (electronic postcard) to sex partners regarding potential disease exposure. In May 2007, a time-space survey of men who have sex with men (MSM) in Los Angeles County (LAC) found that 16% had heard of inSPOTLA and 1% had used the website to send an e-card. An advertising campaign was launched to increase awareness and use of inSPOTLA among MSM in LAC. The campaign consisted of 25 full page ads in local magazines for MSM from late June through November 2008, and ads in bathrooms of 12 bars and restaurants from late October until December 2008. In October 2008, following publication of a journal article about the inSPOT portal, inSPOTLA and inSPOT were profiled on several national television shows, popular websites, and in a major newspaper.
Methods: Web usage data were collected electronically in 2008. These data were compared ecologically to the dates of the advertising campaign and dates of media coverage.
Results: The number of e-cards sent decreased from an average of 420 per month from January through June (before ad campaign) to 211 per month from July through September (first 3 months of campaign). Use increased modestly in the third week of October (when the bathroom ads began). The number of e-ecards sent in October increased to 5,975 and then dropped to 672 in November and 362 in December.
Conclusions: Ecologic comparisons limit the ability to draw causal relationships. The initial decrease in inSPOTLA use during the ad campaign was unexpected, however. Furthermore, the dramatic increase in e-cards sent on the exact days of media coverage strongly indicate a correlation. Still, the ads may have helped amplify or sustain interest from media coverage. Future plans for inSPOTLA promotion will focus more on media advocacy and outreach than advertising.

P2.21

SERVICE USERS' PREFERENCES ON METHODS OF PARTNER NOTIFICATION AND THE USE OF NEWER COMMUNICATION TECHNOLOGIES

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Objectives: Communication technology advances could enhance partner notification (PN) for current service users. We aimed to determine service users' preferences for patient or provider referral and provider communication methods.
Method: Questionnaires completed by service users attending sexual health clinics in inner London. Data were collected on: demography; preferences for patient or provider referral as an infected person disclosing a positive STI result and when discovering a positive diagnosis from regular sexual partners (RSP) and casual sexual partners (CSP) and different communication methods for provider referral.
Results: Of 600 respondents, females were 356 (59.3%), males 228 (38%), unknown 16 (2.7%). Median female and male ages were 27 and 31 years, respectively. Respondents were 288/539 (53.4%) white, 118/539 (34.9%) black and (62/539) 11.7% other. When disclosing an STI diagnosis to CSP and RSP patient referral was preferred in 379/530 (71.5%) and 505/539 (93.7%), respectively. When discovering an STI diagnosis from CSP and RSP patient referral was the contact method of choice in 390/496 (78.6%) and 507/525 (96.6%), respectively.

Comparison of gender preferences for patient or provider referral

		Patient referral	Provider referral	p-value
		n (%)	n (%)	
CSP				
Disclosing an STI	Male (n=206)	165 (80.1%)	41 (19.9%)	
	Female (n=324)	214 (66%)	110 (34%)	<0.001
Discovering an STI	Male (n=197)	163 (82.7%)	34 (17.3%)	
	Female (n=299)	227 (75.9%)	72 (24.1%)	0.07
RSP				
Disclosing an STI	Male (n=205)	198 (96.6%)	7 (3.4%)	

	Female (n=334)	307 (91.9%)	27 (8.1%)	0.03
Discovering an STI	Male (n=206)	199 (96.6)	7 (3.4%)	
	Female (n=319)	308 (96.6%)	11 (3.4%)	0.97

For provider referral, 340/441 (77.1%) respondents rated phone as their 'most preferred' method of communication, followed by letter 195/394 (49.4%), email 103/307 (33.6%) and text 123/368 (33.4%).
Conclusion: In this young, ethnically diverse population patient referral is the preferred method of PN. Traditional methods of contact tracing were preferable to newer technologies for provider referral. Women are significantly more likely than men to opt for provider referral when disclosing an STI.

P2.22

PARTNER NOTIFICATION VIA THE INTERNET: PROVIDER REFERRAL OUTCOMES FOR A UK CLINIC 2004-2008

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Objectives: To evaluate the effectiveness of an innovative approach to provider referral, via an internet dating site used by men who have sex with men (MSM).
Methods: Contacts of HIV, syphilis, gonorrhoea and Chlamydia notified through internet provider referral (IPR) were identified from partner notification records. Data included index diagnoses, number of messages sent and contact outcomes: 'informed' if a message had been accessed, 'screened' if tests were verified, and diagnoses.
Results: In 2008, 47 IPRs were initiated for 11 index patient diagnostic episodes (10 individuals). Index infections included: new HIV(5); previous HIV (1), and/or infectious syphilis (3), gonorrhoea (1) and Chlamydia (4). Messages were received by 36/47 contacts (76.6%); of whom 17/36 (47.2%) were subsequently screened. Eight new STIs were diagnosed in 5/17 (29.4%) ,including: HIV (2), syphilis (4) and chlamydia (2). A further 4/36 (25%) had previously been diagnosed with HIV (3) or syphilis and gonorrhoea (1). The number of partners screened per index was 1.5 (17/11); new STI per index was 0.7 (8/11). The average number of messages sent per contact was 1.6 (77/47).
Conclusion: Provider referral via the internet is a feasible and effective means of notifying contacts of serious STI who might otherwise not be informed. Although index uptake of IPRwas low, the yield was high in terms of partners traced and new infections found per index, and opportunities to address risk reduction with high risk individuals. The service should be routinely offered to MSM with an STI and internet partners.

P2.23

USE OF ELECTRONIC PARTNER NOTIFICATION SERVICES AMONG U.S. MEN WHO HAVE SEX WITH MEN (MSM)

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Objectives To determine the use of electronic partner notification cards (e-cards) among MSM.
Methods Questions related to the use of anonymous, electronic, STI notification card services were added to a 6 city, pilot project for a web-based HIV behavioral surveillance system of MSM. Respondents were asked about partner notification and the use and acceptability of e-cards. Descriptive analyses of the questions were conducted for respondents who had sex with a man in the past 12 months and who reported their race/ethnicity.
Results 5968 MSM were included in this analysis of whom 14% (n=817) reported having been told they were exposed to an STI or HIV in the past 12 months. 50% (n=408) were told by sex partners, and among those 77% (314/408) were told face-to-face or by telephone. 11% (n=44) were notified via email, including inSpot, an e-card notification system. Among the respondents from the 3 cities without e-card services, 77% (2271/2932) stated they would consider sending an anonymous e-card to a sex partner. 8% (n=241) stated they would not consider sending an e-card because it is too impersonal or they would prefer to tell their sex partners directly, either face-to-face or by telephone. Of the respondents from the 3 cities that offered inSPOT, 16% (466/2919) had ever heard of inSPOT, 1% (n=27) had ever sent an InSpot e-card and 1% (n=23) had ever received an inSpot e-card.
Conclusions The effectiveness of e-cards should be further evaluated to determine if adequate promotion of e-cards would increase appropriate use and if e-cards reach persons who otherwise would have not been notified by a partner or health care provider.

P2.24

INTERNET PARTNER NOTIFICATION EFFORTS IN LOS ANGELES COUNTY

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Background: The objective of this analysis is to assess efforts of the Los Angeles County Department of Public Health Sexually Transmitted Disease Program (STDP) at Internet Partner Notification (IPN). While a significant number of men who have sex with men (MSM) syphilis cases report sex partners met online, these partners have often been unreachable due to a lack of contact information other than a website screen name. In July 2008, STDP established an IPN profile on a frequently named website used by MSM to elicit sex partners. This profile allowed access to sex partners who had a screen name from the website. With the cooperation of the website management, IPN for syphilis began in November 2008.
Methods: Three public health investigators extracted Internet Partner Notification data from November 1, 2008 through January 28, 2009, including the number of original syphilis patients, number of partners elicited, number of contact attempts made, response rates, and number of partners who were either tested for syphilis or refused testing. Additional data were extracted from the STDP case management database.
Results: Three MSM syphilis cases provided screen names for 45 partners. Up to three email attempts were made to all 45 partners. Eighteen (40%) partners replied and nine (20%) refused testing. Eight (17.8%) of the named partners were tested for syphilis and all were negative. Three (6.7%) partners were presumptively treated. Case management data revealed that two of the partners named were early syphilis cases in the past year.
Conclusions: The first three months of IPN at the STDP enabled contact of a significant number of partners, with nearly 18% of named partners testing for syphilis. IPN should be used by public health departments to complement traditional partner notification, as it allows contact of partners that might otherwise be impossible to locate.

P2.25

MONITORING PERFORMANCE, INFLUENCE PERFORMANCE? DATA FROM TWO PERFORMANCE MEASURES: TIMELY PATIENT INTERVIEWS & PARTNER TX FOR SYPHILIS, U.S., 2005-07

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Background: Timely interviews of persons with Primary and Secondary syphilis (P&S) and rapid treatment of their contacts can prevent syphilis transmission. Performance measures were implemented in U.S. STD control programs in 2004 and included 2 measures to address this timeliness issue: timely interviewing of the index client; and timeliness of treatment of the contacts identified.
Methods: Performance measures were reported to CDC for 6-six month intervals between Jan. 2005 & Dec. 2007. We looked at the adjusted mean % of P&S clients interviewed within 7,14 & 30 days of specimen collection. We also looked at the adjusted mean number of contacts that were either treated for diagnosed infection or preventively treated within 7,14 & 30 days after the interview of the index case. A Chi-square test of trend was used for comparisons.
Results: 58 project areas reported at least 1 syphilis case in one or more of the six 6-month intervals. Significant declining trend differences were found across the years for interviewing clients and contacts treated. Between 42 and 58%, depending on the measure and time interval, of the Areas improved their performance using a split-half comparison.

Mean	%	of	Clients	Interviewed	Per	100	Cases
		05(1)	05(2)	06(1)	06(2)	07(1)	07(2)
7	Days	34	34	32	33	28	32
14	Days	48	49	49	48	41	47
30	Days	66	67	68	65	59	65
Mean	#	of	Contacts	Treated	Per	100	Cases
		05(1)	05(2)	06(1)	06(2)	07(1)	07(2)
7	Days	31	29	30	29	24	29
14	Days	41	37	37	35	30	37
30	Days	49	44	43	43	36	44

Conclusions: Over the 3 year monitoring period, declining trends indicating decreasing performance were found for these two measures. Interventions are necessary to improve performance on these functions.

P2.26

IMPROVING SYPHILIS PARTNER NOTIFICATION INTERVIEWS BY EMBEDDING DISEASE INTERVENTION SPECIALISTS (DIS) IN HIV CLINICS

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Objectives: In order to improve the time to partner elicitation interview and number of partners elicited with correct locating information, DIS were placed in three HIV clinics with high syphilis morbidity.
Methods: The three non-STD clinics reporting the highest number of syphilis cases were chosen for the placement of a DIS one half day per week and/or on an on-call basis to deliver penicillin and perform an on-site partner elicitation interview. Number of patients interviewed, days elapsed from specimen collection to treatment (time to treatment), days elapsed from specimen collection to initial DIS contact (time to interview), and number of reported and locatable partners were compared for these three clinics before and after the clinic placement of the DIS.
Results: Prior to the placement of clinic-based DIS, 221 syphilis cases were diagnosed at the three clinics. After DIS placement and 54 syphilis cases were diagnosed for a total of 275 cases in this analysis. A greater percentage of patients completed a partner elicitation interview during the period of DIS placement (93% versus 78%, $p = 0.03$). Of patients interviewed ($N = 227$), the average number of locatable partners (1.4 versus 0.7, $p = 0.002$) and the average number of partners exposed and brought to treatment (CDC Disposition A) or infected and brought to treatment (CDC Disposition C) (0.7 versus 0.3, $p = 0.002$) was higher during the period of DIS placement. Time to interview was improved during the time of DIS placement (13 days versus 19 days, $p = 0.10$).
Conclusions: The number of locatable partners and the number of partners brought to syphilis treatment were significantly increased with the placement of a DIS within these HIV clinics. STD programs facing high syphilis/HIV co-morbidity rates should evaluate this as a potential method to expedite partner notification and improve program performance.

P2.28

PARTNER NOTIFICATION OF CHLAMYDIA IN GENERAL PRACTICE: EXAMINING CURRENT PRACTICES AND POSSIBLE SUPPORTS TO ASSIST GPs IN PARTNER NOTIFICATION

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Objective: To examine general practitioners (GPs) current partner notification practices and identify what supports GPs would find most useful to assist them with partner notification.
Methods: Five hundred and fifty GPs from three states across Australia were randomly selected from a national database of medical practitioners and mailed a questionnaire on their partner notification practices and possible supports. Descriptive analysis was conducted using SPSS 15.0.
Results: Of the 521 eligible GPs, 234 (45%) returned a completed questionnaire. Ninety-five percent of GPs considered it their role to discuss partner notification with their patients and 97% felt comfortable doing so. However, only 51% reported being sure of how to best assist patients with this process. Eighty-four percent of GPs agreed that they would find information and resources useful in assisting them with partner notification. Most highly rated were a website GPs could refer patients to which would assist patients in telling their sexual partners (90%) and patient information sheets built into practice software (90%). A considerable number of GPs (43%) at least sometimes prescribed an additional dose of antibiotics for patients to give to their sexual partner and 46% reported that they would support changes to laws and regulations to allow them to provide patient delivered partner therapy.
Conclusions: Partner notification for chlamydia is being undertaken by GPs in Australia to some degree however, there is considerable room for improvement. GPs see it as their role to discuss partner notification with patients, however they are unsure how best to assist, and require greater resources and

guidance around partner notification and further clarification around the medico-legal and regulatory issues. A considerable proportion of GPs are already using patient delivered partner therapy, and further consideration is required to reviewing Australia's current legislation in this area.

P2.29

RAPID, ORAL AND UNIVERSAL HIV SCREENING IN PATIENTS WHO PRESENT TO AN URBAN UNIVERSITY HOSPITAL EMERGENCY DEPARTMENT

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Background: To estimate the prevalence of new Human Immunodeficiency Virus (HIV) diagnosis and the acceptance rate of testing using rapid, oral and universal HIV screening in an urban university hospital emergency department (ED).
Methods: Volunteer residents and medical students were recruited to perform universal oral HIV testing in the ED after being trained on the study protocol as well as basic principles of HIV testing and counseling. They approached patients seeking care at the emergency department regardless of chief complaint. Inclusion included that the patient was between 18 and 65 years of age, in accordance with the 2006 Revised Guidelines of HIV Testing in Health Care Settings by the Centers for Disease Control (CDC). Exclusion criteria included those who were known HIV positive, deemed incompetent to consent for study participation or non-English speaking.
Results: We found a 0.6% prevalence rate of new HIV diagnosis amongst those who were seeking care at our ED. Acceptance to HIV screening was 74.8%. However, we were unable to capture all patients who presented to the ED. This was especially true when testing patients during overnight hours who may have an increased prevalence of being HIV positive. This fact introduces a potential source of selection bias which would mean that it is likely that our prevalence is an underestimation of the true prevalence.
Conclusions: Universal, rapid and oral HIV screening is a feasible method of universally screening patients in an emergency department setting in accordance with CDC guidelines. We found a prevalence less than expected but this is likely due to not capturing all patients overnight who may be at higher risk of HIV infection. Further study is needed to study the feasibility of implementing a rapid, oral and universal testing program in other health care settings such as outpatient clinics.

P2.3

DEVELOPING AN AUDIT TOOL TO MONITOR 48 HOUR ACCESS TO GUM IN WALES

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Background: The GUM Waiting Times Audit is a periodic cross-sectional survey of patients attending GUM clinics in England. We conducted a similar audit in our unit in Wales to determine the nature of our practice in order to reach the Welsh Assembly Government targets to access GUM services. Due to the lack of a central audit in Wales as opposed to Health Protection Agency in England, we designed a questionnaire that could be used to monitor access to GUM clinics within 2 working days.
Methods: A self-completed questionnaire was designed, piloted and distributed to each new or rebook attender over a period of one week in November 2008. This assessed demographic details, symptoms, interval between accessing clinic and attendance and patient preference for attending within 2 working days
Results: Two-hundred and ten new/rebook patients attended the clinic during the week, of whom 157 (74.7%) completed the questionnaire. Only the 61% of patients wanted a sexual health screen. The number of patients offered appointment in 2 working days was 41.6%. Of those reporting not having been offered an appointment with 2 days, 14.2% did not want the appointment, 33.3% were happy to be seen any time and 52.3% wanted to be seen in 2 days.
Conclusion: Among the patients who completed the questionnaire, 15.9% were not being seen with 2 working days, however of these 47.5% did not wish to be seen within 48 hours. We are aware that a number of patients do not wish to attend within 2 working days but prefer at a time more convenient to them. Also, GP referrals may take longer than the national target. We were overwhelmed by the proportion of attenders who wished to be seen within 2 working days and hence plan to reaudit in May 2009.This audit report will help us to present and analyse information that may be beneficial for the planning and implementation of strategies to improve the access to GUM services in Wales.

P2.30

PARTNER NOTIFICATION FOR CHLAMYDIA: AUSTRALIAN'S EXPERIENCES AND THE SUPPORTS NEEDED TO ASSIST THEM

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Objective: To describe the experiences of chlamydia infected individuals in Australia with regard to partner notification and to determine what supports might best assist them.
Methods: A structured telephone questionnaire was administered to men and women recently diagnosed with chlamydia from three states across Australia.
Results: Of the 275 individuals approached to participate, 202 (73%) completed the telephone questionnaire. Of those, 67 (33%) were men who reported sex with men (MSM), 67 (33%) were men who had sex with women only (non-MSM) and 68 (34%) were women who had sex with men only. MSM reported a higher median number of sexual partners in the prior six months (6, range 0-80) compared with non-MSM (4, range 0-50) or women (2, range 1-10). The median number of partners contacted was two for MSM, one for non-MSM, and one for women. The most common reasons for informing partners was out of concern for them (44%) or because it was considered 'the right thing to do' (37%). A strong preference was shown for contacting partners either by phone (52%) or face-to-face (30%). Few individuals experienced verbal or physical abuse/threats (5%) from partners. Fifty six percent of participants would have liked to have been given antibiotics to give to their partner, 68% (76/112) of which felt it would have been more likely their partner would have been treated if an additional dose had been provided. Of those who had not contacted all their partners (*n*=124), 31% felt that the availability of resources such as web based tools would have led to them contacting more partners.
Conclusion: Partner notification is being undertaken to some extent by chlamydia infected individuals in Australia; however, the availability of a range of tools and supports is likely to result in a higher proportion of partners being contacted. The promotion of partner notification and the provision of necessary supports must be key components of any national chlamydia control strategy.

P2.31

THE ROLE OF THE HEALTH ADVISING TEAM IN ACHIEVING PARTNER NOTIFICATION STANDARDS IN CHLAMYDIA-POSITIVE PATIENTS IN A CITY G.U. MEDICINE DEPARMENT.

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Objectives: To compare partner notification standards and treatment times for patients diagnosed with Chlamydia trachomatis in a city-centre Genitourinary Medicine Department during a three-month period in 2008 with those diagnosed in 2005. Between 2005 and 2008 health adviser numbers in the department fell from 4.5 full time equivalents to 1.5 FTEs.
Methods: Data were analysed from every patient diagnosed with C. trachomatis infection in the department during a three-month period in 2008. Health adviser input, treatment times and partner notification rates were compared with those found in 2005 to see whether standards of care had changed over the time studied.
Results: When compared to figures from 2005, in 2008 4.5% fewer newly-diagnosed patients saw a health adviser, and 9% fewer were treated within one month of diagnosis. This delay in treatment particularly affected women, 15% of whom were not treated for at least a month after diagnosis. Traceable partners amounted to 1.05 per index patient in 2005 and 0.97 per index patient in 2008. Despite comparable traceability levels and similarities in the gender and racial mix of patients, partner notification rates fell from 0.75 to 0.46 during the same period.
Conclusions: From 2005 to 2008, partner notification rates for C. trachomatis fell far below the national standard of 0.64 partners per index patient recommended by BASHH, and early treatment rates fell by 9%. These changes coincided with a two-thirds reduction in health adviser numbers and have widespread public health implications, including increased transmission risk and complications arising from untreated Chlamydia. Increased patient contact with health advisers may reduce the time to treatment for those with a positive diagnosis of Chlamydia, improve partner screening and treatment rates, and enhance patient education.

P2.32

DOES THE USE OF A PROFORMA IMPROVE PARTNER NOTIFICATION OUTCOMES FOR PATIENTS DIAGNOSED WITH CHLAMYDIA?

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Background: In July 2006 a partner notification (PN) proforma was introduced for use during contact tracing interviews. This paper describes the outcomes of contact tracing for patients diagnosed with Chlamydia before and after the use of the proforma.
Objectives: Objectives for the use of a proforma were to provide a structure for interviewing patients, increase the rate of successful PN outcomes, reduce morbidity and ensure treatment in patients who are contacts of Chlamydia and to provide more robust data on contact tracing.
Methods: A retrospective case notes review of 180 patients diagnosed with Chlamydia was undertaken for the three months before and three months after the introduction of the proforma. The two data sets were compared and analyzed to determine if overall success rates of PN improved.
Results: Contacts reported as notified and/or treated before and after the proforma increased from 106 (77.9%) and 96 (80.7%) respectively. Outcomes considered as successful improved from 95 (56.9%) to 96 (58.9%). Although these rates showed marginal improvements, it was observed that the demographic and tracing data collected about contacts increased dramatically from 33 (18.8%) to 74 (42.8%), which demonstrated an improvement in the quality of information collected.
Conclusions: The use of a proforma for use in contact tracing interviews can improve success rates and provide more robust data about sexual contacts of patients with Chlamydia.

P2.33

A SERVICE EVALUATION OF PARTNER NOTIFICATION FOR THE UK NATIONAL CHLAMYDIA SCREENING PROGRAMME 2006-7

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Objectives: To investigate the considerable variation in partner notification (PN) outcomes for the National Chlamydia Screening Programme (NCSP), between areas, which ranged from 0.03 – 0.87 partners verified treated per case in 2006/7. The aim was to identify factors associated with good outcomes that could be adopted elsewhere to improve effectiveness.
Method: Semi-structured taped interviews were conducted with staff responsible for PN in 8/26 sites with a representative range of PN outcomes (0.06 - 0.77 partners treated per case). Questions explored attitudes to PN, clients and partners, local procedures, and resources (staffing levels, experience, training,). Interviews were transcribed and subjected to thematic analysis. Quantitative PN data on PN outcomes were critically reviewed and used in triangulation. Associations between site characteristics and PN outcomes were considered.
Results: Good PN outcomes were associated with an intensive PN process (recording partner names, regular uptake of provider referral, and follow-up of outcomes), centralized management and a positive attitude to clients. Insights were gained into the challenges and rewards of PN, working methods used, and competing priorities with pressure to increase screening volumes. Concerns were raised regarding reduced staffing levels, lack of PN training and inadequate PCT support in some areas.
Conclusion: Partner notification outcomes can be optimized by intensive PN processes, including provider referral, and follow-up. Training and support needs have been identified. Centralized management of PN appears beneficial.

P2.34

BEYOND THE NATIONAL CHLAMYDIA SCREENING PROGRAMME - INTEGRATING PARTNER NOTIFICATION FOR CHLAMYDIA ACROSS COMMUNITY AND CLINICS

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Background: The skills associated with achieving effective partner notification (PN) have been concentrated in GU Medicine services in the UK, based around the role of the Health Adviser (HA). Now the National Chlamydia Screening Programme has rolled out across England, and alternate community based screening and treatment sites are being developed, can we develop robust systems to ensure client access to PN irrespective of site of diagnosis? How can community providers support their clients to address contacting partners? How could we deploy expert HAs in a locality to support this process? What standards are available to monitor the model of service?
Method: A group of senior community and sexual healthcare professionals developed an evidence-based pragmatic model of integrated PN management. Standards and audit criteria were reviewed and consensus sought from professional and voluntary sector bodies for this novel approach to service

delivery.
Results and Conclusions: A merger of all HA resources within an area into a single functional unit emerged as the key to an integrated care pathway. This centralised bureau would co-ordinate results processing and partner notification activities, conduct telephone PN interviews, manage provider referrals and follow up on outcomes. Training and support for front line staff to undertake PN interviews could also be provided. Community staff could be supported to educate their clients about PN, offer treatment and either initiative PN in face to face contact tracing interviewing or recruit the central bureau to continue PN by telephone interview. All clients would be offered telephone follow up by a skilled practitioner two weeks after diagnosis.
The model is flexible to the needs of clients and the facilities available at screening and treatment venues, using and developing skills of front line community staff, incorporating expert HA and administrative support. It will be presented to commissioners of community sexual health services.

P2.35

FACTORS ASSOCIATED WITH *UREAPLASMA UREALYTICUM* AND *UREAPLASMA PARVUM* DETECTION IN MEN
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Background: Characteristics associated with recently differentiated species *Ureaplasma urealyticum* (UU) and *Ureaplasma parvum* (UP) have not been completely described.
Methods: Urine specimens were collected from male STD clinic attendees with (n=240) and without (n=121) nongonococcal urethritis and asymptomatic men recruited from an Emergency Department (n=115) from May 2007-December 2008. UU and UP were identified in culture by PCR. *Mycoplasma genitalium* (MG) was detected by PCR. Detection of *Neisseria gonorrhoeae* (NG), *Chlamydia trachomatis* (CT), and *Trichomonas vaginalis* (TV) utilized TMA (Gen-Probe Inc., San Diego, CA). NG-positive men were excluded. Sociobehavioral and clinical data were collected by clinician interview and computer-assisted self-interview. Logistic regression identified risk factors for UU or UP infection.
Results: Mean age was 35.2 years (range 17-72). Most were White (56%) or Black (36%) and 23% reported sex with men. UU was detected in 104 (22%) and UP in 76 (16%), with 7 UU/UP co-infections (1%). CT, MG, or TV co-infections were identified in 23 UU-positive men (22%) and 10 UP-positive men (13%). UU was associated with TV (aOR=7.2 [95%CI:1.4-37.7]), cloudy/purulent urethral discharge vs. none/clear (aOR=2.5 [1.1-5.6]), age <30 years (aOR=2.5 [1.3-4.7]), Black race (aOR=2.0 [1.0-4.0]), and having a female most recent partner (MRP) (aOR=2.1 [0.9-4.7]). UU was inversely associated with CT (aOR=0.2 [0.05-0.7]) and UP (aOR=0.2 [0.05-0.5]), and not associated with MG or source population. In contrast, UP was associated with a female MRP (aOR=12.9 [3.0-55.8]) and inconsistent or no condom use with the MRP (aOR=3.5 [1.4-9.0]). UP was inversely associated with UU (aOR=0.2 [0.06-0.5]), and not related to CT, MG, TV, age, race, clinical signs, or source population.
Conclusions: UU was strongly associated with TV. Both UU and UP were associated with sex with women, but other characteristics differed, suggesting distinct epidemiologic profiles for these two species.

P2.36

CLINICIAN'S KNOWLEDGE OF THE CDC RECOMMENDATIONS FOR THE DETECTION OF CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHOEAE IN THE SEXUALLY ABUSED CHILD.
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Objectives: To determine whether pediatric and ER physicians are aware of which diagnostic tests are used in their hospital labs to detect Ct and GC, and if they are familiar with the CDC 2006 Guidelines for the evaluation of STIs in sexually abused children.
Methods: An anonymous 13-item questionnaire was distributed to residents and attendings in the pediatric and ER departments at 2 hospitals in New York.
Results: 122 questionnaires were completed: (76%) of the respondants were peds, (19%) ER, (2%) FM. Residents were: 59% 1st yr, 11% 2nd yr, 16% 3rd yr, 6% 4th yr. 48% attendings. 71% practiced in a hospital, 21% in the ER, and 7% in a community clinic. Knowledge of the test used to detect Ct: 48% culture, 53% DNA probe, 40% PCR, 10% TMA, 23% not sure. Knowledge of the test used to detect GC: 55% culture, 33% DNA probe 33%, PCR 9%, TMA, 21% not sure. Knowledge of which test should be used to detect GC in a sexually abused child: 61% culture, 15 % DNA probe, 16% PCR, 5% all, and 15% not sure. Knowledge of which test should be used to detect Ct in a sexually abused child: 53% culture, 16% DNA probe, 22% PCR, 4% all, 19% not sure. Follow up of a positive GC NAAT: 30% culture, 3% repeat NAAT, 44% treat, 2.4% culture+NAAT, 45%culture+treat, 2.4% repeat NAAT+treat, 6% all, 7%

not sure. Should a Gram stain be used to diagnose GC: 20% yes, 47% no, 32% not sure. There was overall no difference between pediatricians and ER physicians. However there was a trend towards pediatricians having a better knowledge base for appropriate test to use in the detection of GC and Ct,(X^2=3.6,P>0.05, <0.1).
Conclusion: The results of this survey demonstrated that the majority of physicians did not know what tests are used to detect Ct and GC at their hospital. A significant proportion were also not familiar with the CDC guidelines. Frequently laboratories, not clinicians determine the tests that are used. If there is a lack of communication inappropriate tests may be used which can lead to serious legal ramifications.

P2.37

ACUTE FORENSIC MEDICALS AFTER SEXUAL ASSAULT OF CHILDREN
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Objectives: To determine care of child victims of acute sexual assault, whether standards for management were met and assess the feasability of undertaking STI testing within a paediatric service.
Methods: Case note review of all children aged 1-16 yrs who had an acute forensic medical examination between August 2006 – August 2007 at a Childrens Hospital in a large city in the UK.
Results: 13 children were seen and notes reviewed Age range 4-13yrs, median 13yrs, 85% female, 15% male. 15% Previously sexually active, 23% Drug/alcohol use at time of offence. Perpetrator 62% Known, 31% Stranger, 8% no information. Medical was performed in the Child Assessment unit (85%) or Accident & Emergency Department (15%).58% presented out of hours. Examination was by experienced doctors in 12 cases. Swabs for STIs were taken from 77% patients (100% of patients in whom swabs were indicated.) Morning after pill – given in 100% when indicated. None were given Hep B immunisation and HIV prophylaxis . 69% attended follow up, 23% referred to psychology, 23% referred to STI/contraceptive services. Family/social concerns 62% patients & Concerns about sexual exploitation 8% .
Conclusions: There was very good documentation and communication by letter after the attendance. Medicals were conducted by appropriate professionals in all but one instance. Swabs for STIs were taken appropriately and emergency contraception was given when required. Robust plans for follow-up were in place. Guidelines for HIV prophylaxis and Hep B immunisation required updating, with re-audit once these were in place. Consideration of a system to more robustly log use of the forensic unit out of hours was required. Standards were reached and STI testing through the use of a protocol developed with local STI clinic enabled appropriate testing to be performed.

P2.38

RESULTS OF THE BRITISH COOPERATIVE CLINICAL GROUP 2008 ON-LINE SURVEY OF SEXUAL HEALTH SERVICES IN UK PRISONS
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Objectives: Sexually Transmitted Infections (STI) are highly prevalent in prison populations. Data from published papers show that sexual health services are provided to prisoners but give no indication of coverage, consistency of standards, range of contracts, variations in staffing, extent of surveillance or breadth of waiting times. This on-line survey was designed to gather data from members of BASHH to give an indication of commissioning, workload, access, standards and data collection in the prisons they had knowledge of.
Methods: A questionnaire was developed by members of the British Cooperative Clinical Group (BCCG) and uploaded on the BASHH website. Members were reminded by newsletter and email to complete the survey. Those who had problems completing the survey on line were asked to print the questions and submit hard copy responses. The responses were collated by a professional in on-line surveys and analysed.
Results: Data were submitted for 58 prisons, approximately 40% of UK establishments. 39 had formal contracts, 21 with PCT or Health Board, 11 with Acute Trusts and 7 with the Consultant. The numbers of sessions per month ranged from 1 (12 prisons), 2 (11), 3 (7) to more than 3 (17). 41 services were Consultant-delivered, 12 single-handedly. 13 Nurse specialists also provided services, 3 single-handedly. Health advisers directly provided services in only 11 prisons. 18 services did not have wailting lists 16 were able to see prisoners within 4 weeks of referral. 43 services mixed KC60/STISS coding with the main GUM service but only 19 were able to extarct prison-specific data, and further 2 coded prison diagnoses separately, so surveillance data are likely to be vailable from 21 services. Data on laboratory services, storage of case notes, involvement of prison staff, screening of blood-borne viruses and clinical governance arrangements were also collected.
Conclusions: Services surveyed were mainly commissioned, access variable, data collection poor.

P2.39

ASSESSING THE PSYCHOMETRIC PROPERTIES OF THE PERCEIVED STD THREAT SCALE AMONG YOUNG ADULTS

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Objectives: We analyzed the psychometric properties of a tool designed to assess perceived threat of non-viral STD infection among 18-24 year old men and women.
Methods: Participants were recruited from a large Midwestern university and urban STD clinic. Participants completed a theoretically derived questionnaire to assess perceived threat of non-viral STDs based on constructs of the Health Belief Model. Item domains included participant's perceived severity, perceived susceptibility, STD-related stigma, sexual behavior, and clinical history. Exploratory factor analysis was used to determine the psychometric properties of the scale and identify specific components of each subscale. Cronbach's alpha was calculated to analyze the reliability of the scale.
Results: Participants (n=67) had a mean age of 20 years included 31 males (46.3%) and 34 females (52.3%) recruited from an urban STD clinic (n=47, 70.1%) and university (n=20, 29.9%). Most participants identified as either black (n=30, 44.8%) or white (n=28, 41.8%) and heterosexual (57/85.1%). Overall, the scale had acceptable reliability (α=0.82) and construct validity. The perceived susceptibility scale (16 items; α=.87) included 3 constructs: individual behavior (6 items; α=.87); partner behavior (5 items; α=.82); and STD knowledge (5 items; α=0.72). The perceived severity scale (23 items; α=.79) included 2 constructs: social support and stigma (10 items; α=.821).
Conclusions: This clinically important screening instrument has demonstrated acceptable validity and reliability to assess perceived STD threat, and with further refinement may be able to improve STI services for young men and women by identifying areas of unrecognized risk, which would allow for more focused behavioral intervention programs.

P2.4

PATIENT CHOICE : GUM ATTENDEES PREFERENCE OF HEALTHCARE SETTING FOR SEXUALLY TRANSMITTED INFECTION (STI) SCREENING

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Objectives: The UK National Strategy for Sexual Health & HIV advocates a 3 tier system for sexual health care, levels 1 & 2 provide basic services with some specialisation (level 2) in primary care, with level 3 for complex cases in secondary care, such as genitourinary medicine (GUM) clinics. Transferring asymptomatic cases for STI screening from GUM to primary care may be perceived as more economical and preferable to patients. Equal open access is a key principle in GUM, and patient choice is high on the Department of Health agenda. We asked why GUM clinic attendees choose to access GUM rather than the general practitioner (GP), and would they prefer to attend a GP or family planning clinic (FPC) for STI screening if available.
Method: 120 questionnaires were given to new attendees in January 2007. Reasons for attending GUM rather than GP were noted. Preferences for attending GUM or GPs or FPCs or a GP specialising in STIs at a different surgery were recorded if testing for chlamydia and gonorrhoea were available in each setting with and without tests for HIV and syphilis.
Results: 108 questionnaires were returned. The main reason for choosing GUM was to access specialist skills (80%). 52% were seen sooner in GUM, 34% could not discuss their problem with the GP, 26% had concerns over confidentiality, 26% said their GP could not help. 22% would choose their GP if full STI screening with bloods was offered, 67% GUM; 9% would choose a specialist GP, 78% GUM; 18.5% would prefer FPCs if all tests were offered, 70% GUM. More people would choose GUM if the GP/FPC did not offer blood tests (76% / 78% versus 14% / 10%)
Conclusion: Three quarters of GUM attendees would choose GUM clinics for STI screening rather than their GP, a specialist GP or FPCs, irrespective of symptoms. This has implications for commissioning STI services in both level 3 and primary care, and supports the provision of some STI services in the community whilst retaining open access to GUM clinics to optimise patient choice.

P2.40

PERCEPTIONS FROM AFRICAN-AND MEXICAN-AMERICAN ADOLESCENT MALES REGARDING THEIR ROLE IN INTIMATE RELATIONSHIPS

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Background: The purpose of this study was to explore the perceptions of heterosexual males aged 18 to 21 regarding their role in intimate relationships. This study is a supplement to an ongoing, controlled-randomized trial of a behavioral intervention for prevention of sexually transmitted infection (STI), abuse and unintended pregnancy in African- and Mexican- American adolescent females (14-18 years of age) who have a history of STI.
Methods: The sample included 14, Mexican- and African- American young men aged 18 to 21 who were partners to the young women in the supplementary trial at the time of interview. One-time, one-on-one semi-structured interviews with participants were conducted over five months. Constant comparison of data guided study questions. Coding was completed initially by one investigator and was confirmed by the other nurse researcher who is an expert in qualitative research.
Results: Participants acknowledged roles to include prevention of pregnancy and STI, as well as maintaining trust and intimacy. Data indicated that engagement in intimate relationships was a variable process influenced directly and indirectly by parents, peers, partners, media, and school systems. Participants struggled to balance desire for intimacy with social and cultural norms and perceived a lack of adequate preparation to resolve these internal conflicts to engage in intimate relationships. Many participants expressed frustration at feeling ill prepared to engage in intimate relationships.
Conclusions: Data from this study will form the basis for a conceptual and operational definition of late adolescent male sexual health to effectively guide the development of culturally sensitive, cognitive-behavioral interventions.

P2.41

ESTIMATING THE SIZE OF THE FEMALE SEX WORKER POPULATION IN KISUMU, WESTERN KENYA

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Background: Interventions targeting female sex workers (FSW) and their clients can have a big effect on the spread of HIV even in mature epidemics. In 1997 it was estimated that 1374 FSW were operating in Kisumu (Kenya) of whom 75% were HIV infected. In 2006 a dedicated clinic for FSW was set up in Kisumu, offering free HIV prevention and care services. In 2008, ITM and KEMRI sought to update the estimate of the numbers of FSW in Kisumu in order to assess the coverage of the services.
Methods: First, all places in Kisumu where FSW find their clients were mapped. Second, a capture-recapture exercise was conducted. Each of 25 teams were assigned a number of hotspots. In the 1st round, all FSW present on that day and time were approached and given a card which served as marker. In the 2nd round FSW were asked whether they had received a card the previous week. In both rounds data was collected on age and knowledge/utilization of the services. The number of FSW in Kisumu (N) was calculated using the formula N= M*C/R (M= FSW "marked" in the 1st round; C= total number of FSW "captured" in the 2nd round; R= FSW "recaptured" in the 2nd round).
Results: 152 hotspots were mapped. In the 1st round 651 FSW were captured, 166 FSW refused participation and 38 were unable to consent under influence of alcohol and drugs. In the 2nd round 680 FSW were seen, of whom 329 had been seen the previous week; 169 FSW refused to talk to the team and 38 were unable to consent. Applying the above formula the total number of FSW was estimated at 1357. Taking into account the refusals, the estimate was 1692. Median age of the FSW was 24 years; 3% were less than 18 years; 58% knew about the services, and 34.5% had ever visited the clinic.
Conclusions: Capture-recapture is a feasible and simple method to estimate the size of a FSW population in a given area and to collect information on the coverage of the FSW services. Numbers of FSW in Kisumu apparently have remained consistent over the past decade.

P2.42

DEVELOPMENT AND EVALUATION OF STIFCOMPETENCIES, A NEW CLINICAL TRAINING PROGRAM IN SEXUAL HEALTH FOR PRIMARY CARE HEALTH PROFESSIONALS

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Background & Objectives: UK sexual health care is shifting from hospital based services into primary care (PC). The Dept of Health (DH) defined 9 minimum competencies for delivery of more specialised sexual health in PC.
In a collaboration between BASHH, a UK teaching hospital & its Primary Care Trust, we aimed to develop a feasible, generalisable, costed competency-based training program to enable PC clinicians to provide more specialised STI services to DH standards.

Methods: We used an action research paradigm with 3 iterative cycles. Each cycle's evaluation resulted in improvements in the subsequent cycle. Evaluation was to Kirkpatrick's third level, and involved trainers, trainees and organisers, analyses of training costs and workflow implications. Trustworthiness and utility of the evaluation was maximised by triangulation of results between different stakeholders and methods including portfolio analysis, timesheet collection, focus groups, nominal group technique, semi-structured telephone interviews and Likert questionnaires.
Results: 10 of 13 sexual health experienced PC clinicians (6 GPs, 2 nurse practitioners, 2 practice nurses) have so far completed the training in a median of 18 (10-23) hours contact time over a median of 8 (3-27) weeks. Feasibility issues were resolved by reorganisation of sessions, redesign of assessment tools, and modification of trainer workload to avoid impact on clinic flow. STIF*Competencies* was highly rated by PC clinicians and their practice changed as a result of training. Average cost per PC clinician was £3700 (based on PBR income lost).
Conclusions: STIF*Competencies* provides a validated, costed method for training & assessing PC clinicians to provide more specialised sexual health care to DH standards. The high cost reflects need for direct observation of competence across a wide range of clinical skills. Less experienced clinicians will require longer training. These methods demonstrate the utility of an action research approach.

P2.43

EFFECTIVENESS OF A FOCUSED TRAINING PROGRAM FOR MEDICAL PRACTITIONERS ON STI MANAGEMENT IN SOUTH INDIA

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Background: The Regional Resource Training Centres, a network of 12 medical colleges, was set up in 2003 in Karnataka State. The objective of the network was to map, train and follow up medical practitioners (MPs) in the private and government sectors who saw more than 5 patients per month. More than 5957 general medical practitioners comprising 79.3% of all government and 27.6% of all private practitioners were trained. We assessed behaviour changes pertaining to syndromic case management (SCM) of STIs, as a result of the training.
Methods: Through random sample surveys conducted in 2003 and repeated in 2008, the practice of the MPs was assessed using a male person simulating symptoms of an STI. Exit interviews were conducted by trained persons immediately after the doctor-client interaction.
Results: A total of 462 simulated patient interviews were conducted in both 2003 and 2008. Significant increases were seen in referral for HIV testing to voluntary counselling and testing centres (3.6% to 41.1%, $p < 0.01$), advice on the use of condoms (15.8% to 24%, $p < 0.01$), availability of condoms (1.9% to 14.5%, $p < 0.01$) and partner treatment (9.0% to 26%, $p < 0.01$). The proportion who spontaneously responded that they practice SCM increased from 22% to 32% ($p=<0.01$).Correct prescription of medicines consistent with SCM guidelines increased from 0.4% at baseline to 4.5% in the repeat survey ($p=<0.01$). However, we observed only a marginal change in the practice of dispensation and demonstration of correct condom use. There was a wide disparity between reported practice in structured interviews with MPs and observed practice through the simulated patient.
Conclusions: Training focused on medical practitioners who see STI patients has had a significant effect in improving practices. The simulated patient approach ensures objective assessment of practice. Medical practitioners still seem reluctant to directly dispense condoms and perform condom demonstrations.

P2.44

ELECTRONIC LEARNING (e-LEARNING) TOOLS: A NATIONAL SURVEY OF GENITOURINARY MEDICINE (GUM) TRAINEES OPINIONS AND PRACTICE

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Background: The UK Department of Health, in partnership with professional bodies, is developing a series of e-learning programmes to deliver training to health care professionals. The 'e-Learning for Healthcare (e-LfH) – Sexual Health & HIV' project aims to deliver a web-based learning programme comprising all the knowledge components of the GUM specialty training curriculum. In order to develop a useful educational resource, the opinions of current specialist trainees were sought.
Methods: A questionnaire was distributed to all UK trainees to determine their use of, and opinions on, the relative value of various aspects of e-learning tools.
Results: 34 completed questionnaires were returned giving a representative sample throughout years

and region of training. A clear trend was demonstrated in frequency and type of e-learning sites used as training progresses - year 3 & 4 Specialist Registrars access a wider range of more advanced/HIV related sites. Aspects rated of most importance were as follows: Access - out of hours and from work; Content - photographs, videos and past paper examples scored highest, followed by case studies and chapters. Respondents were ambivalent about discussion forums, with synchronous online chat or virtual meetings being rated of even less value; Assessment tools - rated highly, with data interpretation most valuable followed by multiple choice questions and case studies. Simple scoring systems were preferred to scoring relative to other participants.
Conclusions: Use of e-learning increases in frequency and range as training progresses. The e-LfH project is being developed for the first two years of specialist training which will fit with the 'gap' in e-learning use our survey demonstrates. Our data supports the inclusion of diverse forms of content and assessments to enhance learning in these early training years.

P2.45

e-LEARNING FOR HEALTHCARE – SEXUAL HEALTH & HIV
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Objectives: To develop an e-learning resource for specialists training in Sexual Health and HIV.
Methods: In 2008 BASHH with the Royal College of Physicians made a successful bid to e-Learning for Healthcare, a DH programme to deliver training through e-learning to the health service.
Results: This project will deliver a comprehensive e-learning programme comprising all the knowledge components of the UK Sexual Health & HIV specialist medical training curriculum but many components would be relevant for trainees overseas and in related specialties such as dermatology, Infectious diseases and gynaecology, as well as those in primary care wanting to increase their knowledge in the area of sexual health and HIV. The training material provides an extensive knowledge base for the whole of STIs and HIV but is delivered in 3 levels from introductory, to more advanced and finally specialist knowledge so that learning can be appropriately structured. Each session is supported by self assessment tools. The training package is designed to provide the knowledge framework which can then be supplemented by training in the clinical setting to reinforce the knowledge and develop the skills and attitudes necessary for successful practice in the area. The materials are written by subject matter specialists and experts in their particular field and subject to extensive peer review. There are approximately 200 eLearning sessions planned, each around 20 minutes in length incorporating video clips, case studies and an extensive picture library.
Conclusions: Currently the first sessions are nearing completion, and about 1/3 will be ready for August 2009 with the full resource in August 2010. This will allow trainees an additional way to acquire specialist knowledge and allow existing courses to be redeveloped to provide training in skills, attitudes and more challenging scenarios.

P2.46

ASSESSING THE TRAINING IN SEXUAL DYSFUNCTION FOR GENITOURINARY MEDICINE REGISTRARS
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Objectives: The training program for registrars (SpR) in genitourinary medicine (GUM) lists sexual dysfunction as beyond essential, core curriculum despite many UK GUM clinics offering this service. The objective was to identify current provision of training in this field and to assess whether trainees felt this met their needs.
Methods: A cross sectional study was preformed of all trainees on the British Association of Sexual Health and HIV (BASHH) mailing list using an anonymous questionnaire. Data collected included demographic details, frequency of sexual dysfunction clinics attended and involvement therein, any training in this area and interest in future training.
Results: 39/76 (51%) responses were received. Of these most 30/39 (77%) were full time and 25/39 (64%) female. 20/39 (51%) work in departments with no sexual dysfunction clinic provision. 12/39 have had some training in sexual dysfunction (BASHH masterclass, psychosexual seminars, SpR training days). In routine GUM consultation 33/39 (85%) trainees are consulted regarding sexual dysfunction at least monthly. 19/39 (49%) work in areas with weekly sexual dysfunction clinics however only 3 trainees were involved. 34/39 (87%) expressed interest in training and 31/39 (79%) respondents would like to see sexual dysfunction training added to the SpR curriculum.
Conclusions: 51% of juniors work in units without sexual dysfunction provision. Even when sexual dysfunction clinics occur only 3 trainees were routinely involved and a large training opportunity is being missed. Despite this 12/39 have sought out extra training in the form of seminars, courses and meetings.

85% wished to have sexual dysfunction as part of the core curriculum as they may ultimately work in an area where these skills are required.

P2.48

LGV & ME. GAY MENS' EXPERIENCES OF LGV IN THE UNITED KINGDOM IN 2009

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Background: With approaching 1,000 confirmed cases of LGV in the past 5 years, the UK has recorded a substantial outbreak of this previously rare infection. In response, a research network has been established, funded to provide clinical, molecular and epidemiological intelligence through a network of relevant sexual health clinics, the central diagnostic facility and an academic institution. LGV-NET aims to improve clinical diagnosis, treatment, and health promotions in order control this outbreak.
Methods: A case-control study is used to interview men recently diagnosed with LGV (cases) and men without LGV (controls), the latter with either similar symptoms or no LGV type symptoms. Data are collected through a matrix of online questionnaires. Clinical and microbiological data are also reported. Recruitment began at the end of 2008. We present data on 17 cases recruited by the end of April 2009.
Results: With a median age of 41 years, 88% HIV positive and all but one presenting with symptoms of LGV (typically rectal pain, bleeding, tenesmus and discharge) cases are similar to those observed by national surveillance data. Of the 14 cases able to pinpoint an incident when LGV may have been acquired, 90% were diagnosed within 2 months. Rectal symptoms had persisted for an average of 13 days overall. Almost half (47%) had not been aware of LGV before their diagnosis and 41% reported that using condoms had not been important to them in the previous 3 months. Where follow-up data were available, all had completed their course of antibiotics, with few experiencing any side effects and all reported that their LGV symptoms had completely resolved.
Conclusion: Although qualitative, these data suggest that LGV in gay men manifests as an acute infection with a relatively short incubation period. Current treatments appear acceptable and effective; however levels of awareness and preventative behaviours amongst the population at risk remain unacceptably low.

P2.49

PREVALENCE AND CORRELATES OF TRICHOMONAL VAGINITIS IN THREE URBAN STD CLINICS

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Objectives: *Trichomonas vaginalis* (TV) infection is classically associated with vaginal discharge, pruritus, and other clinical findings, yet asymptomatic and subclinical carriage is common. We evaluated demographic and clinical correlates of TV infection among women attendees of three urban STD clinics, and examined whether use of self-collected vaginal swab or urine sample testing for STDs would miss substantial numbers of TV infections.
Methods: Patients seen at STD clinics in three US cities (Jackson, MS, New Orleans, LA and St. Louis, MO) from May through August, 2008 were recruited to participate. Participants completed a survey through which patient preferences were assessed in the hypothetical event that the clinic had to turn away patients. Medical charts were abstracted to obtain demographic, behavioral, and clinical data. TV was diagnosed using wet-mount examination.
Results: A total of 1,434 women were enrolled in the study. The average age was 26 years, and most patients were African-American. The overall prevalence of TV infection was 9.1%. The prevalence increased with age, from 6.1% in <= 19 years of age to 12.0% in those >30 years (Chisq trend=0.009). Among asymptomatic women, the prevalence of TV was 5.0%. Among women with TV, 22.7% were co-infected with *Chlamydia trachomatis* (Ct) and 9.4% with *Neisseria gonorrhoeae* (GC). If self-collected vaginal swab or urine sample would be offered as an option for testing for Ct/GC due to limited clinic capacity, the prevalence of TV was equally high in those who preferred self-specimen collection and those preferred to see a doctor on the next business day (p =0.25), suggesting that a large number of TV cases would remain undiagnosed without usual STD evaluation.
Conclusions: Asymptomatic presentation of TV was relatively common among STD clinic attendees. Older age and other STDs correlated with active infection. Use of self-collected swabs or urine samples for Ct/GC testing may miss many TV cases.

P2.5

A QUALITATIVE ASSESSMENT OF MEN'S PREFERENCES FOR ACCESSING STI-SCREENING SERVICES

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Objective: The goal of this study was to understand the features of an STI-screening program that would encourage asymptomatic men to be screened for STI at least annually.
Methods: Semi-structured interviews of men attending an STI clinic in Midwestern USA were digitally recorded. Transcribed data was reviewed by at least 3 investigators for thematic content. The constructs included in the interview were:1) Why did you choose the STI clinic over other choices today; 2) What is the best resource for STI-related information; 3) Where would you prefer to collect samples for screening; 4) How would you prefer to receive results; and, 5) What would be the best way to be reminded about being tested each year.
Results: The 22 participants universally acknowledged the expertise and respect for confidentiality of the clinic staff as opposed to other healthcare providers. Cost was also a determining factor. Most men preferred speaking with a provider over using the internet for information, particularly when receiving results. The clinic was the preferred venue for future screening followed by the option to collect samples at home for drop-off at the clinic. Mailing samples was less preferred due to fears of poor sample handling or loss of confidentiality. Men expressed a preference for receiving results via the telephone rather than e-mail, text or internet options. The opportunity to speak with a provider was a common reason for this preference. Reminders would be best if personalized and delivered via paper mail according this population. However, men would also be willing to receive, or give, testing reminders to their social peers.
Conclusions: In this sample, there was high interest in maintaining contact with healthcare personnel with expertise in STI and less with electronic options. While this is likely due to recruiting from an STI clinic, the data serves as a reminder that a variety of access options may be needed in order to expand testing access.

P2.50

UPDATE: THE DISTRIBUTIONS OF TRICHOMONAS VAGINALIS AEROBIC MLCS OF METRONIDAZOLE AND TINIDAZOLE ARE NOT ASSOCIATED WITH CLINICAL TREATMENT OUTCOME

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Objectives: Trichomoniasis, a STD caused by the protozoan *Trichomonas vaginalis* (Tvag), is strongly associated with preterm birth and HIV acquisition. The drugs metronidazole (MET) and tinidazole (TIN) are used in the treatment of trichomoniasis. We have previously reported the distribution of drug susceptibility on 178 clinical isolates. With the prevalence of MET resistance appearing to increase at a rate of 1 to 50-75 cases, understanding the relationship between treatment outcome and parasite resistance is crucial. The following is an update using a larger data set (N = 234).
Methods: Women were recruited from the Jefferson County Department of Health, Sexually Transmitted Diseases Clinic in Birmingham, AL. Tvag cultures were prepared from clinical specimens of participating women suspected to have Tvag diagnosed from wet preparation microscopy. All women were treated with a 2-gram stat dose of metronidazole under the observation of a primary care clinician and reassessed for live culture 5 to 9 days post-initial visit. Minimum lethal concentrations (MLCs) of drug required to kill Tvag were determined using CDC protocols. Testing was performed in triplicate with known controls (susceptible CDC 520, and resistant CDC 955). Data was analyzed with non-parametric methods (Wilcoxon/Kruskall-Wallis Rank Sum Test). P-values (P) are one sided and set at an α of 0.05. Interquartile ranges for the distributions are reported.
Results: The median MLC for MET susceptibility was 12.5 (interquartile range of 6.3 to 12.5). The median MLC for TIN susceptibility was 0.8 (interquartile range 0.4 to 1.6). The proportion of women failing drug treatment was 5.98%. Using aerobic MLC values, no differences in the distributions of drug susceptibility were observed (P = 0.133 and 0.154, MET and TIN, respectively) between treatment success and failure among patients.
Conclusions: Additional pharmacokinetic factors should be investigated to account for treatment failure using MET and TIN to treat trichomoniasis.

P2.51

MANAGEMENT OF MALE PATIENTS WHO HAVE URETHRITIS BY FRENCH GENERAL PRACTITIONERS.

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Background: General practitioners (GPs) play a critical role in preventing and treating sexually transmitted diseases (STD). In France, quinolone-resistant Neisseria gonorrhoea (Ng) is becoming increasingly common (38.7%) and it has been recommended that quinolone should not be used for the treatment of urethritis. Little is known about the extent to which the French Health Products Safety Agency (AFSSAPS) guidelines for diagnosing and treating urethritis are used by GPs.
Methods: We developed an online clinical vignette simulating a case of typical gonococcal urethritis in a male patient, to document components of the sexual behaviour, physical examination, diagnostic testing, treatment and follow-up instructions necessary to comply with the AFSSAPS guidelines. The association between GPs years in practice and performance was assessed (chi-square trend test; $p<0.05$).
Results: The response rate was 32.49% (350/1077). Among respondents, 93% have taken into account the patient's sexual behaviour. Ng was correctly considered as the etiological agent by 90% of GPs, 39% of GPs stated that Chlamydia trachomatis (Ct) infection was frequently associated. Polymerase chain reaction (PCR) test for Ct was ordered by 16% of GPs. Presumptive treatment for gonorrhoea and chlamydia were simultaneously prescribed correctly by only 20% of GPs, while 18% prescribed a quinolone. Frequency of compliance to guidelines was inversely related to years in practice. Doctors with a shorter working career (< 10 years) were more likely to elicit a sexual behaviour, to screen for other STD, to examine the genitalia and to use a recommended antibiotic regimen ($p<0.05$). Screening for HIV and Syphilis was provided by 81% and 59% of GPs, respectively. There was no statistically significant gender difference in practitioner compliance with recommendations ($p>0.05$).
Conclusions: Gaps in quality for the management of male gonococcal urethritis exist among French GPs.

P2.52

SYNDROMIC APPROACH IN MALE URETHRAL DISCHARGE PATIENTS OF AN STI SPECIALIZED CLINIC IN MANAUS, AMAZONAS, FROM 2005 TO 2007

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Background: The Syndromic Approach (SA) for STIs, particularly those for male Urethral Discharge (UD), is being used regularly by the Brazilian Health System since 1995. The present study aims to describe and evaluate this therapeutic strategy and its results between the periods of 2005 and 2007 in a specialized clinic in Manaus-Amazonas.
Methods: A descriptive and evaluative study of the effectiveness of the AS in UD was analyzed based on 452 patients' files that demanded medical assistance in the stipulated period. The sample size was set to tolerate an error margin of 1.5% and to achieve a confidence interval of 95%.The variables studied were the cure rates achieved from the first and second consultations, association with syphilis and HIV, and presence of Neiseria gonorhrroeae (NG).
Results: The SA for UD had a curing rate of less than 70% during the first consultation, and it achieved levels of 84.3% during the second consultation. Syphilis was associated with 2.25% of the cases and HIV with 3.5%.NG was part of the syndrome in less than 50% of the cases.Proximally 15% of the files did not contain proper information.
Conclusion: There was a reduction on the effectiveness of the SA compared to a similar study produced in 2000 in the same institution.These results may be due to several cured patients during the first consultation not returning for a second consultation. This demonstrates that patient-clinic relationship was weaker during the years of the study.A new study to test this hypothesis is already in progress.

P2.53

CERVICAL CYTOLOGY SCREENING OF HIV POSITIVE WOMEN IN A LONDON GENITOURINARY/HIV CLINIC

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Objectives: This is a retrospective study of cervical cytology of HIV positive patients in a genitourinary/HIV clinic to look at factors influencing abnormal smear results and their management from the perspective of the HIV physician.
Methods: Data, including age, ethnicity, details of cervical cytology, details of HIV disease was taken from all HIV positive women who attended the Central Middlesex Hospital for HIV follow-up with a physician in-between 01/01/2008 and 31/01/2009.
Results: This was a predominantly Black African cohort (n=168) with a 16.5% prevalence of abnormal

smear results. 44% of the patients had their smear test in the GUM/HIV clinic. 19.5% had regular follow up in colposcopy clinics. 18% had their smear tests with their GPs and there was significant discordance between the stated date and results and the cytology reports. There was no communication from other health care professionals to the HIV teams regarding outcomes of smear tests/colposcopy. 10.6% didn't have a smear test in the study period for various reasons including being on a period, pregnancy, not attending colposcopy appointments and declining to have a smear test. 3.5% had no documentation of a cervical cytology. There was no co-relation between having an abnormal cervical cytology and having an AIDS diagnosis, CD4 count or being on antiretroviral therapy.
Conclusions: This is an at-risk patient cohort with socio-economic factors that impact on access to care who may benefit from one-stop-shop or a multidisciplinary service providing cervical screening. The lack of significant co-relation between disease status and abnormal cervical cytology suggests the need for a prospective study looking at other factors such as age at coitarche, average number sexual partners per year and smoking history.

P2.54

CIRCUMCISION STATUS AND THE PROBABILITY OF VISIBLE PENILE WARTS AMONG HETEROSEXUAL MEN ATTENDING STD CLINICS

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Objectives: Studies indicate that circumcision lowers the odds of penile HPV infection, but reports describing its impact on visible penile warts (VPW) are mixed. We sought to determine whether circumcision status independently predicts VPW among heterosexual men.
Methods: We analyzed electronic records from first clinic visits of self-identified heterosexual men receiving care at two STD clinics in Baltimore, Maryland, between 1992 and 2002 who had a clinical exam documenting circumcision status. This database also included demographic, behavioral, and clinical variables. We used logistic regression to adjust for potential confounders and to calculate odds ratios (OR) and 95% confidence intervals (CI).
Results: A total of 45,323 heterosexual men had at least one visit; 10,150 had no penile examination documented. Of the remaining 35,173, the median age was 28 years, 96.4% were Black, 15.7% were uncircumcised, and 2.1% were HIV infected. There were 853 men with VPW (2.4%). Of these, 752 cases (88%) occurred in circumcised men (p=0.01). After adjustment for potential confounders (age, race, HIV status, condom use, number of sex partners in the preceding month, and prior history of genital warts), uncircumcised men had a lower probability of being diagnosed with VPW than did circumcised men (OR 0.73, 95%CI: 0.59-0.90, p=0.004).
Conclusions: Circumcision has been associated with lower risk of HPV infection but, in our urban STD clinic population, an increased probability of VPW. Whether this finding is due to biological or anatomical factors is unclear.

P2.55

FEATURES OF GENITAL ULCERS WITH NO PATHOGENS IDENTIFIED IN MEN IN DURBAN, SOUTH AFRICA

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Objectives: To review the characteristics of genital ulcers in men in Durban in whom no cause was identifed using PCR tests.
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 were undertaken.
Results: Of 162 patients enrolled, no pathogens were identified in 54 (33%). The most likely clinical diagnosis in these (n=51) were genital herpes 37 (73%), chancroid 9 (18%), and syphilis 5 (10%). The delay before attending (data for 39) was 1-3 days in 4 (10%), 4-7 days in 17 (44%), 8-14 days in 8 (21%), 15-30 days in 3 (8%) and >30 days in 7 (18%). Forty seven (87%) had antibodies to HSV-2 and 38 (70%) were HIV positive Three patients had positive TPHA and RPR tests with titres≥1:4. Only 2 had received antibiotics in the previous 2 weeks. Twenty two (40.7%) were new attenders to the clinic.
Conclusions: The profile of ulcers with no pathogens identified was similar to that seen in men with pathogens identified. Genital herpes is the most likely cause in the vast majority of ulcers with no pathogens identified. Despite the better performance of the newer PCR tests over previous methods the prevalence of genital herpes probably continues to be underestimated. Consideration should be given into adjusting the genital ulcer treatment algorithm to focus more on genital herpes.

P2.56

PEARLY PENILE PAPULES REGRESS IN OLDER PATIENTS AND WITH CIRCUMCISION

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Background: Little is known about the natural history of pearly penile papules (PPP), and many clinicians acknowledge two features that are inconsistent with information currently given to patients: 1.) papules are rarely seen in older males, and 2.) papules are rarely seen in circumcised males. This study assesses the prevalence and correlates of PPP in two non-GUM male cohorts (<25 years and >50 years).
Methods: PPP were categorised in 188 university students (<25 years), based on self-examination with a previously validated self-assessment tool, and 70 patients (>50 years), based on clinician examination at urology outpatient clinics. PPP were categorised from 1 to 4, based on increasing papule size and distribution. An anonymous questionnaire was used to assess participant demographics and sexual history. Responses were analysed to identify associations with PPP prevalence.
Results: The prevalence of PPP was 38.3% in <25 years; 11.4% in >50 years ($p<0.001$). The prevalence of category 3 and 4 PPP was 8.5% in <25 years; 1.4% in >50 years ($p<0.05$). In the younger age group, the prevalence of PPP was 26.5% in circumcised participants; 42.4% in uncircumcised participants ($p<0.05$), but was unrelated to either frequency of sexual intercourse or time since first sexual intercourse.
Conclusions: PPP disappear with age, and any PPP in patients >50 years are less marked than those in patients <25 years. Patients should be advised accordingly. PPP are less prevalent in circumcised males. This may suggest that patients unhappy with the extent of PPP development could be advised to wear the foreskin rolled back – this may maximise exposure of the coronal area to normal abrasion, which may hasten PPP regression. More research is needed to assess this. The relationship between other factors and PPP prevalence remains unclear.

P2.57

AUDIT AND REAUDIT OF ONLINE AND OUTPATIENT CLINIC MANAGEMENT OF ERECTILE DYSFUNCTION-SEARCHING FOR BEST PRACTICE IN THE ERA OF PATIENT CHOICE

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Background: Men with erectile dysfunction (ED) may find it difficult to access clinics or to disclose their problem to conventional medical services. On-line services provide an alternative method of access. However there have been concerns that on-line consultations may provide a lower standard of care compared to traditional clinics.
Methods: We have audited both an online private service and an NHS outpatient service using identical criteria. A 2 part retrospective case note review of 100 sequential new patients registering at both the internet and clinic based services between Aug-Nov 2007 (Audit 1) and Oct-Dec 2008 (Audit 2) was carried out. The clinical records were compared using a standardised assessment tool examining key aspects of ED management.
Results: The online compulsory fields led to a more complete documented history compared to the clinic setting in audit 1. An action was to adapt the online questionnaire for clinic use to improve data collection eg the lack of documented BP in six outpatients. These changes to the clinic proforma and staff training increased this to 100% in audit 2. Where additional investigations were suggested, the results were universally available in the clinic, however the on-line recommendation to test via their GP meant that the results were not always available. It is proposed to evaluate the use of home testing kits for lipids and blood glucose. Audit 2 confirmed improvements resulting from these actions but again highlighted the problem of 'recommending' hormonal blood tests (eg in low libido) that in clinic are part of the record but are unavailable if done by GP or organised separately by patient. The major concern in audit 2 related to alcohol history where notes of excess intake was made but no action taken. In contrast the automated response allows the online service to ensure that advice to address this is always provided.
Conclusion: In summary, these audits provide clear learning points across the on-line/clinic interface that has benefitted governance of each service.

P2.57

SYPHILIS INCIDENCE AND ASSOCIATED RISK FACTORS IN A COHORT OF HIGH-RISK MEN AND WOMEN; LIMA, TRUJILLO AND CHICLAYO, PERU, 2003-2007

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Background: Data on syphilis transmission in Peru is based on cross-sectional studies. We analyzed data from the NIMH International HIV/STD Prevention Trial to determine factors associated with incident syphilis infection in Peru.
Methods: Populations at risk for HIV/STIs in three Peruvian cities were followed in an HIV/STI prevention trial for 2 years. Participants completed behavioral surveys and provided blood at baseline and two annual follow-up visits. Syphilis was diagnosed using RPR (RPRnosticon) screening with TPPA (Fujirebio) confirmation. Incident syphilis infections were defined as new RPR/TPPA-positive cases at follow-up, or previously diagnosed cases with >four-fold decline in RPR titer following treatment and subsequent >four-fold increase in titer, or reconversion from negative to positive titers.
Results: Among 3,301 participants at baseline, syphilis prevalence (any RPR) was 5.7%. Syphilis incidence (per 100 person-years) was 0.87 over the two years of follow-up. Incidence among heterosexual-identified men and women was 0.36 and 0.49, respectively. Incidence among men who have sex with men (MSM) was 3.31. Among subjects with syphilis at baseline, RPR >1:8 was associated with increased risk of re-infection (HR=6.37; 2.85-14.25). In multivariate analysis, factors associated with incident syphilis included increased age (HR=1.06; 95% CI=1.00-1.02), HIV infection (HR=2.33; CI=0.90-5.51), MSM status (HR=5.27; CI=2.17-12.82), and increased number of sex partners (past 3 months) (HR=1.11; 1.01-1.21). Number of sex acts (past 3 months) was not associated with incident infection.
Discussion: Incident syphilis in Peru was concentrated among MSM and associated with increased age, number of recent sex partners, and baseline RPR titer (in cases of re-infection). Identification of the behavioral, biological, and network characteristics promoting syphilis acquisition (and HIV co-transmission) among MSM in Peru is critical for developing interventions to control the spread of disease.

P2.58

EPIDEMIOLOGICAL TRENDS AND MANAGEMENT OF SEXUALLY TRANSMITTED INFECTIONS (STIs) IN GEORGIA

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Objectives: In general, the epidemiological situation regarding STIs in Eastern European countries is considered as unfavourable, however, data are scarce. The aim of this study was to describe the situation regarding STI morbidity and management in Georgia.
Methods: A comprehensive questionnaire was used to collect and analyse the data available at the Statistical Department, Ministry of Health of the Republic of Georgia.
Results: Infections caused by *Treponema pallidum*, *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Trichomonas vaginalis* and HIV are mandatorily notified in Georgia. From 2000 to 2007, the incidence of syphilis decreased from 20.3 to 8.7 per 100,000 inhabitants. However, the incidence of gonorrhoea, chlamydia, and *T. vaginalis* infection increased from 13.3 to 16.4, 6.3 to 16.2, and 48.6 to 73.9, respectively. Contact reporting and tracing is optional. For diagnosis of syphilis, internationally validated test systems (RPR, TPHA, ELISA) are used, 50% of the laboratories are also using dark field microscopy. Diagnosis of gonorrhoea is mainly done using microscopy of stained smears, i.e. culture and NAATs are seldom used. Diagnosis of chlamydia is mainly performed using serology or direct immunofluorescence, Roche Amplicor PCR test is available but mainly not used due to the higher cost for diagnosis. *T. vaginalis* infections are mostly diagnosed using Gram-stained smears and rarely (5%) using culture. Treatment of syphilis and gonorrhoea is permitted only for dermatovenereologists.
Conclusions: In Georgia, lack of resources, high migration rate and poor attendance at the STI clinics contributes to the unfavourable situation regarding STIs. Management of STIs, including diagnosis, contact tracing, epidemiological surveillance, and treatment, in Georgia has several shortcomings and needs to be optimized, harmonised and quality assured.

P2.59

STATE OF THE STI NATIONAL PROGRAMME IN 20 LATIN AMERICAN COUNTRIES, YEAR 2007

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Objectives:STI continue to pose a serious public health problem for many Latin American and Caribbean(LAC)countries, although sound epidemiological surveillance data may be lacking. We investigated the quality and completeness of epidemiological reporting from national STI programmes of the PAHO LAC region.
Methods: Cross-sectional questionnaire survey administered in 2007 to national STI coordinators from the 20 countries of the LAC region, followed by regional meeting to validate findings in 2008.
Results:19/20 (95%) country coordinators completed the survey and participated in the evaluation meeting. In 2006, overall, 544,583 cases of bacterial and viral STIs were notified. Syphilis:28,026 were reported, representing<1% of the estimated 3 millions cases. Congenital syphilis represented 8,423 cases.12 of the 20 countries did not reach the "minimum acceptable incidence"(0.5 per 1000 live births) defined for elimination of congenital syphilis;Gonorrhoea:35,955 aetiological cases were notified, whilst 192,180 urethral and vaginal syndromes were also reported, for a total of 228,135 possible gonococcal cases.This represents only 3% of the 7.5 million estimated cases.Treatment with ciprofloxacin has become ineffective in many countries. Chlamydia: was notified aetiologically only in five countries, with an ascending trend in the last five years, whilst trends are unknown for most of the countries. Information on epidemiological data, coverage of vulnerable groups, STI knowledge and behaviour in these groups, and available resources appear insufficient.
Conclusion: Surveillance data is inadequate in most LAC countries and grossly underestimates the magnitude of the problem. Congenital syphilis continues to be a serious problem and renewed efforts are needed to fulfil the pledge for its global elimination.Opportunities for improvement and collaboration were identified at the international workshop and remedial actions must be taken urgently.

P2.6

"WE ONLY GET ONE DAY": FACILITATORS AND BARRIERS TO STI/HIV HEALTH CARE AMONG SOUTH AFRICAN MEN

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Objectives: There is strong reason to believe that men may be key players in the spread of sexually transmitted infections (STIs) and HIV. Therefore, we examined facilitators and barriers to the use of public clinics or community health centres for STI care and HIV testing by men in Johannesburg, South Africa.
Methods: In June 2007, 6 focus groups (FGs) and 19 individual interviews (IIs) were conducted among men ages 18-50 years (n=77). STI patients were recruited from 3 different clinics and healthy men from surrounding community settings. Semi-structured guides covered knowledge about STIs and genital ulcer disease, access to STI/HIV services, and interactions with public health facilities. Data was collected by 2 teams with 2 interviewers per team. Detailed notes were taken and the teams met daily to review notes and discuss common or convergent themes. Notes were coded and analyzed in NVivo.
Results: Men reported mixed experiences with the clinics. The most frequently cited barriers included: distrust/dislike of health care providers, long queues, limited diagnostic information, and a lack of confidentiality. In 5 of the 6 FGs, men reported unpleasant visits and discomfort interacting with female nurses; nearly half of men in IIs gave similar reports. Patients wanted to be examined and treated by a male nurse/doctor and complained that the male STI clinic was available only one day a week. Conversely, patients attending public clinics reported several facilitators: friendly or competent nurses, convenient clinic location, and free services. Men identified an overall lack of communication between themselves and health care providers.
Conclusions: There is a need for more male-centered STI/HIV services where men can feel at ease during examinations. A supportive environment could be achieved by adding some male nurses to the existing clinic staff, among other factors. It is important to monitor the quality of STI/HIV care offered and the satisfaction of patients.

P2.60

REVIEW OF A NATIONAL SEXUAL HEALTH AND HIV STRATEGY – PROCESS AND OUTCOMES

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Objectives: To review the ten-year English *National Strategy for Sexual Health and HIV* (2001) and accelerate its implementation.
Methods: The Independent Advisory Group on Sexual Health and HIV advises the Government on

implementation of the sexual health strategy. In 2007, it commissioned the Medical Foundation for AIDS & Sexual Health (MedFASH) to undertake a review, funded by the Department of Health (DH). Information was gathered through desk research, expert groups and regional meetings with stakeholders and service users. The review report was published in July 2008.
Results: The review reported broad delivery of the strategy's implementation action plan at national level, but patchy implementation locally. To address barriers identified, action in five strategic areas was recommended: public health priority and high-level leadership; strategic partnerships; commissioning; investment in prevention; and modern service delivery. Indicators to measure progress were proposed. The report's launch generated media coverage including BBC national radio, national press (broadsheet and tabloid), health trade press and varied websites. Media interest focused on sex education and general practice.
Following online publication, printed copies were mailed to senior NHS, local government and non-statutory decision-makers, with questionnaires for feedback. Conference presentations by invitation around the country enabled dissemination to a range of audiences including parliamentarians, health professionals, NHS management, and voluntary organisations.
Conclusions: The review report is in use locally, regionally and nationally. Key recommendations have already been actioned on Personal, Social, Health and Economic Education in schools and the Quality and Outcomes Framework for GPs. The review is informing DH planning.
However huge challenges remain, particularly at local level, including how to ensure sexual health improvement is central to implementation of the NHS Next Stage Review.

P2.61

DISTURBING SYMPTOMS - WHAT CLINICIANS AND COMMISSIONERS THINK ABOUT STI & HIV SERVICES IN THE UK AND HOW THEY ARE CHANGING
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Background: Disturbing Symptoms is an annual "state of the nation" survey by BASHH, BHIVA and THT of how clinicians and those commissioning services in Primary Care Trusts and Health Boards view service development against a background of health service changes. In 2009, this included Wales, Scotland and Northern Ireland for the first time. For England, the survey can track change over the past 7 years.
Methods: Electronic surveys were distributed to the membership of BASHH and BHIVA, to all Primary Care Trusts and Health Boards, and to individual commissioners where identifiable. Clinicians completed the survey collaboratively for their clinic. Closed questions were asked, followed by open text questions about recent experiences and what would be helpful in reducing STIs and HIV locally. English respondents were asked about Payment By Results.
Results: Responses were received from 102 clinics and 41 PCTs/Health Boards. Key clinician findings were:26% turned away people seeking initial diagnoses; 75% had increased activity but only 30% had increased staffing; only 17% met regularly with patient reps (a sharp drop). Particular clinic concerns were poor commissioning, competitive tendering and restructuring, infrastructural issues and (English) Payment By Results. Key PCT/HB findings were: 17% had no lead commissioner; 30% had been in post less than a year; 24% had no needs assessment for the past 4 years; 63% were in networks; 59% increased expenditure in 2008 (76% in 2007); key priorities were community and primary care services; over half wanted better information and central Government support (e.g. National Support Team, WAG guidance).
Conclusions: Both clinics and commissioning bodies need greater support and guidance to engage fully with structural changes. Current changes in commissioning practice are putting strains on relationships which must be recognised and mitigated by better networks and dialogue.

P2.62

RESEARCH ON HPV AND CERVICAL CANCER PREVENTION IN SUB-SAHARAN AFRICA: REVIEW OF EVIDENCE AND FUTURE DIRECTIONS
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Background: Over eighty percent of HPV-induced cervical cancers occur in developing nations, and some of the highest incidence rates are found in sub-Saharan Africa (SSA). Research on cancer rates and population risk has been emerging from SSA; however, a comprehensive literature review to identify strengths, weaknesses and gaps in published studies is lacking.
Methods: We developed a systematic literature search strategy using multiple search engines (PubMed,

Google Scholar, SSRN) and combined MeSH terms and key words ('HPV', 'cervical cancer', 'Africa') into an algorithm to maximize the yield of the search strategy. Extracted articles were searched manually and review articles cross-referenced to identify the most appropriate manuscripts and reports.
Results: Over 2500 publications were retrieved and then narrowed to 490 by manual search and abstract review. Studies could be broadly grouped in the following areas: (i) relative ranking of cervical cancer: studies of population-based cancer registries (ii) risk factors: case control and cohort studies (iii) screening test accuracy: observational studies and randomized trials, (iii) treatment of pre-cancer (cryotherapy and LEEP): observational studies and randomized trials, (iv) HPV genotyping: observational studies, (v) treatment of cervical cancer with chemotherapy and radiotherapy: case reports/series, (vi) HPV, HIV and other co-infections: observational studies and program evaluations, and (vii) studies describing community outreach, education, and behavior.
Conclusions: Our literature review demonstrates the gaps in existing HPV-cervical cancer research in SSA, especially primary prevention studies focusing on HPV vaccine efficacy and effectiveness, as well as program evaluation studies on 'screen-and-treat' secondary prevention programs. Future research should focus on the most effective approaches to implementation of these programs and their integration with other health and development programs.

P2.63

WHEN DID THE NEW VARIANT OF CHLAMYDIA TRACHOMATIS (nvCt) EMERGE IN ÖREBRO COUNTY, SWEDEN? - AN EVALUATION OF THE POSITIVITY RATES FROM 2000 TO 2006
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Objectives: In 2006 a new variant of Chlamydia trachomatis (nvCt), which escaped the diagnostics using systems from Roche Diagnostics and Abbott Laboratories, was reported in Sweden (Ripa and Nilsson, STD). In most Swedish diagnostic laboratories only nucleic acid amplification tests (NAATs) are used for Ct. However, at Örebro University Hospital, analysing all Ct samples in Örebro County, both NAAT (Cobas Amplicor PCR [CA PCR], Roche) and culture on McCoy cells are used. After the nvCt was identified, 38% of Ct culture positives were confirmed as nvCt (Unemo et al. Euro Surveill 2007). nvCt has now been frequently detected across Sweden but it remains unknown where and when nvCt emerged.
Aim: To compare the proportions of Ct positive specimens in culture to Ct positives in CA PCR from 2000 to 2006, in order to evaluate when nvCt may have emerged in Örebro County, Sweden.
Methods: For Ct diagnostics, CA PCR (Roche) and McCoy cell culture with fluorescein-labeled monoclonal antibodies were used. The total number of specimens analysed using culture from 2000 to 2006 were 6615, 7101, 7251, 6367, 6124, 5482 and 5168, respectively, and using CA PCR 5231, 6901, 7858, 8777, 10101, 11173, and 11643, respectively. The percentage of Ct positive samples for each year and method was calculated. Weighted linear regression was used to evaluate the change of proportion positive tests between the two methods.
Results: Using culture, the proportion of Ct positive samples increased every year from 2001 to 2006 while the proportion of CA PCR positive samples decreased from 2002 to 2006. The regression analyses showed a statistically significant interaction effect between time periods (2000 to 2006) and groups of samples analysed with culture or CA PCR.
Conclusion: In Örebro County, Sweden, the nvCt may have emerged during 2002 to 2003, i.e. when the estimated difference in proportions of Ct positive samples in culture compared to CA PCR positive samples, with statistical significance, began to decline.

P2.64

RECONCILING THE DIVERGENT TRENDS IN CHLAMYDIA AND GONORRHOEA DIAGNOSES IN THE UK SINCE 2000
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Background: Chlamydia diagnoses rose rapidly since 2000, while gonorrhoea diagnoses rose then fell (peaking in 2002). Since both are sexually transmitted, how can these divergent trends be reconciled? Possible explanations include increased case finding, chlamydia screening or changes in sexual behaviour. We hypothesise that a true change in chlamydia prevalence relative to gonorrhoea would result in a comparable change in the proportion of people with gonorrhoea coinfected with chlamydia.
Methods: Longitudinal data from GUM KC60 reports and the Gonococcal Resistance to Antimicrobials Surveillance Programme (GRASP) (including the proportion coinfected and symptomatic) were analysed using logistic regression and chi-squared tests to detect trends.
Results: Over the analysis period, the proportion of symptomatic individuals did not show a statistically

significant change. Additionally there was no obvious shift in reported sexual behaviour of those in the GRASP study. Table 1 shows the results from regression and chi-squared statistical analysis for coinfection.
Conclusions: This study lends tentative support to an increase in chlamydia prevalence in men, particularly MSM but not women. This may reflect a shift in type of risk behaviour type from oral sex to anal sex in MSM. The positivity of women screened has declined as the screening programme has expanded which is suggestive of a stabilisation of chlamydia prevalence in women. Alternatively, women coinfected with gonorrhoea and chlamydia may not accurately reflect prevalence in the wider community. Understanding historical changes in incidence and prevalence is important to informing current and future control efforts.
Table 1 Statistical analysis of GRASP coinfection trends 2000 - 2007

	Average % coinfected, all years	Range (Year observed)	Chi-squared (7 d.f.)	p value	Coefficient (regression line)
Female	37.2%	33.9% (2007) to 41.5% (2005)	5.29	>0.5	-0.0016
Male (not MSM)	26.8%	23.7% (2002) to 30.9% (2007)	13.47	0.05 – 0.1	0.0104
MSM	10.3%	5.3% (2001) to 17.0% (2007)	62.09	<0.001	0.0171

P2.65

INTRODUCING THE FEMALE CONDOM INTO COUNTRY PROGRAMMES: LESSONS LEARNT IN PRODUCT INTRODUCTION
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Background: The female condom (FC) was welcomed as the first female initiated method that could be used for both pregnancy and disease prevention. Donor funding from international agencies was made available for acceptability studies and supplies of FCs were distributed through government and NGO programmes in many countries including sub-saharan Africa, however, few countries moved beyond small-scale introduction. The FC has now been introduced in many countries and the type of programme (public, social marketing, commercial outlets), target groups, extent of distribution, and funding has varied considerably. Making the commodity itself available has not always translated into accessibility to those who needed it. Core elements of successful introductory strategies of the FC have included:- Government commitment; training and buy-in of providers; identifying and targeting priority groups where the FC can be introduced as a part of an integrated package of prevention; effective logistics including monitoring and evaluation and positioning the FC to avoid stigmitisation. A number of countries have successfully introduced the female condom including South Africa, Brazil and Zimbabwe and these programmes continue to expand. With the recent recommendation to FDA to approve the cheaper FC2 female condom and other products becoming available, more countries may consider introducing the female condom.
Objectives: This paper will examine a range of female condom introductions, highlight successful elements that have been incorporated into new and enduring programs, and identify factors that have impeded more widespread success. These lessons can be used to inform the introduction of other emerging women-initiated prevention methods.

P2.66

IMPROVING PROMPT DIAGNOSIS AND MANAGEMENT OF SYPHILIS AMONG PREGNANT WOMEN IN COLOMBIA: TOWARD CONGENITAL SYPHILIS ELIMINATION IN A RURAL SETTING
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Background: With reported congenital syphilis (CS) at 6 per 1000 live births in 2006, the largely rural Urabá Region has among the highest rates in Colombia. Barriers to prompt syphilis screening and treatment for pregnant women include lack of laboratory facilities and capacity for VDRL testing. We sought to evaluate the impact of introducing rapid point-of-care (POC) syphilis testing in urban and rural health posts around Turbo, the port city of Urabá.
Methods: We used a before-and-after design to evaluate the utility of enhanced training and rapid POC testing on CS diagnosis, treatment and reporting. Clinicians urban and rural Urabá were offered clinical

training on CS and hands-on use of POC tests (Bioline). Changes in knowledge and skills were assessed using a written exam done immediately prior to and 4 months after the training, comparing scores with t student test. Changes in screening, diagnosis, treatment and reporting were assessed by reviewing a random sample of antenatal and birth records and all CS cases charts occurring during the 6 months preceding and 5 months after the training.
Results: The one day training was attended by 38% of nurses and 50% of physicians offered the course. Of the 95 attendees (57 nurses, 38 physicians) 40 individuals (42%) completed the follow up exam. Comparing pre- and post-training exam scores, the second test scores were significantly higher for nurses and for physicians ($P<0.001$). At the second test, 65% of nurses and 95% of physicians reported reading the state CS guidelines. Thirty-two people reported using the rapid test at least once, and most (97%) reported no difficulty with it. The chart review assessing impact on practice is ongoing.
Conclusions: After 4 months, clinicians who underwent enhanced CS training had improved knowledge and skills, and had tried using a rapid POC test for syphilis. The impact of enhanced CS training on clinical practice and reporting is still being determined.

P2.67

TESTING FOR SYPHILIS IN PREGNANCY - POLICE vrs PRACTICE

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Background: Syphilis in pregnancy is a major cause of adverse pregnancy outcomes including abortions, stillbirths, and congenital syphilis. The control of syphilis in pregnancy can help in the achievement of MDGs 4, 5, and 6. To this end, many countries in Africa have developed policies to address this. In Ghana, such policy was developed over 10 years ago and includes the routine screening and treatment of all pregnant women attending antenatal clinics for syphilis. However, anecdotally there is a dichotomy between policy and practice at health facility level in many parts of the country, including the Ashanti region. This pilot study set out to assess the antenatal syphilis screening programme in the Ashanti Region of Ghana and its operational realities at the antenatal clinic.
Methods: Simple random sampling was used to select health facilities in 21 districts in the Ashanti. Region. Health care practitioners in the antenatal clinics of these facilities were interviewed on their knowledge of the policy, its practice and operational difficulties.
Results: 210 antenatal clinics out of 464 were studied. Only 3.3% of facilities routinely screened pregnant women for syphilis. Many health professionals involved with antenatal care did not know of the existence of this policy. Other challenges to universal screening were the lack of logistics, lack of human capacity to do the testing, inability of clients to pay for the service, and difficulty in partner notification. 61% of facilities studied had well implemented programmes in HIV PMTCT.
Conclusion: As in many African countries with policies on the control of syphilis in pregnancy, the practice at facility level in the Ashanti Region is different from the policy. There is a missed opportunity in not tagging syphilis screening in pregnancy to well resourced HIV PMTCT programmes. The future lies in integrating the control of syphilis in pregnancy to HIV PMTCT programmes.

P2.68

EFFECTIVENESS AND COVERAGE OF HIV INTERVENTIONS FOR MALE AND TRANSGENDER SEX WORKERS IN PAKISTAN

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Background: 2% of all MSWs (estimated 70,000) in Pakistan are HIV infected. NGOs implement HIV interventions for MSWs (including TSWs) in 6 cities using government funds.
Methods: We measured effectiveness of MSW interventions from national HIV bio-behavioral surveillance data. Effectiveness was measured by 1) comparing intervention vs. non-intervention cities and 2) intra city behaviors from baseline-2 years post intervention. Coverage was measured by calculating supply of condoms (NGO data) against their demand (total sex acts) by registered or estimated MSW in each city. Condom use (outcome indicator) by MSWs reflects successful outreach, behavior change and supply of condoms.
Results: MSWs from intervention cities had lower HIV prevalence (1% vs 2%), fewer median clients per month (14 vs 23) and higher condom use during last commercial sex act (28% vs 20%). These differences were statistically and numerically significant for transgenders but not MSWs. Within city comparison of baseline-2 years post intervention (2 cities only) showed that among MSWs, condom use with last commercial sex act was unchanged in Lahore and declined in Faisalabad (27% vs 7%). It improved for transgenders in both Faisalabad (16% vs 44%) and Lahore (17% vs 33%). Commercial clients increased for MSWs in Lahore and for transgenders in Faisalabad. There was one outreach worker

for every 250-350 MSW served and <20% had received any VCT. NGOs served 19,408 clients; meeting condom demand for 13% of registered and 18% of estimated MSW in their cities. This is about 5% coverage of all estimated MSW nationwide. In field interviews MSM registered with NGOs felt that all their condom needs are fully met.
Conclusions: MSW interventions show moderate success for transgenders but not MSWs and seldom reach non sex worker MSM. To control HIV, NGOs must improve both effectiveness and coverage by targeting MSM in addition to transgenders and MSWs and by enhancing outreach, counseling, condom supply and VCT

P2.69

EFFECTIVENESS AND COVERAGE OF HIV INTERVENTIONS FOR FEMALE SEX WORKERS (FSWS) IN PAKISTAN
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Background: HIV Prevention among FSWs is a priority in Pakistan. To date, HIV infection remains rare among the estimated 125,000 FSWs nationwide. NGOs implement HIV interventions in 5 cities using government funds.
Methods: We examined effectiveness of these interventions using national HIV bio-behavioral surveillance data by comparing 1) intervention with non-intervention cities, 2) behaviors within the intervention cities from baseline to 2 years post intervention. Coverage was measured by comparing supply of condoms (NGO data) against their demand (total commercial sex acts) by all registered or estimated FSWs in each city. Condom use by FSWs is an outcome indicator that reflects successful outreach, behavior change and supply of condoms.
Results: FSWs from intervention cities had fewer median clients monthly (18 vs 25), higher condom use during last commercial sex act (51% vs 43%) and better knowledge of HIV/ STIs (82% vs 63%). All $p<0.01$. Within city comparison of baseline-2 years post intervention (3 cities only) showed that HIV prevalence remained undetectable in all cities. Number of paying clients declined for Multan (41 vs 34) and Lahore (30 vs 21) but was relatively unchanged for Karachi (17 vs 20). Condom use with last commercial sex act increased slightly in Multan (35% vs 39%) and Karachi (50% vs 59%) but declined in Lahore (68% vs 47%). Condom use with non-commercial partners was 14% to 35% and remained unchanged in all cities. There was one outreach worker per 300-350 FSWs and <10% of FSWs had received any VCT. NGOs serve 15,000 FSWs in 5 cities; meeting condom demand for only 8-11% of all registered and <9% for the total estimated FSWs in these cities. This translates to 2% coverage of all FSWs estimated nationwide.
Conclusions: FSW interventions are marginally effective but lack coverage. HIV infection has yet to reach FSWs offering a window of opportunity that must be used to scale up coverage, enhance condom supply, outreach, counseling and VCT.

P2.7

A MOBILE SEXUAL HEALTH UNIT
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Objectives: This study aims to assess the effect of a mobile sexual health unit
Methods: As part of a promotional exercise for a new sexual health website a mobile sexual health unit toured one inner city borough for sixteen days between 26/11/08 and 18/12/08 offering sexual health advice, asymptomatic Chlamydia and gonorrhoea testing, point of care HIV testing, pregnancy testing, condom distribution and email consultations.
Results: The cost of the bus (excluding materials) was £62 967. A total of 5 190 accessed the bus and 3 285 people received some health promotion interaction (eg condom demonstration, registration with condom distribution scheme, STI screen). In the first two months of launching, the website received 5,887 hits and performed 45 e-consultations. The tests performed on the bus are detailed in the table.

	Median Age	Chlamydia tests		HIV tests		Pregnancy tests	
		total	pos	total	pos	total	pos
M	34.4	90	6 (7%)	69	0		
F	20.8	68	5 (7%)	35	1 (3%)	5	1 (20%)

One male tested positive for gonorrhoea and Chlamydia. The cost of performing the 158 chlamydia screens, 105 HIV tests and 5 pregnancy tests in different individuals would have generated a PbR tariff of £48 910. The total number of STI screens performed in the borough rose from 2 849 in November 2008 to 3 115 in December 2008.
Conclusions: The mobile unit was popular and targeted a population at risk of STI. In contrast to many other community initiatives, the bus attracted more males than females. The cost per STI screens was higher than provision from a GU clinic, but the additive effects of health promotion and signposting should be included, and may be demonstrated in the substantial increase in STI screens performed in the borough while the bus was touring. This mobile unit may be an effective method of delivering sexual health care to a high risk population.

P2.71

EFFECT OF INTENSIFIED COUNSELING AND RECOMMENDED FOLLOW-UP FOR HIGH-RISK MEN WHO HAVE SEX WITH MEN (MSM) IN A SEXUALLY TRANSMITTED DISEASE CLINIC
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Objectives: To evaluate an intensified counseling and follow-up program for high-risk MSM STD clinic patients.
Methods: In 2006, we initiated intensified counseling and follow-up for MSM meeting any of the following criteria: bacterial STD diagnosis; methamphetamine or amyl nitrite use in the past year; or nonconcordant unprotected anal sex in the past year. We used proportional hazards to assess the risk of new STD, reevaluation for STD symptoms, and reevaluation for asymptomatic screening in intervention recipients and nonrecipients, and to compare these outcomes in MSM evaluated during the before the intervention period.
Results: From 2006-08, staff offered intensified counseling to 606 (26%) of 2302 men who met intervention criteria and 424 (13%) of 3349 who did not ($p<.0001$); 643 (62%) men accepted. Among men who met criteria, 154 (22%) intervention recipients and 308 (15%) nonrecipients returned to the clinic in a median of 471 days. Men who met criteria had a higher risk of new STD than those who did not (HR 1.9, 95% CI 1.5-2.5). Controlling for HIV status and individual risk criteria, among men who met criteria recipients were more likely than nonrecipients to return with STD symptoms (HR 1.5 95% CI 1.1-2.0), a new STD (HR 1.6, 95% CI 1.0-2.4), or for screening (HR 1.8, 95% CI 1.4-2.3). Compared to MSM who met intervention criteria evaluated from 2003-05, MSM who met criteria evaluated 2006-08 were less likely to return with a new STD (HR 0.64, 95% CI 0.49-0.84) or with STD symptoms (HR 0.51, 95% CI 0.42-0.60), and more likely to undergo screening (HR 1.4, 95% CI 1.2-1.8). Similar trends occurred among MSM in the two periods who did not meet criteria.
Conclusions: Our criteria identified MSM at elevated risk for STD, but staff failed to offer the intervention to most men who met criteria. STD risk among MSM declined and asymptomatic STD screening increased concurrent with the intervention's introduction, but those trends were not clearly associated with the intervention.

P2.72

CIRCUMCISION MAY NOT BE AN ACCEPTABLE OR SAFE RISK REDUCTION INTERVENTION FOR MEN WHO HAVE SEX WITH MEN
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Background: Randomised controlled trials have demonstrated that male circumcision (MC) is protective against HIV and acceptable to men who have sex with women. MC acceptability studies amongst men who have sex with men (MSM) are few and results have been inconclusive. Little data is available regarding the potential impact of MC on future condom use in MSM. The objectives of this study were to examine whether MSM in a UK setting find MC an acceptable form of HIV prevention and whether there would be any change in their sexual behaviour if they were circumcised.
Methods: A validated self-completion questionnaire was offered prospectively to both HIV positive and negative MSM attending a sexually transmitted infection and HIV outpatient clinic. The questionnaire included demographics, MC status, willingness to undergo MC if the protective effect was 80%, and subsequent likelihood of condom utilisation.
Results: 219 MSM (55.9% HIV positive) completed the questionnaire. The median age was 42 years and 47 (21.7%) were circumcised. There was no correlation between HIV status and MC status ($p=0.7$). 78.6% of uncircumcised HIV negative MSM and 81% of uncircumcised HIV positive MSM would not be willing to be circumcised to reduce HIV risk. Reasons included: "I like my foreskin", and "I fear of losing sensation". 40.8% of HIV negative and 41.7% of HIV positive uncircumcised MSM stated that they would stop using condoms following MC; these individuals previously reported consistent condom use. There

were no differences in any of these findings between MSM who practiced exclusive insertive, receptive anal sex or were versatile.
Conclusion: Our findings suggest that most MSM in a UK setting do not find MC an acceptable form of HIV prevention. Furthermore any resultant reduction in HIV transmission may be offset by a decrease in condom use.

P2.73

EXPLORATORY ANALYSIS OF THE POTENTIAL IMPACT OF INTERVENTIONS TO DETECT ACUTE HIV INFECTION AND PREVENT SECONDARY TRANSMISSION
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Background: HIV transmission during the brief but highly-infectious period of acute HIV infection accounts for a disproportionate number of incident HIV infections. Interventions that combine early detection with effective transmission risk reduction counseling for acutely-infected persons could help reduce the incidence of HIV.
Methods: We developed a simple mathematical model to estimate the proportionate reduction in incidence produced by a hypothetical acute infection detection/behavior change intervention. The impact of such a program depends on: (a) the proportion of persons with acute infection who are diagnosed while acutely infected; (b) when, during the course of infection, acutely-infected persons first learn their HIV status; and (c) the proportionate reduction in the expected number of secondary transmission events produced by the risk reduction counseling intervention. Estimates of key modeling parameters were drawn from the literature.
Results: Under base-case assumptions, an early detection/behavior change intervention would be expected to reduce acute-phase transmission by between 1.7% and 8.7%. In different epidemiological settings acute-phase transmission could account for up to 10% to 50% of all new infections. The overall reduction in incidence that could be expected from an early detection/behavior change intervention therefore ranges from under 1% to approximately 5%.
Conclusions: More effective strategies to detect acute HIV infection are needed to enhance the utility of early detection/behavior change interventions.

P2.74

FEASIBILITY, ACCEPTABILITY AND RELEVANCE OF AN STI RISK REDUCTION INTERVENTION FOR YOUNG WOMEN: A US TO UK INTERVENTION TRANSLATION
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Background: Interventions are needed to reduce the high rates of sexually transmitted infections (STIs) in young and particularly young black women in the UK . As a less resource intensive and time consuming alternative to developing and trialing a new intervention, Project SAFE (Sexual Awareness For Everyone), a US intervention that reduced STI re-infection rates among women in several trials, was translated to the UK setting through the Young Brent Project (YBP).
Methods: Three iterative pilot runs of the YBP were conducted with a total of 18 young women aged 14-24 years recruited from a northwest London sexual health clinic. This was followed by a workshop (n=8) and in-depth interviews (n=13) with participants six months after the pilots.
Results: Although recruitment was labour intensive, attrition rates were negligible. Skilled facilitation was essential for optimal delivery and an additional session was included to avoid participant fatigue while retaining discussion time and including the additional areas of need identified. Participants rated sessions highly as relevant and practical. They were positive about participation at follow up and reported: improved relationships; less partner dependency; improved ability to discuss STIs and condoms; ability to make condoms fun; ability to articulate their needs. While reporting intentions to get to know future partners before sex and use condoms with new partners from the start, participants disagreed about the value of consistent condom use in relationships and of monogamous sexual partnerships.
Conclusions: The pilot was most successful in increasing communication and condom skills, relationship quality and self esteem, but also identified areas of additional need in our population. The YBP is ready for roll-out. However, facilitator training, venue availability, skilled facilitation, recruitment of participants and overcoming structural and individual barriers to participation need to be addressed.

P2.75

CONDOM USE ASSOCIATED WITH SIGNIFICANTLY LOWER RISK OF CHLAMYDIA TRACHOMATIS INFECTION

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Objective: To assess the protective effect of condom use against *Chlamydia trachomatis* (CT) infection.
Methods: Cross-sectional cohort of heterosexual adolescents/young adults (N=1029, 60% female), recruited in STD and adolescent clinics and emergency departments in Boston and Indianapolis. Participants completed a structured interview eliciting coitus-specific condom use, condom error and substance use data for the previous 30 days, and were tested for CT using nucleic-acid amplification tests. Multivariate modeling was used to control for demographic, socioeconomic, risk behaviour and substance use characteristics.
Results: Compared to non-users, participants who reported any condom use in the last 30 days had lower prevalence of CT infection (32% vs. 28%, odds ratio (OR) [95% confidence interval] [CI95%] 0.84, [0.64-1.1]). The OR for infection was significantly lower when controlling for gender, age, race/ethnicity, school attendance and number of life-time sex-partners (any vs. no condom use OR[CI95%] 0.75[0.57-0.99], p=0.043). In multivariate models, the risk of CT infection was 8% lower per event of condom use (OR[CI95%] 0.92[0.87-0.98], p=0.0064) and, compared to participants who reported 100% condom use, participants who reported no condom use and participants who reported some condom use had increased risk of CT infection (none vs. 100% condom use OR[CI95%] 1.69[1.19-2.4]; 1-49% vs. 100% condom use OR[CI95%] 1.57[0.98-2.49]; 50-99% vs. 100% condom use OR[CI95%] 1.6[1-2.54]; p=0.0258). In multivariate models adjusted for the same co-variates and for condom use errors, participants who reported no condom use and participants who reported some condom use had increased risk of CT infection (none vs. 100% condom use OR[CI95%] 1.84[1.2-2.85]; 1-49% vs. 100% condom use OR[CI95%] 1.85[1.02-2.85], and 50-99% vs. 100% condom use OR[CI95%] 2[1.15-3.47]; p=0.0456).
Conclusion: These results strengthen the evidence that condom use provides protection against CT infection.

P2.78

THE PREVALENCE OF CHLAMYDIA AND MYCOPLASMA GENITALIUM IN A COHORT OF AUSTRALIAN YOUNG WOMEN.

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Objectives: This longitudinal study aims to determine the optimal screening frequency for chlamydia in Australia by estimating the incidence of chlamydia among women aged 16 to 25 years. As a secondary aim, we are measuring the incidence of Mycoplasma genitalium (MG). We present the results for chlamydia and MG prevalence at time of recruitment.
Methods: Women aged 16 to 25 years were recruited from general practice and sexual health clinics (SHC) in the Australian States of Victoria, NSW and ACT and consented to participate in a 12 month study providing vaginal swabs through the mail every three months for testing. All participants were tested for chlamydia and MG at recruitment.
Results: 1120 women were recruited from 30 clinics with a participation rate of 62%. The median age was 21 years. The prevalence of chlamydia and MG at recruitment was 4.9% (95% CI:3.7-6.2) and 2.2% (95% CI:1.3-3.0) respectively. Two or more male partners in the last year was more strongly associated with chlamydia (OR=7.3; 95%CI:3.3-16.2) than MG (OR=2.4; 95%CI:1.0-5.9). Prevalence estimates were higher among women recruited from SHC versus general practice for both chlamydia (OR=2.5; 95%CI:1.4-4.2) and MG (OR=2.8; 95%CI:1.2-6.4), although this was largely explained by a difference in number of partners (median of 2 partners in the last year at SHC versus 1 at general practice, p<0.01). Antibiotic use in the last 2 months for any reason was protective against chlamydia (OR=0.4; 95%CI: 0.2-0.9) but not MG (OR=0.8; 95%CI: 0.3-2.1).
Conclusions: We found a high prevalence of chlamydia among young women. Two or more partners in the last year increased the risk of chlamydia, but antibiotic use in the prior 2 months was protective against infection. These are the first national MG prevalence estimates for Australian women. In keeping

with international studies, MG prevalence was half that of Chlamydia (2.2%), suggesting there is a significant amount of undiagnosed MG in Australian women.

P2.79

WOULD LACK OF A PHYSICAL EXAM MISS PELVIC INFLAMMATORY DISEASE IN ASYMPTOMATIC WOMEN ATTENDING AN STI CLINIC?

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Background: STI clinics are increasingly offering a non-examination 'fast-track' alternative to comprehensive visits for asymptomatic (asx) patients, but this raises the question whether pelvic inflammatory disease (PID) may be missed when a physical exam including a bimanual exam (PE) is not done on asx women.
Methods: An electronic database in a large urban dedicated STI clinic was used to examine PID rates in women seen during 2006-2007. PID was diagnosed presumptively on the basis of an abnormal bimanual exam, in accordance with the CDC 2006 STD Treatment Guidelines. In a first analysis women receiving a PE were divided into symptomatic (sx) and asx cohorts and PID rates in the 2 cohorts were compared. In a second analysis women receiving a PE were divided into cohorts by history of contact to CT or GC, *vs*. no contact. The cohorts were divided into sx and asx subgroups. PID rates in the cohorts and subgroups were compared. Finally, in a third analysis, PID rates within 30 and 60 days after an initial visit by asx women who did not receive a PE were compared to 30 and 60 day return PID rates in women receiving a PE on their initial visit. Statistical analysis was by chi-square.
Results: PID rates were significantly higher in 5492 sx (6.1%) than in 831 asx women (0.5%) in 2006-2007 ($p < 0.0001$). PID rates in 448 women who were contacts to CT or GC did not differ significantly from rates in 5875 women who were not contacts ($p = 0.28$), and also did not differ significantly by contact status within the sx ($p = 0.71$) or asx ($p = 0.94$) subgroups. Only 0.15% of 2777 women who did not receive an exam in 2006-2007 returned within 60 days with a diagnosis of PID. This rate was significantly lower ($p < 0.0001$) than the 60 day return rate of PID in 6319 women who did receive a PE (0.5%).
Conclusions: Very few cases of PID would be missed in our STI clinic by not giving a PE to asx women, including those who were contacts to CT or GC.

P2.8

HIGH IMPACT CHANGE 3: THE USE OF PATIENT SELF-TRIAGE TO IMPROVE UTILISATION OF THE MULTIDISCIPLINARY TEAM

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Background: Following introduction of the 48 hour access target, GUM clinics have had to develop ways of seeing patients more efficiently, such as running nurse-led clinics. So that patients are seen by the most appropriate healthcare professional (HCP), nursing staff developed a self-triage form (STF) for patients.
Objectives: To assess correlation of patient-assessed symptoms using STF with HCP assessment. To reduce the number of different HCP seen on each patient visit.
Methods: All new patients completed STF on arrival at the clinic. Patients indicating they were asymptomatic were streamed to any HCP, those with minor symptoms e.g. dysuria or discharge could be seen by specialist nurse or doctor and those with more significant symptoms e.g. abdominal or testicular pain were streamed into doctor-led clinics. STF were piloted for 2 weeks and then self-perceived symptoms were correlated with HCP assessed symptoms. Following analysis the form content and lay out were altered to try to increase correlation and then re-analysed on a similarly sized cohort.
Results: In the pilot study STF were filled out by 237 patients and patient assessment correlated with HCP assessment in 187 (78.9%) of cases. After redesigning the form, the agreement had increased to 91% (n=218/237) ($P<0.001$, $\div 2=16.499$, df 2).
Conclusions: We have shown a high level of correlation between patient-perceived and HCP assessed symptom severity and hence that patients can triage themselves effectively. By allowing patients to be streamed easily to see the most appropriate HCP, our multidisciplinary team has been able to maximise capacity and capability, efficiently utilising the available skill mix. We feel that the patient experience has improved as they see a smaller number of HCP on each visit and staff morale has also improved due to whole team working. This change to the service model has supported the increase in numbers of new patients seen (18% over the past 2 years) and helped us to meet 48 hour access targets.

P2.80

FEASIBILITY OF HOME VISITATION BY A PUBLIC HEALTH NURSE INTERVENTION FOR OUTPATIENT MANAGEMENT OF ADOLESCENTS WITH PELVIC INFLAMMATORY DISEASE (PID)

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Objective: Large trials have demonstrated that women with PID treated as outpatients had similar outcomes compared to inpatients. These trials required a 5 day visit which could have improved outcomes in the outpatient group. Most adolescents in real world conditions do not return for re-assessment. We conducted a pilot study to determine the feasibility of a Public Health Nurse (PHN) home visitation intervention to ensure a 3-5 day re-assessment of high risk adolescents diagnosed with PID.
Methods: Adolescents with mild-moderate PID were randomized to the PHN or control arms. All participants received standardized clinical care, completed baseline audio computerized self- interviews, watched a behavioral change video, and received a full course of doxycycline. The intervention group received 2 standardized PHN home visits (3-5 days and 2 weeks). The control group was asked to return within 72 hours for re-assessment and interviewed by a disease intervention specialist after the 2 week treatment period. Primary feasibility outcomes included enrollment refusals, visit completion, and group differences on adherence measures.
Results: There were no refusals to participate among eligible patients. The PHN saw 87.5% of patients after 2 weeks and the mean days to PHN visit from enrollment was 5.6 (SD 8.2). Of those, 100% completed their medication, 100% notified their partner, 86% ensured partner treatment, and 100% were satisfied with their care. Only 33% of girls in the control group had seen a provider, 83% notified their partner, 60% of partners were treated, and 67% were satisfied with their care.
Conclusion: This preliminary data suggests that 1) high risk adolescents are willing to accept PHN assistance even when the law asserts they can manage PID on their own, 2) PHNs can complete the follow-up visits, and 3) the PHN intervention may be associated with adherence to self-treatment expectations. Given these early findings, larger trials evaluating this approach are warranted.

P2.81

NEGATIVE CHLAMYDIAL ANTIBODY TITRE IN PRESUMED "PELVIC INFLAMMATORY DISEASE" CORRELATES STRONGLY WITH ENDOMETRIOSIS SYMPTOMS

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Background & Methods: Women with endometriosis are commonly misdiagnosed as having Pelvic Inflammatory Disease (PID). We measured Chlamydial Antibody Titres (CAT) in women with acute PID clinically diagnosed according to Hager's criteria and given ambulant antibiotic treatment to UK guidelines. At follow-up in a specialist pelvic pain clinic, they were evaluated by a simple five-point system of historical symptoms designed to predict endometriosis:

1. disabling dysmenorrhoea severely affecting sport, work or school attendance
2. inadequate response to painkillers, hot water bottle or other heat treatment
3. pain improved by (or worse after stopping) OC Pill, Depoprovera or Levonorgestrel-IUS
4. severe defecation pain or inability to insert tampon at start of period
5. similar history or proven endometriosis in close female relative

They were divided according to symptom score points as follows: None = Unlikely, One only = Possible, 1+2+/-3 = Probable, and Probable + 4 or 5 = Almost Certain endometriosis. CAT results were divided into Negative (<64 or 64), Intermediate (128 or 256) or Significant (512 or above).

Results: Of 249 women with clinical PID, 185 had CAT measured (Group A) and 117 reattended for review. Of these, 38 (32%, mean age 26.4 years, age range 18-42) had either probable (17) or almost certain (21) endometriosis (Group B) and nearly all had negative CAT, significantly different from the remainder p=0.0002 (X^2). 17 (40%) had discontinued hormonal contraception less than six months prior to first attendance or switched from another hormonal method to the progesterone-only pill (POP) or implant.

	All PID (A)	A-B	Endometriosis (B)
CAT Negative	100	67	33
CAT Intermediate	33	30	3
CAT Significant	52	50	2

Conclusions: Negative CAT in women with pelvic pain suggests a diagnosis other than PID, and correlates strongly with this simple endometriosis scoring system. Stopping hormonal contraception or switching to POP often precedes a misdiagnosis of "PID" due to inadequate suppression of endometriotic pain.

P2.82

MYCOPLASMA GENITALIUM, MYCOPLASMA HOMINIS, UREAPLASMA UREALYTICUM AND CHLAMYDIA TRACHOMATIS IN WOMEN WITH MUCOPURULENT CERVICITIS IN SINGAPORE

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Background: Mucopurulent cervicitis (MPC) is defined as cervical inflammation not resulting from infection with Neisseria gonorrhoeae or Trichomonas vaginalis. Chlamydia trachomatis is largely correlated, however recently, Mycoplasma genitalium has been associated with a greater risk of MPC. Recent advances in diagnostics have enabled the use of PCR to detect Mycoplasma genitalium, Mycoplasma hominis and Ureaplasma Urealyticum in cervical swabs from women presenting with symptoms of cervicitis. This study was conducted to determine the role of Mycoplasma genitalium, Mycoplasma hominis, Ureaplasma urealyticum and Chlamydia trachomatis in women presenting with MPC in Singapore.
Methods: 70 consecutive female patients were recruited into the study. Patients were recruited with symptoms of vaginal discharge or cervical inflammation and pus cells > 30 per high power field (1000x) on cervical microscopy gram stain. Cervical swabs were collected and tested by PCR for Chlamydia trachomatis, Ureaplasma urealyticum, Mycoplasma hominis and Mycoplasma genitalium. Patients with confirmed MPC were treated with doxycycline 100mg twice daily for 1 week. A second cervical sample was obtained for test of cure at 4 weeks.
Results: Chlamydia trachomatis was detected in 22.2% of patients, Mycoplasma hominis in 15.3%, Ureaplasma urealyticum in 2.8% and Mycoplasma genitalium in 1.4%. No organism was detected in 58.3% of patients. Test of cure at 4 weeks was 100% for all organisms detected except for Chlamydia trachomatis which was 81.8%.
Conclusions: This study confirms that both Chlamydia trachomatis and Mycoplasma hominis are significant causal organisms of MPC in Singapore. Mycoplasma genitalium does not appear to be significantly correlated with MPC. All organisms tested for in this study responded to doxycycline for 1 week. It is known that the PCR for Chlamydia can remain positive up to 3 months after successful treatment. This may explain the lack of a 100% cure rate at 4 weeks.

P2.83

CASE-CONTROL STUDY OF THE ASSOCIATIONS BETWEEN *UREAPLASMA UREALYTICUM* AND *UREAPLASMA PARVUM* AND NONGONOCOCCAL URETHRITIS (NGU) IN MEN

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Background: Studies differentiating *Ureaplasma urealyticum* (UU) from *Ureaplasma parvum* (UP) suggest that the two species may differ in pathogenicity, but evidence is conflicting. We conducted a case-control study to assess the association of each with NGU.
Methods: From May 2007-December 2008, 240 male STD clinic patients entered a treatment trial for NGU. NGU was defined as urethral discharge on examination or ≥5PMNs/HPF on urethral Gram-stain smear. 121 STD clinic patients without NGU were recruited as controls. UU and UP were identified in culture by PCR. *Mycoplasma genitalium* (MG) was detected in urine by PCR. *Neisseria gonorrhoeae* (NG), *Chlamydia trachomatis* (CT), and *Trichomonas vaginalis* (TV), were detected in urine using TMA (Gen-Probe Inc., San Diego, CA). Clinician interview and computer-assisted self-interview collected sociobehavioral characteristics, signs, symptoms, and clinical history. Logistic regression identified independent risk factors.
Results: Among these 361 men, mean age was 34.1 years (range 17-72). Most were White (61%) or Black (30%); 5% were Hispanic. 29% reported sex with men in the past year. Most cases attended for symptoms (77%) while most controls sought STD screening (91%). UU was more common in cases than controls (25.4% vs. 16.5%, p=0.056), while UP was slightly less common in cases (13.8% vs. 16.7%, p=0.46). Adjustment for other factors independently associated with NGU (CT, MG, TV, younger age, Black race, prior NGU and prior NG) did not strengthen the association of UU with NGU (aOR=1.6 [95%CI:0.8-3.2]) and the lack of association between UP and NGU persisted (aOR=0.9 [0.4-1.9]). Results did not substantially differ when the case group was restricted to men with discharge and PMNs,

nor when using an alternate control group of men recruited from the Emergency Department.
Conclusions: UU was marginally associated with NGU, but less strongly than other known pathogens. There was no association between UP and NGU, suggesting it is not pathogenic.

P2.84

THE PREVALENCE OF RECTAL AND URETHRAL MYCOPLASMA GENITALIUM IN MEN WHO HAVE SEX WITH MEN: CAUSE FOR CONCERN IN HIV POSITIVE MEN?
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Objectives: To determine the prevalence of urethral and rectal *Mycoplasma genitalium* (MG) in men who have sex with men (MSM) attending an urban genitourinary medicine clinic and to measure its associations with symptoms, clinical signs, sexual behaviour and concomitant sexually transmitted infections (STIs).
Methods: Consecutive MSM attending for STI screening were tested for MG using a real-time PCR assay detecting the MgPa gene. Data were collected on demographics, sexual behaviour, clinical symptoms and signs and STI history.
Results: 849 first void urine and rectal swab specimens were collected from 438 MSM. The overall prevalence of MG in MSM was 6.6%, with urethral and rectal positivity rates of 2.7% and 4.4% respectively. By comparison, overall prevalence of C. trachomatis (CT) was 7.8% and of N. gonorrhoea (GC) was 5.0%. MG was significantly associated with HIV positivity (OR 7.6 95% CI 3.2-18.7, $p<0.001$) compared with CT (OR 1.5 95% CI 0.5-4.1, $p=0.4$) and GC (OR 1.7 95% CI 0.7-3.8, $p=0.194$). Furthermore, MG was more prevalent than CT ($p=0.15$) and GC ($p=0.02$) in this sub-group of HIV positive MSM. Urethral infection was associated with dysuria ($p<0.001$) but there was no association between rectal infection and anorectal symptoms. There was a trend towards increasing risk of MG positivity with increasing number of sexual partners.
Conclusion: Rates of MG are much higher in HIV positive MSM than HIV negative MSM at both urethral and rectal sites and MG is more prevalent in HIV positive MSM than other bacterial STIs. Although its role in the rectum remains uncertain, the high prevalence seen at this site could be a potential source for further urethral infection. MG may play an important role in the transmission of HIV and future work should assess the need for appropriate screening and treatment of MG infection in MSM, particularly those with HIV infection and high risk sexual behaviour.

P2.85

RECTAL CHLAMYDIA AND GONORRHEA INFECTIONS IN MEN THAT HAVE SEX WITH MEN
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Objectives: to evaluate the outcomes of the inclusion of rectal CT/GC testing in men who practice receptive anal intercourse in our clinic, and to evaluate the rates of coinfection with rectal CT/GC, other STIs and HIV.
Methods: We perform rectal swabs for the detection of rectal CT/GC in any patient with history of receptive anal intercourse as part of the routine clinic visit. APTIMA Combo 2 Assay® was used after validation studies were performed in our reference laboratory. We performed a retrospective review of medical records of individuals who tested positive for rectal CT or GC from May 2007 to August 2008.
Results: A total of 527 rectal swabs were performed. 111 (21 %) positive results were obtained. Characteristics of the patients with positive test are described in Table1.

Table 1	Total of men screened = 527
Total of positive rectal infections	111 (21%)
Rectal infections with CT	73/527 (13.8%)
Rectal infections with GC	54/527 (10.25%)
Rectal infections with CT and GC	17/527 (3.2%)
Age (years)	29 (17-49)

Race/ethnicity	
Hispanic	56 (50.4%)
African American	47 (42.3%)
White non hispanic	8 (7.3%)
Number of partners (mean)	
2 or more in the previous 2 months	56 (50.4%)
4 or more in the previous 12 months	54 (48.6%)
Anal symptoms	23/111 (20.7%)
Infections with only CT	10/73 (13.6%)
Infections with only GC	5/54 (9.2%)
Coinfection CT/GC	7/17 (41.1%)
Abnormal anal exam	11/111 (9.9%)
Infections with only CT	7/73 (9.5%)
Infections with only GC	6/54 (11.1%)
Coinfection with CT/GC	7/17 (41.1%)
Urine testing in patients with rectal infection	
CT	6/73 (8.2%)
GC	18/54 (33.3%)
History of STI (CT or GC)	53 (47%)
Known HIV infection	26 (23.4%)
New HIV diagnosis	15 (13.5%)
Infectious syphilis	23 (20.7%)

Conclusions: A high rate of rectal Chlamydia and Gonorrhea in patients who engage in receptive anal intercourse was found in our clinic. Most of the infections are asymptomatic and without abnormalities in the physical exam. Most of the patients had only rectal infection, and would have been missed by only urethral or urine test. Rates of co- infection with HIV and syphilis are high. The detention of rectal infection with CT/GC should be a priority in STD prevention programs and FDA approved validated tests are needed urgently to expand screening in populations at risk.

P2.86

MANAGEMENT FOR MALES WHOSE FEMALE PARTNERS ARE DIAGNOSED WITH GENITAL CHLAMYDIAL INFECTION

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Objectives: Genital chlamydial infection is commonly asymptomatic and is one of the troublesome issues in control of sexually transmitted infections. Therefore, it is important that asymptomatic males

who may be infected with *Chlamydia trachomatis* visit a clinic and be tested. In particular, asymptomatic men whose female sexual partners are diagnosed as having genital chlamydial infection need to be tested and treated if necessary. In this study, we investigated the infection rate of asymptomatic men whose female sexual partners were diagnosed as having genital chlamydial infection and discuss the management for them.
Methods: The subjects were asymptomatic men whose female sexual partners were diagnosed with genital chlamydial infection. Age, microscopic findings of urinary sediment, and the results of a nucleic acid amplification test of the first-voided urine specimen were examined in those men who visited our clinics. The finding of five or more white blood cells in urinary sediment was defined as pyuria.
Results: A total of 267 men were included and analyzed. Their median age was 28 years (range: 18 to 62). The infection rate for urinary *C. trachomatis* in asymptomatic men was 36.3% (97 of the 267). In the analysis of urine sediment, 35 of the 267 (13.1%) had pyuria and urinary *C. trachomatis* was positive in 82.9%. Even in men without pyuria, the positive urinary *C. trachomatis* rate was 29.3% (68 of 232).
Conclusions: The infection rate of urinary *C. trachomatis* was similar to those in previous studies. When such men have pyuria in the clinic, prompt treatment is the appropriate approach. Even if the men are without pyuria, testing for urinary *C. trachomatis* should be performed.

P2.87

PREVALENCE OF RECTAL CHLAMYDIA IN THOSE ATTENDING SEXUAL HEALTH SERVICES IN WALSALL WEST MIDLANDS
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Objectives: Currently it is not recommended to routinely screen for rectal Chlamydia in MSM. However, MSM with HIV infection who are symptomatic are routinely screened for rectal Chlamydia in order to exclude Lymphogranuloma Venereum (LGV). We aimed to determine the prevalence of rectal chlamydial infection in all men presenting to the Walsall GUM department in 2008.
Methods: We undertook a retrospective case notes review of all patients diagnosed with rectal Chlamydia in 2008. 342 men (heterosexual and homosexual) were diagnosed with Chlamydia (of any site) in 2008. 21/342 (6%) were noted to have rectal Chlamydia.
Results: 9/21 were HIV positive and all were Caucasian MSM. Further analysis for LGV of positive rectal Chlamydia swabs was performed in 16 cases, 1 of which was positive for LGV. Interestingly, rectal symptoms were noted in just 5/21 (24%). Additionally, 6/21 tested positive for urethral Chlamydia infection at the same episode. 9/21 had syphilis co-infection (1 acutely infected). Of 15 cases tested for Hepatitis C infection, 2 were positive. Condom use was noted in just 2/21 (10%).
Conclusions: Our awareness of asymptomatic rectal chlamydial infection should be increased. Nearly half of our 2008 rectal Chlamydia cohort has HIV infection. Condom use is minimal in the cohort. Health, psychosocial and public health implications of undiagnosed rectal chlamydial infection is a concern. Optimisation of health promotion within this high risk group is required. We propose that routine screening for rectal chlamydia should be undertaken amongst all MSM regardless of absence/presence of symptoms or HIV status.

P2.89

RESOURCE ALLOCATION: PRIORITIZING FOLLOW-UP OF UNTREATED CHLAMYDIA IN BALTIMORE
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Background: Chlamydia (CT) screening programs limit disease impact only if CT cases receive prompt therapy. In 2001, the Baltimore City Health Department (BCHD) found that 25% of gonorrhea (GC) cases diagnosed in the private sector were going untreated. In response, BCHD set up an ongoing program to identify and treat these cases. The aim of this study was to estimate the proportion of CT cases that go untreated and to determine the resources needed to implement a similar case follow-up program for CT.
Methods: For CT cases reported during a 1-month period (August 2007), we searched the STD electronic database for verification of treatment. We called providers for verification whenever treatment could not be confirmed. We predicted annualized staff time required for CT case follow-up based on time required by office staff to call providers during the observation period and time currently spent by field staff to contact untreated GC cases.
Results: Of 654 cases reported by laboratories, providers submitted (mandatory) treatment information for only 45%; phone follow-up yielded information for an additional 37%. Of these 539 cases, 12.4% had either no documented treatment or incorrect treatment. Emergency departments (EDs) were the testing

site for 60% of untreated cases. Based on one month of activity, we estimate that 922 CT cases went untreated annually and that 1,143 hours of staff time annually (60% on phone calls to providers) would be required to verify treatment and to contact untreated cases.
Conclusions: The proportion of diagnosed CT cases that go untreated is half that of GC cases, but because of the greater absolute number of CT cases, the number of untreated CT cases is high. The predominance of untreated cases in EDs implies that a targeted intervention to assure treatment in EDs would be an efficient strategy to reduce the proportion of diagnosed CT cases that go untreated.

P2.9

ARE PATIENTS WHO DO NOT ATTEND APPOINTMENTS WORTH CHASING?
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Background: Many patients who make new appointments in genito-urinary medicine (GUM) clinic do not attend (DNA). It is not known to what extent this represents a genuine failed opportunity to diagnose or manage STIs or their reasons for default.
Objectives: To determine for those that DNA
1. Demographics
2. Subsequent health care seeking behaviour
3. Acceptance of further appointments
4. Rates of infection in subsequent attendees
Methods: Phase 1
A retrospective case note review of 1682 new patients booking appointments in general GUM clinics in the first quarter of 2008 was performed to establish frequency of DNA's and subsequent rebooking behaviour.
Phase 2 A prospective intervention study of all patients who DNA'd appointments over a 6 month period in 2008. Telephone interviews were conducted and reappointment offered. Success at contact, reasons for non-attendance, uptake of reappointment, clinic attendance and STIs in the attendees were determined.
Results: Phase 1. Of 11% of DNA's, 20% rebooked their appointments, mostly (81%) within 2 weeks. Phase 2. 38% of non-attendees were contactable of which 66% were asymptomatic. Reasons for non attendance were; forgetting (36%), work commitments (23%), other reasons (41%). Clinic opening times were not cited as a reason for non-attendance. 4% of non-attendees accessed services elsewhere. 53% accepted reappointment, and 41% of these reattended. For 105 patients contacted by phone, one case of chlamydia and general warts was found.
Conclusion: Non-attendees are problematic to contact. Patients who could be contacted rarely attend and do not appear to represent a high risk group for STIs.

P2.90

CHLAMYDIA TRACOMATIS INFECTION DURING PREGNANCY ASSOCIATED WITH PRETERM DELIVERY: A POPULATION-BASED PROSPECTIVE COHORT STUDY
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Objective: To assess the effect of C. trachomatis infection during pregnancy on premature delivery and birthweight.
Methods: The study was conducted between February 2003 and January 2005. Pregnant women, who attended a participating midwifery practice or antenatal clinic and who were expected to deliver in Rotterdam, were eligible for the study. Urine samples were obtained from 4,676 women. Women completed a self-administered questionnaire and pregnancy outcomes were obtained from midwives and hospital registries. Urine samples were assayed for C. trachomatis by PCR. Urine samples and questionnaires of 4,055 women were available for the analysis of C. trachomatis infection. Gestational age and birthweight could be analysed for 3,913 newborns.
Results: The overall prevalence of C. trachomatis infection was 3.9%, but rates varied by age and socio-economic backgroud. C. trachomatis infection was associated with preterm delivery, especially with early prematurity before 32 weeks (OR 4.35 [95% CI 1.25, 15.17]) and 35 weeks gestation (OR 2.66 [95% CI 1.08, 6.53]), but not with low birthweight or being small for gestational age. Of all preterm deliveries before 32 weeks and 35 weeks gestation in this region 14.9% [95% CI 4.5, 39.5] and 7.4% [95% CI 2.5, 20.1] respectively was attributable to C. trachomatis infection.
Conclusion: C. trachomatis infection in pregnant women contributes significantly to early premature delivery and should, therefore, be considered a public health problem, especially for young women in socio-economic groups at increased risk of C. trachomatis infection.

P2.91

TRENDS IN HOSPITALIZATION FOR WOMEN ACCESSING THE HEALTH CARE SYSTEM FOR ECTOPIC PREGNANCY: IMPLICATIONS FOR INCIDENCE MONITORING

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Background: The effectiveness of control programs in reducing Chlamydia trachomatis (Ct) complications such as ectopic pregnancy (EP) has been questioned in light of increasing Ct case rates. Monitoring EP often relies on tracking hospital discharge and day surgery (DAD) diagnoses; however, many have challenged DAD data because of a perceived shift to outpatient management of Ct complications such as EP and because of inadequate medical coverage for persons at risk. We evaluated DAD data as a marker for EP incidence and to look for shifts in practice by comparison to physician billing data.
Methods: Over 95% of British Columbia (BC) residents participate in the Medical Services Plan (MSP) which reimburses physicians for insured services including inpatient, day surgery and outpatient. Over 95% of hospital or day surgery patients in the DAD database for an EP-related condition also appear in MSP data via a physician billing for that DAD service but outpatients appear only in MSP. From 1992-2006, we tracked EP trends by analyzing MSP data for unique 15-44 y/o women with at least 1 EP-related physician billing per year and DAD data for unique women with at least 1 EP-related hospital or day surgery discharge ICD-coded as the most responsible diagnosis.
Results: From 1992 - 2006, the EP-related rate declined by 38% (197.9 to 121.7) in MSP data and by 60% (122.3 to 51.1) in DAD data. The proportion of women treated as inpatients for an EP-related condition from 1992-2006 (i.e. appearing in DAD data) decreased from 56.2% to 40.6%.
Conclusions: Declining trends for EP in the 2 databases paralleled one another. The decreasing proportion of annual hospitalizations for EP demonstrates a shift from inpatient to outpatient management. Nonetheless, DAD data can be useful as a surrogate marker for the population incidence of EP.

P2.92

EPIDEMIOLOGY OF CHLAMYDIA TESTING BY PRIOR STI AND PREGNANCY HISTORY

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Background: Few studies have described how chlamydia testing differs by race/ethnicity, class, and age. It is also unclear whether providers differentially screen young women based on prior STI or pregnancy history.
Methods: Retrospective cohort analysis using electronic medical records of women 14 to 25 years old (N=15,334). For each woman, we identified the earliest evidence of sexual activity based on HEDIS criteria and extracted data from subsequent routine non-pregnancy-related outpatient visits (N=22,321) and all CT tests from outpatient, inpatient, and ER settings. Visits for 1 year following each CT test were excluded in order to focus on visits in which a test was indicated. Random effects logistic regression analysis was performed to assess differences by race/ethnicity, insurance status, and age in odds of a CT test being done. Analyses were stratified by prior STI and pregnancy history.
Results: The odds of a CT test being done when indicated were lower among women aged 14-15 (OR 0.23), 16-17 (OR 0.74), compared to women aged 18-19 years. The odds of testing were higher among Latinas (OR 8.92) and black women (OR 2.96), compared to white women. The odds of testing were higher among women with public (OR 1.58), public pending (OR 6.59), compared to women with private insurance. Odds of testing were not statistically significantly lower among younger women following a history of STI or pregnancy. CT testing differences by race/ethnicity were less pronounced among women with a history of STI but more pronounced among Latinas with a pregnancy history (OR 16.39). Testing differences by insurance status persisted in stratified analyses.
Conclusions: Despite recommendations to screen all sexually active young women annually for chlamydia, providers are more likely to test minority and non-privately insured women. Providers are less likely to test younger women for CT, although this difference is reduced when the woman has a history of STI or pregnancy.

P2.93

RECTAL INFECTION WITH CHLAMYDIA AND GONORRHEA IN WOMEN WHO PRACTICE RECEPTIVE ANAL INTERCOURSE

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Objectives: To evaluate the rates of rectal Chlamydia (CT) and gonorrhea (GC) infection in women who practice receptive anal intercourse; and to describe the characteristics of women with rectal infections with these organisms.
Methods: Collection of rectal swabs in any women with history of receptive anal intercourse was included as part of routine STI screening in May 2007 after appropriate validation studies were performed in our reference laboratory. Rectal swabs were screened using APTIMA Combo 2 Assay®. Retrospective review of medical records of females who tested positive for rectal CT or GC from May 2007 to August 2008 was performed.
Results: A total of 97 rectal swabs were performed. 22 (22.7 %) positive results were obtained. Characteristics of the patients with positive tests are described in Table1.
Conclusions: Approximately one fourth of women who engage in receptive anal intercourse are infected with rectal CT or GC in our clinic. Most of the infections are asymptomatic and without abnormalities in the physical exam. Lower rates of positive tests were found in urine samples when compared to rectal samples and rectal infections would have been missed if only urine was screened. Our results support routine testing for rectal CT and GC in women who report receptive anal intercourse. FDA approved validated tests for detection of rectal infections are needed urgently to expand screening in populations at risk.

Table 1. Total of women screened = 97	
Total of positive rectal infections	22 (22.7%)
Rectal infections with CT	17
Rectal infections with GC	8
Rectal infections with CT and GC	3
Age (years, mean, range)	25.4 (17–46)
Race/ethnicity	
Hispanic	11 (50%)
African American	10 (45.5%)
White non Hispanic	1 (0.5%)
Number of sexual partners	
2 or more in the previous 2 months	11 (50%)
4 or more in the previous 12 months	7 (32%)
Anal symptoms	2 (9%)
Abnormal anal exam	2 (9%)
Urine testing in women with rectal infection	
CT	13 (65%)
GC	2 (18%)
HIV coinfection	0

P2.94

ANTIMICROBIAL TREATMENT OF GONORRHOEA IN PRIMARY CARE: IS THERE RESISTANCE TO CHANGE?
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Background: Rapid emergence of resistance of *Neisseria gonorrhoeae* to antimicrobial agents is of global concern and severely restricts treatment options. In England, data from the Gonococcal Resistance to Antimicrobials Surveillance Programme (GRASP) indicate that resistance to ciprofloxacin rose from 2% in 2000 to 28% in 2007. In 2002 cephalosporins replaced ciprofloxacin as recommended first line

therapy. We investigated the efficacy of treatment guidelines by studying antimicrobial treatment patterns of the two main providers of gonorrhoea treatment in England: sexually transmitted disease (STD) clinics and general practices (GPs).
Methods: Data from 374 GPs from the General Practice Research Database and from 24 participating STD clinics in GRASP for England between 2000 and 2007 were analysed. Proportions of patients receiving selected antimicrobials at gonorrhoea diagnosis were compared using Chi-square test for trend.
Results: Overall, 39% (256/662) of gonorrhoea patients in GPs were prescribed antimicrobials at diagnosis; ciprofloxacin was most commonly prescribed (47%, 121/256). Over the study period the prevalence of ciprofloxacin prescribing at gonorrhoea diagnosis was stable in GPs (p=0.7), but fell from 76% to 5% in STD clinics (p<0.001). A significant rise in cephalosporin prescribing was observed in both settings: in GPs prevalence rose from 7% in 2000 to 30% in 2007 (p<0.001), and in STD from 3% to 89% (p<0.001) (table).
Conclusions: While apparent increased use of cephalosporins for gonorrhoea by GPs is encouraging, continued ciprofloxacin use is of concern. Treatment for concurrent conditions may contribute to prescribing patterns in GPs; however, as current health policy in England mandates the growth of STD work in primary care, more effective communication of treatment guidelines may be needed.

Table: Percentage of patients receiving selected antimicrobials at gonorrhoea diagnosis in GPs and STD clinics, 2000 and 2007.

Antimicrobial	Setting	2000 % [95% CI]	2007 % [95% CI]	Total (2000-2007) % [95% CI]
Cephalosporins	GP	7 [1,24]	30 [16,49]	14 [10,19]
	STD	3 [2,4]	89 [88,91]	45 [44,46]
Quinolones (Ciprofloxacin only)	GP	39 [22,59]	36 [20,55]	47 [41,54]
	STD	76 [73,79]	5 [4,6]	41 [40,42]
Quinolones (Other)	GP	0 [-,-]	3 [0,6]	5 [3,9]
	STD	2 [2,3]	0 [0,1]	1 [1,1]
Macrolides	GP	7 [1,24]	12 [3,28]	15 [11,20]
	STD	10 [8,11]	55 [53,58]	29 [28,30]
Tetracyclines	GP	0 [-,-]	0 [-,-]	1 [0,3]
	STD	64 [61,67]	17 [15,19]	47 [46,48]
Penicillins	GP	43 [24,63]	9 [2,24]	21 [17,27]
	STD	12 [10,14]	0 [0,1]	8 [8,9]
Other	GP	25 [10,45]	45 [28,64]	26 [21,32]
	STD	7 [5,6]	7 [5,8]	6 [6,6]
% of patients precribed an antimicrobial at diagnosis in GP		35 [24,46]	38 [27,48]	39 [35,42]

P2.95

DOES AZITHROMYCIN CO-TREATMENT ENHANCE THE EFFICACY OF ORAL CEPHALOSPORINS FOR PHARYGEAL GONORRHEA?
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Objectives: To assess the effectiveness of oral therapies for pharyngeal gonorrhea.
Methods: Analysis of medical record data collected from STD clinic patients.
Results: Between 1993 and 2008, clinicians obtained pharyngeal specimens during 9793 (61%) of 16,030 visits with women and 19,203 (93%) of 20,715 visits with men who have sex with men (MSM). Pharyngeal gonorrhea cultures were positive in 173 women (1.7%) and 815 MSM (4.2%). Among 24,246 visits during which patients tested for both genital and pharyngeal gonorrhea, 241 (17%) of 1446 MSM and 91 (33%) of 278 women with genital gonorrhea had a concurrent pharyngeal gonorrhea. 132 persons treated with oral 3rd generation cephalosporins and/or 1 gram of azithromycin were retested for pharyngeal gonorrhea 7-90 days following diagnosis. Repeat positive tests occurred in 2 (7%) of 26 women and 25 (24%) of 104 men. No men with recurrent pharyngeal gonorrhea reported pharyngeal symptoms when retested; this information was not recorded from women. At retest, gonorrhea was

detected in 2 (3%) of 62 persons treated with a cephalosporin and azithromycin, 9 (45%) of 20 treated with a cephalosporin and doxycycline, 12 (39%) of 31 treated with a cephalosporin alone and 4 (21%) of 19 treated with azithromycin alone. Treatment with a cephalosporin and doxycycline (OR 25, 95% CI 4.7-129), a cephalosporin alone (OR 19, 95% CI 3.9-92), and azithromycin alone (OR 8.0, 95% CI 1.3-48) were all significantly associated with subsequently testing positive compared to therapy with both a cephalosporin and azithromycin. Pharyngeal gonococcal infection post treatment was no significantly associated with gender, age, time to repeat testing or year of diagnosis.
Conclusions: Pharyngeal gonorrhea is common in MSM and in women with genital tract gonorrhea. Treatment failure appears to be more frequent when therapy consists of an oral 3rd generation cephalosporin, without or without doxycycline, compared to dual therapy with a cephalosporin and azithromycin.

P2.96

GENITAL HERPES – AN INTERNET-BASED RISK SURVEY
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Background: Genital herpes is one of the most common sexually transmitted infections worldwide. Most people infected with HSV-2 are asymptomatic. With the increasing availability of web-based technology for use as information and education tools, we established a web-based survey to determine risk for genital herpes and encourage people to attend for HSV testing.
Method: A web-based genital herpes risk assessment quiz was established on the Australian Herpes Management Forum (AHMF) web site, consisting of 16 demographic and sexual health-related questions. Each question carried a numerical risk-weighting based on epidemiological data; the higher the overall score, the greater the risk of herpes. To determine how representative our sample was in relation to age and sex, we compared our survey with Australian Census data.
Results: Between October 2006 and August 2007 there were 5,572 responses. 2,825 (57%) were males, 2,129 (43%) were females and 4,358 (92%) were Australian. Compared with the Australian population, the survey population had a higher proportion of individuals aged less than 34 years, and a lower population over 55. 686 (13.8%) were classified low risk, 2,558 (51.6%) medium risk and 1,710 (34.5%) as high risk of having acquired genital herpes. 39% reported four or fewer, and 38% reported ten or more, sex partners in their lifetime. Males were more likely than females to report blisters and tingling in the genital area $p<0.05$ for both; whereas females were more likely than males to report genital itching and genital burning $p< 0.001$ for both.
Conclusion: A large number of individuals participated in this survey, suggesting the internet is a useful tool for health promotion for genital herpes and encouraging individuals who may not otherwise seek advice to be assessed for risk and directed to a health care provider.

P2.97

VALACYCLOVIR AND HIGH DOSE ACYCLOVIR ARE NOT EFFECTIVE IN REDUCING SHORT GENITAL HERPES REACTIVATION EPISODES: IMPLICATIONS FOR SEXUAL TRANSMISSION
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Background: Intensive studies of herpes simplex virus type 2 (HSV-2) genital shedding have demonstrated that most reactivations last <18 hours. We evaluated whether once daily valacyclovir (VAL) or high dose acyclovir (ACV) could impact these short episodes of reactivation.
Methods: 26 HSV-2 seropositive, HIV seronegative persons received open-label VAL 500 mg by mouth daily or high dose ACV (800 mg by mouth 3x/day) for 7 week periods in random order, separated by a one week wash-out. Participants obtained mixed anogenital swabs four times daily throughout the study. HSV-2 DNA was quantitated by real-time PCR.
Results: Participants collected a median of 361 (range 145-391) swabs. Overall, 363 (4.1%) of 8882 swabs had HSV detected. There was no difference in the rate of HSV-2 detection on VAL (190/4399 swabs, 4.3%) or ACV (173/4483 swabs, 3.9%) (IRR=1.10, 95% CI-0.89-1.35). Lesions were present during 5 (3%) and symptoms during 12 (8%) episodes. The median maximum amount of HSV detected per episode was 2.7 log10 copies/mL on both VAL and ACV ($p=0.36$). Of 120 HSV shedding episodes of known duration, 64 (53%) occurred on VAL and 56 (47%) on ACV. The median number of HSV shedding episodes per participant was similar on VAL and ACV (2 vs. 1 episode, $p=0.32$). The median episode duration was 7 hours on both VAL and ACV ($p=0.77$). Overall, 38 (32%) episodes lasted iÜ6 hours, 74 (62%) lasted iÜ12 hours, and 97 (82%) lasted iÜ24 hours.
Conclusions: Frequent short bursts of HSV-2 reactivation occur in the presence of once daily VAL or

high dose ACV. These data may have important implications for HSV-2 transmission and HIV-1 acquisition. More potent therapies are needed to suppress genital HSV-2.

P2.98

PREMENSTRUALLY-RECURRENT GENITAL HERPES IS PREVENTED BY LUTEAL-PHASE TRANSDERMAL ESTROGEN TREATMENT OF PERIMENOPAUSE

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Background: We have previously demonstrated that women with premenstrually-recurrent genital herpes (p-RGH) had all episodes prevented using Aciclovir 400mg bd for only 7 days before each period (ISSTDR 2005). We investigated changes in p-RGH frequency after starting transdermal estrogen treatment for perimenopausal Premenstrual Dysphoric Disorder (PMDD).
Methods: Five perimenopausal women (aged 36-45) had p-RGH (culture-proven HSV2) in at least six consecutive menstrual cycles and each suffered severe premenstrual syndrome meeting the diagnostic criteria for PMDD (DSM-IV, American Psychiatric Association 2000). Four had successful p-RGH suppression with brief luteal phase Aciclovir, before all commenced transdermal Estradiol gel 0.5mg (Sandrena, Organon) for 14 days in the luteal phase only. Subjects self-reported PMDD and herpetic symptoms over 9-12 months follow-up during which no Aciclovir was taken.
Results: All women experienced substantial or complete relief of PMDD in all but one of 48 treated cycles and only 4 episodes of p-RGH occurred while taking Estradiol. Intention to treat (ITT) analysis of 7 episodes of PMDD and 9 p-RGH in 54 women-months observation showed highly significant prevention of both conditions ($p<0.001$).

Age	Months Observed	PMDD	Herpes
36	9	2	2
41	12	3	3
42	10	1	2
44	11	0	1
45	12	1	1
	Mean Episodes/month (Expected 1.0)	0.13	0.17
	95% C.I. for Mean	0.03-0.26	0.07-0.26
	Paired Student's t-Test: t=	18.9	24.1
	Probability	<0.001	<0.001

Conclusions: We believe this is the first scientific demonstration of successful use of hormonal treatment to prevent genital herpes and control PMDD simultaneously. The mechanism of p-RGH is probably psycho-neuro-endocrine, similar to that of other premenstrually exacerbated conditions such as candidiasis, acne and asthma, with recurrences being triggered by immunosuppression due to the exceptional mental stress of PMDD and physical symptoms of perimenopause. By setting aside traditional antiviral therapy, and treating the underlying trigger for recurrences, this study demonstrates the potential for an holistic combined hormonal / infection approach to this and other cyclically-dependent genital dermatoses.

P2.99

UPTAKE OF A RAPID HSV-2 SEROLOGY TEST IN AN URBAN STD CLINIC

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Objectives: Although genital herpes (HSV-2) is highly prevalent, testing for HSV-2 antibody is not yet common clinical practice. We analyzed client characteristics associated with HSV-2 rapid antibody test uptake and test positivity among clients attending an urban public health STD clinic.
Methods: The HerpeSelect Express assay was performed on serum; positive samples were confirmed using the HerpeSelect 2 ELISA. Patient cost for this optional test was $30 cash. Demographic characteristics were compared for test acceptance and positivity using chi-square test, Fisher's Exact test, logistic regression, T-test and Mann-Whitney U test. $P<0.05$ was used for all analyses.
Results: From 6/08-9/08, 3500 individuals attended the clinic and 443 (12.7%) opted for HSV-2 testing.

Clients who were black, younger or female were less likely to accept testing (all Ps<0.001). The number of recent sexual partners, having a new sex partner in the last 30 days, and self-reported sexual orientation were not associated with uptake of testing. Of the 442 clients with results available, 109 (24.6%) were positive for HSV 2 antibody. Women were more likely to test positive; 42/111 (37.8%) versus only 67/331 (20.2%; P<0.001) men. A positive HSV-2 antibody test was associated with increasing age and black race (Ps<0.001). HSV-2 seropositivity was associated with greater number of partners in the last 30 days (P=0.042), but not with number of new partners in the last 30 days or partners in the last year. Of the 109 HSV-2 seropositive clients, 71 (65.1%) accepted a prescription for suppressive acyclovir therapy.
Conclusions: Uptake of testing was modest in this population, almost certainly because of cost. Women and black men were less likely to be tested, but were more likely to be positive. These findings suggest that HSV-2 screening may not contribute significantly to reduction in HSV-2 infection rates without subsidized testing in the context of larger educational and public health control efforts.

P3.1

DO SOCIAL DETERMINANTS INFLUENCE THE SPATIOTEMPORAL PATTERN OF GONORRHEA IN NORTH CAROLINA, USA?
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Objective: Our objective was to determine if neighbourhood level social determinants influenced the spatial pattern of gonorrhea (GC) for North Carolina.
Methods: GC counts, aggregated quarterly (between January 2004 and March 2008) and by census tract, were derived from de-identified surveillance data obtained from the North Carolina State Health Department. We mapped and correlated GC rates with neighborhood level social determinants (male to female ratio, % black, % female head of household with child, % rented housing, percent without plumbing, % less than high school education, % earning less than $30,000 per year, % unemployed) obtained from the United States Census Bureau for the year 2000. Rural-urban commuting area codes were obtained from the University of Washington. We determined which social factors were predictive of census tract case counts using a generalized linear mixed model with spatially correlated random effects. Bayesian inference was performed using the software packages R and WinBUGS.
Results: Several social factors were associated with GC at the 95% confidence level: Percent black (2.5% increase in rates per 1% increase in proportion black), % female head of household with a child, % renting, % with no plumbing, % with less than a high school education, % unemployed, and living in a rural census tract (21% decrease in rate compared to urban). After accounting for social factors, substantial spatial dependence was present in GC risk explaining 80% of the residual variance.
Conclusion: Multiple social determinants measuring neighbourhood level socioeconomic status and poverty appear to influence the spatial pattern of gonorrhea infection for North Carolina. The presence of residual spatial dependence suggests that the spatial pattern is not fully explained by low socioeconomic status alone; however, social intervention targeted at the community level may influence gonorrhea patterns effectively.

P3.10

TEST FOR CHLAMYDIA TRACHOMATIS IN THE WAITING ROOM AREA
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Objectives: Infection with Chlamydia trachomatis is commonly asymptomatic. Self-testing provides a method for identifying Chlamydia in these patients. The objective of this study was to determine the prevalence and risk factors of C trachomatis in a group of asymptomatic patients.
Methods: Asymptomatic patients attending a drop-in STI clinic were offered self-testing for C trachomatis performed in the toilet of the waiting room. Patients with symptoms were advised to proceed for clinical examination. First void urine was used in men and vaginal swab in women, and the samples were tested for C trachomatis by strand displacement assay (Becton Dickinson). This study is based on data from 2215 patients, 1227 women and 988 men, completing a self-test and a questionnaire from 2004 to 2007.
Results: Median age was 24 years for women and 26 years for men. The prevalence of C trachomatis was 7,0% in women and 9,3% in men. Chlamydial infection in women was associated with age under 25 years, more than one sexual partner during previous six months, low educational level and "other symptoms". Chlamydia infection in men was associated with age under 35 years, no steady partner, and

dysuria. The prevalence of Chlamydia was not significantly related to age at first intercourse or extent of condom use, nor to previous Chlamydial infection reported by 38% of females and 35% of males.
Conclusions: This study identifies different risk factors for C trachomatis-infection in men and women. The results indicate a need for screening of men up to 35 years of age. Self-testing is an acceptable method to detect C trachomatis infection in asymptomatic individuals. In spite of information given that symptomatic patients should undergo clinical examination, many symptomatic patients chose self-testing.

P3.100

ARE ALL CODERS EQUAL?
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Background: Within GU medicine staff roles have developed very quickly. Diagnostic coding is no longer the exclusive domain of doctors and has become the responsibility of all clinicians. The need for accurate coding has never been more important as it directly influences both income , national statistics and allows local disease rates to be accurately monitored.
Method: Experienced coders at our two hospital sites reviewed 92 consecutive case notes, they identified 281 separate diagnostic codes . The coders determined which staff group had coded the notes and divided the codes into missed, correct, over coded and codes where the coder had failed to make an appropriate change on receipt of results. The errors were identified for each clinical group.
Results:

STAFF GROUP	MISSED	CORRECT	OVER	CHANGE FAIL	TOTALS
GU Nurses	8 (7%)	87 (82%)	10 (9%)	1 (1%)	106 (37%)
Health Advisors	5 (10%)	40 (80%)	3 (6%)	2 (4%)	50 (18%)
Doctors	5 (5%)	91 (94%)	0	1 (1%)	97 (35%)
F2 Doctor	4 (14%)	20 (71%)	4 (14%)	0 ()	28 (10%)

We will present the data identifying the commonly incorrect codes for each staff group.
Conclusion: The rush to hit National targets has permitted our speciality to leap forward but with significant room for improvement. Different staff groups are making different errors. Being able to identify the common errors within the staff groups permits enhanced feedback. When re-audited we aim to demonstrate a significant improvement in performance. All GU clinics need to have confidence in their coding. There is a need for Foundation doctors to have increased supervision and training in coding if we expect them to perform this task. This began as a retrospective review but has evolved into an audit with an achievable local target of 85% correct codes. Our intention over time is to raise this target towards 100% in achievable steps.

P3.101

GLOUCESTERSHIRE ARE WE SEEING A RISE IN OUR OVER 45'S?
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Background: Analysis of data from the regional enhanced STI surveillance system showed an increase in attendance 1996-2003 in the over 45's and a more than doubling in the rate of STI's in the West Midlands(1). We aimed to compare these findings to our own. There are two main clinics serving the 578,631 population of Gloucestershire, one in Gloucester City the other in Cheltenham. These two clinics are only 9 mls apart and serve the same size of population. The numbers of new/rebook patients attending the clinics are identical but Gloucester has twice as many areas (LSOA's) residing in the lowest 1/5th on the Index of Mutiple Deprivation.
Method: Last year the clinics had about 10,000 new patient episodes. We used the Telecare system to identify all patient >45yo who have attended over the past 5 years. We ran a business object query to identify details of the infections present and the sex of those attending as compared to those <45. We looked specifically at the following STI's: HIV, syphilis, chlamydia, gonorrhoea, first episode genital warts and first episode herpes simplex.
Results:

year	n >45yo	% of total attendances	% infected

2008	751	8	12
2007	609	7	12
2006	667	8	10
2005	693	10	6
2004	630	8	8
2003	598	9	8

We will detail the different STI's the average ages of those attending and compare the rates between Cheltenham and Gloucester.
Conclusion: The proportion of >45's attending our clinic has remained fairly constant but total numbers have risen in line with increased clinics and efficiency. The rates of infections present in those attending has risen by an average of 11% per year which suggests the West Midland experience is more widespread and has not abated since 2003. Last year there was a decrease for the first time, a possible silver lining to the credit crunch cloud! Time will tell. (1)Sexually Transmitted Infections Aug 2008 Vol84 No 4 pp312-317

P3.102

WHO IS AT HIGH-RISK?: CHARACTERIZATION OF WOMEN ATTENDING AN STD CLINIC
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Background: High risk sexual activity is defined by multiple sexual partners; however the majority of women attending STD clinics report only 1 recent partner. We compared characteristics of women reporting ≥4 sex partners in the preceding year to women reporting only 1 partner over this period.
Methods: Screening of electronic medical records from 2007 identified 335 women with ≥4 partners in the last 12 months. Records of multi-partner women were age-matched with women reporting 1 partner. Demographic, sexual history, STD history, and laboratory diagnosis were extracted.
Results: Approximately 5,000 women presented to an STD clinic in 2007; 6.7% reported ≥4 sex partners. Women with ≥4 partners were younger than women with single partners (Median age 24 versus 29), with 30% of multi-partner women ≤20. Multi-partner women reported more non-vaginal sex (38% versus 11%), more condom use (49% versus 27%), and more same-sex contacts (8% versus <1%). Report of a prior STD was similar between the two groups (multi-partner = 67%, single partner = 69%) however, women with multiple partners were 3 times as likely to report ≥3 STDs. Multi-partner women had a higher incidence of syphilis and gonorrhea (10% versus 4%; 26% versus 20%). Syphilis was seen primarily in women ≥26 with multiple partners.
Conclusion: Multi-partner women remain at higher risk for STDs, but multi-partner women are not the norm at this clinic. Further research is needed to define characteristics of women reporting multiple partners, and to determine factors that make single partnered women "high risk."

P3.103

THE PAST 90 YEARS: THE EVOLUTION OF GENITOURINARY MEDICINE IN ENGLAND AND WALES
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Background: In April returns from Genitourinary Medicine (GUM) clinics will change significantly providing an opportunity to reflect. Trends in diagnoses in syphilis and gonorrhoea have been reported elsewhere. This presentation aims to provide a more comprehensive historical perspective with an emphasis on the evolution of GUM as a speciality.
Methods: Data was extracted from various sources including publications by the Department of Health, Chief Medical Officer and the Health Protection Agency. From each yearly return a comprehensive dataset was generated. This included, where available, clinic attendances, number of clinics, and number of diagnoses. The emergence of new infections and concepts, including contact tracing, were noted. Quotes reflecting historical attitudes were recorded and compared.
Results: Routine statistics of sexually transmitted infections (STIs) were collated from 1918 to 2007. The emergence of new infections, key challenges and service developments were plotted on a historical timeline. This included first discussions regarding; access to services (1919/20), care of pregnant women

(mid-1920s); issues of acquisition of infection overseas, immigration, homelessness and men who have sex with men (1940s-1950s); contact tracing (1947) and the role of health advisors (1958). Quotes included "There will always remain a number whose relationship was so casual and so fleeting, or so clouded by alcohol, that the tracing of contacts is impossible (1961).
Conclusions: Widespread, free facilities for diagnosis and treatment of STIs have been available for over 90 years. However, this presentation highlights the emergence of challenges that still have relevance today. In recognition of this, continued innovation towards novel solutions is required.

P3.104

REPORTED STI TESTING BEHAVIOUR OF INCARCERATED YOUNG MALE OFFENDERS: FINDINGS FROM A QUALITATIVE STUDY
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Background: Sexually transmitted infections (STIs) are a major public health problem in the UK. Here we describe young men's self-reported STI testing behaviour, and explore why testing is and is not sought in two locales: the community and the Young Offender Institute (YOI).
Methods: In-depth interviews were conducted with 40 men, aged 16-20, whilst incarcerated in a Scottish YOI. They were purposively sampled using answers from a questionnaire administered to 67 inmates.
Results: The majority (n=24) of those interviewed reported having undergone STI testing: 8 in the community, 12 within the YOI, and 4 in both the community and the YOI. The extent to which they were worried about STIs and perceived themselves 'at risk' were important in understanding openness to testing. The convenience of testing within the YOI boosted the numbers seeking testing once incarcerated. Inertia and failure to realise testing was available within the YOI, rather than objecting to, or being embarrassed about, testing, explained why those who had not sought a test had not done so.
Conclusions: Strategies to increase awareness of the availability of STI testing within YOIs would be likely to result in higher up-take. An opt-out YOI STI screening programme would probably result in very high testing rates. Strategies to combat inertia amongst at-risk young men with regard to their STI status would also be likely to increase up-take of STI testing, within the community and in other settings, particularly if tests could be offered in institutional settings frequented regularly by the young men.

P3.105

REVIEW OF SEXUAL HEALTH VISITS AND WELL-WOMAN EXAMS AMONG FEMALE MILITARY MEMBERS DEPLOYED TO AFGHANISTAN
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Background: Information regarding sexual and reproductive health needs among women in austere combat environments is lacking.
Objectives: To assess demand for such services as well as identified risk factors, sexually transmitted disease (STD) and reproductive health needs among women deployed to Afghanistan.
Methods: Medical encounters at the Craig Theater Hospital's Sexual and Women's Health Clinic in Bagram, Afghanistan, from Jan 2007 through Sep 2007, were reviewed. A descriptive analysis of documented care and available test results was performed.
Results: Among 3298 women deployed during the 8 month period, 901 encounters were logged among 546 women (1.9 visits per 1000 person days). Common reasons for visits included contraception (197, 21.9%), pregnancy tests (116, 12.9%), menses problems (115, 12.8%), vaginitis (95, 10.5%), pelvic pain (87, 9.7%), dysplasia (70, 7.8%), and STD screening (65, 7.2%). Among 204 women screened for 1 or more STDs, 10 (4.9%) had positive results (Chlamydia (n=4), gonorrhea (n=1), HSV (n=5) and HIV (n=1)). Abnormal pap results were documented among 11 out of 84 (2.8%) exams. Among 213 women tested, 55 (25.8%) had positive pregnancy tests, 3 (5.5%) of whom had probable ectopic pregnancies and 6 (10.9%) had miscarriages. During visits where the patient reported recent sexual activity, only 95 (37%) had documented condom use.
Conclusions: Demand for contraception, pregnancy testing, and STD screening was high. A large number of pregnancies and infrequent condom use were observed. These findings support the need for continued sexual health and reproductive care for female service members during deployment as well as enhanced screening and education prior to deployment.

P3.106

HOW CAN IMPROVEMENTS TO SURVEILLANCE OF SEXUALLY TRANSMITTED INFECTION IN WALES BE USED TO ASSIST SEXUAL HEALTH SERVICE DELIVERY AT A LOCAL LEVEL?

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Background: Surveillance of sexually transmitted infection (STI) in Wales is currently carried out using data submitted from genitourinary medicine (GUM) clinics on Welsh Assembly Government form KC60. These aggregated workload data are submitted quarterly. However, reporting is often delayed, limiting it's usefulness for surveillance. Also, KC60 reports only provide limited demographic and behaviour data on patients attending GUM and do not provide information on disease rates by patient area of residence.
Methods: To address these limitations, Welsh Assembly Government has funded a National Public Health Service project to improve surveillance of STI in Wales, entitled 'Development and implementation of timely, person and residence-based STI surveillance in Wales'. Once completed, this surveillance scheme should provide a number of routine outputs. Laboratory data should provide timely identification of clusters of STI. Clinical data from GUM will be used to centrally recreate the KC60 reports and linkage of anonymous laboratory and GUM data should provide enhanced, person-based information by area of patient residence.
Results and Conclusions: The system is currently being piloted in GUM and laboratory sites across Wales. Data from pilot sites will be presented. These will include rates of infection by area of patient residence and incidence of concurrent or repeat infections in individuals. Consideration will be given as to how the new surveillance system will be used to provide a better understanding of the epidemiology of STI in Wales and how this new system will assist in sexual health service delivery at a local level.

P3.107

THE LAW AND SEXWORKER HEALTH (LASH) PROJECT

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Objective: We investigated the impact of various prostitution laws on the health and welfare of the sex workers working in three Australian jurisdictions.
Methods: We mapped the female brothel-based sex industries in Perth (where all forms of sex work were criminalised), Melbourne (decriminalised, but regulated through licensing), and Sydney (decriminalised and unlicensed). Representative samples of sex workers in brothels were invited to complete a questionnaire (available in 5 languages) and to provide a vaginal tampon for testing for chlamydia, gonorrhoea, Mycoplasma genitalium, and Trichomonas vaginalis by multiplex PCR.
Results: All 3 cities had thriving and diverse sex industries, though the unlicensed premises in Melbourne proved difficult to access. Questionnaire participation rates were high (>80%) when worksite access was gained: 175 women in Perth, 229 in Melbourne, and 201 in Sydney. The Melbourne women were a median of 4 years older and had been working 2-3 times longer. Only 27% of the Sydney women had been born in Australia (cf 51% in Perth and 67% in Melbourne, $p<0.001$), while more Perth women had injected drugs (14%) in the last 12m (cf 2% in Sydney and 10% in Melbourne, $p<0.001$). There was no significant difference in mental health scores (K10) between the women in the 3 cities. Despite vastly more frequent screening of the Melbourne women as required by the law (72% monthly cf 12% in Sydney and 15% in Perth, $p<0.001$) STI prevalences were similarly low in each city. However, the under-sampling of unlicensed brothels in Melbourne limited the interpretation of these findings.
Conclusions: The demographic differences between the sex industries in the 3 cities may be partially explained by their legal frameworks. The policy of compulsory monthly STI screening of sex workers in Melbourne should be reviewed.

P3.109

EARLY SEXUAL INTERCOURSE IN IRELAND: THE HEALTH AND LEGAL COMPLICATIONS

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Background: Sexually transmitted infections (STIs) in Ireland have increased over 300% since 1994. Early first sexual intercourse has adverse sexual health and legal outcomes in the Irish context. The legal age of consent to sexual intercourse is 17years. Under Irish law a 16 year old boy who has consensual sex with a 16 year old girl has committed a criminal offence while at the same time; the girl has not committed any offence.
Method: Demographic and behavioural data were obtained from records of 20,365 first time patient visits to three STI screening centres in Southern Ireland from January 1999 through December 2008. Classical statistical survival analysis methodology (time to event) was used to compare the time lag from age of first intercourse to STI diagnosis between birth cohorts and early sexual debut groups.
Results: Overall STI prevalence was 41.05%; for those experiencing first intercourse <17years 43.93% and ≤15years 44.91%. The prevalence of first intercourse <17years increased with time; 17.84 % in the 1950s to 89.38% in the 1990s. Similar increases were observed for first intercourse ≤15years; 9.43% in the 1950s to 68.14% in the 1990s. The mean time lag in years (SD) between first intercourse <15 years and <17 years and STI diagnosis was 10.5 (8.1) and 9.4 (7.7) respectively. There is a decrease in the mean lag time across birth cohorts (Table 1). Using binary variables, those experiencing first intercourse at <17 years and at ≤15 years were at an increased odds of acquiring an STI (crude OR 1.18; 95% CI 1.11 to 1.25 and crude OR 1.20; 95% CI 1.11 to 1.30, respectively).
Conclusions: Age at first intercourse has decreased across the decades leading to a rapid reduction in the length of time between first intercourse and STI diagnosis. Irish youth experiencing first intercourse either <15years or <17 years are at an elevated risk of legal and health complications.
Table 1. Mean Lag time by Cohort with SD in parenthesis

First Intercourse	1950s (880)	1960s (n=2051)	1970s (n=7917)	1980s (n=8842)	1990s (n=113)
≤15 years	36.7 (6.43)	24 (5.18)	13.4 (4.83)	6.07 (3.34)	1.78 (1.29)
<17 years	34.5 (6.48)	22.6 (4.81)	12 (4.45)	5.29 (2.94)	1.52 (1.24)

P3.11

RISK FACTORS FOR CHLAMYDIA TRACHOMATIS INFECTION IN A PRIMARY CARE SENTINEL SURVEILLANCE NETWORK

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Background: Chlamydia is the most commonly notified disease in Australia. Targeted health promotion campaigns are an important component of prevention, and should be informed by evidence regarding risk factors for infection. We assessed predictors of infection in clients tested for chlamydia at eleven clinics in Victoria, Australia.
Methods: We analysed data from April 2006 to June 2008 from the chlamydia network of the Victorian Primary Care Network for Sentinel Surveillance on BBVs and STIs. Demographic and behaviour information was collected from all clients routinely tested for chlamydia and test results were matched to surveys. Logistic regression was used to assess risk factors for chlamydia infection in females, heterosexual males, and men who have sex with men (MSM).
Results: Over 27 months, 38,013 questionnaires in clients tested for chlamydia (51% males) were received, Among males, 50% were MSM. Chlamydia prevalence was 5.9% overall; 4.9% in females, 7.4% in heterosexual males and 5.7% in MSM. Predictors of infection for females and heterosexual males included younger age, born overseas, multiple partners, inconsistent condom use with regular or casual partner. Additional predicators included a new sexual partner (females only) and being of Indigenous origin and STI symptoms (males only). Predictors among MSM included STI symptoms, being HIV positive, reporting multiple oral or anal sex partners and inconsistent condom use with casual partners.
Conclusions: This analysis found increased risk for chlamydia infection with both regular and casual partners for heterosexuals, highlighting the need to also include the risk with regular partners in health promotion campaigns. The increased risk among HIV positive MSM and MSM with multiple partners reinforces the need for regular STI screening in accordance with Australian testing guidelines.

P3.110

MULTIFACETED RISK OF SEXUAL HEALTH PROBLEMS AMONG VOCATIONAL SCHOOL STUDENTS IN A REGION WITH LOW SES

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Background: Starting a center for sexual health we assessed the rates and predictors for problems regarding sexual health and STI risk among teenagers in a region with low social economic status.
Methods: Data (questionnaires and Chlamydia trachomatis (Ct) tests) were obtained from an ongoing intervention trial (PRESS Study) among vocational school students (n=305, mean age 19), Netherlands. Secondary analyses were done on rate and predictors for (i) sexual health problems (problems with desire, arousal or orgasm, pain), (ii) teenage pregnancy (worried about being pregnant, use of morning-after pill, induced abortion, pregnancy), (iii) STI risk (composite score from five questions according to national published Ct prediction rule), and (iv) STI related complaints (e.g. intermenstrual or post coital blood loss, abdominal pain, more genital discharge than normal).
Results: Of participants, 87% ever had sex with on average 4 partners. They debuted at on average age 16. 91% went to disco's or bars and 87% also had sex when they went out. 47% reported regular alcohol use and 29% used recreational drugs. Of women, 3% had been pregnant. Overall, 5% had experience with involuntary sex. Rate of (i),(ii) and (iv) was higher for women (31%, 49%, and 35% for the three categories respectively) than men (15%, 22%, and 7%). For (iii) rate was 67% for men and women. (i) through (iv) were closely and independently related in multivariate analyses. Drug use was independently associated with (i), (ii) and (iii) as well, meaning that this group has a multifaceted high risk profile. Ct prevalence was 5.2% for women and 3.0% for men (difference not significant). All Ct cases were found in the group who scored high on the questions on STI risk.
Conclusions: Vocational school students are an important target for multifaceted sexual health prevention. Much is to be gained in this group who express high rate of sexual health problems and STI transmission risk but a (still) relatively low rate of STI.

P3.111

VULNERABILITY OF WOMEN WHO HAVE SEX WITH WOMEN TO DRUG USE, SEXUAL RISK BEHAVIOR, AND SEXUALLY TRANSMITTED INFECTION IN BUSHWICK, BROOKLYN, NY

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Background: Women who have sex with women (WSWs) have been found to be at high risk of drug use and sexually transmitted infections (STIs), including HIV.
Methods: Using data collected during a sociometric network study of risk partners conducted in Brooklyn, NY, we conducted an analysis among women (N=161) involved in sexual partnerships to measure the association between WSW status and drug use, sexual risk behavior, sex with high-risk partners, and STI/HIV.
Results: Among all sexual partnerships in the Bushwick network (N=296 partnerships), greater than 40% involved WSWs; 4% of partnerships were between WSWs, 12% were between a WSW and a man who has ever had sex with a man (MSM), and 25% were between a WSW and a non-MSM. WSWs were much more likely than other women (non-WSWs) to have ever used non-injected heroin (odds ratio (OR): 2.8, 95% confidence interval (CI): 1.4-5.4), cocaine (OR: 4.0, 95% CI: 1.9-8.5), and injection drugs (OR: 2.5 95% CI: 1.2-4.8). WSW status was strongly associated with sex trade in the past year (OR: 15.4, 95% CI; 6.4-36.7), attendance at a group sex event in the past year (OR: 10.2, 95% CI: 4.3-24.2), and sex partnership in the past three months with a partner who had ever used non-injection drugs (OR: 3.7, 95% CI: 1.4-9.7), had a high lifetime number of partners (> median) (OR: 3.2, 95% CI: 1.6-6.3), and who was infected with herpes simplex virus-2 (1.9, 95% CI: 1.0-3.6) or chlamydia (OR: 11.3, 95% CI: 3.2-49). WSWs, versus non-WSWs, were more likely to be infected with chlamydia (OR: 13.5, 95% CI: 1.7-109) but had comparable levels of HIV and herpes simplex virus-2 infection. Multivariable analyses demonstrated that the association between WSW status and chlamydial infection was primarily explained by involvement in sex trade.
Conclusions: WSWs in this network experienced disproportionate risk of drug use, sexual risk behavior, involvement in high-risk networks, and STI. Drug and STI treatment and prevention should reach this vulnerable group.

P3.112

DISCRIMINATORY ATTITUDES TOWARDS PEOPLE LIVING WITH HIV (PLH): RESULTS FROM THE BELGIAN HEALTH INTERVIEW SURVEY 2004

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Objectives: More than 25 years after the disease, PHL are still the victims of discriminations in the everyday. The study assessed these discriminatory attitudes towards people with HIV among the Belgian population.
Methods: The data are derived from the third Belgian Health Interview Survey (HIS) of 2004 and concern individuals aged 15 or over (N=8,984). People had to answer questions in a self administered questionnaire about their attitudes towards PLH. All estimates reported are weighted to age-sex distribution of the population in Belgium.
Results: 69% of people aged 15 and over expressed their agreement with the content of one or more assertions with discriminatory character towards people with HIV. 66.7% of people agreed to share a meal with an HIV positive person. However, 70.3% of women said that they would not leave their child in company of a person with HIV against 65.2% of men ($p<0.001$).This percentage decreases as the level of education rises: 80.2% among persons with a primary level of education or without diploma and 60.4% among persons having a higher education ($p<0.001$). 39% said that a boss must be able to lay-off an HIV-infected person. This percentage decreases as the level of education rises: 32.5% among the people having a higher education ($p<0.001$). 68.6% said "I must be informed in case one of my colleagues is HIV-positive, even without his/her permission"" This percentage decreases as the level of education rises: 58.4% of people having a higher education ($p<0.001$).
Conclusions: This study found that very high rates of discrimination still persist. The level of education plays a prominent role. The lack of knowledge on HIV transmission modes nourishes the negative prejudices and the discriminatory behaviors with respect to infected people. It's necessary to reinforce knowledge in HIV transmission among the general population, and especially the lower educated groups.

P3.113

RACIAL DISPARITIES IN WOMEN ATTENDING AN STD CLINIC: DOES NUMBER OF SEXUAL PARTNERS ACCOUNT FOR THE DIFFERENCE?
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Background: The higher STD rates in African American women represent an important and frequently cited example of U.S. health disparities. To explore the impact of sexual partner number among women attending our STD clinic, we compared characteristics of African American and Caucasian women acknowledging ≥4 sex partners and those with a single sex partner.
Methods: Screening of electronic medical records from 2007 identified 335 women with ≥4 partners in the last 12 months. Multi-partner charts were age-matched with women reporting 1 partner (N = 334). Analyses were performed to compare sexual history, and STD history by race and number of sex partners.
Results: Of 335 women identified with ≥4 sex partners, 67% were African American and 33% were Caucasian. Of 334 women with a single partner, 92% were African American and 8% were Caucasian. African American women reported less non-vaginal sex in both single-partner and multi-partner groups (Multi OR = 0.61 (0.39 – 0.98); Single OR 0.39 (0.15-1.04)). Although not significant, there was a trend toward more condom use among African American women in both groups. African American women with single- and multiple-partners however were more likely to report a history of any STD than Caucasian women (Multi OR = 1.73 (1.07-2.79); Single OR 3.75, (1.68-8.42)).
Conclusions: African American women remain at higher risk of STDs than Caucasian women despite lower rates of non-vaginal sex and higher condom use. Sex partner numbers do not account for the higher prevalence of self-reported STDs observed in African American women.

P3.114

CHANGING AGE DISTRIBUTION OF MEN WHO HAVE SEX WITH MEN DIAGNOSED WITH HIV IN VICTORIA, AUSTRALIA
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Background: In developed countries HIV transmission has been increasing in men who have sex with men (MSM). In the state of Victoria, Australia HIV infections predominately occur in MSM in their mid to late thirties. Given the increase in other sexually transmitted infections among younger MSM there is concern this population is also at increased risk of HIV.
Methods: We analysed ten years (1999-2008) of Victorian HIV passive surveillance notifications data to describe trends in age at HIV diagnosis. In addition, data (2006- 2008) from the Victorian Primary Care Network for Sentinel Surveillance (VPCNSS) were assessed for trends in HIV testing behaviours among MSM.
Results: In passive surveillance new HIV cases doubled from 130 in 1999 to 263 in 2007 with the

median age of diagnosis in MSM increasing from 35 to 39 years in this period. In 2008 there were 259 new HIV cases; the median age in MSM declined to 35 years ($p < 0.05$). The median age among MSM with newly acquired HIV infection also declined from 36 in 2007 to 33 years in 2008 ($p < 0.05$). From 2007 to 2008 the proportion of new HIV diagnoses among MSM increased in the 20-29 year age group by 28% and decreased by 24% in the 30-49 year age group. VPCNSS data showed the age distribution of MSM tested for HIV at sentinel sites remained statistically unchanged from April 2006 to June 2008.
Conclusions: Over the past 12 months there has been a significant decline in the median age of HIV diagnosis in MSM in Victoria. Our findings suggest that the change in age at HIV diagnosis is not related to increased testing but rather increased transmission in MSM under the age of 30 years. This indicates the need to target HIV prevention at younger MSM.

P3.115

HIV PREVALENCE AMONG ETHNIC MINORITY MEN WHO HAVE SEX WITH MEN (MSM) IN BRITAIN

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Background: Little is known about the sexual health of ethnic minority men who have sex with men (MSM) living in Britain. This paper looks at HIV prevalence among ethnic minority and white MSM living in Britain, including men from black African, black Caribbean, South Asian and other ethnic backgrounds.
Methods: Between August 2007 and March 2008 MSM living in Britain were asked to complete an anonymous, confidential online survey. The research was advertised on a range of websites used by ethnic minority and white MSM, as well as in bars, clubs and sexual health clinics across Britain. The questionnaire included questions on HIV testing, self-reported HIV status and sexual behaviour.
Results: 1241 ethnic minority MSM completed the questionnaire (mean age 30 years) including 399 black Caribbean or African men, 379 South Asian men (Indian, Pakistani or Bangladeshi) and 318 Chinese or other Asian men. Overall, half the ethnic minority MSM were born in the UK; this varied by ethnicity ($p<0.01$). In addition MSM from two key migrant groups took part: 173 MSM born in Central or South America and 243 MSM born in Eastern Europe. 13,717 white British MSM (mean age 36 years) also completed the questionnaire. Self-reported HIV prevalence was 8.7% for white British MSM. HIV prevalence varied significantly between ethnic minority and migrant groups ($p<0.001$). HIV prevalence was lowest for South Asian MSM (3.7%), Chinese/other Asian MSM (3.5%) and MSM born in Eastern Europe (3.7%). HIV prevalence was highest for MSM born in Central or South America (16.9%). For black MSM, HIV prevalence was 10.2%. Patterns of high risk sexual behaviour did not appear to differ significantly between these groups of men ($p=0.2$).
Conclusions: HIV prevalence varied significantly between white, ethnic minority and key migrant groups of MSM living in Britain. Differences in sexual behaviour did not appear to explain these differentials, reflecting similar research in the USA.

P3.116

LIMINAL IDENTIES: HIV-POSITIVE CARIBBEAN MEN WHO HAVE SEX WITH MEN IN LONDON, UK

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Background: Recent years have seen important research on homosexuality, particularly theoretical work on identity formation in the context of pervasive societal anti-gay sentiment. Research in this vein on black MSM has focused on African-Americans; there is as yet no published research on black Caribbean (BC) MSM in the UK. This paper is concerned with exploring the identities of gay and bisexual HIV-positive BC men in the UK.
Methods: In-depth, semi-structured interviews with 10 of 115 HIV-positive BC MSM in the LIVITY study on the impact of HIV among BC in South London, using a quota-based sample according to gender, age, sexuality and country of birth.
Results: Accounts by 10 HIV-positive BC MSM living in the UK reveal them to be liminal beings with unstable and unresolved identities. They are between social states: aware they are not heterosexual, and not publicly recognised or self-accepted as homosexual. Caribbean-born respondents especially suffer from homophobia, expressing regret and disappointment at their sexuality. They may also experience cognitive dissonance–as they are aware of their conflict with the heteronormative order–they cannot resolve. Religion contributes to homophobia and cognitive dissonance particularly for Caribbean-born men, some of whom may believe a fundamental conflict exists between Christianity and homosexuality. Heterosexism and homophobia contribute to and reinforce their liminal state, by preventing transition to

publicly recognised homosexual status. Respondents may engage in private and public, internal and external, overt and covert, policing of their and other gay men's behaviour: through strategic pretence at heterosexuality and/or condemnation of men engaging in behaviour identifiable as stereotypically homosexual, for example.
Conclusions: Narratives point to the need to complexify the conventional understanding of Jamaican heterosexism to explain reported variations in the degree of anti-homosexual hostility in the country.

P3.117

AGE AND RISK BEHAVIORS AMONG MSM SEEKING CARE AT STD CLINICS
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Objectives: To characterize risk profiles by age of MSM evaluated in STD clinics of Baltimore, Maryland.
Methods: First visits of men presenting for clinical evaluation who reported same sex contact between 12/03 and 12/08 were analyzed. Young MSM were defined as those <25 years of age. We compared demographic, behavioral, and clinical characteristics between the younger and older MSM. We used chi square and Fisher's exact test to compare variables between groups.
Results: 619 first visits of a total of 863 MSM visits were included; 57.2% were <25 years; median ages for young and older MSM were 20 and 32 years, respectively. Compared to younger MSM [i.e. younger vs. older], the older group was more likely to be White (4% vs. 19%, p<0.001), HIV+ (15% vs. 24%, p=0.02), have sex while drunk on alcohol (16% vs. 23%, p=0.02), use cocaine (3% vs. 12%, p<0.001), share injection equipment (0.3% vs. 2%, p=0.05) and self-identify as "straight" (3% vs. 9%, p<0.01). There were no differences in number of partners in preceding 6 months (mean of 2.8 vs. 2.9), lack of condom use at last intercourse (54% vs. 57%), gonorrhea (9.5% vs. 7.4%) or syphilis (10.3% vs. 14.1%) diagnosis. Among those who were HIV+, 12% vs. 18% had gonorrhea; 56% vs. 50% did not use condoms at last intercourse.
Conclusions: Demographic and risk profiles differ among younger and older MSM. In this important risk group, prevention counseling interventions for younger and older MSM need to be specifically tailored in order to be maximally effective.

P3.118

COMMUNITY INVOLVEMENT, SEXUAL IDENTITY DISCLOSURE AND UNPROTECTED ANAL INTERCOURSE AMONG PERUVIAN MEN WHO HAVE SEX WITH MEN
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Background: Sexual identity disclosure and participation in gay/bisexual/transgender (GBT) communities might lead to reduced risk behaviors like unprotected anal intercourse (UAI) among men who have sex with men (MSM) through exposure to risk reduction messages and promotion of community norms of safer sexual behavior.
Methods: A convenience sample of 560 sexually active adults MSM was recruited from a public STI clinic and in street outreach campaigns in Lima, 2007. Data on sexual behavior, community involvement (number of friends self-identified MSM) and disclosure (number of friends recognize participant as MSM and number of relatives aware of participant's identity) was collected.
Results: 71% (396/560) of participants (Age:median=29;IQR=24-36;Sex partners last 6 months:median=3;IQR=1-9) reported last sexual partner was GBT. 35% (139/396) had receptive or insertive UAI. 65% (249/387) reported most/all of their friends were aware of their homosexual behavior, while 7% had not disclosed to any friends. In contrast, 48% reported that most/all family members knew their sexual behavior, and 30% (115/387) had not disclosed to any relatives. No community involvement or disclosure markers (Friends disclosure's Prevalence Ratio (PR)=0.9; GBT friend's PR=0.9, family disclosure's PR=1.0, all p-values >0.3) was associated with decreased risk of UAI after adjusting for age, education, sexual identity, history of compensated sex and number of sexual partners in last 6 months.
Conclusions: UAI and concealment of sexual identity from family members are both common among MSM in Peru. Neither sexual identity disclosure nor GBT community involvement were associated with UAI. The high overall prevalence of UAI may reflect lack of existing community norms of safer sexual behavior. Additional research is necessary to define the influence of MSM communities and social networks on risk behavior in order to assess the potential of community- and network-based intervention.

P3.119

DISCLOSURE, DISCRIMINATION AND IDENTITY: A QUALITATIVE STUDY AMONG BLACK AND SOUTH ASIAN MEN WHO HAVE SEX WITH MEN (MSM) IN BRITAIN

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Background: Some ethnic minority men who have sex with men (MSM) in Britain may be at higher risk of sexually transmitted infections (STI) and HIV than other MSM. This study explores the identity and experience of Black and South Asian MSM living in Britain, and how they negotiate the intersection of ethnicity and sexuality in their everyday lives.
Methods: Online qualitative interviews were conducted with 42 ethnic minority MSM from Black African, Black Caribbean, Indian and Pakistani backgrounds between November 2007 and February 2008. All men were living in Britain at the time of the interview. The subject areas included: disclosure of sexuality to family and social networks; affiliation to mainstream gay culture; experiences of discrimination related to ethnicity and sexuality.
Results: The major findings common to both groups were: limited disclosure of sexuality to family and social networks; experiences of discrimination by white gay men that included exclusion, racism as well as "objectification"; a lack of gay role models and imagery relating to ethnic minority men. Among South Asian men, an emerging theme was their regret at being unable to fulfil family expectations regarding marriage and children. For Black MSM, there was a strong belief that same-sex behaviour subverted cultural notions related to how masculinity is configured.
Conclusions: In Britain, many Black and South Asian MSM develop an ambivalent or conflicted relationship with their own ethnic identity and, at the same time, see themselves as being apart from mainstream White British gay culture. The continuing stigma and discrimination experienced by some ethnic minority MSM in Britain presents a challenge for HIV prevention and sexual health promotion.

P3.120

RELATIVE SAFETY II: RISK AND UNPROTECTED ANAL INTERCOURSE AMONG GAY MEN WITH DIAGNOSED HIV

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Background: In order to improve HIV prevention planning, more information is required about how gay men with diagnosed HIV who have unprotected anal intercourse (UAI) attend to transmission risk.
Methods: This study updates *Relative Safety*, the authoritative study of the meanings attending UAI among gay men with diagnosed HIV in the UK (Keogh et al. 1999). Voluntary agencies recruited participants with diagnosed HIV who had engaged in UAI with another man at least once in the past year. Balanced recruitment was undertaken in areas of higher and lower HIV prevalence. Interviews lasting 90 minutes covered: HIV status communication with sexual partners, their most recent experience of UAI, and their awareness and experience of a range of HIV risk reduction strategies and technologies.
Results: Analysis was conducted on interviews undertaken with forty two men. Respondents' overarching concerns related to the risk of harm to their own social or moral identity if it became known that they were diagnosed men engaging in UAI. Respondents understood the role of UAI in HIV transmission, although the different ways in which men attempted to reduce harm was often dependant upon which combination of physical risks and social risks held the greatest salience. Men's capacity to respond to HIV-related stigma was related to their ability to successfully manage risk.
Conclusions: The study findings offer ample evidence of a need for tailored and targeted HIV prevention interventions for men with diagnosed HIV, including:
*Recognition that HIV-related stigma is central to men's reticence to engage with harm reduction strategies
*Strengthening health promoters' and health providers' collective capacity to engage men with diagnosed HIV in frank discussions about their sexual lives without judgement or prejudice, and
*Evidence-based prevention interventions for men with diagnosed HIV that directly address their involvement in UAI.

P3.122

NEISSERIA GONORRHOEAE AND HIV COINFECTION AMONG MEN WHO HAVE SEX WITH MEN: UNITED STATES, 2006-2008

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Francisco Department of Public Health, US; [5]Virginia Department of Health, US; [6]Washington State Department of Health, US; [7]Minnesota Department of Health, US

Objectives: *Neisseria gonorrhoeae* (NG) infection in an HIV-positive man is a marker of unprotected sex. National-level data on HIV-NG coinfection in the U.S. are limited, particularly from providers other than sexually transmitted disease (STD) clinics (though non-STD clinic providers accounted for >60% of reported NG infections in men in 2007). We characterize the proportion of HIV-NG coinfection among men who have sex with men (MSM) and describe associated risk behaviors.
Methods: The STD Surveillance Network collects demographic, behavioral and clinical data from patients seen in non-STD clinic settings in 11 counties in 5 states (California, Colorado, Minnesota, Virginia, and Washington). For February 2006–August 2008, we analyzed data on cases from the first 10 men reported with NG and interviewed by state or county health departments each month.
Results: Of 2,039 NG interviews, 422 (21.7%) were with MSM. Of 381 MSM with NG for whom HIV data were available, 110 (29.9%) self-reported being HIV positive (range: 16.6% to 47.3%). Of HIV-NG coinfected MSM, 69.2% were white, 12.2% Hispanic, and 7.5% black; mean age was 38.7 (range: 21-58). Coinfected cases were largely reported from primary care settings (61.8%). Compared to self-reported HIV-negative MSM, MSM with HIV had more sexual partners and were more likely to report studied risk behaviors (see Table). There were no significant differences in risk behaviors between coinfected MSM diagnosed with HIV ≤ 1 year ago compared with coinfected MSM diagnosed > 1 year ago.
Conclusions: Large percentages of MSM with NG are coinfected with HIV. Many coinfected MSM engage in risky sexual practices, including MSM diagnosed with HIV > 1 year ago (though we cannot exclude serosorting). Primary care physicians should understand the importance of integrating HIV and STD prevention and treatment services for MSM, including routine screening of MSM with NG for HIV and ongoing risk reduction counseling for coinfected MSM.

	HIV Positive MSM with NG	HIV Negative MSM with NG	
Risk behaviors in 3 months prior to NG diagnosis	n=110	n=271	p value
	n (%)	n (%)	
Mean number of sex partners (range)	5.3 (0-50)	3.4 (0-30)	0.0025
Anonymous sex	40 (50.6)	32 (26.0)	<0.001
Lack of condom use with last sex partner prior to NG diagnosis	67 (72.8)	113 (64.9)	0.191
Internet use to find sex partners	58 (55.2)	103 (40.4)	0.01
Erectile dysfunction drug use	31 (29.5)	28 (11.2)	<0.001
Methamphetamine use	33 (30.8)	23 (9.4)	<0.001
Nitrate use	38 (36.2)	33 (13.3)	<0.001

P3.123

MANY MSM WITH PREVIOUSLY DIAGNOSED HIV ARE AT RISK FOR TRANSMITTING HIV AND ARE NOT ON ANTIRETROVIRAL THERAPY

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Objectives: Antiretroviral therapy (ART) may decrease HIV transmission. We measured the proportion of HIV-infected men who have sex with men (MSM) seen in an STD clinic who might be eligible for early initiation of ART (at CD4 cell counts >350 cells/μL).
Methods: We reviewed records of HIV-infected MSM seen in an STD clinic from 2004 to 2008, excluding visits for newly diagnosed HIV and those for which the CD4 count or ART status was unavailable. We used logistic regression to identify factors associated with CD4 counts >350 in men off ART.
Results: 768 HIV-infected MSM had 1,191 visits during the study period. 154 (20%) were excluded due to missing CD4 count or ART status. The final analysis included 503 men, of whom 327 (65%) were on ART, 46 (9%) were not on ART with CD4 counts ≤350, 60 (12%) were not on ART with CD4 counts 351-500, and 70 (14%) were not on ART with CD4 counts >500. 195 men (39%) reported non-concordant unprotected anal intercourse (UAI) in the preceding year. Of these men, 84 (43%) were off ART: 19 with CD4 counts <350, 28 with CD4 counts of 351-500, and 37 with CD4 counts >500. Of patients who reported nonconcordant UAI, the viral load was >10,000 copies/mL in 1 (1%) on ART, 7 (70%) not on

ART with CD4 counts <350, and 32 (67%) not on ART with CD4 counts >350. Compared to patients on ART or not on ART with CD4 counts<350, those not on ART with CD4 counts >350 were younger [OR 0.93 (0.91-0.96) per year of age], more likely to report non-concordant UAI [OR 1.87 (95% CI: 1.25-2.80)] had a greater number of anal sex partners [OR 1.02 (1.00-1.03) per sex partner]; and were more likely to be diagnosed with gonorrhea at the clinic visit [OR 1.93 (1.12-3.32)].
Conclusions: One-third of HIV-infected MSM who reported non-concordant UAI were not on ART with CD4 counts >350. These men have a high risk of transmitting HIV due to a combination of sexual behavior and lack of viral suppression. Offering them ART is a potential prevention opportunity.

P3.124

HIV AND STD PREVALENCE AND RISK BEHAVIORS AMONG MEN WHO HAVE SEX WITH MEN AND FEMALE SEX WORKER POPULATIONS IN EL SALVADOR

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Background: A behavioral surveillance survey done in 2001 in El Salvador, surveyed a convenience sample of female sex workers (FSW) and men who have sex with men (MSM), and reported an HIV prevalence of 3.2% and 17.7%, respectively. We present findings from the second behavioral surveillance survey done in 2008 using different sample methodology.
Methods: We used audio computer assisted interviews to survey MSM and FSW participants in San Salvador. Respondent Driven Sampling (RDS) was used to recruit participants. The target sample size was 600 in both populations. Blood was tested for HIV (Determine and Oraquick), syphilis (Rapid Plasma Reagin and Treponema Pallidum Aglutination Particles) and herpes (HSV-2 Herpes Select) serology. Data collection was conducted from March through September 2008. We used RDSAT 6.0.1 to conduct the analysis.
Results: We enrolled a total of 663 FSW participants and 624 MSM. The HIV prevalence was 5.5% (95% CI: 2.7-7.3) among FSW and 7.6% (95% CI: 4.5-10.9) among MSM. Active syphilis prevalence was 6.3% (95% CI: 3.9-9.1) for FSW and 9.0% (95% CI: 5.2-13) for MSM. HSV-2 sero-prevalence was 81.5% (95% CI: 77-86.1) for FSW and 42.8% (95% CI: 34.9-49.2) for MSM. Reported condom use by FSW during the last sexual encounter was 75.5% (95% CI: 69.8 -79.8) while 81.7% (95% CI: 70.8-94.7) reported using a condom with the last frequent client and 90.3% (95% CI: 86.5-93.8) with the last new client. For MSM, condom use with last casual partner was 65.3% (95% CI: 52.7-73.7).
Conclusions: This is the first survey using RDS and ACASI in El Salvador. HIV prevalence in both groups was moderate. We found high rates of HSV-2 seropositivity and active syphilis, which may increase the vulnerability of these populations to HIV in the future. New intervention strategies should include condom promotion programs.

P3.125

HIGH PREVALENCE OF ASYMPTOMATIC STI IN HIV-POSITIVE MSM, VISITING HIV-OUTPATIENT CLINICS IN THE NETHERLANDS

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Background: Recent reports suggest that sexually transmitted infections (STI's) are common in known HIV-positive men who have sex with men (MSM). Many of these STI's may be asymptomatic. We studied the prevalence of asymptomatic STI's in HIV-positive MSM in the Netherlands.
Methods: A total number of 669 MSM, visiting the HIV outpatient clinic of two academic hospitals between October 2007 and June 2008, were screened for STI's. *C. trachomatis* (CT) and *N. gonorrhoea* (NG) were tested by PCR on oral swabs, anal self-swabs and urine. Antibodies against hepatitis B virus (HBV) and hepatitis C virus (HCV) were tested in serum if the patient was not already known to have antibodies after earlier infection or vaccination. All patients were screened for syphilis by conventional treponemal antigen and antibody tests.
Results: Of all patients, 8.7% had CT and 3.3% NG. One of both microorganisms was found in 10.5% of patients. Three of the patients with CT tested positive for lymphogranuloma venereum proctitis (CT serovar L1-3). Most infections were anal: in 9.5% of patients we found an anal infection and in 2.2% a urethral infection. If only anal swabs had been tested, 84.3% of all CT and NG infections would have been diagnosed. 14.7% and 95.3% of all participants were not already known to have antibodies against HBV, respectively HCV. Among these, 1 new HBV and 3 new HCV infections were identified. 30.6% of

participants had evidence of past syphilis infections. In 4.9% of participants a new syphilis infection was diagnosed.
Conclusions: More than 10% of HIV-positive MSM who are treated for HIV at two academic hospitals in the Netherlands, have one or more asymptomatic STI, mostly CT and syphilis. Routine (bi-) annual screening of HIV-positive MSM, regardless of (genital) symptoms, should be considered.

P3.126

TRENDS IN STD POSITIVITY AMONG MSM IN PRIMARY CARE AT A LARGE URBAN LGBT HEALTH CENTER, CHICAGO 2002-2007
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Background: MSM bear a significant burden of STDs in the US. Increases in STDs among MSM since the late 1990s underscore the need for continuing prevention.
Objectives: We examined trends in diagnoses of syphilis and urogenital gonorrhea (NG) and chlamydia (CT) among MSM receiving primary care at an urban LGBT health clinic.
Methods: Data were collected in accordance with routine STD surveillance procedures and analyzed using SAS version 9.1. Statistical significance of trends over time were assessed by non-parametric trend test.
Results: 4,693 tests for syphilis, 2,443 tests for NG, and 2,437 tests for CT were performed between January 2002 and December 2007. The number of tests performed annually increased by an average of 14.5% for syphilis, 22.8% for NG, and 23.1% for CT. Overall, 256 (5.45%) cases of all-stage syphilis, 153 (6.26%) cases of NG, and 126 (5.17%) cases of CT were detected. There was a statistically significant decline in the prevalence of syphilis, from 9.3% in 2002 to 3.9% in 2007 ($p<0.001$). NG prevalence also declined, from 9.1% in 2002 to 3.5% in 2006, but then rose to 7.1% in 2007. CT prevalence declined from 8.3% in 2002 to 4.8% in 2003 and then remained stable at around 5% between 2003 and 2007.
Conclusions: Declines in the prevalence of NG and syphilis may be the result of expanded screening rather than actual declines in morbidity, as the number of tests increased annually during this period. However, despite expanded screening, CT did not decline after 2003 and NG increased 200% from 2006 to 2007. In addition to continued screening, primary care clinicians should emphasize risk assessment and risk reduction counseling.

P3.127

HIGH PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS IN ASYMPTOMATIC HOMOSEXUAL MEN OF THE AMSTERDAM COHORT STUDIES
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Background: Studies among men who have sex with men (msm) have shown a rise in sexual risk behaviour since the introduction of HAART. To study the prevalence of STI in asymptomatic men and associated risk behaviour, we performed a screening for STI among msm participating in the Amsterdam Cohort Studies (ACS).
Methods: In 2008 we tested 181 HIV-negative and 21 HIV-positive msm for STI. An anal self-swab and a urine-sample were taken by the participant and an oral swab by a nurse, to test for Chlamydia Trachomatis (CT) and Neisseria Gonorrhoeae (NG) by nucleic acid amplification tests (NAAT). Antibodies for syphilis, HBV, HCV and HIV were tested in serum. Additionally, information on sexual behaviour was collected through questionnaires.
Results: The majority (200) of participants did not report any symptoms. Mean age was 36 years. Of all participants, 11.9% (24/202) tested positive for at least one STI; 9 with anal CT, 1 with urethral CT, 5 with anal NG, 2 with pharyngeal NG, 1 with anal and pharyngeal NG, 2 with anal CT and anal NG, 1 with anal and urethral CT, 1 with anal CT and NG and urethral NG and 2 with an early latent syphilis. HIV-positive participants had a significantly higher prevalence of STI (38.8%, 8/21) than HIV-negative participants (8.8%,16/181) ($p<0.001$).
71.4% (15/21) of HIV-positives participants reported to have had at least one casual sex partner in the 6 months previous to testing, compared to 49.4% (88/178) of HIV-negative participants. Of all HIV-positive participants 28.6% (6/21) reported unsafe anal sex with at least one casual sex partner compared to 14.0% (25/178) of HIV-negatives.
Conclusion: In this cohort of msm we found high risk behaviour and a high prevalence of asymptomatic STI, especially among HIV-positive msm. Being HIV-positive was significantly associated with STI. This

study shows that screening for STI in asymptomatic msm, regardless of HIV-status, should be performed regularly.

P3.128

MAXIMISING PUBLIC HEALTH GAINS: UNDERSTANDING THE OVERLAPPING HIV AND STI EPIDEMICS AMONG MEN WHO HAVE SEX WITH MEN (MSM)

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Background: HIV and other STIs disproportionally affect MSM and have risen sharply in some high-resource countries in recent years. Routine surveillance systems track these infections in isolation despite shared behavioural risks, biological and socio-environmental characteristics. Efforts to maximise health gains in MSM require a greater understanding of the overlap and interdependence of these epidemics.
Method: Analyses of 2007 enhanced STI surveillance data (UK) and 2005 Population behavioural surveys on MSM (US, Canada & Germany).
Findings: The estimated numbers of MSM living with HIV were: 32,000 (UK) 39,000 (Germany) 30,000 Canada and 230 000 (US).
US: Rates of test positivity for syphilis, urethral gonorrhoea, rectal gonorrhoea and chlamydia among HIV+ MSM were 22%, 18%, 10% and 8% respectively. Corresponding rates among negative MSM were: 7%, 9%,6%,& 5%. Germany: Self -reported rates of syphilis and any STI in the last 12 months among HIV+ MSM were >15% and >34% respectively and higher among men not on ARVs. Rates among HIV negative MSM were 3% and 9%. Hepatitis C virus was reported among 4% of HIV+ MSM. Over 90% of cases of LGV were HIV +MSM. UK: An estimated 40% of MSM diagnosed with syphilis in 2007 were HIV+. The figure for gonorrhoea was 32%; LGV 78%; and hepatitis C 97%. Older MSM with an acute STI were more likely to be HIV positive. Canada: 2% of MSM were co-infected with HIV-HCV (15% were HIV positive and 6% were HCV+).
Conclusion: There is great heterogeneity of systems and approaches for monitoring co-infections across the four countries. Findings indicate that HIV+ MSM are disproportionately affected by STIs and account for the large burden of LGV and sexually transmitted HCV. An integrated public health response aimed at improving the sexual health of MSM is warranted. There is a need to harmonise and integrate surveillance systems nationally and internationally to better track overlapping epidemics in MSM.

P3.129

HCV AMONG MEN WHO HAVE SEX WITH MEN IN LONDON AND THE SOUTH EAST: EVIDENCE OF SEXUAL TRANSMISSION

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Background: Hepatitis C infection (HCV) among persons living with HIV is an emerging problem in developed countries. Recently there has been an increase in reports of newly acquired HCV among HIV-infected men who have sex with men (MSM) commonly without a history of injecting drug use (IDU). To better understand the burden of HCV infection and associated behavioural risk factors among MSM the Health Protection Agency established an enhanced surveillance system in collaboration with the British HIV Association and British Association for Sexual Health and HIV.
Methods: 21 centres were recruited from London and the South East. Data collected prospectively between 08/01/08 and 06/01/09 were collated and analysed.
Results: 40 newly acquired HCV cases were reported among MSM across 12/21 participating sites; 25 confirmed and 15 probable cases. Raised LFTs at routine LFT screen was the main reason for HCV testing (60%). The majority (95%) were previously diagnosed with HIV, with 15% of cases reporting IDU with the previous 6 months. Drug use (non-IDU) was reported by 75% of men, the majority of whom (90%) engaged in sex whilst under their influence. In the 3 months prior to diagnosis, 43% of men reported between 2-4 sexual partners and 25% between 5-10. Over four-fifth of cases reported insertive (81%) unprotected anal intercourse (UAI) and/or receptive (84%) UAI. Of the 30% of men who reported fisting, 83% reported unprotected insertive and 75% unprotected receptive fisting. All but one man engaged in receptive UAI or receptive unprotected fisting.
Conclusion: Our findings indicate that few MSM with recently acquired HCV had a history of IDU and provides evidence of sexual transmission of HCV among MSM in London and the South East. MSM with recently acquired HCV were almost all HIV infected and the majority had engaged in UAI and/or fisting.

These data highlight the need for HCV evaluation for all MSM with abnormal LFTs as well as routine screening of all HIV positive MSM.

P3.13

MORE EVIDENCE THAT CHLAMYDIA PREVALENCE IN THE UNITED STATES MAY ACTUALLY BE DECREASING: NATIONAL JOB TRAINING PROGRAM, 2003-2007

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Objectives: Describe prevalence trends in genital Chlamydia trachomatis (CT) infections among high-risk, socio-economically disadvantaged young men and women entering the U.S. National Job Training Program (NJTP), where universal screening is required.
Methods: We evaluated CT prevalence rates from men and women entering NJTP aged 16-24 years. Trends (2003-2007) were stratified by sex and adjusted for relevant covariates, including test technology. Results were compared to notifiable disease case surveillance system trends.
Results: Among both women and men, chlamydia prevalence declined significantly from 2003 to 2007. In 2003, prevalence among women was 9.9%; in 2007, prevalence was 13.7%. However, adjusting for covariates, including test technology, demonstrated a significant decline in prevalence (19% decrease, $p<0.001$). Among men, prevalence in 2003 was 8.4%; in 2007, prevalence was 8.3%; after controlling for possible confounding, a significant decline prevalence was also detected (8% decrease, $p=0.006$).These decreases are in direct contrast to national CT morbidity data; CT case rates increased by 22.7% from 2003-2007.
Conclusions: In a universally-screened high-risk population of young women and men, CT prevalence declined from 2003-2007. Previously presented population-based trend data from NHANES (1999-2006) have suggested a decline in chlamydia prevalence among the general population of the U.S. Taken together, such findings provide evidence of decline in CT burden in the U.S. Morbidity data are impacted by better detection and more screening and are not appropriate for assessing trends in true disease burden. Overall CT prevalence rates remain high despite decreases, suggesting that increases in screening coverage, in addition to expansion of other prevention strategies such as partner treatment, may be worthwhile.

P3.131

STI AND HEPATITIS C TESTING BEHAVIOURS AMONG MEN WHO HAVE SEX WITH MEN IN CANADA, 2005-2007

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Background: M-track is a second generation surveillance system that aims to measure HIV, HCV, sexually transmitted infections (STIs) trends and associated risk behaviours among men who have sex with men (MSM) across Canada.
Methods: Data were collected from 2005-2007 in five sites (Montreal, Ottawa, Toronto, Winnipeg and Victoria). Participants were recruited primarily through venue-based convenience sampling, and asked to complete a questionnaire and provide a dried blood specimen (DBS). DBS were tested for HIV, HCV and syphilis.
Results: A total of 4,840 men participated in the survey, 69.5% provided a DBS. 61.1% (2787/4558) had ever been tested for gonorrhea, 57.7% (2625/4553) for syphilis, and 58.4% (2647/4529) for hepatitis C; among these participants, recent testing (last two years) was reported by 82.9% for gonorrhea, 86.9% for syphilis and 86.2% for hepatitis C. Of those participants who reported ever being tested for hepatitis C, 3.2% (80/2536) reported being hepatitis C positive on their last test. Over half of participants (54.8%) reported ever being vaccinated against hepatitis A and 68.1% reported having received vaccination against hepatitis B. Participants reported recent diagnoses of STI (previous year) as follows: gonorrhea (4.8%), syphilis (1.6%), genital herpes (1.9%), chlamydia (3.1%), genital/anal warts (3.8%), hepatitis A (0.9%) and hepatitis B (1.0%).
Conclusions: Results indicate an opportunity to improve rates of STI and hepatitis testing as well as hepatitis A and B vaccination among MSM in Canada.

P3.132

PROTECTIVE AND RISK FACTORS FOR HIV INFECTION FOR MEXICAN-AMERICAN GAY MEN
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Background: Latinos have been disproportionately affected by the HIV epidemic. This study explored the lived experience of Mexican-American gay men who grew up in Dallas, Texas, regarding protective and risk factors for HIV infection.
Objective: The purpose was to identify potential themes for inclusion in effective HIV preventive interventions for Mexican-American gay men.
Method: Twenty Mexican-American gay men aged 30-60 years of age, who grew up in Dallas, Texas were enrolled. A phenomenological design using semi-structured interviews was utilized.
Results: Patterns concerning risk and protective behaviors for HIV included "accepting," "machismo," "loving," "respecting," "dating," "being HIV negative" and "being HIV positive."
Conclusion: This study identified themes for HIV preventive interventions for Mexican-American men who have sex with men (MSM). Recommendation is for inclusion of both HIV negative and positive participants in the same intervention. Interventions are also indicated for a focus on self acceptance of one's sexuality and self-esteem. Lack of self-acceptance regarding one's sexuality and low self-esteem may lead to devaluing of one's self. Individuals who do not value themselves because of their homosexuality are more likely to devalue their homosexual sexual partners as well potentially engaging in self-destructive behavior, placing themselves and their sexual partners at risk. Mexican-American MSM may be encouraged to view machismo as a man who is a protector of his family and who protects his health out of respect for self and respect for family. This research also identified a need for support social policies that provide for equal rights for gay people.

P3.134

COMMUNITY-BASED SURVEILLANCE OF SEXUAL BEHAVIOUR IN AUSTRALIA, 2005-2008
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Background: With the prevalence of chlamydia and other STI rising in Australia, we need to determine whether there have also been changes in sexual risk behaviour. It is important to undertake behavioral surveillance in young people - the group at greatest risk of STI.
Methods: We have conducted serial cross-sectional surveys of young people at a Melbourne music festival. Logistic regression, adjusted for age and gender, was used to determine trends in risk behaviours. We defined people being at risk of STI if they reported a new, casual or multiple recent partners and inconsistent condom use.
Results: From 2005 to 2008 over 5,000 questionnaires were completed by people aged 16 to 29.The proportion at risk of an STI decreased from 33.8% in 2005 to 29.4% in 2008 (OR 0.92, 95%CI 0.87-0.97). There was no change over time in the proportion reporting multiple partners (OR 0.97, 95%CI 0.92-1.02) but consistent condom use increased in this group from 27.8% to 33.7% (OR 1.17, 95%CI 1.07-1.28). Having a new partner in the prior three months decreased from 32.1% to 25.2% (OR 0.77, 95%CI 0.77-0.90), accompanied by an increase in consistent condom use from 50.0% to 56.7% (OR 1.21, 95%CI 1.05-1.39). The proportion reporting casual sexual partners increased from 46.2% to 55.1% (OR 1.25, 95%CI 1.15-1.35) although condom use with casual partners remained around 60% (OR 1.07, 95%CI 0.95-1.21).
Conclusions: Despite increases in STI notifications, risk behaviors (other than having casual partners) appear to be decreasing in this group. One explanation is that the increasing STI diagnoses are largely due to increased STI testing. An alternate explanation is that having casual partners is a greater driver of STI transmission than inconsistent condom use. The young people we surveyed reported risk behaviors at much higher prevalence than their age counterparts in other studies. Music festivals are a useful setting for monitoring trends within a high-risk subpopulation of young people.

P3.135

QUANTIFYING HIV TRANSMISSION RISK THROUGH HETEROSEXUAL AND HOMOSEXUAL ANAL INTERCOURSE: A SYSTEMATIC REVIEW AND META-ANALYSIS
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Objectives: To assess HIV transmission risk from homosexual and heterosexual anal intercourse (AI) exposure and its implications for HIV prevention in heterosexual populations.
Methods: Systematic review and meta-analysis of the literature on HIV-1 infectiousness through AI conducted according to MOOSE guidelines. PubMed and bibliographies of relevant articles were searched

to September 2008. 62,643 titles were searched; 16 publications reporting four per-act and 12 per-partner transmission estimates were included. A simple binomial formula was used to illustrate the relationship between per-act and per-partner estimates by the number of sex acts within a partnership.
Results: Overall, random effects model summary estimates were 1.4% (95%CI 0.2-2.5) and 40.4% (95%CI 6.0-74.9) for per-act and per-partner unprotected receptive AI (URAI), respectively. There was no significant difference between per-act risks for heterosexual and homosexual URAI. Per-partner unprotected insertive AI (UIAI) and combined URAI-UIAI risk were 21.7% (95%CI 0.2-43.3) and 39.9% (95%CI 22.5-57.4) respectively, with no available per-act estimates. Per-partner estimates adjusting, using statistical models, for exposures outside the "main" partnership and for other sexual practices (summary estimate for combined URAI-UIAI exposure 7.9% [95%CI 1.2-14.5%]) were much lower than from studies where no such adjustment was made (crude summary estimate 48.1% [95%CI 35.3-60.8%]).
Conclusions: Unprotected AI is a high risk practice (higher than for penile-vaginal sex), with seemingly no difference in risk for homosexual and heterosexual sex. The per-act summary estimate predicts far higher per-partner transmission rates than observed. There is likely considerable variability in AI infectiousness, and adjusted per-partner estimates may be underestimates. Greater understanding of the role that AI plays in heterosexual sex lives, particularly in regions with high HIV transmission, is important for prevention.

P3.136

WHAT'S IN A NAME: ISSUES IN DEFINING MOST AT RISK POPULATIONS
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Background: The term "Most at Risk Populations" is commonly used to refer to sex workers, injecting drug users, and men who have sex with men (MSM). Definitions are often not provided in surveillance reports. We explore how prevalence differs according to definition used for risk groups in Jamaica.
Methods: We varied the behavior and the reference period used to define risk groups and compared the proportion who met the definition, the age, and the prevalence of STI for each combination. Gonorrhea, Chlamydia and trichomoniasis were detected from urine using Gen-Probe. The behaviors compared for sexwork were: self-reported sex in exchange for cash; sex in exchange for cash or gifts; and street soliciting of sex partners. The behaviors compared for MSM were MSM sex in past year; MSM sex in past 4 weeks; MSM sex with 2+ men in past 4 weeks; and MSM sex with partners from street. We estimated the STI prevalence for each group. Data were from Jamaica's surveillance program and included tests of 321 sexworkers and 201 MSM.
Results: The proportion meeting the criteria varied by definitoin used, however, STIs were common regardless of definition. Prevalence of HIV, chlamydia, and syphilis did not vary greatly more than 3% for MSM by definition used. HIV prevalence among MSM ranged from 32% to 35%. Among MSM and sexworkers, GC varied by definition and was highest (8.3% among MSM and 12.8% among sexworkers) among those who met partners on the street. The prevalence among sexworkers who reported taking cash for sex was similar to the prevalence of those who reported taking cash or gifts in exchange for sex.
Conclusion: STI were high among MSM and sexworkers regardless of definition used. Finding a partner on the street was associated with highest prevalence of infection for both sexworkers and MSM.

P3.137

THE GEOGRAPHY OF HETEROSEXUAL PARTNERSHIPS IN BALTIMORE CITY ADULTS
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Background: STI/HIV risk is determined in part by social and sexual network characteristics, and geography plays a role in network formation. Geographic proximity of sexual partnerships can be estimated using census tract (CT) data. To study the effects of neighborhood factors on STI/HIV transmission, the geography of partner selection must be understood.
Methods: The Baltimore site of the National HIV Behavioral Surveillance system surveyed adults reporting heterosexual partnerships. Data were gathered on CT of residence, and those of up to five of the most recent sexual partners. Close proximity was defined as residing in the same or adjacent CT, and distances between tract centroids were determined for each partnership. HIV core areas were defined as the CTs in the top quartile for standardized HIV/AIDS case rates.
Results: Participants (n=307) provided data on 776 recent sexual partnerships, and CT information was obtained for 510 partnerships (66%). Of these, 47% of partnerships were in close proximity. Median distance between partners was 1155 meters (IQR: 0-3426 m). Partners who exchanged sex for drugs or money were most likely to be in close proximity, followed by main and casual partners (60%, 49%, and

40%, respectively). Assortative mixing by age and/or race was not associated with geographic proximity. Residents of HIV core areas were significantly more likely to choose partners in close proximity than were residents of lower risk areas, even after adjustment for gender and partnership type (prevalence ratio = 1.3, 95% CI 1.1-1.6). Residents of HIV core areas also live significantly closer to their partners than do non-residents (Rank-sum p<.004).
Conclusions: Over 15 years ago, STD clinic patients in Baltimore were found to seek partners within a closely bounded geographical area. We confirm these results in a non-STD clinic population, indicating a continuing need for neighborhood approaches to intervention programs in inner-city areas.

P3.138

EVOLUTION OF A NETWORK OF SEXUALLY TRANSMITTED INFECTIONS CENTRED IN OUR REGION

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Objective: To describe the evolution of a sexual network in our region and illustrate the distribution and frequency of sexually transmitted infections within the network.
Method: After diagnosis of a new case of HIV in February 2007, partner notification, HIV and sexually transmitted infection (STI) testing were undertaken and 123 individuals were identified in the network at that time. Genitourinary Medicine (GUM) case notes of contacts identified in the network were reviewed from February 2007 to the 1st of July 2008. Frequency and distribution of diagnoses of STIs made on original identification in the network in 2007 were compared to subsequent new diagnoses within the network.
Results: One hundred and eighteen men who have sex with men (MSMs) and 5 women were identified in the original network in 2007. By the 1st of July 2008 sixty-five new sexual contacts (all MSMs) were added to the network and there were 25 new STI diagnoses in 13 contacts. Seven contacts originally identified in the cluster in 2007 were diagnosed with 16 of the new STIs, one of whom had 7 separate diagnoses. Three new diagnoses of HIV were made, of which one was in a contact originally identified and tested negative for HIV outside the window period in 2007.
Conclusion: The sexual network has evolved by increasing in size with multiple new STIs diagnosed. The highest risk of STIs occurred in relatively few individuals, several of whom were contacts originally identified in 2007. Standard interventions in health promotion in the GUM setting were not universally successful in preventing high-risk behaviour. Network monitoring can highlight individuals who should have additional input.

P3.139

THE LINK BETWEEN CONCURRENCY AND HIV INFECTION AMONG YOUNG, RURAL MALAWIAN FEMALES

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Background: Concurrency, or having more than one sexual partnership at one time, has been associated with the transmission of STIs, including HIV, in several populations. We hypothesized that rural Malawian youth were more likely to be infected with an HIV if they reported concurrency within their most recent relationship.
Methods: Data from a 2004 survey of sexual behavior and STI/HIV biomarkers among rural Malawians was used. Analyses were conducted in Stata and restricted to sexually active females (n=412) aged 15-24 years with reported concurrency in their most recent partnership by either their self or their partner and outcome of HIV infection. Analyses included multiple logistic regression, adjusted for confounders, and multiple imputation (MI).
Results: During their most recent sexual relationship, 5.1% of women reported concurrency and 14.6% reported believing their partner was concurrent, while 51.7% reported mutual monogamy. The overall prevalence of HIV was 4.4%. Among women who reported monogamy, those who also reported believing their most recent partner was concurrent were 4.29 (95%CI 1.01, 18.12) times more likely to be HIV+ than those who reported partner's fidelity, controlling for age. MI led to statistically insignificant results. Among women who reported believing their most recent partner was monogamous, those women who reported personal concurrency were 17.70 (95%CI 2.61, 120.25) times more likely to be HIV+ than those women who didn't report personal concurrency. Using MI and controlling for confounders, these women were still 3.94 (95%CI 2.45, 5.42) times more likely to be HIV+ than those women who didn't report personal concurrency.
Conclusions: Concurrency was not common among rural young women in Malawi but was associated

with an increased risk of HIV infection although estimates were imprecise. Youth, including young women and those in rural areas, need to understand the risks associated with concurrency.

P3.14

CHLAMYDIA PREVALENCE AMONG FEMALE SEX WORKERS (FSW) ATTENDING A DEDICATED LONDON SEXUAL HEALTH CLINIC

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Background: Our clinic operates a nurse led service providing sexual health services to FSW in London. The team have received anecdotal reports from FSW that in an increasingly competitive work market unprotected vaginal sex is becoming more common with clients. We aimed to find out Chlamydia trachomatis (CT) prevalence in the population attending the service and also to see if sites of infection may reflect increasingly unsafe sexual practices.
Methods: The clinic database and records were used to identify FSW attending the dedicated service over an 18 month period from 1/7/07 to 31/12/08. Total attendances were calculated for the FSW service. Case notes were reviewed for all FSW identified with CT infections. Reported sexual behaviour data was collated. Prevalence was calculated for our clinic population and sites of infection compared through consecutive 6 month periods.
Results: During the 18 month study period 1000 FSW attended the service for CT screening. A total of 63 FSW were diagnosed with CT at 77 sites (23 pharyngeal, 43 cervical, and 11 rectal). The overall prevalence of CT measured 6.3%, 6.1% and 6.4% for the consecutive 6 month periods evaluated. Cervical CT prevalence was 5.2%, 4.2% and 3.5% during these periods.
Conclusions: CT prevalence in our London FSW population is 6.3%. The levels in our cohort were stable during the data collection period. Anecdotal reports of increasing levels of unprotected vaginal sex have been reported by FSW. Our review of CT infection sites has not demonstrated increased levels of cervical infections. As this may be a suitable biological marker for increasing unsafe sex we think it is sensible to monitor this data.

P3.140

CONCURRENT SEXUAL PARTNERSHIPS AMONG ADULTS IN A CITY IN SOUTHEASTERN CHINA

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Background: City "X" is a heavily industrialized city in southeastern China with an urban population of 1 million in one of China's highest HIV prevalence provinces. Sexual transmission has replaced drug use as the primary transmission route. Based on data from a population survey, we assess the prevalence and correlates of having concurrent sex partners during respondents' current partnership.
Methods: In July 2008, we conducted an ACASI-administered survey in City X of 852 adults, at least 18 years old and urban residents. We calculated bivariate crude odds ratios (OR) to identify factors associated with concurrency.
Results and Conclusions: Among the 742 respondents with a current partner, 18% reported concurrent partnerships. This was 2.2 (95% CI: 1.7, 2.9) times as likely among men (31%) than women (9%). Concurrency was also higher among unmarried respondents (24%) compared to those with a government-issued marriage certificate (14%) (OR 1.9 [1.1, 3.2]). Indicators of high social status including attaining more than a high school education (1.6 [1.0, 2.4]), frequent (at least weekly) socializing after work (1.5 [1.3, 1.7]) and frequent alcohol consumption (3.0 [1.2, 4.6]) correlated with concurrency. Non-traditional sexual behaviors such as ever having used a condom (2.3 [1.5, 3.4]), and dating the current partner (21%) (3.0 [1.8, 4.6]) compared to being married/cohabitating (8%) at the time of the first sexual act. These correlates are consistent with findings from national surveys in the US. As China continues to develop economically, the cultural transformation towards Western values and a modern lifestyle influence sexual behavior. Concurrent sexual partnerships are an important feature of sexual networks that accelerates the spread of STDs. Although syphilis and HIV are generally limited to commercial sex workers and injection drug users in City X, rates of concurrency revealed in this study forecast risk of rapid spread into the general urban population.

P3.141

EFFECT OF CONDOM USE MEASURES IN PREDICTING STDS: VARIATION BY INDIVIDUAL AND CONTEXTUAL FACTORS OF SEXUAL RISKS

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Background and Objective: Mixed results in the global literature regarding the effectiveness of condom use against STD infection may be attributable to the variation in measurement of condom use. In this study, we assess the sensitivity and specificity of a variety of condom use measures in predicting STD infection, and assess the difference in sensitivity and specificity by type of sexual partner (clients vs. stable partners) and type of STDs, ethnicity, education, and level of risk of STD exposure.
Methods: Cross-sectional data from 454 female sex workers (FSWs) in Guangxi, China were analyzed to assess the sensitivity and specificity of six condom use measures in predicting biologically confirmed STD infection. Measurements of condom use were created with possible combination of types of use (any use, consistent use, or correct use) and periods of recall (life time, last month, or recent three sexual episodes).
Results: Measures of consistent use had higher sensitivity than measures of any use, regardless of the recall period and type of sexual partner. Incorporating correct use improved the measures of consistent use. Measures of consistent use and the combination of consistent and correct use demonstrated similarly high sensitivity in predicting particular STD infections. They showed much higher sensitivity in predicting STD infection among FSWs who reported higher risk for STD exposure than among FSWs who reported less risk of exposure to STD infections.
Conclusion: The findings suggest the superiority of consistent use and correct use of condoms in predicting STD infection. The findings also underscore the importance of considering the context of sexual risk such as type of sexual partner and risk of exposure to STD infection when we measure condom use. Future studies of condom effectiveness should collect and quantify these contextual and individual factors among target population.

P3.142

A SYSTEMATIC REVIEW AND META-ANALYSIS OF INTERVIEWING TOOLS TO INVESTIGATE HIV RISK BEHAVIOUR IN DEVELOPING COUNTRIES

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Objective: HIV interventions often rely on self-reported measures of risk factors, which are subject to recall and social desirability bias. Concerns over the accuracy of these measures have prompted efforts to improve the level of privacy and anonymity of the interview setting. The purpose of this review is to determine whether such novel tools minimise misreporting of sensitive information by reducing interviewer bias.
Methods: Systematic review and meta-analysis of empirical data collected in developing countries comparing traditional face-to-face interview (FTFI) with innovative tools for reporting HIV-risk behaviour. Crude odds ratios and 95% confidence intervals were calculated. Cochran's chi-squared test of heterogeneity was performed to explore differences between estimates. Pooled estimates were determined by gender, population, region, education and year of data collection using a random effects model.
Preliminary results: We included 17 datasets in the meta-analysis. There was significant heterogeneity across all studies comparing FTFI for two outcomes of interest: 'ever had sex' ($Q=35.95$, $p<0.001$) and non-condom use ($Q=37.49$, $p<0.000$). Non-FTFI methods were not associated with a signficant increase in the reporting of either outcome. However, some patterns emerged with some regions (Asia) and year (data collected after 2002) presenting higher estimates for reporting of 'ever had sex' in non-FTFI methods. The results for education level were consistent across studies: if more than 60% had secondary education, non-interviewer administerd studies were more succesful.
Conclusion: Contrary to expectation, there was no significant difference between FTFI and non-interviewer administered responses for the reporting of 'ever had sex' or for non-condom use, and little difference between subgroups including gender and education. These results imply that FTFI may not be inferior to innovative interview tools, or the questions were not too sensitive in the population assessed.

P3.143

OLDER AGE AND SWINGING; NEED TO IDENTIFY HIDDEN AND EMERGING RISK GROUPS AT STD CLINICS

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Background: Identification of STD risk groups is essential for optimal STD prevention and care. Until now, swingers, i.e. heterosexual couples who are practicing mate swapping, group sex, visit sex clubs for couples, are not considered as a specific risk group for STD in health care services and prevention. At our

STD clinic, we started in 2007 to systematically register whether an attendee was a swinger.
Methods: We analyse STD clinic registration data from January 2007 through December 2008, South Limburg, The Netherlands to assess swingers' share in consultations and STD diagnoses. For the current analyses STD is defined as a positive Chlamydia trachomatis (Ct) and/or Neisseria Gonorrhoea (NG) diagnosis.
Results: Off all 8971 consultations, 12% were comprised by swingers (median age 43 years, interquartile range (IQR) 38-48), 11% by men who have sex with men (MSM) (32 years, IQR: 23-46), 4% by female prostitutes (35 years, IQR: 28-44) and 74% by other heterosexuals (24 years, IQR: 21-29). Overall 11% of consultations were by older attendees (>45 years). Strikingly, STD prevalence is not low in this older group (table), with prevalence of Ct and NG being 7% and 3%.

	age <20	age 20-34	age 35-44	age 45 and older
Heterosexuals (n=7066)	12.6	10.3	6.8	2.9
MSM (n=875)	11.8	15.7	11.8	14.6
Swingers (n=1042)	0	7.2	8.7	13.8
Overall (all attendees)	12.5	10.6	8.1	9.3

Prevalence is especially high in MSM and older swingers. Older swingers show a Ct prevalence of 10% and a NG prevalence of 4%. In the older age group with STD diagnosis, swingers have with 55% and MSM with 31% the largest share in STD.
Conclusions: Older STI clinic attendees should not be overlooked as an important STI clinic population. Swingers comprise substantial part of STD consultations. They are a mainly older population group and have a huge share in STD diagnoses, especially in the older age-groups. While other risk groups for STI, such as MSM, are systematically identified at STD health care facilities in order to provide them with fitting care services, for swingers this is generally not the case. Swingers are a hidden risk group that need not to be ignored.

P3.144

SWINGERS, A SEXUAL SUBCULTURE AT RISK FOR STD.
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Background: Swingers, heterosexual couples whom as a couple have sex with others, form an elusive risk group for STD. However, they are rarely studied and are a missed target in surveillance and prevention strategies. Little is known about this risk group and their risk behavior and perceptions regarding STD. The aim of the SWAP (Swingers World Attitude and Practice) study is to map the sexual networks of swingers in relation to the spread of STD.
Methods: We interviewed 24 swingers (11 couples and 2 female swingers) about the swingers subculture, 20 swingers attended focus groups about risk perceptions and STD. Besides the qualitative component described here the SWAP study includes extensive behavioral, network and KAP (knowledge, attitude and practices) questionnaires and STD testing.
Results: Swingers appear to form a sexual subculture. They have their own terminology like "soft swap" (no penetrating sex), "wappen" (using drugs during swinging), "pay date" (swinging in exchange for money); their own specific (sexual) behavior (use of sex toys or massage); and their own norms and perceptions regarding sexual relations and STD risk. Different subgroups can be defined within the subculture by place and behavior of swinging: visiting clubs or only swinging at home; having sex within a steady group of swingers or only once or twice with a specific couple; using drugs or not. The risk behavior and perceptions seem to differ in the subgroups. Knowledge about STD, risk behavior and risk perception in the interviewed swingers is in general low.
Conclusions: Swingers form a sexual subculture. Within the subculture different subgroups and sexual networks with related knowledge, perceptions and behavior are formed. More information about the sexual networks, sexual behavior and perceptions of the swingers subculture is needed to develop effective prevention strategies.

P3.145

SEXUAL ORIENTATION & ACTIVITY ACCORDING TO COUNTRY OF BIRTH AMONG BLACK CARIBBEAN AND BLACK BRITISH HIV-POSITIVE MEN IN SOUTH LONDON: THE LIVITY STUDY
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Background: There remains considerable stigma and discrimination surrounding homosexuality in the Caribbean. We sought to examine the relationship between country of birth and subsequent sexual orientation and activity amongst black Caribbean (bc) men.
Methods: The Livity study is an in-depth epidemiological and behavioural study on the impact of HIV in the bc community in south London. 250 HIV-positive bc patients were enrolled from the 10 HIV clinics in south London. Participants completed an 11-part self-administered sexual health questionnaire.
Results: Of 250 participants, 171 (68.4%) were male, of which 67.3% were msm. The median age was 36 years (IQR=30-42). 58 (33.9%) were born in the UK, and 112 (65.5%) in the Caribbean (70.5% Jamaica, 14 from the Windward Islands, 6 Guyana, and 13 from other islands). A similar proportion of those men born in the UK or Caribbean reported that they were msm (72.4% vs. 63.4%, $p>0.1$), but a higher proportion of Caribbean-born msm identified as bisexual (0% vs. 29.6%, $p<0.001$) rather than homosexual. There was a significant difference in the median number of lifetime sexual partners based upon country of birth among msm (UK-born: 100, IQR=20-400 vs. Caribbean-born: 50, IQR=20-150, $p<0.05$), but not heterosexual men. A higher proportion of those msm born in the Caribbean vs. the UK reported likely HIV acquisition from a person of bc ethnicity (48.3% vs. 21.9%), but less likely from a white source partner (26.7% vs. 65.6%, $p<0.05$), while no significant difference was observed amongst heterosexual men. Importantly, none of those men who identified themselves as heterosexual (either UK- or Caribbean-born) reported any male sexual partners.
Conclusions: Despite persisting stigma, a high proportion of bc men identified themselves as msm, with distinct differences in self-identification and number of lifetime partners according to country of birth. There was no evidence of covert homosexual activity among bc heterosexuals.

P3.146

SEXUAL BEHAVIOUR AMONG HIV-POSITIVE BLACK CARIBBEANS IN SOUTH LONDON: THE LIVITY STUDY

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Background: The increasing rates of new HIV diagnoses among black Caribbeans (BC) in the UK is of major public health concern. However, there remains a paucity of research in this area. The LIVITY study is an in-depth epidemiological and behavioural study to determine the current status and potential future impact of HIV in the BCC.
Methods: Eligible patients were HIV-positive black Caribbeans (BC) registered at ten clinics in south London. Participants completed an 11-part self-administered questionnaire, including sexual behaviour before and after HIV diagnosis, sexually transmitted infections (STIs) and sex in, or with people from, the Caribbean.
Results: 250 HIV-positive BC patients were enrolled. Median age was 37 years (IQR=31-43), 45.6% were MSM, 22.0% heterosexual male and 31.6% were heterosexual women. 61.2% were Caribbean-born and 38.4% were UK-born. 54.4% of respondents believed that they had acquired their HIV infection in the UK and in the 5 years prior to study enrolment, of which 29.6% reported that the source partner was white, 25.9% BC and 22.2% black African. 56.1% of patients who had visited the Caribbean (n=148) reported sex while there and 29.0% reported sex with recent arrivals from the Caribbean. Median number of lifetime sexual partners was 6 (IQR=4-10) for heterosexual women; 25 (IQR=10-58) for heterosexual men and 60 (IQR=20-290) for MSM. Before HIV diagnosis, patients reported always using condoms with 27.4% of their partners versus 65.8% post HIV diagnosis. Patients reporting an STI after HIV diagnosis ranged from 7.1% in heterosexual men to 34.3% in MSM.
Conclusions: The LIVITY study is the first comprehensive study in HIV among BCs in south London. A high proportion of infections in this community were acquired in the UK, which contrasts with the epidemiology of HIV among black Africans in the UK, predominantly acquired in sub-Saharan Africa. There was also evidence of a significant overlap with the epidemic in the Caribbean.

P3.147

SEXUAL BEHAVIOURS OF BLACK CARIBBEANS IN BRITAIN: A COMPARISON OF A NATIONAL PROBABILITY SURVEY AND THE LIVITY STUDY

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Background: Increasing new HIV diagnoses among black Caribbeans (BC) in the UK is of major public health concern, but little is known of patterns of their sexual risk behaviours. The LIVITY project studied sexual health among HIV-positive BC in south London. We compared our findings with a sample of BC from a national probability survey of sexual behaviours in the British population, to inform the likely

future impact of HIV among BC.
Methods: BC from the LIVITY study (N=197) were recruited from 10 HIV clinics in south London from 08/2004-06/2007. This sample was then compared with BC (N=413) from the National Survey of Sexual Attitudes and Lifestyles, 2000 (NATSAL), conducted 05/1999-08/2001, using STATA survey analysis tools.
Results: LIVITY BC were older, more likely to be MSM (47%vs.1%) and Caribbean-born ($p<0.05$) than NATSAL BC. LIVITY heterosexual men (HM) reported riskier sexual behaviours than NATSAL BC HM: a higher proportion had ≥10 lifetime sexual partners and ≥5 partners in past 5 yrs. A higher proportion of LIVITY heterosexual women (HW) had ≥10 lifetime sexual partners, were more likely to have had an abortion and experienced sexual debut aged <16 than NATSAL BC HW. No differences identified in number, or turnover, of partnerships in the last yr.

Sexual Behaviours	Heterosexual Men			Heterosexual Women		
(N=unweighted/weighted)	NATSAL (N=144/77.6)	LIVITY (N=28)	P Value	NATSAL (N=256/77.9)	LIVITY (N=72)	P Value
Age of Coitarch (Yrs)						
<16	62.6%	67.7%		18.8%	35.6%	
≥16	37.4%	32.3%	0.611	81.2%	64.4%	<0.001
Number Lifetime Sex Partners						
<10	48.3%	22.6%		86.8%	68.1%	
≥10	51.7%	77.4%	0.019	13.2%	31.9%	0.002
Number of Sex Partners, Past 5 years *						
<5	61.4%	38.7%		89.1%	80.6%	
≥5	38.6%	61.3%	0.049	10.9%	19.4%	0.099
Number Sex Partners, Past Year						
<2	87.8%	80.8%		62.6%	48.4%	
≥2	12.2%	19.2%	0.152	37.4%	51.6%	0.207
Number New Sex Partners, Past Year **	(N=126/72.8) **	(N=25) **		(N=207/60.6) **	(N=63) **	
<2	72.8%	72.0%		95.2%	92.1%	
≥2	23.2%	28.0%	0.633	4.8%	7.9%	0.376
Ever abortion	-	-	-	28.0%	56.2%	<0.001
Ever paid for sex	6.9%	19.4%	0.131	-	-	-
* past 5 years for LIVITY BC is 5 yrs before HIV diagnosis						
** only if ≥0 partners in the last year						

Conclusions: Our results highlight differences in sexual behaviour between HIV-positive BC and the British BC general population. In HW, LIVITY BC had a greater number of partners in 2 time frames than NATSAL 2000 BC. In HW, earlier sexual debut, a greater number of lifetime partners, and abortions were more frequently reported in LIVITY BC than among NATSAL 2000 BC. Most LIVITY HIV respondents were aware of their diagnosis during this time period implying that HIV-positive BC in south London, had riskier sexual practices than the British BC general population before HIV diagnosis but not afterwards. Results will be used in modelling the potential future impact of HIV on BC.

P3.148

SEXUAL ORIENTATION AND SEXUAL PRACTICES AMONG MEN WHO HAVE SEX WITH MEN AND WOMEN IN EL SALVADOR

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Background: In Central America men who have sex with men and women (MSMW) may constitute a key bridging population, linking transmission of HIV to the general population. To inform prevention efforts we conducted a survey among men who have sex with men in El Salvador in the cities of San Salvador and San Miguel in 2008.
Methods: We used respondent driven sampling (RDS) to recruit participants, behavioral questionnaires where administered through computer assisted interviews. HIV testing was done using Determine and Oraquick and confirmed with ELISA. All participants were men who reported sex with another man in the last year. We investigated HIV prevalence and risk behaviors among current MSMW (sex with men and women in the last 12 months) compared to MSM. Findings presented are unweighted for RDS.
Results: 824 MSM were recruited, behavioral information was available for 795. Of MSM, 15% self-identified as heterosexual, 29% bisexual, 46% gay and 10% transvestite/transsexual. Overall, 50% has a life-time history of vaginal intercourse with women and 36% reported sex with men and women in the last year. There was no difference in HIV prevalence by sexual practices (12% in MSMW and 15% in MSM, p=0.24). MSMW were more likely to have been married, to report use of illegal drugs and alcohol, and to report exclusively insertive sex with male partners; less likely to disclose their same-sex practices to their family and sex partners, to have male steady partners, to have been tested for HIV and to report condom use on last sexual encounter with any partner.
Conclusions: MSMW have equal HIV prevalence than MSM and higher risk behaviors and constitute and important HIV bridge to the general population. Prevention interventions, such as condom promotion and STD treatment for this group are urgently needed.

P3.149

EXPLORING SEXUAL NORMS AND HIV RISK BEHAVIORS AND AMONG MIGRANT MEXICAN MEN LIVING IN TEXAS
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Background: Evidence suggests an association between U.S. migration and increased HIV risk behaviors and infection among Mexican men. Migrants' social isolation, poverty, and low education are associated with HIV vulnerability. How do migrant men's sexual norms influence their HIV risk behaviors?
Objectives: Describe HIV risk behaviors and sexual norms of migrant Mexican men in Texas; and, assess associations between sexual norms and risk behaviors.
Methods: We administered a survey on HIV risk behaviors and sexual norms to a convenience sample of Mexican men attending the Mexican Consulate in Dallas. We performed univariate and bivariate analysis in SPSS.
Results: Participants' (n=131) average age was 33 (17-60) and average years in the U.S. was 13 (<1-40). Fifty three percent were married/cohabitating and 32% were single. 21% thought they were at risk for HIV, 11% reported ever having sex with a man, 6% with a sex worker in the past year, 10% reported history of any STI, and 2% reported sex with someone with HIV. Only 17% reported always using condoms with any partner and 15% always used condoms with sex workers. Most reported inequitable sexual norms: women cannot have more than one sex partner (79% agreed); women who carry condoms are "easy" (43% agreed); men should make sexual decisions (38% agreed). Being single was significantly associated with perceived HIV risk ($p<0.05$) while living with partner was associated with rarely/never using condoms ($p<0.05$). Inequitable sexual norms were significantly associated with sex with another man, sex with someone with HIV, and previous STI ($p<0.05$).
Conclusions: Results suggest inequitable sexual norms influence HIV risk behaviors and should be addressed in HIV interventions tailored for Mexican migrant men.

P3.15

PREVALENCE OF SYMPTOMS AMONG PERSONS WITH DIAGNOSED AND UNDIAGNOSED CHLAMYDIAL (Ct) AND TRICHOMONAS VAGINALIS (Tv) INFECTIONS
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Objective: We estimate the prevalence of symptomatic and asymptomatic infections in a probability sample of the population of Baltimore, USA --- an urban community with historically high rates of diagnosed and undiagnosed STIs.
Methods: Since September 2006, the Monitoring STIs Survey Program (MSSP) has drawn probability

samples of young adults (ages 18- to 35) residing in households with landline telephones. Participants are interviewed using T-ACASI technology to provide maximum privacy. Consenting respondents mail in urine specimens for testing using APTIMA Combo2 (Gen-Probe, Inc.) for Ct diagnosis and transcription-mediated amplification (TMA) using analyte-specific reagents for Tv diagnosis. To date, 2,194 subjects have been interviewed and 1,559 have provided urine specimens adequate for testing.
Results: 79.3% (se=4.0%) of persons found to have undiagnosed Ct or Tv infections reported neither dysuria or discharge in the 3 months prior to testing. In contrast, approximately one-half of respondents (48.4%, se=10.8%) who report being diagnosed with a Ct or Tv infection in the past 3 months also reported dysuria (8.6%, se=5.1%), discharge (36.5%, se=10.0%), or both (3.3%, se=2.5%) during that same time period. Discharge was more strongly associated with both diagnosed and undiagnosed infection than dysuria (see Table).
Conclusions: While undiagnosed infections are more likely to be asymptomatic, the majority of both diagnosed and undiagnosed Ct and Tv infections occur among persons who report neither dysuria nor discharge. However, symptomatic infections are more closely associated with discharge than dysuria.
Table: Prevalence of Undiagnosed and Diagnosed Ct and Tv Infections among persons Reporting Dysuria or Discharge in the past 3 months. (Estimates weighted to reflect complex sample design.)

	Diagnosed Ct or Tv in past 3 mo.	Diagnosed Ct or Tv in past 3 mo.	Undiagnosed Ct or Tv	Undiagnosed Ct or Tv
SYMPTOMS (3 mo.)	No	Yes	No	Yes
None	99.6%	1.4%	91.7%	8.4%
Drip or Discharge	87.7%	12.3%	83.4%	16.6%
Dysuria	94.3%	5.7%	94.8%	5.2%
Both	96.6%	3.4%	73.5%	26.5%
	$p < 0.0001$	$p < 0.0001$	$p = 0.001$	$p = 0.001$

P3.150

ADOLESCENT BOYS' COMMUNICATION WITH PARTNERS ABOUT SEX
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Objectives: Adolescents have high rates of STIs. Sex partner communication is felt to be key to increasing condom use. We describe the timing, content, and style of communication about relationships and sex between adolescent boys and their partners.
Methods: Thirty 14-16 year old boys were recruited from a clinic serving a community with high STI rates, and completed 1 hour face-to-face interviews. Participants were asked open ended questions about partner communication, such as, "How did you let them know you were interested?" and "What kind of things do you talk about with this person?" Interviews were recorded, transcribed, and analyzed using qualitative methods.
Results: Mean age was 14.9 years. Ethnicities included African American (27), white (2), and Latino (1). 16 were sexually active. Communication pattern depended upon relationship type. With girlfriends, participants sought intimacy, and verbal communication consisted of getting to know someone (eg. details of school, favorite rap artist) and confiding in that person. Difficult conversations were often via phone, text message, or through a friend. With sex partners, verbal communication about sex tended to occur hours, days or weeks before the event. Participants described using "what-if" scenarios ("What if you gave me a blow job?"), giving the prospective partner the opportunity to show interest and provide initial consent. Communication at the time of sex was usually non-verbal and not subtle. The boys described waiting for cues from female partners to indicate sexual interest and consent, such as the partner taking a shirt off, putting condoms on the dresser, or kissing and having the partner escalate the behavior.
Conclusions: Condom interventions stress direct verbal negotiation between partners. However, boys in our study described little direct verbal communication at the time of sex. These data can inform the content, methods and timing of future condom interventions for adolescents.

P3.151

HIV/STI SEXUAL RISK BEHAVIORS AMONG LATINO MIGRANT WORKERS IN A NEW RECEIVING AREA IN THE UNITED STATES
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Background: Latino migrants in the US are faced with many factors that influence sexual risk taking behavior. The objective was to examine individual, social, and environmental factors that increase HIV/STI sexual risk among Latino migrant workers in a new receiving community.
Methods: Latino migrant workers (n=125) who arrived in New Orleans after Hurricane Katrina (August 2005) were assembled using respondent driven sampling, interviewed quarterly for one year, and tested at baseline and 1-year for CT, GC, syphilis and HIV using NAAT urine testing, IgG, and Ora-Sure rapid testing, respectively.
Results: The mean age was 29.7 years (SD 7.7) and mean time in US was 1.6 years (SD 3.1). Most were: Honduran (78.9%), worked in construction (74.3%), undocumented (98.2%), could neither understand nor speak English (98.4%), and while 42.1% were married, only 11.3% lived with their wife. Sex with and inconsistent condom use with different types of partners was: female sex worker (52.4% and 6.1%), casual sex partners (16.8% and 57.1%), and steady partners (14.7% and 88.8%). In multivariate analysis, drinking alcohol (O.R. 6.69 95% CI 2.16-20.7) and using elicit drugs (O.R. 2.69 95% CI 1.49-4.90) were associated with unprotected sex with a FSW or a casual sex partner. Prevalence of CT at baseline and 1-year were (CT 3.2% and 1.8%). No GC, syphilis or HIV was detected.
Conclusion: Low STI/HIV morbidity was found despite high rates of sexual risk behaviors. Prevention efforts should consider language and legal barriers and focus on reducing substance use and promoting social stabilization.

P3.152

POPULATION SIZE ESTIMATES FOR MEN WHO HAVE SEX WITH MEN AND FEMALE SEX WORKERS IN EL SALVADOR

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Background: Female sex workers (FSW) and men who have sex with men (MSM) are highly vulnerable to HIV infection, but this population can be particularly difficult to reach in Central America due to stigma and violence. We aimed to estimate the number of FSW and MSM in the city of San Salvador, El Salvador to better plan HIV prevention activities. There are no published estimates for these populations in El Salvador.
Methods: We conducted capture-recapture among MSM and FSW in San Salvador in 2008. Capture was done by distributing key chains to both MSM and FSW populations through local nongovernmental organizations (NGOs) that work with these groups. Recapture was done during the course of a behavioral surveillance survey (BSS) using respondent driven sampling. The distribution of key chains was done one month before the start of data collection for the BSS survey.
Results: The capture included 400 FSW and 400 MSM. Of the 663 FSW interviewed in the BSS survey, 39 had received the key chain for a total estimate of 6,800 (95% confidence interval, 4,833-8,767) FSW in San Salvador. Of the 624 MSM who participated in the BSS survey, 36 had received the key chain, resulting in a total estimate of 6,933 (95% confidence interval, 4836-9031) MSM in San Salvador.
Conclusions: Linking capture-recapture methodologies for population estimation to surveys can provide valuable information at a low cost. These data are crucial for program planning for national AIDS programs and NGOs working with these populations and for HIV estimation exercises.

P3.154

THE ASSOCIATION BETWEEN PERCEIVED RISK FOR STDS AND CONDOM USE IN SHORTER AND LONGER LENGTH ADOLESCENT SEXUAL RELATIONSHIPS

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Backround: Among adolescents, perceptions of risk for STDs (PRSTD) predict condom use with main sex partners. Because condom use declines over the course of a main sex partner relationship, interventions aimed at increasing PRSTD in order to increase condom use with main sex partners may need to consider differences in the importance of PRSTD in longer vs. shorter relationships. Objectives: To determine whether the association between PRSTD and condom use is different for shorter vs. longer relationships among adolescents and young adult women attending STD clinics.
Methods: A cohort of adolescent girls, aged 14 -19 at baseline, were recruited from an adolescent health clinic or an STD clinic in Baltimore, MD and interviewed semi-annually for 3 years. Participants

reported on a total of 587 unique sexual partners. Each main sex partner was included in the analysis only once; in instances where a partner was mentioned at two different interviews, data from the most recent interview was used. Partner PRSTD was dichotomized into very or extremely likely vs. not at all, a little or somewhat likely. Hierarchical linear modeling was used to control for multiple observations per participant.
Results: Ninety-seven percent of the 298 participants were African American; their mean age was 17.1 years. Fifty-two percent had a history of an STD. Among women in main sexual relationships shorter than 6 months old, there was no association between PRSTD and condom use at last sex (OR=0.82; 95%CI=0.26, 2.60), while the association was significant among women in main sexual relationship greater than 6 months (OR=3.17; 95%CI=1.33, 7.53).
Conclusions: These data show that PRSTD is a less useful target for shorter length main sex partner relationships, suggesting that these relationships may resemble casual sex partnerships where other psychosocial constructs such as self-efficacy may be better foci for prevention efforts.

P3.155

EVIDENCE THAT TESTING POSITIVE FOR HIV PRODUCES SUSTAINED CHANGES IN HIGH RISK SEXUAL BEHAVIOR
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Objective: To determine if persons with HIV infection demonstrate behavioral risk compensation with antiretroviral therapy (ART) or reversion to high risk sexual behavior over the course of HIV infection.
Methods: Between 2005 and 2008, we conducted annual cross-sectional, anonymous surveys of randomly selected patients seen in a large, urban HIV clinic in the US. Respondents diagnosed with HIV within the past year were excluded from analysis. We examined the associations of time since HIV diagnosis, age, gender, sexual orientation, ART use, methamphetamine use, and year of survey with non-concordant, unprotected anal or vaginal intercourse (UAVI) using logistic regression, and we used linear regression to assess the associations of these variables with the number of anal or vaginal sexual partners in the past year.
Results: The analysis of 716 surveys included 478 (70%) men who have sex with men, 112 (16%) women, and 87 (13%) heterosexual men. In multivariate analysis, non-concordant UAVI was associated with shorter time since HIV diagnosis (p=0.015), younger age (p=0.001), and methamphetamine use (p<0.001). In multivariate analysis, the number of sexual partners was associated with shorter time since HIV diagnosis (p=0.007), methamphetamine use (p<0.001), and lack of ART (p=0.004). The table summarizes adjusted results by time since HIV diagnosis.

Table. Risk Behaviors of HIV-Infected Persons by Time Since HIV Diagnosis

Time Since HIV Diagnosis	Sample Size (N=716)	Proportion Reporting Non-concordant UAVI* (95%CI)	Mean Number of Sexual Partners** (95%CI)
1-2 years	32 (4%)	32% (22-44)	9 (6-13)
2-5 years	121 (17%)	26% (21-33)	7 (5-10)
5-10 years	171 (24%)	22% (18-25)	5 (4-7)
≥10 years	392 (55%)	17% (14-22)	3 (2-5)

*adjusted for age and methamphetamine use

**adjusted for ART status and methamphetamine use

Conclusions: We found no evidence of risk compensation with ART use or reversion to high risk sexual behavior in the years following HIV diagnosis.

P3.156

SOCIAL AND BEHAVIORAL CORRELATES OF SEXUALLY TRANSMITTED INFECTION- AND HIV-DISCORDANT SEXUAL PARTNERSHIPS IN BUSHWICK, BROOKLYN, NY
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Background: The Centers for Disease Control (CDC) advise repeat HIV testing for partners of HIV-infected persons; injection drug users and their sex partners; individuals with recent multiple partners and their sex partners; those who trade sex for money or drugs; and men who have sex with men. Additional social and behavioral variables may be useful for identifying priority populations.
Methods: We analyzed data collected during a social network study conducted in a Brooklyn, NY neighborhood to identify social and behavioral characteristics of respondents (N=343) involved in HIV and HSV-2 discordant partnerships. We assessed whether screening tools composed of CDC-recommended sexual risk and injection drug indicators plus key social and behavioral correlates of discordant partnerships were more effective in identifying STI/HIV priority populations (defined as HIV or HSV-2 infected individuals and their sex partners) than tools composed of CDC-recommended indicators alone.
Results: HIV partnership discordance was associated with injection drug use but was generally not associated with sexual behaviors including multiple partnerships and sex trade. HSV-2 discordance was associated with multiple partnerships, lifetime number of sex partners, sex trade, and same sex partnership history. Additional correlates of HIV and HSV-2 discordance included respondent and/or sex partner's older age (iÝ25 years), respondent non-injection drug use, and respondent incarceration history. Screening based on CDC-recommended sexual risk and injection drug indicators identified just over half of priority populations for HIV or HSV-2 testing. Analysis suggested a screening tool that included CDC indicators plus indicators of older age, non-injection drug use, and incarceration would identify 90-100% of priority populations.
Conclusions: Inclusion of additional social and behavioral indicators to current screening tools could markedly improve the identification of populations in need of STI/HIV testing.

P3.157

CHANGING FACE OF FEMALE SEX WORKERS (FSW) IN LONDON 1999-2008
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Objectives: Immigration patterns to the UK have changed significantly over time. Patterns have often resulted in changes to the sex working population. The last 10 years has seen significant influxes from new EU member states as well as from other regions globally. We aimed to provide information of changes in the nationality of FSW in London over the last decade.
Methods: Clinic records and databases were used to identify all female sex workers attending a dedicated London clinic for FSW from (1/1/99 – 31/12/99 and 1/4/07 – 31/3/08). Details of nationality were recorded. Data was compared for the 2 separate time points. Nationalities were grouped according to geography and in the case of Europe according to traditional East- West borders.
Results: Data was available for 946 women in 1999 and 1399 women in 07/08. Country/ region of birth (shown as % 1999, % 2007-8) was UK (68%, 11%), Western Europe (0%, 13%), Eastern Europe (15%, 20%),Latin and South America (11%, 38%), SE Asia (7%, 5%), Russia/ CIS (0%, 8%), Sub-Saharan Africa (0%, 3%), Other (<1%, 2%).
Conclusions: The nationalities of FSW in London have changed dramatically over the last decade. UK born FSW now make up a small proportion of women seen in our central London clinic (down from 68% to 11%). The most notable increases over the study period has been in the number of FSW from Latin and South America (from 11% to 38%). Together women from Eastern Europe, Russia and CIS now make up 28% of our clinic attendees.

P3.158

THE ASSOCIATION BETWEEN HIV PREVALENCE IN FEMALE SEX WORKERS (FSWs) AND HIV PREVALENCE AMONG PREGNANT WOMEN IN SOUTHERN INDIA: AN ECOLOGICAL ANALYSIS
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Background: The HIV epidemic is very heterogeneous at the district level in the four Southern states of India most affected by the epidemic and where transmission is mainly heterosexual. We carried out an ecologic study of the relationship between high-risk population parameters and HIV prevalence among pregnant women (ANC HIV prevalence), in the context of Avahan, the India AIDS Initiative of the Bill & Melinda Gates Foundation.
Methods: The data used in this study included: ANC HIV prevalence available from the National AIDS Control Organization (dependent variable); data on prevalence of HIV and other STIs among FSWs, their clients and men who have sex with men (MSM) from studies carried out in the context of the monitoring & evaluation of Avahan in 24 districts; data of the size estimates of FSWs and MSM from the Avahan program in each district; and census data. The latter two data were used to estimate the % of female

(male) adults who are FSWs (MSM). The latter was also multiplied by HIV prevalence in FSWs (MSM) to obtain the % of HIV-positive FSWs (MSM) in the adult female (male) population. Linear regression was used for statistical analyses. Variables with $p<0.10$ in univariate regression were entered in a multivariate model.
Results: In univariate analyses, only HIV ($r=0.59$, $p=0.002$) and HSV-2 ($r=0.48$, $p=0.019$) prevalence among FSWs were significant predictors of ANC HIV prevalence. Although size of the FSW population was not associated with ANC HIV prevalence, there was a borderline significant association between the latter and the proportion of HIV-positive FSWs in the total adult female population ($r=0.35$, $p=0.09$). In the multivariate analysis, only FSW HIV prevalence remained significant.
Conclusions: This study suggests that there is a link between HIV prevalence among FSWs and the spread of HIV to the general population in Southern India. Such an observation supports the rationale of interventions targeted at the commercial sex milieu, such as Avahan.

P3.16

SURVEILLANCE FOR CHLAMYDIA TRACHOMATIS AMONG U.S. FEMALE SOLDIERS ASSIGNED TO U.S. FORCES, KOREA
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Objectives: (1) Determine the prevalence of Chlamydia trachomatis (CT) infections in active duty female Soldiers assigned to the U.S. Army, Korea, (2) reduce potential infertility and other health issues associated with CT infections, and (3) minimize the impact of CT infections on military readiness.
Methods: All females in-processing to the U.S. Army, Korea, were given a briefing on CT, provided a brief questionnaire, and requested to provide a urine sample for CT testing (Aptima Combo 2) in accordance with command policy.
Results: A total of 1,843 newly arrived female Soldiers, 17 to 56 years of age, were tested for Chlamydia trachomatis from November 2007 through November 2008. Female Soldiers ≤25 years comprised 59% of the population sampled. Among women 18-39 years (n = 1,712), a total of 116 (6.3) were positive for CT. The prevalence of 17-25 year old CT positive female Soldiers was 9.2% (100/1088), while for ages >25 the percentage of CT positive females was only 2.1% (16/755). Overall, the proportion of CT infections decreased from a high of 12.1% (28/231) (19 years old) to 6.0% (5/83) (27 years old), with only occasional infections in female Soldiers aged 28 to 39 years. Female Soldiers in the 18 and 19 year age groups had the highest prevalence of CT infections (11.7% and 12.1%, respectively).
Conclusion: The high prevalence of positive female Soldiers supports the need for a CT education, screening, and treatment programs for female Soldiers reporting to Korea. Detection and treatment are expected to reduce pelvic inflammatory disease, chronic pelvic pain and infertility, resulting in cost savings for the military. Reducing time away from work related to the sequelae of infection and reducing the need for medical evaluations will enhance military readiness. The screening program will be periodically reevaluated to assess cost and areas of emphasis.

P3.160

STUDYING COMPLEX INTERACTIONS AMONG DETERMINANTS OF HEALTHCARE SEEKING BEHAVIOURS: SELF MEDICATION FOR STD IN FEMALE SEX WORKERS
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Objectives: To describe self medication prevalence and determinants in a female sex worker population in Peru and to present a methodology exploring the best predictors as well as the interactions between determinants of self medication.
Methods: A cross-sectional survey of 4,153 female sex workers was carried out in Peru as part of the PREVEN trial evaluation. We estimated from this data the prevalence of self medication and explored determinants and associations using successive logistic regression models.
Results: Self medication prevalence was high at 32%. The most important predictor of self medication was having no knowledge of healthcare services provided for female sex workers. The second most important determinant was having another income beside sex work. Finally, the third main determinant was being brothel-based which diminished the risk of self medication. The other determinants were organised at different levels of proximity to the outcome creating a pathway of how self medication risk is formed.
Conclusions: We aimed to capture the complexity of determinants of a healthcare seeking behaviour by

using a succession of regression models. The importance of this staggered analysis resides on its potential to improve the understanding of risk pathways and, consequently, the targeting of interventions. In this study, we observed that a lack of awareness of healthcare services and financial barriers decrease access to healthcare, which in turn may increase self medication, providing an opportunity for prevention programmes. Potentially, the sharing of information that takes place between brothel-based female sex workers was beneficial in reducing self medication.

P3.161

ESTIMATING THE SIZE OF THE FEMALE SEX WORKER POPULATION IN THREE CITIES IN COTE D'IVOIRE: RESULTS FROM CAPTURE-RECAPTURE AND OTHER METHODS.

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Objectives: To estimate the size of the female sex worker (FSW) population in major cities in Côte d'Ivoire, West Africa, using three different methods: 1) size estimation via mapping; 2) capture-recapture (C-RC); 3) a multiplier method. These estimates are needed for planning and evaluating the coverage of an intervention.
Methods: Three cities in Côte d'Ivoire were included in the study: Yamoussoukro, Bouaké and San Pedro. First, a geographic mapping of hotspots was done by teams of trained assistants and peer educators. During the mapping, a census of FSW in each site was done. In a second phase, the C-RC method was applied by 10 teams each assigned a different geographic zone in the city. FSW were "captured" (C1) by giving them a study card. Six days later a second sample was "captured" (C2), including a number of FSW re-captured (R). Then the formula C1*C2/R was applied to estimate the number of FSW. During the C-RC, each participant was asked whether she had ever used the SW service center in town. This information was then compared with the number of SWs registered in that center, in order to estimate the total number of SW (multiplier method).
Results: The study was conducted between February and December 2008 in the three cities.

	Yamoussoukro	Bouaké	San Pedro
Number of hotspots	131	164	259
% FSW already visited services	15	17	30
Estimated number of FSW by:			
Census	1905	1208	1562
C-RC	1160	1202	1916
Multiplier method	2261	1376	15178

Conclusions: C-RC was found a feasible method to estimate the size of the FSW population in Côte d'Ivoire. An inconvenience is its relatively high cost when applying C-RC to the whole country. Size estimations through census are cheaper but may overestimate the number of SWs due to double counting. The multiplier method showed a huge overestimation in San Pedro where the center is functional since 2000. Because of the high mobility of SWs, questions on service use should be narrowed down to 6 months time instead of "ever" when using a multiplier method.

P3.162

HIV/STI PREVALENCE AND RISK BEHAVIOUR AMONG FEMALE AND MALE SEX WORKERS ATTENDING THREE PREVENTION AND CARE SERVICES IN CÔTE D'IVOIRE.

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Background: In 2004, a program was initiated to expand the reach and increase the quality of sex worker (SW) services in Côte d'Ivoire. In one center in Abidjan, services have been extended specifically for male sex workers (MSW).
Objectives: To assess HIV/STI prevalence and condom use among SWs attending prevention and care services, as part of a more comprehensive program outcome evaluation.
Methods: A cross-sectional study was conducted from October to December 2007 among a

representative sample of SWs visiting three program clinics in Abidjan and San Pedro. After giving informed consent, SWs were interviewed by trained research assistants using a structured questionnaire. Participants were asked to provide an oral fluid sample for on-site HIV testing (Oraquick HIV 1/2). Other samples included a self-administered vaginal sample (Female (F)SW) and a urine and anal sample (MSW). The samples were shipped to the Institute of Tropical Medicine in Antwerp, Belgium, for PCR testing (Amplicor (Roche) and ProbeTec SDA (Becton Dickinson) for N.gonorrhoeae and C.trachomatis; in-house PCRs for T.vaginalis).
Results: A total of 664 FSWs and 96 MSWs participated in the study.

	FSWs N=664	MSWs N=96	p
Age (median, yrs)	26	27	NS
Ivorian nationality (%)	74	93	<0,001
Consistent condom use with clients (%)	75	86	0,02
Consistent condom use with boyfriends (%)	32 (n=287)	82 (n=38)	<0,001
Prevalence STI (%):			
Ng (urine-anal)	5	13 (5-8)	0,002
Ct	4	3	NS
Tv	12	2	0,003
HIV	33	50	0,002

Conclusions: Despite program scale up, HIV prevalence among FSW remained high, with 35% among first attendees in one clinic compared to 27% in 2002. Ongoing prevention efforts should continue and be strengthened. This is the first study showing high STI and HIV prevalence among MSWs. Those data underscore the need to set up specific programs for MSWs, based on a better understanding of their needs including low threshold services.

P3.164

HIV BRIDGING IN RUSSIA: SEX RISK BEHAVIORS AND HIV PREVALENCE AMONG DRUG USERS AND THEIR SEX PARTNERS

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Objective: The HIV epidemic that began in Russia in the mid-1990s has been concentrated mostly among the high-risk core group of drug users (DUs). Recent evidence of increasing HIV cases among non-core group individuals attributed to heterosexual behavior raises potential concern about a more generalized epidemic. The purpose of this analysis is to examine the potential for HIV transmission from DU to their non-DU (e.g. non-core) sex partners.
Methods: Drug users and their sex partners were recruited during 2005-2008 in St. Petersburg, Russia using a modified form of respondent driven sampling. Participants underwent a computer-based interview and HIV testing.
Results: A total of 631 DU were recruited into the sample, with an HIV prevalence of 45%. A majority (84%) of DU reported being sexually active in the past 6 months, and the DU status of their sex partners was reported as follows: 54% DU, 40% non-DU, and 6% unknown DU status. In 41% of partnerships with an HIV-negative or unknown status partner not known to be DU (potential bridging partnerships), the last reported intercourse was unprotected. Characteristics of non-DU sex partners of DU enrolled in the study include many reporting new sex partners in past 6 months (66%), unprotected intercourse at last sex (60%), and multiple sex partners in past 6 months (48%). HIV prevalence in this group was 15% (8 out of 53).
Conclusions: The high prevalence of HIV among the core group of DU, their sexual contact with non-DU, and the high risk sexual behaviors of the potential bridging population together indicate the real potential for an increasingly generalized epidemic. The degree to which there will be further transmission from non-DU sex partners of DU, who exhibit high levels of sex risk behaviors, to other non-DU sex partners requires further study.

P3.165

HEALTH SERVICE USERS' VIEWS ON UNLINKED ANONYMOUS TESTING: FINDINGS FROM A QUESTIONNAIRE SURVEY

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Objectives: To seek the views of health service users on unlinked anonymous testing of blood (UAT) for sero-prevalence surveillance.
Methods: A questionnaire survey of users of two inner city genito-urinary medicine (GUM) clinics; London and Sheffield. 471 men and women were approached between October and December 2007.
Results: 424 (90%) completed a questionnaire. The mean age was 28.1 years. Ethnicity differed by location; 86.6% of participants in Sheffield were white compared to 69% in London. Only one in seven respondents (14.4%) were aware that blood left over from clinical testing may be tested anonymously for infectious diseases, although those who reported having seen information (6.9%) were broadly happy with its content. Almost nine out of ten (88.8%) said they would agree to their leftover blood being tested, with just over a quarter (26.8%) expressing worries about UAT. Respondents who had worries were less likely than those with none to agree to leftover blood being tested, and respondents participating in risk behaviours were more like to agree than those who did not. Almost three-quarters (74.3%) felt they should be asked whether they minded their blood being tested in this way.
Conclusions: Although knowledge is low, there is overwhelming support for UAT. Endorsement was even higher among those at great risk in terms of their sexual behaviours. However, the majority want the opportunity to consent for their blood to be used. The views of these participants may be seen to justify a reappraisal of UK policy in relation to UAT, particularly in relation to consent requirements and the provision of information about this method of sero-surveillance.

P3.166

HIV/HSV-2 CO-INFECTION AMONG CANADIAN STREET-INVOLVED YOUTH

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Background: Genital herpes (GH) is the most common sexually transmitted infection (STI) among HIV-infected persons; however, little epidemiological data are available on the co-infection of HIV and GH, especially among youth.
Methods: The Enhanced Surveillance of Canadian Street Youth (E-SYS) is a multi-site cross-sectional study aimed at determining the prevalence and associated determinants of sexually transmitted and blood-borne infections (STBBI) among street-involved youth in Canada. Participants completed an interviewer-administered questionnaire and provided urine and blood specimens for STBBI testing. Data collected between 1999 and 2005, comprising of a sample size of 6,053 participants (aged 14-24, from seven large urban centres) were used in the analyses.
Results: Overall, 32 (0.53%) participants tested HIV positive and 53.1% were positive for HSV-2 infection. Seventeen participants (0.28%) were HIV/HSV-2 co-infected. Males and females were equally represented among those co-infected with HIV and HSV-2 (52.4% vs. 54.5%, respectively). Also, a larger proportion of co-infection was found among youth who reported a history of STI (60% vs. 41.7%, respectively) and among those who had been involved in the sex trade as compared to those who did not (55.6% vs. 50.0%, respectively). Co-infected youth also tended to be older (76.5% 20-24 years old vs. 23.5% 15-19 years old) and Aboriginal (61.1% vs. 42.9%, non-Aboriginal).
Conclusions: The small sample size of HIV positive individuals among participating street-involved youth did not allow for in-depth statistical analyses of the determinants of HIV/HSV-2 co-infection. However, continued collection of data via E-SYS should allow for increased power to conduct such analyses in the future. HSV-2 infection is a known co-factor for HIV transmission and acquisition; a better understanding of HSV-2 risk behaviours among street youth could help inform prevention and control interventions for HIV and other STI transmission.

P3.167

INTER AND INTRA-SUBJECT VARIATION OF HIV-1 GP120 WITHIN HIV INFECTED INDIVIDUALS IN CHINA: PARENTERAL VS. SEXUAL TRANSMISSION

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Background: Previous studies of HIV transmission in injection drug users (IDUs) from southern China demonstrated higher inter-subject variation among individuals with increased risks of sexual

transmission. We present a new investigation on inter and intra-subject variation of HIV in IDUs and compare them to commercial sex workers (CSWs) infected with the same viral subtype.
Methods: Samples from IDUs at local clinics in Pingxiang (N=10) and Binyang (N=14) were collected in 2000. Samples were obtained from CSWs at local re-education centers from Kunming (N=5) in 2004. RNA was extracted and amplified by nested PCR protocol for the C2-V4 region of envelope. Clones were selected and amplified for bi-directional sequencing by TemplPhi. Phylogenetic and distance analyses were carried out using MEGA 4.0.
Results: Kunming and Binyang subjects were infected with HIV subtype CRF08_BC, while two subjects from Pingxiang were infected with HIV CRF08_BC and eight with HIV CRF01_AE. Inter-patient variation in the V3 loop for CSW from Kunming was 3.8% compared to 5.4% in IDUs, though not statistically significant. Intra-patient variation of V3 did not differ significantly between the two groups: 0.6% vs. 0.9%, respectively. Intra-subject length variation in V4 was seen in 1/5 (20%) CSW with CRF08_BC, but was present in 6/16 (37.5%) CRF08_BC and 5/8 (62.5%) CRF01_AE infected IDUs. For the IDUs, those in chronic stage had a higher median intra-patient variation value than patients who were recently infected, with the greatest variation being found in the V4 region (3.3 chronic:1.84 recent) and the lowest in V3 (1.7 chronic:0.48 recent).
Conclusions: More intra-subject variation occurred with subtype CRF01_AE than CRF08_BC infected subjects. Intra-subject diversity for those infected with subtype CRF08_BC was similar, regardless of mode of transmission. These results suggest less immune pressure inducing variation among CRF08_BC infected individuals in China.

P3.168

HIV PREVALENCE AMONG PATIENTS WITH SEXUALLY TRANSMITTED INFECTIONS (STIs) IN ITALY, 1991-2005
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Objectives: To estimate the prevalence of HIV infection among patients with STIs, to assess socio-demographic and behavioural characteristics of HIV-positive patients, and to evaluate the proportion of those who ignore to be HIV-infected.
Methods: Data were obtained from Italy's Sentinel STI Surveillance System (1991-2005). This System collects information on STI diagnoses provided by a network of 12 public STI clinics located in major cities.
Results: From January 1991 to December 2005, 45,197 patients (58.0% of all patients diagnosed with an STI) underwent HIV testing. The overall HIV prevalence was 8.0%. The highest HIV prevalence (11.2%) was observed in the age group 35-44 years. The HIV prevalence was 9.4% among males, 5.5% among females, 8.5% among nationals and 5.8% among non-nationals. When analyzing by exposure category, the prevalence was 63.1% among injecting drug users (IDUs), 26.0% among men who have sex with men (MSM), and 5.1% among heterosexual patients. HIV prevalence was 15.6% among patients with primary or secondary syphilis, 10.7% among patients with genital warts, and 11.1% among patients with genital herpes. The mean age of the 3,629 HIV-positive patients was 34 years (Standard deviation 8.5 years); more than half of them were males (75.3%) and 13.9% were non-nationals; 59.0% reported having had two or more partners in the previous six months; heterosexual contacts were reported by 54.4%; 27.1% discovered to be HIV-positive at STI diagnosis.
Conclusions: The data from Italy's Sentinel STI Surveillance System suggest that HIV infection circulates more frequently among males, IDUs, MSM, and patients with primary or secondary syphilis. More than one-fourth of HIV-positive patients ignored being HIV-infected. These results are important for developing prevention campaigns targeted at reducing the spread of HIV among STI patients at high risk of infection.

P3.169

DISPROPORTIONATE AND INCREASING BURDEN OF HIV INFECTION AMONG MEN WHO HAVE SEX WITH MEN IN SLOVENIA; RESULTS FROM THE NATIONAL SURVEILLANCE, 2000-2008
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Objectives: To present the evidence for a disproportionate and increasing burden of HIV infection among men who have sex with men (MSM) in Slovenia using HIV surveillance data.
Methods: We used data from: (a) case reporting of diagnoses of HIV infection and AIDS; (b) sentinel HIV prevalence monitoring among MSM (annually repeated one-day surveys in a community venue convenient samples in the capital Ljubljana); (c) behavioural surveillance among MSM (attached to sentinel HIV prevalence monitoring).
Results: In 2008, of the total of 46 new HIV infection diagnoses reported in Slovenia, 34 cases were diagnosed among MSM, representing 74% of all cases. During the period from 2000 to 2008, the national reported rates of all new HIV diagnoses rose from 6.5 to 22.6 per million population. The rates of new HIV diagnoses among MSM per million men 15-64 years old, rose from 9.9 in 2000 to 46.6 in 2008, an increase of almost 5 times. During the same period, the proportion of MSM presenting with AIDS defining illness at the time of HIV diagnosis declined from 57% in 2000 to 21% in 2008. Results from our sentinel behaviour surveillance among MSM indicate an increase in HIV testing uptake among MSM from 29% of MSM reporting testing during 2003 to 43% during 2008. By 2007, HIV prevalence in a sentinel population of MSM in Ljubljana has not yet raised above 5%.
Conclusions: MSM in Slovenia bear a disproportionate and increasing burden of HIV infection. The increase in the number of new HIV diagnoses during recent years has been due exclusively to the increase in new diagnoses among MSM. This may, in part, be due to increased HIV testing uptake and lower proportion of very late diagnoses of HIV infection among MSM. Intensified HIV prevention among MSM and continued HIV testing promotion is needed.

P3.17

TRENDS IN CHLAMYDIA TRACHOMATIS DIAGNOSIS BY GENERAL PRACTITIONERS VS STI CLINICS IN ROTTERDAM, THE NETHERLANDS

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Background: In the Netherlands STI testing is provided by general practitioners (GP), medical specialists and STI clinics. Since Chlamydia trachomatis (CT) is not notifiable, epidemiological data are not readily available. The Rotterdam STI clinic provides data to the Dutch STI sentinel surveillance system, while other test-sites are not linked to any surveillance system. Our objective was to explore trends in CT testing and positivity by sex and age-group in relation to testing by STI clinic, GP's and specialist facilities.
Methods: The laboratories provided aggregated CT test data by sex and age group from 2004-2007. Comparable data were extracted from the STI clinic surveillance.
Results : From 2004 to 2007 the number of CT tests performed increased with 29% from 22,115 to 28,554, with a range from 5% (STI clinic) to 57% (laboratory for GP and specialists). The number of CT cases detected increased with 41% from 1891 to 2657. Overall CT positivity-rate increased from 8.6% in 2004 to 9.3% in 2007. In 2007, mean CT positivity-rate in men was 11.5% with a maximum of 18% in the 15-24 age group. Mean CT positivity-rate in women was 9% with a maximum of 18% in the 15-19 year age group. In the GP lab Ct positivity in the 15-29 year age groups was 13% in women and 19% in men, compared to 14% in both sexes in the STD clinic. Preliminary analysis showed that in 2007 60% of testing was performed by GP's and 63% of CT cases were diagnosed in GP practice.
Conclusion: A complete picture of testing and diagnoses in geographical areas can be achieved by laboratory surveillance in combination with sentinel surveillance. Stimulating active testing and providing test facilities has led to an increase in uptake of testing and cases found in both GP and STI practice. The increase of CT positivity rates suggests ongoing transmission, and CT remains a public health problem especially in the younger age groups.

P3.170

CHARACTERISTICS OF PERSONS WITH A FIRST KNOWN HIV TEST AT THE TIME OF HIV DIAGNOSIS IN BRITISH COLUMBIA, 2004-2007

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Objective: Increasing serostatus awareness among persons with HIV requires understanding the characteristics of at-risk individuals who are not accessing HIV testing in a timely way. We used provincial HIV surveillance data from British Columbia (4.3 million population) to examine this question by describing the characteristics of newly diagnosed persons with a first known HIV test at the time of diagnosis.

Methods: Previous negative HIV test dates for newly diagnosed persons between 2004-2007 were identified through case follow-up and probabilistic matches of personal identifiers to a provincial HIV test database (>90% of all HIV tests in BC). Cases had no identified previous negative HIV test at diagnosis. Multivariate analysis was conducted in SPSS using key demographic, risk, test, and infection stage variables (selected based on literature review and data quality). Individuals with age < 15 years, or an inter-test interval of < 30 days were excluded.
Results: Of 1550 eligible persons, 596 (38.5%) had a first known HIV test at diagnosis. Cases were more likely to be > 65 years (AOR 2.94 [1.10, 7.86]) or of South Asian (AOR 2.89 [1.47, 5.70]), Hispanic (AOR 2.43 [1.37, 4.30]) or Black ethnicity (AOR 3.17 [1.56, 6.44]), or have an AIDS case report within 6 months of diagnosis (AOR 2.61 [1.73, 3.96]). Cases were less likely to be IDU (AOR 0.30 [0.18, 0.50]), MSM (AOR 0.49 [0.29, 0.83], STW (AOR 0.45 [0.23, 0.87]) or have a known HIV+ sexual partner (AOR 0.73 [0.54, 0.98]).
Conclusion: In BC, over one-third of newly diagnosed persons are not known to have a previous HIV test, associated with older age and advanced HIV at diagnosis. Differences by ethnicity may be related to immigration and poor determination of previous test status. Populations with a high prevalence of HIV and the focus of current HIV testing strategies were more likely to have previously tested. In these groups, increasing testing frequency for HIV may be more important than increasing overall uptake.

P3.171

EFFECTIVENESS OF OPTING-OUT STRATEGY FOR HIV TESTING; EVALUATION OF FOUR YEARS OF STANDARD HIV TESTING IN AN STD CLINIC
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Background: A high proportion of HIV infected individuals are unaware of infection. They miss the opportunity for timely treatment. Our STD clinic recognized the need to increase test rates and routinely included an HIV test, unless the client refuses, in each consultation as of 2004. We evaluated effectiveness of this opting-out approach for HIV testing.
Methods: We used (1) laboratory registry data from the area that is served by clinic and (2) anonimised STD clinic data (South Limburg, The Netherlands) from 2003 to 2007 to assess trends in HIV testing and (reasons for) test refusal using multivariate analyses and interview.
Results: In South limburg, number of HIV tests increased strongly, which was mostly due to increasing STD clinic requests and antenatal screening (table).

	Laboratory	Surveillance:	all HIV tests	(n)		STD clinic	HIV test refusal rates	(%)
	Men (tested elsewhere)	Men (tested STD clinic)	Women (tested elsewhere)	Women (tested STD clinic)	Women (antenatal screening)	Heterosexual men	Women	MSM
2003	2578	728	886	4336	0 (not implemented)	16.8	15.2	15.8
2004	2819	847	909	3556	5278	5.6	5.6	9.7
2005	2709	1001	1169	3546	4956	4.2	5.0	6.9
2006	2944	1363	1547	4040	4809	3.9	4.2	7.2
2007	2992	1774	1924	4241	4600	3.9	3.1	4.3

Of clinic attendees, 84% (1,616/1,920) were tested in 2003 and this proportion increased to 96% (3,699/3,836) in 2007 (table). Independent risk factors for test refusal were for heterosexuals: Dutch nationality, fewer sex partners, history of STI, previous negative HIV test, STD related complaints, a partner with STD ('partner-warned'); for MSM 'partner-warned', and age over 30 years. Self-reported reasons for refusal included fear, being in window phase and recently tested. In spite of low refusal rates, 88% (n=57/65) of MSM and 44% (191/424) of heterosexuals who refused HIV testing were linked to higher STI/HIV risk (i.e. being older MSM, reporting STD related complaints and being warned by an STD positive partner).
Conclusions: Standard HIV testing in an STD clinic is feasible and effective in increasing awareness of ones HIV status. It should be essential part of STD screening in STD clinics and should be considered in other health care settings for specific risk groups as well. Identification of both client and provider driven factors related not testing should be focus of local settings that incorporate routine HIV testing in order to optimize their existing testing and counselling practices.

P3.172

COMPARISON OF CLINICAL AND DEMOGRAPHIC CHARACTERISTICS OF PREGNANT WOMEN WITH NON-PREGNANT WOMEN SEEN FOR HIV-RELATED CARE IN 2007

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Background: Routine offer of HIV testing to women attending antenatal care, potentially provides pregnant HIV-infected women with the opportunity for earlier diagnosis and is successful at detecting previously undiagnosed infections. SOPHID (Survey of Prevalent HIV Infections Diagnosed) collects data on individuals accessing HIV-related care in England, Wales and Northern Ireland (EWNI); this includes date of first diagnosis, but not pregnancy status. NSHPC (National Study of HIV in Pregnancy and Childhood) independently collects data on pregnancies in HIV-infected women.
Objectives: We combined limited data from both datasets to compare the characteristics of HIV-infected pregnant women with HIV-infected non-pregnant women (>15years) seen for care in EWNI in 2007.
Methods: Records of 946 pregnant women reported to the NSHPC with an expected date of delivery (EDD) in 2007 (EWNI only), were compared with SOPHID records of all individuals accessing care in 2007: 76% of the 946 women were matched. Univariable logistic regression was used to compare characteristics of pregnant and non-pregnant women in SOPHID.
Results: At least 5% of women seen for HIV-related care in 2007 were pregnant in 2006/07, over half of whom were diagnosed before 2006 (475, 57%). Those first seen for care in 2006/07 (a proxy for diagnosis in 2006/07) were more likely to be pregnant than those diagnosed previously (OR 2.1, 95%CI). Pregnancy was also associated with a higher CD4 count when first seen (CD4>350; OR 1.4, 95%CI) and being asymptomatic (OR 2.6, 95%CI compared with having had AIDS). A higher proportion of black-African women were pregnant than white women (5.5% compared to 4.4% p=0.03).
Conclusions: At least 5% of women seen for HIV-related care in 2007 in EWNI were pregnant. Although, overall, pregnant HIV-infected women have higher CD4 counts, they are likely to require more complex clinical care during pregnancy. Women living with HIV also require advice and interventions regarding conception.

P3.173

HIV INFECTION AMONG PATIENTS WITH GONORRHEA INFECTION OR WITH EARLY SYPHILIS, FRANCE, 2004-2007

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Objective: To describe the prevalence of HIV infection among patients for whom a diagnosis of gonorrhea or early syphilis was notified to the surveillance system between 2004 and 2007.
Methods: The surveillance system of sexual transmitted infections (STI) is based on the voluntary participation of clinicians (STI clinics, hospitals, private practitioners' consultations). Case definitions include clinical and biological criteria for early syphilis (< 1 year), and the isolation of Nesseiria gonrrhoeae for gonorrhea infection. For each new case, a standardized epidemiological questionnaire is completed by the physician. A short self-administered questionnaire on sexual practices in the last 12 months is offered to each patient.
Results: Between 2004 and 2007, 653 cases of gonorrhea infection and 1,783 cases of syphilis were notified. Compared to syphilis patients, patients with gonorrhea infection were younger (30 vs. 36 years), more often heterosexual (35% vs. 17%) than homosexual, and from Paris region (70% vs. 48%). HIV status was known for 85% of gonorrhea patients and 93% of syphilis patients ; among those, the prevalence of HIV infection was respectively 16% and 43%. For gonorrhea and syphilis, HIV prevalence was higher in men having sex with men (MSM), respectively 23% and 49%, than in heterosexual men (respectively 3% and 18%) or women (3% and 6%). Among HIV positive patients, the proportion of patients who discovered their HIV infection along gonorrhea or syphilis diagnosis was high, respectively 18% and 11%. However, HIV positive patients had a similar profile for both STI: median age of 38 years, over 90% MSM, high risk behaviors during the last 12 months, with unprotected oral sex (95%), unprotected anal sex (>50%) and a large number of sexual partners (median 9-10).
Conclusion: The prevalence of HIV among patients with gonorrhea or syphilis was high. An STI diagnosis should be an opportunity for screening HIV infection, and counseling on prevention.

P3.174

DETECTION OF ACUTE HIV INFECTION IN ROUTINE COUNSELING AND TESTING POPULATIONS IN LIMA, PERU

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Background: Routine screening for acute HIV infection using HIV RNA PCR analysis of pooled serum samples is not standard practice in public health systems of resource-limited countries. We sought to determine the utility of pooled PCR testing to detect acute or early HIV infection in Lima, Peru.
Methods: Eligible participants included men and women seeking HIV testing at a municipal STI clinic in Lima or at temporary testing sites in surrounding neighborhoods. Blood samples were screened for HIV using fourth-generation EIA Ag/Ab assay (Vironostika Uni-Form II) with Western Blot (Immunogenetics) confirmation. All samples negative by EIA or Western blot were pooled into groups of 50 for HIV RNA PCR analysis (Taqman/Roche). EIA-negative/PCR-positive samples were defined as acute HIV infection, and EIA-positive/ Western Blot-negative or indeterminate/PCR-positive samples were classified as early infection.
Results: A total of 1,191 participants were recruited from December 2007 to May 2008. The overall HIV prevalence in the study population was 3.2% (38/1191); 4.0% (37/917) in the STI clinic population and 0.4% (1/274) in the community. The prevalence of HIV was 10.9% (25/230) among self-identified gay or bisexual men, 3.7% (4/109) among other men, and 2.1% (7/329) among women. Two cases of early HIV infection were diagnosed (0.2%; 95% CI=0-0.6%), both in male STI clinic patients who identified as gay or bisexual. No (0/1191; 95% CI=0-0.3%) cases of acute HIV were identified.
Conclusions: Pooled HIV RNA screening was technologically feasible and easily adapted to existing counseling and testing systems in Peru. Though no cases of acute infection were detected in high-or low-risk populations, our limited sample size cannot rule out a prevalence of < 0.3%. Larger-scale studies are necessary to determine the relative cost and utility of RNA PCR and 4th generation EIA/p24 antigen assays for the detection of acute and early HIV infection in high-risk populations in resource-limited settings

P3.175

SECOND GENERATION SURVEILLANCE IN LOW INCOME COUNTRY: AN EXPERIENCE FROM PAKISTAN

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Background: HIV/AIDS Surveillance established by AIDS Control Program involves active collection of both biological and behavioral data of transgender sex workers (TSWs) in order to understand the impact of prevention and to design new interventions.
Methods: Biological and behavioral data was collected during 2008 in two urban centers of largest province of Punjab. In order to enhance participation list of all Gurus (mentor) was developed. Gurus were selected randomly from the list to recruit eligible subjects. Two hundred of each behavioral questionnaire and dried blood spot (DBS) for HIV testing was administered by trained community workers after taking informed consent in each city. All biological samples were screened by EIA-Enzyme immunoassay.
Results: Overall HIV prevalence was 2.5% in both cities. Mean age of TSWs was 27.5 + 6 years. Majority of TSWs i.e., 86% were unmarried and entertained 1.5 + 0.7 clients per day. Seventy five percent of TSWs knew that condom was effective prevention method against HIV transmission and only 17% used condom. More than two third i.e., 64% had herd of Sexually Transmitted Infections of which 13.2% had self reported STIs in past six months of which 91% were treated. Only 7.2% were utilizing services offered by service delivery projects. Awareness of STIs among utilizers and non-utilizers of services showed statistically significant difference (100% Vs 30% p; 0.000).
Conclusion: Among TSWs though knowledge of HIV preventive method is satisfactory but is not being practiced. There is need to increase condom usage and improve service utilization among marginalized population.

P3.177

RECENT HIV INFECTION AMONG PREGNANT WOMEN: NEW INSIGHTS INTO THE SWAZILAND EPIDEMIC

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and Social Welfare, Swaziland; [5]National Central Public Health Laboratory, Ministry of Health and Social Welfare, Swaziland; [6]Abbott Diagnostics Division, Italy

Objectives: To study the proportion and the factors associated with recent HIV infections among pregnant women in Swaziland.
Methods: We analyzed 1,636 HIV-positive serum samples collected from pregnant women included in the HIV Serosurvey conducted in Swaziland in 2004 and 2006. For each woman, socio-demographic and clinical data were available. All samples were tested for the avidity index (AI) as previously described1; samples with an AI ≤0.80 were defined as recent infections (≤6 months from seroconversion). A multivariate analysis was conducted to analyze socio-demographic and clinical factors associated with recent infection.
Results: The proportion of recently infected pregnant women was 14.6% (95%CI 12.2-17.5) and 13.1% (95% CI 11.0-15.5) in 2004 and 2006, respectively, with no significant difference between the two years. At multivariate analysis, the probability of being recently infected was significantly higher among women aged 14-19 years compared to older women (aOR 2.2, 95%CI 1.5-3.2), and among those who were at their first pregnancy (aOR 1.6, 95%CI 1.1-2.3). Residence, nationality, educational level, and reportedly sexually transmitted diseases were not associated with recent infection.
Conclusions: In Swaziland, HIV continues to spread among pregnant women without any evident decrease in the last years, as indicated by the stable trend of recent infections rate. In our sample, adolescent girls showed the highest probability of acquiring HIV infection, stressing an urgent need for tailored prevention and education campaigns to be conducted in schools, focused at preventing on stopping behaviors at-risk among teenagers. [1]Suligoi B. et al, J Clin Microbiol 2002; 43(11):4015-4020

P3.178

IMPACT OF HIV ON STI IN INDIA – AN EXPERIENCE AT A TERTIARY CARE CENTRE
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Background: HIV infection is a global phenomenon. India has about 2.5 million HIV infected people with a prevalence of about 0.36%. The infection is spreading primarily (85%) through sexual route in India. HIV infection is impacting STIs globally which is a risk factor for acquiring STIs. Studies from various centres have reported different patterns of STIs in HIV infected persons. We studied the occurrence of STIs in HIV infected individuals attending our STD Clinic.
Methods: A retrospective analysis of HIV positive patients' records, from 2002-2007 at our Sexually Transmitted Diseases Clinic was done. A detailed clinical history and examination were recorded. VDRL and CD4+ cell count were done. Dark ground illumination, Gram's stain, Tzanck smear and wet mount were done where ever required.
Results: There were 512 HIV positive patients (404 males and 108 females) between 4.5 - 66 years of age (mean 33.5 years). Majority of them were males between 20-40 years and most of them had acquired HIV from commercial sex workers through heterosexual unprotected intercourse. Two hundred and fifty nine (50.6%) of them had 358 STIs. Many of them had more than one STI. One hundred and five of these were genital herpes, 97 genital warts, 59 molluscum contagiosum, 32 syphilis, 32 scabies, 14 candidal balanoposthitis, 8 vulvovaginal candidiasis, 7 chancroid, and 2 each were gonorrhoea and non-gonococcal uethritis. The CD4+ cell count in these patients varied from 2 – 1610 cc3 (mean 279 cc3 ; median 223 cc3). Viral STIs like genital herpes (32), genital warts (18) and molluscum contagiosum (18) were more often seen in patients with <200 CD4+ cell count.
Conclusions: In our study about 50% (259) HIV infected patients had STIs. Majority of these (73%) were viral STIs. Syphilis was the next commonest while others were less frequent. High occurrence of STIs in our study group may be due to the study subjects been taken from a STD Clinic.

P3.179

HERPES SIMPLEX VIRUS INFECTIONS IN A BUSY URBAN SEXUALLY TRANSMITTED DISEASES CLINIC
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Objectives: To evaluate the rates of herpes simplex virus (HSV) type 1 and 2 infections in individuals attending an urban Sexually Transmitted Diseases (STD) clinic and to describe rates by gender and age.
Methods: In a busy urban Sexually Transmitted Diseases clinic we offer HSV type 1 and 2 IgG specific serology testing in individuals who present for routine STD screening. Review of demographic information of patients who had a HSV type1 and 2 specific serology obtained during the year 2007 was performed.
Results: A total of 364 individuals were screened for type-specific antibodies to HSV-1 and HSV-2.

Characteristics of the individuals are described in Table 1. Chi-square tests were used to evaluate differences in positive serology rates by age and gender.

Table 1	Total of individuals tested for HSV-1 and HSV-2 = 364	
HSV-1 positive serology	265/364 (72.8%)	
HSV-2 positive serology	168/364 (46.15%)	
HSV-1 positive serology		
HSV-1 by Gender		
Male	168/240 (70%)	
Female	97/124 (78.2%)	p = 0.095
HIV-1 by Age		
<29 years	122/178 (68.55)	
>29 years	142/185 (76.7%)	p = 0.079
HSV -2 positive serology		
HSV-2 by Gender		
Male	94/240(39.2%)	
Female	74/124 (59.7%)	p <0.001
HSV-2 by Age		
<29 years	54/178 (30.3%)	
>29 years	113/185 (61%)	p< 0.001

Conclusions: We found high rates of individuals with HSV-1 and HSV-2 infections. HSV-1 infections occur in similar rates in both men and women and in younger and older individuals. HSV-2 infections are more frequent in females and in older individuals. Efforts to decrease acquisition in the younger population should be included in STD and HIV prevention programs.

P3.18

AN EVALUATION OF CHLAMYDIA SCREENING IN BRITISH COLUMBIA (BC): TRENDS IN VOLUME, COVERAGE AND POSITIVITY (1998-2006)

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Background: Chlamydia trachomatis (Ct) screening is key to control programs. Trends in volume and coverage can be used to evaluate physician and public awareness campaigns. Trends in percent positivity can mirror prevalence and Ct screening can lead to a reduction in pelvic inflammatory disease (PID). Canada and the US recommend annual Ct screening for sexually active women <26 y/o; however, population-based data on volume, coverage and percent positivity are sparse. In 2001, 20-49% of <27 y/o female members of US commercial or Medicaid managed care organizations were screened for Ct. Our objective was to evaluate Ct screening volume, coverage and percent positivity by age and gender for the entire BC population.
Methods: Over 95% of residents of British Columbia (BC) participate in the Medical Services Plan (MSP) which reimburses insured medical services including Ct laboratory testing based on defined fee codes. The only non-MSP laboratory is the BC Provincial Laboratory (PL). For 1998-2006, we analyzed Ct screening by age and gender based on Ct testing fee codes submitted by MSP-funded labs and a data extract for Ct tests performed by the PL. We used Ct surveillance data for new infections divided by total

test volume to estimate annual percentage positivity. From 1998-2000, > 90% of Ct tests in BC were EIA; from 2002-2006, >90% of tests were NAT.
Results:

	All of BC	F 15-44 y/o	F <26 y/o	F 15-19 y/o	F 20-24 y/o	All males	M 20-24 y/o
Tests '98/'06	186,186/258,918	153,723/191,168	67,537/82,747	22,807/25,216	36,685/47,774	19,362/41,117	3955/9270
Coverage '98,'06	4.7%, 6.0%	17.0%, 20.9%	10.4%, 12.7%	17.8%, 18.4%	28.7%, 31.8%	0.98%, 1.9%	3.0%, 5.9%
% (+) '98,'06	2.6%, 3.5%	2.2%, 3.1%	3.9%, 5.3%	5.5%, 7.3%	3.2%, 4.7%	7.0%, 7.4%	11.2%, 11.6%

Conclusions: In the last decade, Ct screening volume and coverage rates have increased substantially for both genders and all age groups in BC suggesting enhanced awareness and priority among physicians and patients. Although test percent positivity has increased to a lesser degree, it still suggests a true increase in Ct prevalence, at least in the tested population. The annual population-based Ct screening coverage rate in females <26 y/o increased from 10.4% in 1998 to 12.7% in 2006.

P3.180

THINK HERPES, THINK HIV: RESULTS OF AETIOLOGICAL SURVEILLANCE AMONG GENITAL ULCER PATIENTS IN SOUTH AFRICA 2006-2008
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Objectives: To determine the aetiology of genital ulceration syndrome (GUS) among patients presenting to primary healthcare clinics in South Africa.
Methods: Anonymous genital ulcer specimens were collected from consecutive consenting patients attending clinics in Johannesburg, Kimberley and Bloemfontein between 2006 and 2008. A multiplex PCR assay detected the presence of Herpes simplex virus (HSV), *Treponema pallidum* (TP) and *Haemophilus ducreyi* (HD) in ulcer swabs; a separate PCR was used to screen DNA extracts for *Chlamydia trachomatis* L1-L3 (LGV). Ulcer impression smears were Giemsa-stained to detect intracellular Donovan bodies of granuloma inguinale (GI). All participants provided sera for HIV screening and were offered on-site HIV counseling and testing. Genital ulceration was treated according to existing national guidelines with benzathine penicillin and erythromycin. The Chi-squared test was used to determine the significance of associations.
Results: Among the 425 GUS patients screened (273 men, 152 women), HSV was detected in 231 (54.4%) of cases, TP in 40 (9.4%) cases, HD in 8 (1.9%) cases and LGV in 6 (1.4%) cases. No GI cases were detected. There was no significant gender difference in terms of ulcer aetiology. HSV was detected in 54.6% of men and 53.9% of women; TP was detected in 9.2% of men and 9.9% of women. The overall HIV prevalence was significantly higher in women (81.6% vs. 72.2% in men; $p = 0.005$). The prevalence of HIV co-infection in patients with genital herpes was 77.6% in men and 86.6% in women ($p = 0.118$). There was a significant association between HIV co-infection and the detection of HSV in genital ulcers ($p = 0.006$).
Conclusions: Genital herpes accounts for the majority of genital ulcers and the prevalence of HIV co-infection is high, particularly in women. The data support the recent addition of oral acyclovir to national GUS treatment guidelines. These data confirm the demise of chancroid in South Africa.

P3.181

THE ETIOLOGY OF GUD IN MALAWI: 1992-2007
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Background: Genital ulcer disease (GUD) continues to be a common presentation to STD clinics in sub-Saharan Africa although the etiology of ulcers has shifted in recent years. In Malawi STD clinics, we have been tracking GUD etiologies and their relationship to HIV since 1992.
Methods: Patients presenting with GUD at two STD clinics were enrolled. Swabs were taken from the

ulcer base, and blood plasma was collected. Detection methods included: 1992: H. ducreyi (HD) culture; T. pallidum (TP) direct fluorescent antibody; Herpes simplex virus (HSV) serology (Herpecheck). 1999 and 2007: PCR for HD, TP, HSV and lymphogranuloma venereum (LGV); HSV serology (Focus). Chi squared test was used to establish p values.
Results: See Table 1. HIV prevalence among STD clinic patients without GUD declined from 230/517 (44.5%) in 1992-3, to 115/311(37.0%) in 1998-9, to 732/3242 (22.5%) in 2007 (P<0.001). Among all men presenting with STD symptoms, the proportion presenting with GUD declined from 778/1295 (60.0%) in 1992-3, to 657/1510 (43.5%) in 2007 (P<0.001).
Conclusion: GUD remains the single most prominent presentation for men with STD symptoms in Malawi. Although HSV is now the prominent GUD pathogen, the curable pathogens HD, TP, and LGV persist. GUD continues to be highly associated with HIV, despite a falling HIV prevalence among non-GUD patients. HIV testing and targeted HIV/STD prevention programs among GUD patients must be the norm. Table 1. Changing Etiology of Genital Ulcers in Malawi 1992-1993 1998-1999 2006-2007 Agent N=778 % N=137 % Pos/tested % P- valu HD 204 26.2% 41 29.9% 58/371 15.6% <0.001 TP 136 17.5% 5 3.6% 20/371 5.4% <0.001 TP-ser 129 16.6% 12 8.8% 21/422 5.0% <0.001 HSV NA 47 34.3% 267/371 72.0% <0.001 HSV-ser 6/26 23.1% 107 78.1% 299/422 70.9% <0.001 LGV NA NA 24/371 6.5% NA HIV-ser (GUD only) 445 57.2% *243/445 54.6% 257/422 60.9% 0.17 *HIV-serology for 1998-1999 is from a sample of general STD clinic patients with GUD

P3.182

RISK FACTORS FOR HERPES SIMPLEX TYPE 2 (HSV-2) ANTIBODIES AND GENITAL GONOCOCCAL OR CHLAMYDIAL INFECTION IN THE GENERAL POPULATION OF COTONOU, BENIN

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Background: In the context of a project evaluating preventive interventions, we carried out in 2007-8 a study on HIV/STI prevalence in the general population of Cotonou, Benin. We report the results on risk factors for HSV-2 infection and for infection by either *Neisseria gonorrhoeae* or *Chlamydia trachomatis* (NG/CT).
Methods: Cross-sectional study among men (M) aged 15-64 and women (W) aged 15-49, recruited in randomly selected households of 38 Cotonou census areas. After informed consent, eligible subjects of each selected household answered a questionnaire and provided blood and genital samples, that were tested for HIV, HSV-2 antibodies, syphilis, NG and CT. Statistical analyses, including multivariate logistic regression (MLR), were weighted according to the sampling design and took into account the cluster effect.
Results: Biological samples were available from 1113 M and 1240 W (82% and 89 % of eligible M and W, respectively). The prevalence figures were: HIV, 2.0% in M, 3.8% in W; syphilis, 1.3% in M, 0.3% in W; HSV-2, 20.2% in M, 33.3% in W; NG, 0.2% in M, 0.6% in W; NG/CT, 2.4% in M, 2.8% in W. Risk factors for HSV-2 in MLR (all p<0.01) were: female sex [Odds ratio(OR)=2.6], increasing age and larger number of lifetime sexual partners (test for trend for both factors); whereas being single was protective (OR=0.5). Independent risk factors for NG/CT (all p<0.04) were: having had >1 non-spousal partner in the last year for both M (OR=3.4) and W (OR=8.4), and for M, being aged 20-34 (OR=3.3), and being a man in uniform (OR=9.2) or a trader or salesman (OR=3.1). Additional factors for women were: younger age (test for trend), and age at sexual debut<15 (OR=3.8).
Conclusions: Prevalence of HIV and HSV-2 was moderately high in this population, whereas the prevalence of curable STIs was low. Predictors of HSV-2 and NG/CT were as expected from the literature, but also point out to a higher level of risk of some employment categories for M in the local context.

P3.183

HERPES SIMPLEX VIRUSES TYPE 1 AND TYPE 2 IN HETEROSEXUAL AFRICAN AMERICAN MALES: THE ROLE OF MALE CIRCUMCISION

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Background: Male circumcision is protective against HIV and other sexually transmitted infections. However, interactions between male circumcision status and herpes infections are complex. In a heterosexual African American male STD Clinic population, we evaluated whether circumcision status influenced HSV-1 or HSV-2 seroprevalence, clinical genital disease, or asymptomatic shedding.

Methods: Prospectively evaluated African American men attending an STD clinic provided a sexual history, and underwent genital examination, serological testing for HSV-1 and HSV-2, and collection of genital swabs for HSV PCR. Circumcision status was determined by direct examination. Analyses were performed using appropriate parametric and nonparametric methods.
Results: Of 460 men, 335 (73%) were circumcised and 125 (27%) were uncircumcised; 61% were HSV-1 positive and 46% were HSV-2 positive. Circumcision rates increased significantly with decreasing age. There was no difference in HSV-2 seroprevalence between circumcised and uncircumcised men. However, uncircumcised men had a significantly higher prevalence of HSV-1 than circumcised men (OR 1.85; CI 1.15 – 2.96). This difference in HSV-1 seroprevalence primarily occurred in men between 18 and 25 years old (OR 2.83; CI 1.38-5.83) with men over 26 having similar HSV-1 seroprevalences. Lack of circumcision remained independently associated with higher HSV-1 seroprevalence after multivariate analysis for age, years since sexual debut, and lifetime number of sex partners. Frequency of observed genital ulceration did not differ by circumcision status. HSV shedding at the single visit was too infrequent for meaningful analysis.
Conclusions: Evaluation of circumcision and HSV status in African American men is confounded by age. Lack of circumcision is associated with higher HSV-1, but not HSV-2, seroprevalence in young African American heterosexual men.

P3.184

PREVALENCE OF CHRONIC HEPATITIS B VIRUS INFECTION AMONG HIGH-RISK WOMEN IN BURKINA FASO

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Objective: To estimate the prevalence of hepatitis B virus (HBV) among women at high risk of HIV infection in Burkina Faso.
Methods: Cross-sectional survey of 603 high-risk women in Burkina Faso. Hepatitis B core antibodies (HBcAb) and hepatitis B surface antigen (HBsAg) were detected in plasma: (i) if results of both tests were positive and if IgM-HBcAb was negative, a chronic HBV infection was diagnosed, which triggered the dosage of hepatitis B envelop antigen (HBeAg) and antibodies (HBeAb); (ii) if HBcAb was positive and HBsAg was negative, detection of hepatitis Bs antibodies (HBsAb) was done.
Results: Overall, 228 (38%), 7 (1%) and 6 (1%) women were HIV 1, HIV-2, and HIV-1+2 seropositive, respectively, 121 (50%) of whom received highly active antiretroviral therapy (HAART) which always included lamivudine (3TC). Among the 445 women (74%) with positive HBcAb, 58 were both HBsAg positive and IgM-HBcAb negative. The prevalence of chronic HBV infection was 9.6% (58/603; 95% CI 7.4-12.2), with similar rates among HIV-seropositive (10.0%) and HIV-uninfected (9.4%) women (P=0.83). Of these 58 women, 7 (12%) were HBeAg positive/HBeAb negative, 45 HBeAg negative/HBeAb positive (78%), and 6 HBeAg negative/HBeAb negative (10%). Of the 387 women positive for HBcAb only, 174 (45%) had undetectable HBsAb. This was more frequent among HIV-seropositive (58%) than among HIV uninfected (37%) women (P<0.001).
Conclusions: HIV-HBV coinfection was very frequent in this population, which emphasises the need for monitoring the risk of hepatotoxicity and 3TC resistance with 3TC-based HAART. These findings strongly support the need for quantifying HBV DNA levels to estimate the prevalence of pre-C mutant viruses in HBV chronically-infected women, and to detect occult HBV infection, more frequently observed during HIV-HBV coinfection.

P3.19

IS THERE EVIDENCE TO SUGGEST THAT CHLAMYDIA POSITIVITY IS INCREASING AMONG AUSTRALIAN WOMEN?

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Background We present the results of an analysis of computerised client records at a large urban sexual health clinic in Australia. This analysis aimed to determine whether chlamydia positivity among female clients has changed over time after adjusting for demographic, clinical and sexual risk factors associated with chlamydia infection.
Methods Computerised records for all heterosexually active female clients who attended the Melbourne Sexual Health Centre for the first time between 2003 and 2007 and were tested for chlamydia, were included in the analysis. Chlamydia diagnostic methods were constant during this time. Chlamydia

positivity estimates and 95% confidence intervals were calculated and logistic regression was used to assess any possible change in chlamydia positivity over time adjusting for demographic, clinical and sexual risk factors. National chlamydia surveillance and antibiotic utilisation data were also analysed.
Results The average age of the 10,498 women tested was 27.7 years (median 25.7 years, range 12.2 to 80.7 years). The overall prevalence of chlamydia among female clients during the study period was 5.9% (95%CI: 5.5%, 6.4%). Chlamydia positivity increased each year from 4.2% in 2003 to 6.7% in 2007 ($p<0.01$). After adjusting for other factors, chlamydia positivity increased on average 13% per year (OR=1.13; 95%CI: 1.06, 1.20). The average daily defined dose of antibiotics effective against chlamydia declined significantly between 1992 and 2001 ($p<0.01$) at a time when chlamydia positivity across Australia was increasing ($p=0.06$).
ConclusionsThese data suggest that the true prevalence of chlamydia in Australia is rising. One possible and biologically plausible explanation for this, is that fewer antibiotics are being prescribed that would inadvertently treat asymptomatic chlamydia infection.

P3.2

DIAGNOSIS OF GONORRHEA IN VIENNA: OBSERVATIONS OF 10 YEARS
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Objective: The aim of the study was to evaluate the number of gonococcal infections during the last 10 years, to determine the resistance pattern, and to compare culture with nucleic acid amplification tests (NAATs).
Methods: From 1999 to 2008 a total of about 250,000 men and women were examined for the presence of gonorrhea and other STIs in the Outpatient´s Centre for STI in Vienna. Cervical and/or urethral swabs as well as extragenital samples were collected and incubated on selective VCA3 medium. The Aptima Combo 2 (AC2) assay was evaluated as an additional diagnostic procedure for genital and extragenital samples collected in and outside the laboratory. Disk diffusion method was performed to identify the resistance patterns.
Results: A significant increase of gonococcal infections from 52 in 1999 to 298 in 2002 was noticed. After a decrease during the three following years, a significant increase of about 30% was observed again in 2008. Comparing both, culture and the AC2 assay in 366 infected individuals, showed a high concordance of both methods for urethral and cervical samples (95.1 and 86%, respectively), while culture for rectal and pharyngeal samples was only positive in 76.9% and 38.5%, respectively, and therefore significantly lower when compared to NAATs. For specimens transported to the laboratory only half of the infections were detected by culture. An increasing number of gonococcal isolates with antibiotic resistance were detected: While in 1999 only 3.1% of QRNG were isolated, the rate was 64% in 2003 and 52% in 2007. Tetracycline resistance was observed in 34% and penicillin indeterminate resistance in 67% of gonococcal isolates. No resistance against cephalosporines was observed.
Conclusions: The increase of antibiotic resistance demonstrates the need for resistance proof by culture. Amplification methods should be recommended for the detection of pharyngeal and rectal gonorrhea and in case of suboptimal collection and transport conditions.

P3.20

SEXUALLY TRANSMITTED INFECTIONS AND SEXUAL RISK BEHAVIORS: COMPARING TEENAGERS AND ADULTS IN A PROBABILITY SAMPLE OF RESIDENTS OF BALTIMORE, MD, USA
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Background: Adolescents reportedly are at higher risk for acquiring sexually transmitted infections than their adult counterparts. Previous research has associated STI prevalence with risk behaviors that may be more prevalent among teenagers.
Methods: The Monitoring STIs Survey Program (MSSP) monitors the prevalence of STIs in Baltimore, MD, USA using automated telephone self-interviewing (T-ACASI) and urine collection kits sent out and returned by U.S. mail. We report findings from the first two years of MSSP survey sampling on the prevalence of undetected STIs and sexual risk behaviors among sexually active Baltimore residents, comparing teenagers aged 15-19 to adults aged 20-35.
Results & Conclusions: Chlamydia trachomatis (CT) rates were significantly higher among teens than among 20-35 year-olds, 7.4% v. 3.3% ($p=0.01$), but age group differences in T. vaginalis (TV)

prevalence were not statistically significant. Teens were significantly more likely than adults to have had more than one sexual partner in the previous year. However, teens were also more likely to have used a condom during most recent sexual intercourse and less likely to have had sex while under the influence of drugs or alcohol. In multivariable logistic regression, age group was not associated with the odds of having CT. Moreover, when analyses were run separately for teens and adults, factors associated with a higher odds of CT infection were the same for both age groups; only nonwhite race and having more than four sexual partners were predictive of CT infection, suggesting the possible role of network and/or biological factors in teens' CT infection risk.

P3.21

THE SENSATIONALISING OF STI RATES AMONG INDIGENOUS PEOPLE IN CONTEMPORARY AUSTRALIAN SOCIETY

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Background: Indigenous people of Australia, particularly those who live in remote areas, experience rates of STI at many times that of non Indigenous Australians. In mid 2007, the Australian Government passed legislation, now known as the Northern Territory Emergency Intervention that was partially based on the premise that child sexual abuse (CSA) was a norm in many remote communities. Furthermore endemic STI rates were a result of this. Since then the legislation has enabled unprecedented access to and control over many facets of Aboriginal people's lives in the Northern Territory. However the issue of reducing endemic STIs in these communities has been largely shunned and instead negative media and attention has continued to link CSA to STIs.
Methods: New diagnoses of sexually transmissible infections are notifiable to the National Notifiable Diseases Surveillance System. Trends in STI were analysed for cases aged 16 years or less at diagnosis in both Indigenous and non- Indigenous populations.
Results: More than 90% of STIs reported nationally for Indigenous people aged less than 16 years occurred in areas of high endemicity. In 2007, 280 cases of chlamydia, 328 of gonorrhoea and 11 case of infectious syphilis were notified. Of these cases, 98%, 97% and 100%, respectively occurred in children aged 12 - 15 years, similar to the proportions reported in the same age group in the non-Indigenous population. For those aged 12 – 15 years, the proportion of notifications increased with age, with the highest number of notifications among those aged 15 years.
Conclusion: STIs in young people, more often than not, occur in areas where there is a lack of accessible and appropriate health care facilities. The age pattern of notification of STIs in the Indigenous population was similar to that in the non-Indigenous population yet little attention is given to this population in linking STI to CSA.

P3.23

BACTERIAL SEXUALLY TRANSMITTED INFECTIONS WITHIN THE HIV POPULATION ATTENDING TWO SEXUAL HEALTH CLINICS IN AUSTRALIA, 1998-2008

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Background: STIs are a marker for sexual behaviour and also enhance the infectiousness of HIV. In Australia, individuals with HIV disease outside the major cities are managed mostly by sexual health clinics. We investigated the feasibility of biological and behavioural data extraction from a database management system commonly used by many sexual health clinics.
Methods: Data from two regional sexual health clinics in the state of Queensland (1998-2008) were merged; where necessary individual patient records were scrutinised. New diagnoses of organisms or syndromes were expressed as rates per 100 pts at each yearly interval, where the denominator population was the total number of HIV patients at each time interval.
Results: The total number of individual HIV pts increased from 213 in 1998 to 451 in 2008. The number of individuals who presented with an STI more than once was 38 (8.4%). Diagnosis rates for N.gonorrhoeae, C.trachomatis, and infectious syphilis were 0.7, 1.5, 0 (respectively) in 1998, 1.5, 3.1, 1.1, in 2005-6, and 2.4, 1.1, and 1.8 in 2008. Overall, the contributions of chlamydia and gonorrhoea to syndromes were as follows:

	Urethritis	Proctitis	Epididymitis
C trach	27%	38%	7%
N gono	30%	41%	14%

Neither identified	38%	13%	78%

Conclusions: Bacterial STIs in this HIV population reached a nadir in the 1990s, but have increased again considerably. Sexual health clinics provide an opportunity for enhanced surveillance and population interventions for HIV.

P3.24

SENTINEL SURVEILLANCE FOR RECTAL CHLAMYDIA AND GONORRHEA IN SAN FRANCISCO

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Background: Rectal chlamydia trachomatis (CT) and Neisseria gonorrhoeae (GC) infections are both markers of high-risk sexual behavior and can facilitate the transmission and acquisition of HIV infection. The San Francisco Department of Public Health recommends sexually active men who have sex with men (MSM) be tested for these rectal infections every 3-6 months. Sentinel surveillance examines the positivity of disease and is less biased by changes in testing practices. We examined trends in rectal infections among MSM in San Francisco from 2005 through 2008 in four sentinel clinics.
Methods: The San Francisco Department of Public Health provides rectal CT and GC testing at the municipal STD clinic, a gay men's health clinic, an HIV care clinic and to private physicians with practices largely comprised of MSM (PMDs). All rectal GC/CT testing was conducted at the San Francisco Department of Public Health, Public Health Laboratory using the Gen-Probe APTIMA Combo2® Assay (San Diego, CA). Trends in positivity among MSM seen at the STD clinic, gay men's health clinic, HIV care clinic and private physicians were examined. Trends in positivity were assessed using Pearson's Chi-square statistics.
Results: Rectal GC positivity declined by 62% (95% CI 50-74%) at the STD clinic from 8.9% in 2005 to 5.5% in 2008 ($p<0.0001$) (Table). Rectal GC positivity (range) was stable across the period at the gay men's health clinic, HIV care clinic, and among private physicians. Rectal CT positivity was stable (8.6% to 7.9%) across all sentinel surveillance sites during the period of 2005 through 2008.
Conclusions: From 2005 through 2008, rectal GC positivity declined at San Francisco's STD clinic, and remained stable among the other sites. Rectal CT remained unchanged over this period. Sentinel surveillance of rectal infections is critical in monitoring local epidemiology. Further efforts to decrease rectal CT/GC infection in MSM are needed.

	2005	2006	2007	2008	X2 P-Value
Rectal GC					
STD Clinic	201/2272 (8.9%)	310/3492 (8.9%)	251/3564 (7.0%)	197/3561 (5.5%)	<0.0001
Gay Men's Health	65/906 (7.2%)	103/1395 (7.4%)	92/1426 (6.5%)	132/2079 (6.4%)	0.5976
HIV Care Clinic	9/108 (8.3%)	25/308 (8.1%)	28/339 (8.3%)	29/334 (8.7%)	0.9948
Private MD	18/342 (5.3%)	38/732 (5.2%)	53/1284 (4.1%)	33/790 (4.2%)	0.5981
Total Rectal GC	293/3628 (8.1%)	476/5927 (8.0%)	424/6613 (6.4%)	391/6764 (5.8%)	<0.0001
Rectal CT					
STD Clinic	193/2272 (8.5%)	253/3492 (7.3%)	263/3561 (7.4%)	244/3561 (6.9%)	0.1294
Gay Men's Health	72/906 (8.0%)	102/1395 (7.3%)	124/1426 (8.7%)	201/2079 (9.6%)	0.1016
HIV Care Clinic	12/108 (11.1%)	34/308 (11.0%)	27/339 (8.0%)	25/333 (7.5%)	0.3210
Private MD	36/340 (10.6%)	49/730 (6.7%)	94/1280 (7.3%)	65/789 (8.2%)	0.1403
Total Rectal CT	313/3626 (8.6%)	438/5925 (7.4%)	508/6606 (7.7%)	534/6762 (7.9%)	0.1697

P3.25

STI CO-INFECTIONS IN THE NETHERLANDS: YOUNG HETEROSEXUALS AND MIDDLE-AGED MSM AT HIGHEST RISK

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Objectives: We assessed the extent and risk factors of multiple incident STI infections of the population seen at the Dutch STI clinics to enable specific subpopulations to be targeted with future interventions.
Methods: Routine surveillance data submitted by STI clinics to the National Institute for Public Health on demographics, sexual behaviour, STI testing (for chlamydia, gonorrhoea, syphilis, HIV and hepatitis B) and diagnoses for the period 2004-2007 were analysed. STI clinic attendees with previously diagnosed HIV infection were excluded from the analyses.
Results: STI co-infections were diagnosed concurrently in 2,414 (7.4%) of all 32,586 incident STI diagnoses. In total, 75% were coexisting chlamydia and gonorrhoea infections. In multivariate logistic regression analyses, co-infections were significantly more often diagnosed in MSM (OR=7.5) and less often in women (OR=0.8) than in heterosexual men. STI clinic attendees from Surinamese or Antillean origin were at higher risk for co-infection (OR=4.3) than Dutch attendees. Reporting a previous STI (OR=1.8) and commercial sex contacts (OR=1.3) were also significantly related with co-infection. The youngest age group (below 19 years) was at highest risk for STI co-infections. Stratified by sexual preference, a linear trend was seen for co-infections by age in MSM. In contrast, 27% of co-infections in heterosexuals were diagnosed in the youngest age group compared to 14% of mono diagnoses and 10% of consultations.
Conclusions: Specific sexual networks, such as MSM, migrant groups and young heterosexual attendees were at highest risk for STI co-infections. The differential trend with age among MSM versus heterosexuals suggest these high-risk networks may have different determinants that put them at higher risk, such as sexual risk taking, biological susceptibility, knowledge and compliance with prevention measures. Prevention could therefore be targeted differentially towards specific sexual networks.

P3.26

WHO IS AT GREATEST RISK FOR BACTERIAL STD ACQUISTION AMONG HIV-INFECTED MEN WHO HAVE SEX WITH MEN IN CARE IN A BOSTON COMMUNITY HEALTH CENTER?
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Background: Based on reports of increasing STDs and unsafe sex among HIV+ MSM, the current analysis was designed to understand transmission risk factors in this population.
Methods: Two hundred and one MSM in care at a Boston community health center were enrolled in a behavioral intervention, which included computer-administered self-interview every 6 months for a year, and serological syphilis testing, and NAAT urine screening for Gonorrhea and Chlamydia, at each study visit. Their electronic medical records were reviewed to detect new STDs acquired between study visits. Logistic regression analyses were conducted to determine behavioral and demographic variables associated with acquiring a new STD. Variables found to have independent significant associations with acquiring a new STD were included in multivariable logistic regression analyses.
Results: Most participants were Caucasian (74.6%), college educated (54.7%), with a mean age of 40.7 years. Almost 1/2 had a detectable viral load (49.8%) and 57.0% were on HAART, with a mean CD4 count of 537 cells/mm3. At baseline, 4.5% had an STD, and 12.3% developed a new STD over the year, with syphilis accounting for almost half of the incident infections. In the 3 months prior to enrollment, 69.0% engaged in insertive or receptive anal sex with an HIV (-) or status unknown partner; 23.6% drank 5 or more alcoholic drinks at least once in a day, 65.3% reported other substance use, including 30.8% using Methamphetamine. In the multivariable logistic regression model, being under 40 years old (OR: 4.1, CI 1.5 – 11.6) and reporting recent methamphetamine use (OR: 3.5, CI: 1.3 – 9.1) were significantly independently associated with acquiring a new STD.
Conclusions: Incident STDs are common among HIV+MSM in care. Providers should often screen HIV+ MSM for bacterial STDs, particularly younger patients, and should routinely inquire about substance use in order to prevent new STD acquisition and HIV/STD transmission.

P3.27

HIGH PREVALENCE OF CHLAMYDIA TRACHOMATIS AND NEISSERIA GONORRHEA INFECTIONS IN PREGNANT WOMEN OF SIX BRAZILIAN CITIES
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Objective: to estimate prevalences of Chlamydia trachomatis and Neisseria gonorrhoeae (NG) infections among Brazilian pregnant women and to identify its association with socioeconomic and demographic variables.
Methods: a transversal multicentric study including pregnant women attended in primary health care units from six Brazilian cities between 2004 and 2005. Women recently treated for genital infections

were excluded. A questionnaire including socio-demographic, clinical and behavioral data was applied. Genital specimens were collected for Hybrid Capture for CT and NG. Odds Ratios were calculated and statistical analysis was done using two-sided t tests, Fischer exact tests and chi-square tests.
Results: There were enrolled 3303 pregnant women, with a mean age of 23.8 years (± 6.9). Prevalences rates were 9.4% and 1.5% for CT and for NG, respectively. Ten percent of pregnant women positive for CT were infected simultaneously by NG. Risk of being infected by one of the pathogens was two-fold higher among pregnant women with less than 20 years. Factors significantly associated with infection were: age lower than 20 years (OR 2.49, 95%CI 1.92-3.22 for CT, and OR 2.25, 95%CI 1.19-4.28 for NG), being afro-descendent (OR 1.65, 95%CI 1.15-2.36 for CT, and OR 2.36, 95%CI 1.08-5.05 for NG), being single or divorced (OR 1.94, 95%CI 1.48-2.53 for CT, and OR 2.75, 95%CI 1.44-5.22 for NG) and having more than one sexual partner during the previous year (OR 2.89, 95%CI 2.18-3.84 for CT, and OR 2.81, 95%CI 1.42-5.51 for NG).
Conclusions: This study observed high prevalence rates of CT and NG infections among Brazilian pregnant women. Main risk factor for infection was age lower than 20 years.

P3.28

PREVALENCE OF THE NEISSERIA GONORRHOEAE AND CHLAMYDIA TRACHOMATIS IN MALE WORKES OF SMALL INDUSTRIES
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Objectives: To estimate Neisseria gonorrhoeae and Chlamydia trachomatis prevalences among Brazilian male workers of small industries and to identify its association with socioeconomic and demographic variables.
Methods: a transversal multicentric study including male workers from six Brazilian capital . Urine samples were examined by PCR. Sociodemographic and behaviors data were obtained by specific questionnaires. Odds ratios (OR) were calculated and Fischer exact tests and chi-square tests were used for statistical analysis.
Results: 2814 men were enrolled, with a mean age of 33.2 years (± 10,7). Urine samples was obtained of 2329 men. The gonoccocal and chlamidial prevalences were 0,9% and 3,4% respectively. Risk of being infected with N. gonorrhoeae was three-fold higher among men with more than one sexual partner during the previous year (OR 3,70, 95% CI 1,33-11,78, p=0,008). The chlamydial highest prevalences were associated with: age under 25 years (OR 2.42, 95%CI 1.51-3.60; p=0,000), lower incoming (OR 1.90, 95%CI 1.08-3.37; p=0,032), being single, divorced or widowed (OR 1.69, 95%CI 1.07-2.57; p=0,03) and more than one sexual partner during the last year (OR 1.72, 95%CI 1.07-2.76).
Conclusions: High chlamydial prevalence were found among Brazilian male workers. Without considering that those results are representative of the male population of the country, that population was a group supposedly assintomatic for STD, what can happen in most of the small industries of the country, because they don't have health care at the industries. This evidences the importance of the development of actions for those infections' diagnosis in that population.

P3.29

CO-INFECTIONS OF GONORRHOEA, CHLAMYDIA AND TRICHOMONAS IN SYMPTOMATIC MEN IN PRETORIA – IMPLICATIONS FOR APPROPRIATE THERAPY
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Objectives: To determine the prevalence of co-infection of gonorrhoea, chlamydia and trichomonas, in men from the Pretoria region using molecular techniques.
Methods: This cross-sectional survey was undertaken to determine the co-infection rates of gonorrhoea, chlamydia and trichomonas in symptomatic adult men attending a private clinic run by a general practitioner (GP) in Pretoria. Endourethral swab specimens were collected and stored at -70°C for batch testing by molecular assays for the detection of *Neisseria gonorrhoeae*, *Chlamydia trachomatis* and *Trichomonas vaginalis*.
Results: Swabs were taken from 253 men presenting to the clinic and the samples were shipped to Atlanta, USA on dry ice. Organisms were detected in 145 (57.3%) of the 253 samples. Co-infection was found in 20 (7.9%) of the samples, but none of the men were infected with all three organisms simultaneously. *N. gonorrhoeae* was detected in 113 (44.7%), *C. trachomatis* in 38 (15.0%) and *T. vaginalis* in 14 (5.5%) of all specimens. Only 28 (56%) of the men presenting with urethral discharge were found to be infected with gonorrhoea; *C. trachomatis* was detected in 8 (16.0%) of the samples

and *T. vaginalis* infection was detected in one (2.0%); four (8.0%) men were co-infected with *N. gonorrhoeae* and *C. trachomatis*.
Conclusions: This study shows high a prevalence of recognised sexually transmitted pathogens in symptomatic men presenting to a General Practitioner for health care. Trichomoniasis was found in 16% of men with urethral discharge and anti-trichomonal agents need to be added for treatment of such individuals. In settings where laboratory facilities are not available these findings provide information for development of therapeutic guidelines and one needs to consider the value of observing the presence/absence of urethral discharge in symptomatic men.

P3.3

COMBINED HORMONAL CONTRACEPTION MAY BE PROTECTIVE AGAINST *NEISSERIA GONORRHOEAE* INFECTION

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Objectives: The role of hormonal contraception on acquisition of gonorrhea is not well characterized as results of previous studies have been inconsistent. Our objective is to determine the influence of hormonal contraception on gonococcal infection in women exposed to males with *Neisseria gonorrhoeae* infection.
Methods: Females ages 15-30 reporting sexual contact to a male partner diagnosed with *N. gonorrhoeae* were enrolled. Demographic and sexual histories, physical findings, and laboratory tests were collected. Women testing positive and negative for cervical *N. gonorrhoeae* were compared using chi-square and Fisher exact testing, with multivariable modeling performed on those factors independently associated with gonococcal infection on univariate analysis.
Results: *N. gonorrhoeae* infection occurred in 68 of 107 (64%) women. On univariate analysis, combined hormonal contraception (estrogen and progestin) or Depo-medroxyprogesterone acetate (DMPA) were associated with lower rates of gonococcal cervicitis, while a new sexual partner and sex during menses were seen more commonly in women with gonorrhea. After multivariable modeling, women using combined hormonal contraception were significantly less likely than non-users to test positive for *N. gonorrhoeae* (32% vs. 76%; OR 0.1; 95% CI 0.05, 0.4; $p<0.001$). Similarly, women using DMPA were less likely to be diagnosed with gonococcal infection (33% vs. 76%; OR 0.1; 95% 0.02, 0.6; $p=0.01$). A new sexual partner in the preceding month was associated with testing positive for gonorrhea (OR 4.2, 95% CI 1.3, 13.6).
Conclusions: In women exposed to males with *N. gonorrhoeae*, combined hormonal contraception and DMPA are independently associated with a lower rate of testing positive for *N. gonorrhoeae*. Contrary to previous studies, our data suggest that modern hormonal contraceptives may play an important role in protecting women against acquisition of gonorrhea.

P3.30

EVALUATION OF SEXUALLY TRANSMITTED GENITAL TRACT INFECTIONS AMONG HIGH-RISK WOMEN ACCESSING STI CLINICAL AND PREVENTIVE SERVICES, BAMAKO, MALI

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Objective: This survey was conducted to determine the burden of sexually transmitted genital tract infections among female sex workers (FSWs) attending clinics in Kayes and Bamako, Mali.
Methods: This was a cross-sectional survey of 360 FSWs, aged 15 years or older, attending clinics located in Kayes and Bamako. The women each received a pelvic examination, during which time a vaginal swab was collected. The swabs were inoculated into GeneLock solution and shipped to the CDC in Atlanta for real-time multiplex PCR analysis. The specimens were tested for *Neisseria gonorrhoeae* (NG), *Chlamydia trachomatis* (CT), *Mycoplasma genitalium* (MG), and *Trichomonas vaginalis* (TV).
Results: A total of 360 vaginal swabs were collected from the participating FSWs. Real-time multiplex PCR analysis showed the prevalence of GC was 7.2% (95% CI - 4.8% - 10.4%), CT 8.3% (95% CI - 5.7 - 11.7%), MG 20.8% (95% CI - 16.8 - 25.4%), and TV 20.6% (95% CI - 16.5 - 25.1%). Overall, 130 FSWs had at least one sexually transmitted genital infection and 47 had more than one infection. All four pathogens were detected in 6 FSWs. Among 44 patients with GC and/or CT infections, 18 (40.9%) had GC alone, 14 (31.8%) had CT alone and 12 (27.3%) had mixed GC and CT infections.
Conclusion: The prevalence of sexually transmitted genital tract infections among FSWs in Kayes and Bamako, Mali was high. Mixed infections were extremely common. The potential sequelae and appropriate management of MG infection in this high-risk population should be explored further. Routine STI screening or periodic presumptive therapy could be considered for this population. These data have implications for planning future programs that specifically address the needs of FSWs and their partners.

P3.31

ETIOLOGY AND DETERMINANTS OF SEXUALLY TRANSMITTED INFECTIONS IN KARNATAKA STATE, SOUTH INDIA

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Background: Syndromic management remains the cornerstone for treatment of STIs in many countries around the world. We undertook this study to better understand the etiology of STIs in adults in South India and to inform treatment guidelines.
Methods: Adult male and female subjects presenting with discharge or genital ulcers were recruited from clinics in Karnataka, South India. A questionnaire was administered, physical examination performed and blood collected for Herpes simplex virus- type 2 (HSV-2) and syphilis testing. Among men with urethral discharge and women with vaginal discharge, samples were collected for Neisseria gonorrhoeae (NG), Chlamydia trachomatis (CT) and Trichomonas vaginalis (TV). Vaginal swabs were also tested for Bacterial vaginosis and yeast. Participants with genital ulcer disease (GUD) had samples taken for Treponema pallidum (TP), Haemophilus ducreyi (HD) and HSV-2 testing. HIV testing was performed on all individuals who gave separate consent.
Results: 401 men and 412 women were enrolled in the study. High rates of HIV infection were identified, with 17% of men and 15% of women testing positive. Significantly more men and women who were HSV-2 positive were also HIV positive. Among men with urethral discharge, NG was identified in 30%, CT in 11% and TV in 6 percent. Very little NG or CT was detected among women with vaginal discharge. However, BV was identified in approximately 40% with significant amounts of TV and Candida also detected. HSV-2 was the most commonly identified pathogen among participants with genital ulcer disease and the clinical distinction of herpetic versus non-herpetic lesions was not helpful.
Conclusions: Current treatment guidelines should be re-evaluated in south India. In addition, this population is at high risk for HIV and we need to continue to direct prevention efforts towards this group.

P3.32

AETIOLOGY OF URETHRAL AND VAGINAL DISCHARGE SYNDROMES IN SOUTH AFRICA: ASSOCIATIONS WITH HIV SEROSTATUS

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Objectives: To determine the aetiology of the male urethral discharge (MUS) and vaginal discharge (VDS) syndromes, and association of STI pathogens with HIV serostatus.
Methods: Between 2006-2008, anonymous genital specimens were collected from consecutive consenting MUS and VDS patients attending public clinics in four South African cities. Endourethral swabs and sera were collected from men; endocervical swabs, vaginal smears and sera were collected from women. A multiplex PCR assay detected the presence of *Neisseria gonorrhoeae* (GC), *Chlamydia trachomatis* (CT), *Trichomonas vaginalis* (TV) and *Mycoplasma genitalium* (MG). Gram-stained vaginal smears were used to detect candidiasis (CA) and bacterial vaginosis (BV). Sera were screened for HIV; all patients were offered on-site HIV counselling and testing. STI syndromes were treated according to national guidelines. The Chi-squared test was used to determine the significance of associations.
Results: Among 1240 MUS patients, GC was detected in 909 (73%) cases, CT in 199 (16%) cases, MG in 89 (7%) cases and TV in 72 (6%) cases. There were 331 non-gonococcal MUS cases; only 151 (46%) had an STI pathogen detected (CT 28%, MG 15%, TV 12%). Among 1028 women with VDS, TV was detected in 275 (27%) cases, CT in 138 (13%) cases, GC in 134 (13%) cases, MG in 90 (9%), BV in 379 (38%) cases and CA in 232 (23%) cases. HIV prevalence was higher among the women (49% vs. 36% males). Among men, chlamydial infection was associated with a HIV seronegativity ($p<0.0001$); GC, TV and MG were not associated with HIV status. Among women, only TV ($p = 0.0009$), MG ($p = 0.039$) and BV ($p = 0.0008$) were associated with HIV seropositivity.
Conclusions: Gonorrhoea remains the most important cause of MUS. Bacterial vaginosis was the most frequent cause of VDS and STIs were detected in the minority of VDS cases. HIV-positive patients with MUS/VDS do not appear to be at increased risk of sexual acquisition of acute bacterial STIs (GC/CT).

P3.33

SPREAD OF THE NEW VARIANT OF CHLAMYDIA TRACHOMATIS WITHIN SWEDEN OVER TIME

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Objectives: In 2006 a new variant of C. trachomatis (nvCT) was discovered in Sweden. Due to a deletion in the cryptic plasmid this nvCT could not be detected by the commercial methods COBAS Amplicor/TaqMan48 (Roche) and Abbott m2000 (Abbott) at the time. The ProbeTec system from Becton Dickinson (BD) uses another target region and was able to detect nvCT. The aim of the study is to follow the rate of nvCT over time in two counties that use Roche/Abbott (Örebro and Dalarna) and two counties using BD (Uppsala and Norrbotten). The impact of nvCT on the rate of wild type serotype E is also measured.
Methods: Between 115 and 278 consecutive samples (one per positive patient) were collected in each county and at two time points (spanning Nov 2006 - April 2007 and Jan-May 2008). The samples were analyzed with a multiplex PCR detecting the deletion on the cryptic plasmid and the ompA gene of serotype E.
Results: The proportion of nvCT decreased in counties using Roche/Abbott, from 65 to 51% in Dalarna and from 48 to 37% in Örebro. The trend was reverse in counties that use BD, from 19 to 27% in Uppsala and 10 to 14% in Norrbotten. The increase/decrease in proportion of nvCT was significant except in Norrbotten where the samples were too few. The rate of serotype E (that includes nvCT) was relatively stable in Uppsala (66 to 60%), Norrbotten (67 to 62%) and Örebro (72 to 71%) but decreased significantly in Dalarna (87 to 72%).
Conclusion: The relative increase of nvCT from 2007 to 2008 in counties using BD might be due to import from counties using Roche/Abbott with higher nvCT proportions. The first time point was close to the discovery and initiation of diagnostics (Roche/Abbott counties) of nvCT, which indicates that new sexual networks of nvCT were still discovered. The decrease in those counties in the second time point was therefore expected. A third time point in 2009 might tell if the levels are stabilizing.

P3.34

THE CHLAMYDIAMUTANT nvC. TRACHOMATIS IN NORWAY

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Background: In 2006, Swedish researchers noticed an unexpected 25% decline in the number of positive Chlamydia trachomatis cases. This decline was limited to Sweden and was due to the appearance of a mutant Chlamydia trachomatis variant (nvC trachomatis) presenting with false negative results for laboratories using diagnostic kits from Roche Diagnostics and Abbott.
Methods: ROCHE TaqMan 48 was used for detecting C. trachomatis and a triplex in house real-time PCR assay was used to detect both the normal C trachomatis and the mutant. A SYBR-green PCR-assay was used to verify the presence of nvC trachomatis.
Results: We investigated a total of 25413 patients for C trachomatis and nvC trachomatis infection in the period fom January 2007 t.o.m. July 2008. A total of 67 patients were identified as having nvC trachomatis infection. The proportion of nvC trachomatis positives increased from 1.0% in the first quarter of 2007 to 3.6% in the second quarter of 2008.
Conclusion: Our results indicate a slow but steady increase of nvC trachomatis prevalence in Norway. This seems natural since nvC trachomatis still accounts for as much as 40% of the positives in Sweden. Compared to previous rates reported in Sweden (25-80%), the occurrence in Norway of nvC trachomatis is low. Studying the epidemiology of this chlamydiamutant has the potential to contribute to the understanding of mechanisms for spread of sexually transmitted infections.

P3.36

THE ASSOCIATION BETWEEN MYCOPLASMA GENITALIUM AND SUBCLINICAL PELVIC INFLAMMATORY DISEASE

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Objectives: Most cases of infection-mediated infertility are caused by subclinical PID rather than acute PID. One in four women infected with either *Neisseria gonorrhoeae* or *Chlamydia trachomatis* have subclinical PID. While emerging data have demonstrated an association between *Mycoplasma genitalium* and cervicitis, male nongonococcal urethritis, and acute PID, there are no studies evaluating the role of *M. genitalium* and subclinical PID. Our objective is to determine whether *M. genitalium* is associated with subclinical PID.
Methods: We enrolled women ages 15-30 with or at-risk for gonorrhea, chlamydia or bacterial vaginosis,

and who were without signs or symptoms of acute PID. All women underwent a comprehensive examination and cervical swabs were tested for *N. gonorrhoeae* by culture and *C. trachomatis* by polymerase chain reaction. Cervical samples were assayed for *M. genitalium* by quantitative PCR. An endometrial biopsy was performed, and endometritis (i.e. subclinical PID) was defined as the presence of at least one plasma cell per 120X field of endometrial tissue.
Results: *Mycoplasma genitalium* was detected in 43 of 558 (8%) women in our study, while chlamydia and gonorrhea were present in 113 (20%) and 54 (10%), respectively. Endometritis was detected in 169 women (30%). Among women infected with *M. genitalium*, 22/43 (51%) had endometritis, while 147/515 (29%) women negative for *M. genitalium* had endometritis ($p<0.01$). After controlling for *N. gonorrhoeae* and *C. trachomatis* infection, cervical *M. genitalium* was independently associated with endometritis (Odds Ratio 2.4, 95% CI 1.3, 4.6).
Conclusions: *Mycoplasma genitalium* is associated with endometritis among women without signs or symptoms of acute PID. *M. genitalium* likely plays an important role in subclinical PID as well as acute PID. The role of *M. genitalium* in the pathogenesis of PID and subsequent fallopian tube damage and infertility requires further study.

P3.37

INCIDENT MYCOPLASMA GENITALIUM INFECTION AMONG KENYAN WOMEN IS ASSOCIATED WITH BACTERIAL VAGINOSIS
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Background: Prevalent *Mycoplasma genitalium* (MG) infection has been associated with female reproductive tract disease, but little data on MG incidence exist. We conducted a prospective cohort study among high risk African women to identify characteristics associated with incident MG infection.
Methods: Between February 2005 and February 2006, vaginal swabs were collected every two months from 293 female sex workers in Mombasa, Kenya. Of these women, 165 (56.3%) were HIV-positive and 128 (43.7%) were HIV-negative throughout the study. Specimens were tested for MG by transcription mediated amplification (TMA) using a research-use only assay (Gen-Probe, Inc., San Diego, CA). *Neisseria gonorrhoeae* (NG) was diagnosed by culture. Logistic regression was used to identify characteristics independently associated with prevalent MG infection. Cox regression was used for analyses of incident infection.
Results: Mean age was 35.4 years (range 19-57). Baseline MG prevalence was 16.0% (95% CI 11.8%-20.3%) and was higher in HIV-positive than HIV-negative women (20.0% vs. 10.4%; aOR 3.6 95% CI 1.5-8.6, $p=0.04$). Prevalent MG infection was also strongly associated with age ≤30 (aOR 6.0 95% CI 2.6-14.1), and marginally associated with oral contraceptive use (aOR 2.8, 95% CI 0.9-8.3). Average duration of MG infection was 72.1 days (range 15-372) and 10 women (3.4%) experienced repeat infections. MG incidence was 24.7 per 100 woman-years (95% CI 18.0-34.0) and incident infection was associated with concurrent bacterial vaginosis (aHR 2.0, 95% CI 1.0-3.7), but not with HIV positivity (aHR 1.3 (0.7-2.5) or age≤30 (aHR 0.9 (0.3-2.2). Further adjustment for sexual activity, condom use, douching practices, and sociodemographics did not appreciably change the estimates.
Conclusions: MG incidence among these African women was high and significantly associated with bacterial vaginosis. HIV positivity was not associated with incident MG infection, despite an association with prevalent MG infection.

P3.38

MYCOPLASMA GENITALIUM IN THE ROTTERDAM STI OUTPATIENT CLINIC
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Objectives: To determine the incidence of *M. genitalium* (Mg) infection and characteristics of the positive patients.
Methods: DNA was isolated from all specimens submitted for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* testing using the easyMAG. Primers and probe were previously validated (Jensen *et al.*, 2004). When the Mg Ct value was >35, specimens were fully retested. Addition of phocine herpes virus (phHV) to the clinical specimens was used as an internal control. A phHV Ct value of >35.7 (historical mean plus 1.5xSD) was regarded as inhibition.
Results: Of 1362 specimens, 8.4% had a phHV Ct value >35.7 and Mg Ct value of >50 and were regarded as inhibited. Of these, 85 were self-collected vaginal swabs, 15 cervical/urethral swabs, and 4 urines. Of the remaining specimens, 6 had a Mg Ct value of >35, but were negative upon retesting. Thirty-two specimens had a Mg Ct value of >35 and were positive on retesting. Thirty-five specimens had a Mg Ct value between 25 and 35. These 67 specimens (4.9%) were regarded as positive: 1 throat

specimen, 5 penile swabs, 7 cervical/urethral swabs, 10 rectal swabs, 21 urines, and 23 vaginal swabs. From 42 Mg positive patients (21 males and 21 females; age 18 to 62 years) further data were available. Twenty-five (60%) had no concurrent STI and 21 (50%) no history of other STIs. Twenty-nine (69%) reported no symptoms and 10 (24%) one or more symptom. Thirty-three (79%) reported vaginal sex only, seven (17%) anal sex only, and one both types. In all but one case the sex was unprotected.
Conclusion: Mg is an emerging pathogen, that is claiming its place. In this study we have shown that the incidence of infections is at least 4%. Only one in every three patients will report symptoms. All infections are the outcome of unprotected sex. Thus, in empiric syndromic therapy the physician should take the possibility of an infection with Mg into account, especially when standard therapy for *C. trachomatis* fails to cure symptomatic patients.

P3.39

IS MYCOPLASMA GENITALIUM IN WOMEN "THE NEW CHLAMYDIA"? COMMUNITY BASED PREVALENCE AND PROSPECTIVE COHORT STUDY.
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Objectives:
1. To find the prevalence and predictors of M. genitalium in 2529 young, sexually active female students.
2. To estimate the incidence of pelvic inflammatory disease (PID) over 12 months in women with and without M. genitalium.
Methods: Design: Combined prevalence and prospective cohort study.
Setting healthcare: 20 Universities and Further Education colleges.
Participants: 2529 sexually active women (mean age 21 years), who provided self-taken vaginal swabs and completed a questionnaire in 2004-6. Forty percent were from ethnic minorities. In 2008 stored samples were tested for M. genitalium. For incidence of clinical PID, possible cases were identified from responses to 12 month questionnaires backed by clinical records. Three independent researchers blinded to results of bacteriological tests used modified Hager's criteria to classify cases as probable, possible or not PID.
Results: The prevalence of M. genitalium at baseline was 3.3% (78/2377 95% CI 2.6-4.1) compared to chlamydia prevalence of 5.6% (142/2528 95% CI 4.7-6.5). Dual infections were detected only in 0.3% (8). M. genitalium was commoner in women reporting a higher number of sexual partners in the previous year and women of black ethnicity (Table). Infection was not related to urogenital symptoms, age or age at first sexual intercourse. Follow up after 12 months was 94% (2377/2529). Preliminary assessment suggested 2.8% (67/2377) may have had probable (n=21) or possible (n=46) PID during 12 months follow up.
Conclusions: Following confirmation of PID diagnoses, the rates of PID in women with and without M.genitalium at baseline will be presented.

	Rates of M. genitalium		
Partners in last year	% +ve (n)	Ethnicity	% +ve (n)
0	1.2 (1/87)	Black	4.6% (26/634)
1	2.1 (26/1253)		
2	3.6 (19/528)	Non-Black	2.8% (49/1728)
>2	6.5 (32/494)		

P3.4

PREVALENCE OF NEISSERIA GONORRHOEAE INFECTION IN THE UNITED STATES NON-INSTITUTIONALIZED POPULATION AGES 14 - 39, 1999 - 2006
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Objectives: Although reported gonorrhea (GC) cases in the United States (U.S.) declined 74% from 1975 to 1997 and then leveled off, GC rates have remained markedly higher among African American young adults. We evaluated these trends by assessing GC prevalence in a probability sample of the U.S. population.
Methods: As part of the National Health and Nutrition Examination Survey (NHANES) of the U.S. population, 1999-2006, urine from persons aged 14-39 was tested using nucleic acid amplification tests.

Non-Hispanic blacks, Mexican Americans, adolescents, and low-income persons were over sampled. Prevalence estimates are weighted to represent the non-institutionalized U.S. population. Estimates with a relative standard error (RSE) >30% are considered unstable.
Results: GC prevalence did not change significantly between 1999-2002, 0.24% (95% CI 0.14%-0.39%), and 2003-2006, 0.40% (95% CI 0.12%-0.99%). For the combined 8 years, the upper 95% CI limits for prevalence were <1% for each gender and age group. Prevalence for non-Hispanic blacks was 0.98% (95% CI 0.64%-1.41%), significantly higher than for Mexican Americans, 0.22% (95% CI 0.05%-0.59%), and non-Hispanic whites, 0.27% (95% CI 0.06%-0.74%). Although most estimates were <1% and associated RSEs were >30%, GC prevalence among non-Hispanic black females aged 14-25 was elevated and stable, 2.20% (95% CI 1.26%-3.57%). This estimate was significantly higher than for non-Hispanic whites, 0.51% (95% CI 0.16%-1.22%), and Mexican Americans, 0.12% (95% CI 0.01%-0.46%). Among non-Hispanic blacks and other race/ethnicity groups aged 14-25, GC was significantly associated with number of lifetime but not past year sex partners.
Conclusions: Overall, GC prevalence was low. No change was detected over the 8-year interval, but precision for low prevalence estimates was relatively low. As with reported case rates, GC prevalence was highest among young non-Hispanic black females.

P3.40

RISK FACTORS FOR TRICHOMONAS VAGINALIS INFECTION AMONG PATIENTS ATTENDING A SEXUALLY TRANSMITTED DISEASE CLINIC IN BILBAO, SPAIN
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Background: Trichomonas vaginalis is one of the commonest sexually transmitted pathogens in the World. The epidemiology of the disease is still poorly understood and some practitioners continue to question its importance. However, there is growing evidence that T vaginalis is an important pathogen, both in its own right due to the "immediate" morbidity associated with infection, because of the likely facilitation of HIV transmission. The aim of this study is to describe the trichomoniasis cases identified at the STD Unit of the Clinical Microbiology Department at Basurto Hospital in Bilbao since 1993 to 2007.
Methods: We analyzed data from 7711 patients screened for T. vaginalis. At the baseline visit, women were tested for gonorrhoea, Chlamydia, T. vaginalis, HIV, hepatitis B and C and syphilis. T. vaginalis culture was done using vaginal swabs and inoculating them on modified Diamond's medium. At follow-up visits, vaginal swabs were clinician-collected. Cultures were maintained for 3 days, and examined for growth on the third day. All patients were interviewed by STI specialist and the information obtained was used to collect sexual behavioural history and self-reported symptoms of vaginitis (discharge, rash, or redness) at enrolment and at each study follow-up visit. Multiple sexual partners were defined as having more than 2 sexual partners in the previous 3 months.
Results: 6.9% of the women had a prevalent infection; risk factors included the following: sex (women), prostitution, primary education, inconsistent preservative use, and HIV. At follow-up, risk factors were the same except for multiple sexual partners and having had T. vaginalis at the visit before.
Conclusions: T. vaginalis incidence is high in women. Risk factors for prevalent and incident infection are similar. Understanding the relation between T. vaginalis and other STIs could assist its use as a marker for the success of behavioural and treatment interventions targeting other STDs including HIV.

P3.41

MYCOPLASMA GENITALIUM IN GREENLAND: PREVALENCE, MACROLIDE RESISTANCE, ETHICAL CONSIDERATIONS AND POLICY IMPLICATIONS
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Objective: Currently, Mycoplasma genitalium (Mg) is not tested for in Greenland. Our objective was to determine the presence and prevalence of Mg infection in Nuuk, Greenland.
Methods: Between July 2008 and October 2008, 149 Nuuk residents between the ages of 15 and 65 years of age were enrolled in the Greenland Sexual Health Project (Inuulluataarneq). Participants completed an interviewer administered sexual health survey and provided self-collected, first-void, urine samples (men and women) and vaginal swabs (women) for Mg testing. Mg was detected with real-time PCR targeting the MgPa-gene. Macrolide resistance mediating mutations in the Mg positives were detected by a molecular assay.
Results: Ten (7%) of the 149 participants tested positive for Mg infection. In nine cases, sufficient DNA allowed analysis for macrolide resistance, and all nine carried macrolide resistance determinants. The

prevalence of Mg was not different for women (n=8, 9% prevalence (95%CI: 5%, 17%)) and men (n=2, 3% prevalence (95%CI: 0.9% to 11%)). On average, Mg cases were younger (21 years) than non-cases (28 years) and younger when they first had sex (cases averaged 14.6 years; non-cases averaged 16.3 years). The odds of having had an STI before were 5.3 times higher for cases than non-cases (95% CI: 0.7,240, p=0.10). Cases and non-cases did not differ significantly on ever having had forced sex (OR: 2.1, 95% CI: 0.4,9.4, p=0.27).
Conclusions: We found both a high prevalence of Mg infection and resistance to azithromycin treatment in Nuuk. These findings raised important ethical considerations for the project and may have significant impact on Greenlandic public health policy and the Greenlandic health care system, especially around Mg testing, treatment, and prevention of persistent/recurrent infections.

P3.42

TEMPORAL TRENDS IN SELF-REPORTED PELVIC INFLAMMATORY DISEASE (PID) TREATMENT IN REPRODUCTIVE AGE WOMEN IN THE UNITED STATES
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Objectives: To examine the temporal trends in women's reports of ever receiving PID treatment in a national sample of sexually experienced women.
Methods: The National Survey of Family Growth (NSFG) is a national sample of US households that was conducted in 1995 and 2002. Samples included women 15-44 years (1995 n=10,847; 2002 n=7,643) and had response rates of 79%. As part of an indepth interview of women's sexual and reproductive history, women were asked if they had ever received treatment for PID. Data were weighted to represent the US population. SUDAAN was used for data analyses to account for the multistage samples.
Results: There was a significant decline in PID treatment history from 1995 to 2002 (p<.0001). Of sexually experienced women age 15-44 years, 8.4% had received PID treatment in 1995 and 5.7% in 2002. From 1995 to 2002, PID treatment history significantly declined among most ethnic groups (p<.0001) including Hispanics (8.7% in 1995 to 6.4% in 2002), non-Hispanic blacks (11.6% in 1995 to 7.4% in 2002) and non-Hispanic whites (8.0% in 1995 to 5.1% in 2002). Also, PID treatment history significantly declined for all age groups (p<.0001). PID treatment history fell from 4.8% in 1995 to 2.0% in 2002 for adolescents and from 7.0% in 1995 to 4.5% in 2002 for young adults. Reports of PID treatment significantly declined across all education and poverty levels (p<.0001). Although PID treatment history declined across levels of sexual risk taking, in 2002, women who first had sex before age 15 years had significantly higher reports of PID treatment (9.6%) than women who had first sex at 20 years of age or older (3.9%). Similarly, in 2002, women who reported 10 or more sex partners had much higher reports of PID treatment (10.7%) than those with only one sex partner (3.3%).
Conclusions: Self-reported receipt of PID treatment significantly declined from 1995 to 2002. More research is needed to determine the cause of this decline.

P3.43

A PROSPECTIVE STUDY OF BACTERIAL VAGINOSIS AS A RISK FACTOR FOR INCIDENT GONOCOCCAL AND CHLAMYDIAL GENITAL INFECTION
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Objectives: There are few longitudinal studies evaluating the effect of bacterial vaginosis (BV), or disruption of vaginal microbiota, on acquisition of sexually transmitted infections (STIs). The objective of this study was to assess the risk conferred by disturbed microbiota on incident gonococcal (GC) and/or chlamydial (CT) genital infection.
Methods: From 1999-2003, non-pregnant (n=3620) women aged 15 to 44 presenting for routine care at 12 clinics in Birmingham, Alabama participated in a longitudinal observational study. Participants were assessed quarterly for one year (five visits). Clinical and laboratory findings, self-reported behaviors and vaginal smears were obtained at each assessment. Smears were categorized by Nugent's Gram stain score (0-3 was designated normal, 4-6 as intermediate disruption and 7-10 as BV). Pooled logistic regression was used to estimate the hazard ratio (HR) for the comparison of chlamydial/gonococcal incidence in participants with and without disruption of microbiota at the prior visit. GC was evaluated by culture and CT testing was performed by ligase chain reaction. Participants were considered censored at their first GC or CT-positive visit.
Results: Median age of participants was 25.4 years; 79.9% were non-Hispanic Black. Of the 11,716 visits (after censoring), 38.8% were classified as BV and 8.1% as positive for GC or CT. Intermediate disruption (adjusted HR:1.44, 95% CI:1.08-1.42) and BV (adjusted HR:1.71, 95% CI:1.33-2.20) diagnosed at the prior visit were both associated with an increased risk for incident GC or CT infection in

a multivariable model controlling for age, ethnicity, number of sexual partners, new sexual partners, partner's monogamy, antibiotic treatment and condom use.
Conclusions: Disturbed vaginal microbiota, including BV, may elevate the risk for incident GC/CT infection. Future research should evaluate whether treatment of BV reduces the risk for STI acquisition.

P3.44

COITAL AND NON-COITAL SEX: RISK FACTORS FOR BV IN YOUNG AUSTRALIAN WOMEN
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Background: Cross-sectional study to investigate the association between bacterial vaginosis (BV) and sexual practices in sexually-experienced and inexperienced young women.
Methods: 17-21 year old females attending the University of Melbourne, Australia, were invited to participate. A study kit was posted to participants containing information and consent forms, a questionnaire, dacron swab, glass slide and reply-paid envelope. Information regarding demographic characteristics and sexual practices were collected. Gram-stained self-collected vaginal smears were scored by the Nugent method. Associations between BV and behavioural practices were examined by univariate and multivariate analysis.
Results: BV was diagnosed in 25/528 women (4.7%; 95% confidence intervals [95%CI] 3.1-6.9). Importantly, BV was detected in 22/367 women (6.0%; 95%CI 3.8-8.9) with a history of penile-vaginal sex, in 3/78 women (3.8%; 95%CI 0.8-10.8) with non-coital sexual experience only, and was not detected in women (n=83) without a history of genital-sexual contact (0%; 95% CI 0-4.3%) (p=0.03 for trend). BV was associated with >3 vaginal sex partners in the prior year by multivariable analysis (Adjusted Odds ratio=8.1; 95%CI 1.9-34.7).
Conclusions: This study found BV was absent in young women with no reported genital-sexual contact, was most prevalent in women who had engaged in penile-vaginal sex, but occurred in women who had only engaged in non-coital sexual practices. A history of multiple sexual partners was associated with prevalent BV. These data show that non-coital sexual practices may play a role in BV pathogenesis in women with limited sexual experience, and provide evidence to indicate BV may be sexually transmitted.

P3.45

PREVALENCE AND CORRELATES OF TRICHOMONAS VAGINALIS IN YOUNG REPRODUCTIVE AGE WOMEN IN MYSORE, INDIA
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Objective: Trichomonas vaginalis infection is the most common curable sexually transmitted infection (STI) worldwide. This study describes the burden and determinants of T. vaginalis infection among young reproductive age women in Mysore, India.
Methods: Between November 2005 and March 2006, 898 sexually active women attending a reproductive health clinic in Mysore, India were recruited into a cohort study investigating the relationship between lower reproductive tract infections and seroconversion to HSV-2 infection. Women were interviewed and offered a physical examination and testing for Trichomonas vaginalis, bacterial vaginosis, vaginal candidiasis, Neisseria gonorrheoea and herpes simplex virus type-2 antibodies.
Results: Of the 898 participating women, 76 had T. vaginalis infection (8.5%, 95% confidence interval [95%CI]: 6.7%-10.5%). Asymptomatic patients accounted for 46% of culture-positive T. vaginalis infections. Multivariable logistic regression analysis showed per year increase in age (adjusted OR [aOR]: 1.14; 95%CI: 1.04-1.29), a diagnosis of concurrent BV (aOR 6.77; 95%CI: 3.45-13.26), vaginal candidiasis (aOR 2.41; 95%CI: 1.39-4.17) and presence of HSV-2 antibodies (aOR 3.15; 95%CI: 1.66-5.99) were independently associated with T. vaginalis infection.
Conclusion: The prevalence of T. vaginalis infection is relatively high in this community sample of ever married young reproductive aged women. Since this infection increases the risk of HIV transmission and is associated with adverse pregnancy outcomes, infertility, and cervical neoplasia, there is a need for increased screening and treatment of this easily curable infection in India.

P3.46

NEEDLE IN A HAYSTACK -- THE ROLE OF SYPHILIS OUTREACH SCREENING AT FIVE US SITES, 2000-2007.
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Objectives: To quantify the costs and yield of health department-funded syphilis outreach screening in 5 diverse US sites with significant disease burdens.
Methods: Data (venue, costs including staffing, number of tests, reactive tests, new diagnoses) from 2000-2007 were collected for screening efforts funded by public health departments (HDs) from Philadelphia, New York City (NYC), Washington DC, Maricopa County AZ, and the state of Florida. Crude cost per new case was calculated.
Results: Screening was conducted in multiple venues including jails, shelters, clubs, bars, and mobile vans, among others. Not all sites screened for all years; for some screening efforts, staffing data and test results were not obtained by HDs. In 2000 for sites with available data, 21393 tests were performed; 745 new and 8 infectious cases of syphilis were confirmed. In 2007, screening resulted in 107421 tests, 307 confirmed new and 32 confirmed infectious cases. Screening by community-based organizations (CBOs) was the most common outreach method (5 sites), followed by jail intake (3), targeted jail outreach (3), bars/clubs (3), and homeless shelters (3). Yield, in terms of case detection and cost per new case, varied greatly between venues and sites. For example, jail intake screening produced a high prevalence of new cases in Philadelphia and Maricopa County, but not NYC. Variability between sites was also see in CBO outreach:

JAIL INTAKE	# Tests	# Reactive	# New	# Infectious	$ Cost/new (mean)
Philadelphia	201981	8546	648	14	1216
Maricopa	307228	8943	1746	2	643
NYC	8841	768	7	0	58500
CBOs					
Philadelphia	2375	115	6	3	42544
Maricopa	1493	64	8	3	688
NYC	3746	107	20	4	579
Washington	128	2	0	0	5355 (cost)
Florida	6148	375	18	6	6098

Conclusions: Few cases of infectious syphilis were identified through outreach screening. No one venue was effective across all sites, reinforcing that local disease patterns should influence screening methods. Local HD should collect all cost and testing data for outreach screening efforts so that their yield can be evaluated. Guidelines on uniform data collection for outreach screening would be helpful in these evaluations.

P3.47

FOLLOW-UP TESTING AMONG MSM DIAGNOSED WITH EARLY SYPHILIS IN PRIMARY CARE AT A LARGE URBAN LGBT HEALTH CLINIC, CHICAGO 2002-2007

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Background: CDC recommends that MSM diagnosed with early syphilis receive a follow-up test at a minimum of 6 and 12 months to ensure adequate treatment response.
Methods: Data were collected as part of routine STD surveillance and analyzed using SAS version 9.1. We assessed the proportion of patients meeting the CDC guidelines for follow-up testing.
Results: Of 3,674 syphilis tests performed from January 2002 through December 2006, 178 (4.8%) cases of early syphilis were detected among 159 MSM in primary care. After the initial diagnosis, 85/159 (53.5%) had an eligible visit in < 6 months; 102/159 (64.2%) had an eligible visit within 1 year. 55/85 (64.7%) of men with an eligible visit < 6 months had a follow-up test for syphilis at that visit. 88/102 (86.3%) of those with an eligible visit within 1 year were tested. The median time between initial diagnosis and next test was 5.9 months (95% CI 5.1-7.1 months). HIV positive men and those with prior STD history were more likely to be retested for syphilis within 1 year; age and race/ethnicity were not associated with retesting.
Conclusions: Just over half of clients returned to the clinic within 6 months of initial diagnosis and a

third of those were not retested. The extent to which CDC recommendations are met depends on whether the patient returns to the clinic in a timely manner and whether they are tested at the follow-up visit. Both patients and clinicians may benefit from education on recommendations for follow-up testing for syphilis.

P3.49

PUBLIC HEALTH STRATEGIES TO CONTROL CONGENITAL SYPHILIS IN CALI, COLOMBIA

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Backround: Despite efforts by public health authorities in Cali, Colombia, to improve early identification of gestational and congenital syphilis (GS & CS), and provide antibiotic treatment for such patients, the prevalence remains high. Objectives: 1) Better understand the disease burden of GS/CS; 2) Determine the seroprevalence of syphilis in young people who live in areas found to have high rates of GS/CS and; 3) Ascertain what young people understand about the risk of acquiring syphilis, and how it can lead to GS/CS.
Methods: 1) Detection of GS/CS was done through an active surveillance program implemented in 183 city wide health centers; 2) Seroprevalence data was obtained by performing RPR tests in individuals living in communities with a high prevalence rates of GS and CS; 3) Knowledge, attitudes and understanding of risk factors associated with acquiring and transmitting syphilis, were ascertained from a cross sectional cohort of people (age 15-24 years) living in these areas, by using a standardized survey.
Results: Between 2006-2008, 765 women and 270 children were diagnosed with GS and CS. Most cases were from 3 distinct socio-economically deprived urban regions. Between 6.3-6.8% (depending on the region) out of 19,090 individuals tested, had reactive RPRs, and were treated on site with penicillin. Higher seropositivity rates were observed in female sex workers (29%), men who had sex with men (14%) and transsexuals (39%). Survey data from 1495 participants indicated that young people in these communities frequently engage in high risk sexual activities, have little understanding about syphilis, and do not know were and how to get treated.
Conclusions: Socio-economically deprived urban regions in Cali have the highest rates of GS and CS, and high seroprevalence of syphilis. Self reported high risk sexual behavior and the lack of knowledge about the disease, contribute to the high rates of GS/CS. Intense educational campaigns are underway to address this grave problem.

P3.5

VANISHING UNDIAGNOSED GONOCOCCAL INFECTIONS IN AN URBAN AMERICAN COMMUNITY

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Objectives: The Monitoring STIs Survey Program (MSSP) monitors trends in undiagnosed STIs among adolescents and young adults in an urban community in Maryland, US with historically high incidence of diagnosed STIs and high prevalence of undiagnosed STIs. We estimated the prevalence of undiagnosed gonococcal (GC) and chlamydial (CT) infections in 2006-2008 and compared these figures with data from a similar population survey conducted in the same community nearly a decade earlier (JAMA 2002 287:726).
Methods: From a probability sample of persons 15-35 years of age residing in community households with landline telephones, urine specimens were sent to the laboratory by mail with informed consent for STI testing. We used APTIMA Combo2 (Gen-Probe, Inc.) for GC/CT testing. Samples with initial positive results were retested and considered positive if both tests were positive. To assess effects of specimen collection and transport, negative urines were spiked with known concentrations of GC, mailed to the laboratory and tested. In the prior survey, urine collected at the household was kept chilled until laboratory testing by ligase chain reaction (LCx, Abbott).
Results: Among 1712 urines tested, median volume was 60 mL (range, 10-100 mL). Samples were processed a median of 4 days after collection (range, 1-203 days). Under similar conditions, urines spiked with > 250 cfu GC/mL (limit of detection for the assay) and mailed into the laboratory uniformly tested positive. Preliminary estimates show lower rates of undiagnosed GC and similar CT infection rates in the MSSP compared to the prior survey (Table).

Survey period (reference)	Estimated % GC Prevalence	Estimated % CT Prevalence
1997-1998 (JAMA 2002 287:726)*	5.3 (SE, 1.4)	3.0 (SE, 0.8)

2006-2007 (current study)	0.1 (95% CI, 0.0 - 0.7)	4.6 (95% CI, 2.8 - 6.5)
2007-2008 (current study)	0.1 (95% CI, 0.0 - 0.6)	2.9 (95% CI, 1.3 - 4.4)
*Previous study population included ages 18-35.		

Conclusions: The diagnostic test had expected analytical sensitivity, even with specimens that exceeded recommended limits for urine volume and storage time. Alternate explanations for the observed decline in prevalence of untreated GC in this urban US community (e.g. variation in specimen collection and testing, decline in population prevalence of treated and untreated infection) are explored.

P3.50

GEOGRAPHICAL TRENDS OF COMPACTNESS AND DIRECTIONAL BIAS OF SEXUAL NETWORKS IN NORTH CAROLINA DURING AN OUTBREAK

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Background: The incidence of early stage syphilis increased from ~15 cases/100,000 person-years to > 80/100,000 in an outbreak in eastern North Carolina counties; much of the region is rural. We describe geographical trends of compactness and directional bias of the sexual networks formed during the outbreak.
Methods: We compiled and geocoded the sexual networks of syphilis cases diagnosed between Oct 1998 - Dec 2002. We assigned a deviational ellipse to the two largest networks, and measured the standard deviation of geographic coordinates in the x and y direction of the ellipse to estimate geographical compactness and elongation of these sexual networks.
Results and Conclusions: The 1419 syphilis cases included 1235 sexual partnerships. Although many sexual ties were disconnected pairs (38%), 25% (n=371) were part of network components with 25, 46, 59, and 241 cases. In the components of 25, 46, and 59 cases, 80%, 78%, and 72% of cases resided in one zip code. The component of 241 formed two natural substructures linked by a single person. These substructures formed two distinct spatial clusters in an east-west orientation. The geographic distribution of this network was compact (western cluster: standard distance = 31.2 miles in the x direction, 13.8 miles in the y direction; eastern cluster: 28.0 miles in the x direction, 14.7 miles in the y direction). The associated standard deviational ellipse was oriented east-west for both eastern and western clusters. The standard distance for the component of 59 was 46.4 miles in the x direction and 11.7 miles in the y direction. The standard deviational ellipse produced a northwestern orientation for the network of 59 cases. By measuring the geographic directional bias, we have identified natural spatial trends/clusters in the distribution of the sexual networks associated with a large syphilis outbreak. These rural sexual networks were spatially compact, but extended across geo-political boundaries.

P3.51

INCREASING IN FEMALE AND CONGENITAL SYPHILIS IN JAPAN : 1999-2008

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Objective: To describe the overall trend of syphilis and congenital syphilis in Japan.
Method: We reviewed the Japanese national surveillance data "NESID" from 1st April 1999 to 31st December 2008 inclusive, to evaluate the general trend of syphilis in the population. Each case of congenital syphilis cases was reviewed to evaluate the risk factors.
Results: The reported number of syphilis cases decreased by 32% in the time period spanning 1999 to 2003 (751 vs 509). However, the number of cases increased by 55% from 2004 to 2008 (535 vs 830). The number of female cases also increased during the same period (125 vs 214). In same period, 54 cases of congenital syphilis were registered from 24 prefectures. Ten cases were recorded in 2006 and nine cases in 2008, the highest levels during this 10-year period. Among female cases of reproductive age, the following age groups were most affected by syphilis 15-19, 20-24 and 30-39, inclusive.
The risk factors of congenital syphilis were not available in the Japanese national surveillance system. Only a few cases included the mothers' information concerning antenatal care. In respect of the cases where information was present, no data was available about syphilis testing, treatment or the infection status of the partner.
Conclusion: The overall trend of re-emerging syphilis in adults is similar to other industrialized nations. However, because of the lack of systematic information collection, the characteristics and risk factors of mothers infected with syphilis leading to congenital infection, cannot currently be monitored. To establish

effective prevention to reduce congenital syphilis cases, the following recommendations should be considered:
1) NESID format must include the maternal information
2) Partner testing and treatment via contact investigation should be established in the public health / clinical management system
3) Promotion to health care workers to improve awareness about the re-emergence of syphilis is essential.

P3.52

DESCRIPTIVE ANALYSIS OF SYPHILIS CASES DIAGNOSED IN BILBAO HEALTH AREA BETWEEN 2001 TO 2007

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Background: The epidemiology of sexually transmitted infections (STI) is clearly related to many socio-cultural factors and the incidence of different bacterial STIs is known to change rapidly in response to various events. The aim of this study is to describe the syphilis cases identified at the Serology Laboratory at Basurto Hospital (SLBH) between 2001 and 2007 in Bilbao health area.
Methods: All serological specimens for syphilis testing from different medical providers located in Bilbao health area are sent to SLBH. We used an ELISA IgG assay for syphilis serological screening and in positive cases a RPR and FTA syphilis confirmatory test was performed. All early syphilis cases (primary, secondary, and early latent syphilis) are interviewed by STI specialists regarding history of symptoms, demographics, risk behaviours, and partner contact information for case finding and partner notification. We used standard CDC contact periods for primary, secondary, and early latent syphilis as the time period of interest when interviewing patients regarding their sex partners and risk behaviours. We also calculated rates of early and latent syphilis cases and their trends from 2001 to 2007
Results: Early syphilis cases increased continuously from 2001 to 2007 with 87% occurring among men who have sex with men (MSM). Ninety five percent of cases were men and the average age were bigger than the one recorded in women cases. Four percent of patients were diagnosed of HIV infection in the same STI episode. Despite public awareness campaigns, increased publicly financed syphilis screening among MSM and intensified partner notification efforts, the prevalence of early syphilis cases among screened populations was low (13%) and most (67,9%) of syphilis cases were diagnosed after seeking care for symptoms. Early syphilis incidence among MSM doubled between 2004 and 2007.
Conclusions: Innovative approaches to syphilis control are needed

P3.53

THE PATTERN OF INFECTIOUS SYPHILIS AND GONORRHOEA DIAGNOSED IN STI CENTERS IN SPAIN, 2005-07

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Objective: To describe the pattern of newly diagnosed cases with infectious syphilis and gonorrhoea in STI centers in Spain.
Methods: Descriptive analysis of the new cases of infectious syphilis and gonorrhoea, diagnosed between July 2005 and December 2007, in a network of 15 STI centers in Spain. Epidemiological and clinical data gathered by the attending clinicians following a data collection protocol, were sent to the CNE. Study funded by FIPSE/36646.
Results: A total of 842 cases of syphilis (34% primary, 43% secondary and 23% early latent) and 1076 of gonorrhoea (70% urethral) were diagnosed during the study period. Mean ages were 35 (SD:10) and 32 (SD:8,8) years for syphilis (69% were MSM) and gonorrhoea (54% MSM) cases respectively. For both diseases, around 85% of the cases were men, 30% were foreigners (mainly from Latin America), 10% were CSW, 70% attended because of symptoms, and 20% had another STI other than HIV (gonorrhoea and C. trachomatis coinfection was 15%). While among Spanish patients the majority were MSM, among foreigners heterosexuals were predominant. Among MSM, 1/3 of both diseases were acquired through oral sex only. HIV co-infection among MSM was 29,8% in syphilis and 15,2% in gonorrhoea cases vs. 4,0% and 2,0% among heterosexuals. Half of heterosexuals (n=8) were aware of their HIV status before syphilis or gonorrhoea was diagnosed, compared with over 80% (n=184) of MSM.
Conclusions: Data from the network of Spanish STI centers show that syphilis and gonorrhoea disproportionately affect men, especially MSM; it is worrisome that one third of MSM diagnosed with syphilis were HIV-infected. Targeted prevention efforts should be directed to this group of patients, as

well as to immigrants. This network produces timely epidemiological information of great value to inform STI preventive policy in Spain (http://www.isciii.es).

P3.54

PREVALENCE OF SYPHILIS AMONG PREGNANT WOMEN OF SIX BRAZILIAN CITIES

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Objective: To estimate syphilis prevalence among Brazilian pregnant women and to identify its association with socioeconomic and demographic variables.
Methods: a transversal multicentric study including pregnant women attended in primary health care units from six Brazilian cities between 2004 and 2005. Blood samples were examined with RPR and confirmed with ELISA if positive. Sociodemographic, medical, sexual and obstetric data were obtained by specific questionnaires. Odds ratios (OR) were calculated, and two-sided t tests, Fischer exact tests and chi-square tests were used for statistical analysis.
Results: 3303 pregnant women were enrolled, with a mean age of 23.8 years (± 6.9). Syphilis prevalence was 2.6%. More than 90% of pregnant women with syphilis had latent infection. Risk of being infected with syphilis was eight-fold higher among pregnant women with more than one sexual partner during the previous year (OR 8.49, 95%CI 5.35-13.5). Others factors significantly associated with syphilis were: age higher than 40 years (OR 4.63, 95%CI 1.99-10.40), lower schooling (OR 2.02, 95%CI 1.17-3.54), past history of genital ulcer (OR 3.06, 95%CI 1.45-6.28) and sexual partner with genital ulcer (OR 5.0, 95%CI 2.13-11.27).
Conclusions: High syphilis prevalence were found among Brazilian pregnant women. The main risk factor to this infection was having more than one sexual partner during the last year.

P3.55

SCREENING FOR SYPHILIS IN THE ANTENATAL CARE: A REVIEW OF LABORATORY RESULTS FROM IBADAN, NIGERIA.

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Background: Congenital syphilis is recognized as a substantial public health problem in developing countries especially Sub-Saharan Africa. The aim of this study was to determine the prevalence of syphilis among antenatal care attendees with a view to evaluating the impact of this mandatory universal serological testing in pregnant women in University College Hospital, Ibadan, Nigeria.
Methods: This is a descriptive cross-sectional survey of 2827 patients attending antenatal clinic in UCH, Ibadan who were referred by the physicians for syphilis screening between periods of January to December 2008 after an informed consent. Venous blood samples were collected for the identification of syphilis infection. Screening test for syphilis was first carried out by the qualitative Rapid Plasma Reagin (RPR) using the RPR-Slide TM test kit and all reactive sera were then subjected to the quantitative RPR test to estimate the titer of each sample. The Treponema pallidum haemagglutination antibody (TPHA) test was used as confirmatory test of all positive RPR sera titer ≥ 1: 4.
Results: There were 2827 patients that were referred for screening between the periods of January - December 2008. The mean age was 30.09 years (SD= 3.95). Sixty-five patients (0.023%) were positive for RPR while 12 (0.004%) were positive for TPHA, giving a sero-prevalence rate of 0.004 %. Thirty women (0.01%) were RPR positive at 1:2 dilution while 35 (0.0124%) were positive at ≥1:4 titre. Twenty-three (0.008 %) of the women positive for RPR at ≥ 1:4 had indeterminate TPHA results.
Conclusion: Syphilis prevalence among pregnant women in Ibadan, Nigeria remains low, and there is still much to be gained by improving the effectiveness of the syphilis screening and treatment programme. Earlier antenatal care attendance, rapid on-site testing and a repeat test late in pregnancy to manage incident cases are important goals for patients and health care workers.

P3.56

DECLINING TREND OF SEROLOGICAL SYPHILIS IN THE GAMBIA, WEST AFRICA: THE END OF AN EPIDEMIC?

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Objectives: Syphilis is a common disease in Africa and may be an important contributor to the HIV epidemic. Trends in syphilis prevalence are important in their own right and because syphilis is a co-factor for HIV infection. In this study we analysed trends in serological syphilis prevalence at an Sexually Transmitted infections (STI) clinic in The Gambia, where the prevalence of HIV-1 has been increasing over the past two decades.
Methods: At the Genitourinary Medicine (GUM) clinic of the Medical Research Council in The Gambia patients were routinely screened for syphilis using a two-test algorithm, measuring rapid plasma reagin (RPR) followed by the Treponema pallidum haemagglutination assay (TPHA). Serological syphilis was defined as both tests being positive. We determined year to year trends in serological syphilis. Logistic regression was used to identify risk factors.
Results: Over the period 1994-2007, 24,448 people were tested for syphilis. The prevalence of serological syphilis dropped from 11.2% in 1994 to 1.5% in 2007 (p<0.0001; chi2-test for trend) (table 1). Significant risk factors for serological syphilis in women were found to be ethnicity, commercial sex work, and HIV infection. No associations between serological syphilis and possible risk factors in men were found.

	1994-1996	1997-1999	2000-2002	2003-2005	2006-2007	p-value (chi2-test for trend)
Syphilis prevalence (%)	9.1	4.3	2.0	2.1	1.7	<0.0001
HIV-1 prevalence (%)	9.6	14.7	16.2	17.3	21.5	<0.0001
HIV-2 prevalence (%)	5.9	6.2	4.4	3.8	4.1	<0.0001

Table 1. Trends in the prevalence of serological syphilis and HIV-1 and -2 at GUM clinic of the MRC in The Gambia over the period 1994-2007.
Conclusion: This study identified a strong and significant downward trend in the prevalence of serological syphilis among patients attending the GUM clinic in The Gambia in the period 1994-2007. These results suggest that syphilis prevalence may be declining in the general population, in the absence of a targeted control program. Research is needed to identify the reasons for this decline.

P3.58

SURVEILLANCE OF CHLAMYDIA TRACHOMATIS GENOTYPES AMONG MEN WHO HAVE SEX WITH MEN IN AUSTRALIA

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Objective: To identify *Chlamydia trachomatis* serovar distributions, including *lymphogranuloma venereum* (LGV) strains, and variant genotypes among men who had sex with men (MSM) populations.
Methods: Consecutive DNA specimens from chlamydia infections between 2004-2008 in MSMs were collected from the Melbourne and Sydney Sexual Health Centres. In addition, chlamydia positive samples from a community-based MSM cohort in Sydney, were also evaluated. Overall, a total of 500 specimens from MSMs were evaluated. For each specimen, the presence of *C. trachomatis* DNA was confirmed and genotyped based on sequencing of the *omp1* gene as well as by a real-time PCR system targeting the same gene.
Results: Overall, serotypes G (36%), D (32%), and J (18%) were the most prevalent types detected. Serotype G was detected in significantly more samples from Melbourne than from Sydney (P=0.01). Only one L2 serotype was detected, in a Sydney sample. Sequence heterogeneity in the samples demonstrated a large number of genotypes circulating in this population. Real-time *omp1* PCR showed 7% of samples to contain more than one serotype.
Conclusions: This was the largest molecular epidemiology study of *C. trachomatis* in Australian MSM populations. Using a polyphasic approach, this study detected both serotype variants through sequencing and potential infection by more than one *C. trachomatis* serotype by real-time PCR.

P3.59

GENOTYPING OF CHLAMYDIA TRACHOMATIS IN BILBAO, SPAIN

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Background: *Chlamydia trachomatis* is the most common cause of bacterial sexually transmitted infections (STI) worldwide. There are 19 serovars of C. trachomatis, as defined by serological responses to the outer membrane protein (ompA) and can be conveniently defined by sequence analysis of the ompA gene. The aim of this study was to explore the distribution of these genotypes in a group of patients referred from Bilbao health area located in the North of Spain.
Methods: One hundred positive samples from different anatomical sites sent to the STI Laboratory for assessment between January 2007 and June 2007 were genotyped. Direct real-time PCR assay was used to produce two amplicons defining the V1-V2 and V3-V4 regions of the ompA gene using the primers previously described. The PCR reaction was carried out in a volume of 20 µL and was performed in a LightCycler 480. The final product was purified and sequenced using BigDye Terminator V. 3.1 chemistry according to the kit instructions. Sequencing reactions were purified with AutoSeq G-50 and sequenced on an ABI 3130 Genetic Analyzer. DNA sequences obtained were aligned to obtain full-length sequence information of each sample and queried against the BLAST database.
Results: Eighty two percent (82%) of the specimens tested contained only one serovar and 18 (18%) contained two or three serovars. According with studies from other countries, genotypes E and F were the dominant strains found in our patient population. The other genotypes distribution was the following: K (13.41%), D (12.19 %), G (10.97 %), Ja (9.75 %), J (7.31 %), H (10.97 %), Ia (4.87 %), L2 (1.21 %), and L2b (3.66%). Patients with C. trachomatis serotype G were significantly older than the mean of the other groups.
Conclusions: These results could suggest that the immune response to E drives a population switch to the G genotype with repeated exposure as pointed in other studies, but further research in this point is necessary.

P3.6

GEOGRAPHIC MAPPING OF GONORRHOEA CLUSTERS: COULD IT BE USED TO TARGET INTERVENTIONS?
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Background: Although a relatively rare infection in developed countries, gonorrhoea persists through high rates of transmission in core populations. Directing effective interventions at core populations is considered key to the control of gonorrhoea, and has traditionally focussed on well-established risk groups. We investigated whether identifying geographic clusters of gonorrhoea in a large urban area of England could be used to improve the efficiency of targeted interventions.
Methods: Five years of data on patient attendances at a large urban sexually transmitted disease (STD) clinic in England, with associated area of residence and risk factor information, were collected. Patients with gonorrhoea diagnosed were mapped to lower-level super output areas (LSOAs) of residence, which have an average population of 1500. Rates per LSOA were calculated using population statistics from the Office for National Statistics. The deprivation score for each LSOA was generated using the English Index of Multiple Deprivation (2007).
Results: 1671 patients were diagnosed with gonorrhoea during the study period. Approximately 30% of patients resided in 7% of the city's LSOAs.. There was a 44% decrease in the number of diagnoses seen over the 5 years. Rates were highest in deprived areas (0.3 per 1000 least deprived to 1.3 per 1000 most deprived quintile). Rates were highest in patients aged 16-29 years and showed a similar trend with deprivation (1.1 to 4.3/1000 respectively).
Conclusions: There is evidence of geographic clustering of gonorrhoea in the most deprived areas in this urban population. Considerable improvements in sexual health may be achieved by ensuring appropriate sexual health services and interventions are delivered in the most affected areas. Geographic clustering will be further explored using Poisson regression modelling and comparison of residuals over time.

P3.60

DISTRIBUTION OF CHLAMYDIA TRACHOMATIS GENOTYPES IN RECTAL AND UROGENITAL SAMPLES
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Background: We have recently described a highly discriminative genotyping method for *Chlamydia trachomatis* using *omp1* and a set of variable number tandem repeats (Clin. Microbiol. Infect. 2008; 14: 644-652).
Objectives: The aims of this study were to compare the distribution of genotypes from rectal swabs with genotypes of *C. trachomatis* strains detected in urogenital samples. Furthermore, to see if specific subtypes of *C. trachomatis* were associated with Chlamydia infection in rectum.

Methods: Twenty-six frozen swab samples from rectum previously found positive with the Aptima Combo 2 assay (GEN-PROBE) collected in the Aarhus region from 2005 to 2008 were examined. Samples were purified using the MagNAPure Compact, and the Total NA kit (Roche). The *omp1* gene and three VNTRs: CT1291, CT1299, and CT1335 were amplified. PCR products were purified, and sequencing reactions were performed with the BigDye® v 3.1 Cycle Sequencing Kit. Reactions were subsequently run on an ABI PRISM® 3100 sequencer (Applied Biosystems).
Results: *C. trachomatis* DNA from twelve of 26 rectal swab samples could be PCR amplified and the strains genotyped. The distribution of the 12 *omp1* types was G: 7 (58%), D: 4 (33%), and J: 1 (8%). The combined *omp1* and VNTR typing resulted in 11 distinct genotypes among the 12 rectal strains. Two *C. trachomatis* strains from the same patient had identical *omp1* and VNTR sequences. The distribution of *omp1* genotypes among 161 randomly selected urogenital *C. trachomatis* strains from the same period was E: 77 (47.8%), F: 22 (13.7%), D-B: 18 (11.2%), K: 17 (10.6%), J: 9 (5.6%), G: 8 (5.0%), D-IC: 6 (3.7%), H: 2 (1.2%), Ia: 1 (0.6%), B-IU: 1 (0,6%).
Conclusions: *C. trachomatis* genotype G was dominant in rectal swab samples and rare in urogenital samples. The various G subtypes seem related and may indicate a spread of a particular strain among the patients.

P3.61

EVOLUTION OF STRAIN STYPES IN NEISSERIA GONORRHOEAE ISOLATES IN SHANGHAI (2005 AND 2008) BASED ON PORB AND NG-MAST ANALYSIS
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Objectives: To differentiate Neisseria gonorrhoeae isolates collected in Shanghai in 2008 using porB DNA sequence analysis and NG-MAST methods, to compare the index of diversity (ID) for these typing methods, and to establish temporal trends in strain types.
Methods: Eighty-one N. gonorrhoeae isolates (65 from male index patients and 16 from female sexual partners) were consecutively collected in 2008 in Shanghai. The DNA sequence of ~82% of porB was analyzed. NG-MAST sequence types (STs) were also determined. IDs were calculated for isolates from male patients. Congruence of patient-self reported sexual contacts and genotypes were determined.
Results: Isolates (n=81) were differentiated into 39 porB sequences, 10 isolates (12.3%) having a porB1a genotype with 6 different sequences and 71 isolates (87.7%) exhibiting a porB1b genotype with 33 different sequences. Sequences identified were new except for 2 porB1a sequences which were reported in 2005 isolates. All porB1b sequences in 2008 were grouped into clades phylogenetically distinct from 2005 porB1b sequences. porB sequences were identical in 11 patient-self reported sexual contacts (2 trios and 9 pairs), while 2 pairs showed different porB sequences. The index of diversity (ID) for porB typing was 96.8%.
Forty-nine NG-MAST NG-MAST STs were identified in 2008 isolates and 27 STs were not reported in the 2005 study. The largest NG-MAST ST cluster - #421 (27/174, 15.5%) observed in 2005 was only observed in 2 isolates (2.5%) in 2008. The largest ST cluster in 2008 isolates was NG-MAST ST #1866 (6 isolates). The ID for NG-MAST overall was 98.1%. NG-MAST STs were identical between isolates in 2 trios and 7 pairs, while 4 pairs showed different NG-MAST STs between each pair.
Conclusions: Most N. gonorrhoeae isolates carried porB1b genotypes in both 2005 and 2008 surveys. porB sequences were different between 2005 and 2008 isolates, making porB sequence analysis a useful indicator for changes in bacterial populations over time. <I< I>

P3.62

MLVA FOR MOLECULAR TYPING OF NEISSERIA GONORRHOEAE
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Objectives: Similar to many other industrialized countries, *Neisseria gonorrhoeae* (NG) prevalence in the Netherlands has increased in recent years. A multiple-locus variable number of tandem repeat analysis (MLVA) was developed to asses the molecular epidemiology of NG and to elucidate transmission networks in high-risk groups by providing rapid identification of genetically related strains.
Methods: Six VNTR loci of NG were amplified using 2 different multiplex PCR mixes, each containing 3 fluorescently labeled primer sets. The fragments were separated and sized on an ABI 3700 automated sequencer. Based on the calculated number of repeats in each VNTR locus, a 6 number profile was created.
Results: We identified 6 VNTR loci suitable for MLVA since they exhibited sufficient variation in

composition. Three of the 6 VNTR loci were (partially) positioned in coding regions. Subculturing of 6 NG strains over a 1 month period showed that the VNTR patterns remained identical under lab conditions. MLVA was validated by performing cluster analysis using the combined molecular and epidemiological data. From September 2002 to September 2003, 885 NG isolates were obtained from one or more anatomical locations. MLVA was performed on 186 of these isolates and a minimum spanning tree was created from the MLVA profiles. We compared the *por-opa* typing clustering results that we previously obtained with those of the MLVA. The MLVA profiles yielded a cluster similar to a cluster obtained by *por-opa* typing. This cluster consisted predominantly of men who have sex with men of whom almost a third was co-infected with *Chlamydia* and also contained 2 isolates from multiple anatomical sites with identical MLVA profiles.
Conclusions: NG MLVA shows promising results for elucidating transmission networks by molecular typing.

P3.63

MOLECULAR EPIDEMIOLOGY OF SYPHILIS IN SCOTLAND
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Objectives: There has been an annual increase in the number of diagnoses of syphilis in Scotland since the syphilis outbreak started in 2000/2001. There were a total of 235 and 248 cases in 2006 and 2007 respectively, with the majority of cases in men who have sex with men (MSM). The molecular epidemiology of the circulating syphilis strains was investigated.
Methods: Between August 2006 and December 2007 ulcer specimens were collected from patients with infectious syphilis who attended genitourinary medicine clinics in Scotland. Typing of *Treponema pallidum* was performed using a method that examines variation in two loci; the number of 60-bp repeats within the arp gene and sequence variation in the tpr genes.
Results: Treponemal DNA was detected in 76 of 87 specimens and a total of six subtypes were identified from 58 specimens. The most common subtype was 14d (44/58, 76%), followed by 14e (7/58, 12%), 14j (3/58, 5%), 14b (2/58, 3%), 14p and 14k (each 1/58, 2%). Patients were predominately white men who have sex with men (MSM). There was no significant difference between any epidemiological or demographic factor of the 14d or 14e infected patients and the remaining study population. Most infection (79%) was acquired in Scotland.
Conclusions: This is the first study to examine the molecular epidemiology of syphilis in Scotland and in the United Kingdom. Subtype 14d is the predominate subtype circulating in Scotland. The identification of six different subtypes reveals a surprising level of genetic diversity given the low prevalence of syphilis in Scotland. This may suggest that syphilis is becoming endemic within the Scottish MSM community, which is also supported by the stabilising epidemiology which shows a similar number of cases from 2005 to 2007.

P3.64

ONGOING TRANSMISSION OF A SINGLE HEPATITIS B VIRUS STRAIN AMONG MEN HAVING SEX WITH MEN IN AMSTERDAM, THE NETHERLANDS
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Background: The Netherlands is a low endemic country for HBV in which sexual transmission, especially between men having sex with men (MSM), is the main route of HBV infection. Despite the introduction of a vaccination program targeted towards MSM, a genotype A strain has been circulating among MSM in Amsterdam.
Methods: From 1984 through 2002, sera of 1862 MSM of the ongoing, prospective, and open Amsterdam Cohort Studies were retrospectively screened for anti-HBc. After 2003, most MSM participating in this study were vaccinated, so further testing was not necessary. HBV DNA of the anti-HBc seroconverters was amplified and sequenced; and the S-gene (672 nt.) was phylogenetically analysed. Poisson regression was used to test for temporal trends in HBV and HIV incidence.
Results: Of the 1042 MSM who were negative for anti-HBc at entry, 64 seroconverted during follow-up at a median age of 32, of whom 31 were positive for HIV. During the entire study period, the HBV and HIV incidence ran parallel to each other. We observed a steep decline until 1989 and then the incidence remained stable. HBV DNA of 40 seroconverters (63%) could be amplified and sequenced. All, except 3, MSM were infected with genotype A. In total, 15 MSM (38%) were infected with an identical genotype A strain. Other infections with genotype A seemed to be single introductions with no ongoing transmission. The mean genetic distance of the strains within genotype A was 0.023.

Conclusions: The past two decades, an identical genotype A strain has been and still is circulating among MSM. This strain has been circulating for a very long time among MSM, as there is no change in genetic diversity of the virus over the years. Although HBV is generally considered to be more infectious than HIV, this study shows that the HBV and HIV incidence among MSM are similar in trend and height.

P3.65

HORMONAL CONTRACEPTION AND THE RISK OF HIV ACQUISITION AMONG WOMEN IN SOUTH AFRICA

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Objectives: To evaluate the effect of hormonal contraception (HC) including combined oral contraceptives (COC), and the injectable progestins depo-medroxyprogesterone acetate (DMPA) and norethisterone enanthate (Net-En) on the risk of HIV acquisition among women in South Africa.
Methods: We analyzed data from 5567 women ages 16-49 years, a subset of those who participated in the Carraguard Microbicide Efficacy Trial. Participants were interviewed about contraceptive use and sexual behaviors and underwent pelvic examinations and HIV testing every 3 months. We used marginal structural Cox regression models to estimate the effect of HC exposure on HIV acquisition risk among women overall and among young women (16-24 years) in particular.
Results: 270 participants became HIV-infected (3.7 per 100 woman-years (wy)); HIV incidence was 2.8, 4.6, 3.5 and 3.4 per 100 wys in the COC, DMPA, Net-En and non-hormonal (NH) groups, respectively (p=0.09). The adjusted hazard ratios (HR) were 0.77 (95% CI 0.47-1.26), 1.23 (95% CI 0.90-1.68) and 0.92 (95% CI 0.63-1.33) among COC, DMPA and Net-En users, respectively, compared with the NH group controlling for site, age, cohabitation, participant behavioral risk, condom use, partner having other partners, genital discomfort, epithelial findings, and abnormal vaginal discharge. Age modified the effect of hormonal contraception on HIV acquisition risk; among young women the adjusted HR were 1.10 (95% CI 0.50-2.40) for COCs, 1.67 (95% CI 0.97-2.85; p=0.06) for DMPA and 1.38 (95% CI 0.80-2.38) for Net-En users.
Conclusions: Hormonal contraception did not increase the risk of HIV acquisition among South African women overall. Among young women who used DMPA there was a trend towards an increased HIV acquisition risk. These results corroborate previous research conducted among African women from the general population.

P3.66

THE IMPACT OF HIV/AIDS ON MORTALITY IN SOUTH AFRICAN PLATINUM MINERS PRIOR TO THE INTRODUCTION OF ART

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Objectives: We aimed to measure trends in all-cause mortality in a population of platinum miners from 1992 to 2002, prior to the roll-out of an anti-retroviral treatment (ART) programme in this population. We estimate the effect of HIV/AIDS on mortality and determine the pattern of other cause-specific mortality.
Methods: Using routinely collected data, we constructed a cohort of male workers at a platinum mine linked to death and medical records. For each miner that died, we assigned a likely cause of death based on the South African National Burden of Disease categories. Using Poisson regression, all-cause, HIV/AIDS-related and other cause-specific mortality rates and rate ratios were calculated by age and calendar year.
Results: There were 1986 deaths in the cohort of 29,954 men who contributed 200,657 person years at risk (pyar) over the 11-year period. Crude all-cause mortality increased from a base of 6.1 per 1000 pyar (95%CI 5.1-7.3) in 1995 to 20.4 per 1000 pyar (95%CI 18.3-22.8) in 2002. Age-adjusted all-cause mortality increased more than three-fold from 1992 to 2002 (age-adjusted RR 3.2, 95%CI 2.5-4.0). The excess mortality was attributed to HIV/AIDS-related deaths which increased from 0% in 1992-1994 to 5.1% of total deaths in 1995 and reached 63.3% of deaths in 2002. Mortality due to other communicable diseases, non-communicable diseases and injuries remained stable throughout the study period.
Conclusion: The effect of the HIV/AIDS epidemic on mortality in this group of platinum mine workers has been profound and comparable to that experienced in other high prevalence settings. These data provide policy makers and service providers with a baseline against which the impact of ART and other interventions can be measured.

P3.67

CHILD SEXUAL ABUSE AND LINKS TO HIV/STI AND ORPHANHOOD IN URBAN ZIMBABWE

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Objectives: A study was designed to characterise child sexual abuse in Harare, and to explore links between child sexual abuse, orphanhood and HIV/STI.
Methods: Records for all new clients attending a child sexual abuse clinic from July 2004 to June 2005 were computerised and reviewed. Individual and family characteristics, details about the abuse and perpetrators, and results of a medical examination and HIV, syphilis and pregnancy tests were summarised for children up to 16 years. Orphan prevalence was compared to data from the Demographic and Health Survey 2005/06 for Harare, and from a household-based survey in a neighbouring community.
Results: During the study period, 1194 new clients aged from seven weeks to 16 years were assessed at the clinic. Ninety percent were female, and male clients were on average younger than girls; 93% of boys and 59% of girls were classified as pre-pubertal. Ninety-four percent of all clients reported penetrative sexual abuse, occurring most often in the child's or abuser's home. Perpetrators were identified most often as relatives or neighbours by children under 12 years, and 'boyfriends' by girls aged 12-16. Of those tested at presentation, 14 clients (15%) were pregnant and 31 (6%) tested positive for HIV. Where timing is recorded, 39 (6%) clients presented within three days of abuse and 36 were enrolled in the post-exposure prophylaxis programme. There was a higher prevalence of orphans among clinic clients than the DHS sample (age-adjusted OR=1.7; 1.4-2.2) and neighbouring community of Highfield (aOR=1.7; 0.7-4.3).
Conclusions: High numbers of children in Harare experience penetrative sexual abuse and most present too late to avail of PEP. Orphans are disproportionately represented among clinic clients compared to community samples. More immediate presentation of child sexual abuse must be encouraged to prevent HIV and recurrent abuse, and to assist in forensic examination and prosecution.

P3.68

TRICHOMONAS VAGINALIS IS ASSOCIATED WITH HIV-1 IN HIGH-RISK MIGRANT MEN AND WOMEN LIVING IN INNER-CITY SETTLEMENTS IN JOHANNESBURG, SOUTH AFRICA

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Background: Little is known about the epidemiology of *Trichomonas vaginalis* (TV) in urban populations in Africa. We conducted a survey to determine the prevalence of TV and associations with HIV-1 and other risk factors in high-risk migrant men and women living in inner-city Johannesburg.
Methods: A cluster-sampling community-based survey was conducted in 2003-2004 among 1458 male hostel residents in Johannesburg and 1002 women in adjacent informal settlements. Participants aged >18 recruited from various locations provided socio-demographic, mobility, behavioural and health data. TV, *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (NG) were determined by PCR in urine samples. Saliva was tested for HIV-1 antibodies using Orasure® ELISA. Predictors of TV were identified using multivariable logistic analysis adjusting for recruitment site.
Results: TV was detected in 81/1438 (5.6%) men and 188/991 (19.0%) women; 95% and 94% of infected men and women were asymptomatic. 345 (24.0%) men and 549 (55.5%) women were HIV-1 seropositive. Infection with CT and NG were 5.2% and 1.9% in men; and 11.1% and 2.0% in women. HIV-1 was associated with TV in both men (adjusted OR=1.77; 95% CI 1.08 to 2.91; p=0.023) and women (adjusted OR=1.53; 95% CI 1.07 to 2.18; p=0.020). Other risk factors for TV are indicated in the Table. These included smoking and an inverse relationship with perception of safety for both men and women, whilst other factors differed by sex.
Conclusions: TV was highly prevalent and was consistently associated with HIV-1 in this high-risk urban migrant population, with approximately 95% of infections being asymptomatic. Prevention and management of TV in these communities will require screening programmes. The extremely high HIV-1 prevalence rates observed call for urgent and innovative interventions in this high-risk inner-city environment.
Table: Multivariable model of associations with T.vaginalis

Risk factor		TV/Total (%)	Odds Ratio	95% CI	p-value
Men		81/1438 (5.6)			

Cigarette smoker		50/666 (7.5)	2.27	1.40 to 3.69	0.001
Alchohol drinker		32/686 (4.7)	0.51	0.31 to 0.83	0.006
Experienced or witness violence in the last month		28/351 (8.0)	1.90	1.16 to 3.12	0.011
Perception of safety	Very unsafe	22/434 (5.1)	1.36	1.02 to 1.80	0.033
	Unsafe	32/676 (4.7)			
	Safe	20/273 (7.3)			
	Very safe	7/50 (14.0)			
Home language/ethnic group	isiZulu	73/1376 (5.3)	1		
	other	8/62 (12.9)	2.42	1.02 to 5.76	0.046
HIV-1 seropositive		27/345 (7.8)	1.77	1.08 to 2.91	0.023
Women		188/991 (19.0)			
Cigarette smoker		19/63 (30.2)	1.87	1.02 to 3.43	0.045
History of tuberculosis		25/86 (29.1)	2.13	1.25 to 3.62	0.006
Perception of safety	Very unsafe	30/237 (12.7)	1.33	1.07 to 1.64	0.009
	Unsafe	101/455 (22.2)			
	Safe	43/243 (17.7)			
	Very safe	12/54 (22.2)			
Reports genital discharge in last 6 months		49/317 (15.5)	0.63	0.43 to 0.92	0.018
Chlamydia trachomatis infection		40/110 (36.4)	3.05	1.92 to 4.85	<0.001
HIV-1 seropositive		121/549 (22.0)	1.53	1.07 to 2.18	0.020

P3.69

HIV INFECTION AND RISK BEHAVIOURS AMONG SEAFARERS IN THE INDIAN OCEAN

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Background: In 2008 the Commission de l'Océan Indien commissioned a survey on HIV and related risk behaviours among seafarers from the Comores, Madagascar, Mauritius and the Seychelles, in order to inform prevention efforts. Here we report the data from the Comores, Madagascar and Mauritius.
Methods: The survey was restricted to seafarers based in major ports. A sampling frame was constructed from lists of seafarers provided by ministries, unions and other organisations. A random sample was taken from those men who were likely on shore at the time of the survey. Consenting men were interviewed and tested for HIV (Genscreen Ultra HIV Ag-Ab, confirmation by WB) and syphilis (Determine Syphilis). All men were encouraged to visit a nearby VCT centre.
Results: 1418 men took part in the study. The table presents the prevalence of HIV infection and positive syphilis serology:

	Comores	Madagascar	Mauritius
	N=100	N=995	N=323
HIV %	0	0.2	6.9
Syphilis %	4.2	7.0	0.6

The proportion of men reporting at least one non-spousal partner in the past year was 44% for the Comores; 49% for Madagascar; 19% for Mauritius. A condom was used at last sex by 53%; 38%; 45%. Of the men who had non-spousal partners, 32% had sex with a female sex worker (Comores 34%; Madagascar 33%; Mauritius 22%) and 2% with a man. Seafarers from Mauritius reported drug use more often than men from the Comores and Madagascar (14% vs 4% and 6%). Ten men, all from Mauritius, reported IV drug use in the past week. Analysis of risk factors for HIV was done for the men from Mauritius. In bivariate analysis only drug use was significantly associated with HIV (OR 12.8, 4.6-35.8).
Conclusion: There were large differences in HIV prevalence and risk behaviours among seafarers from the four islands. HIV prevalence was not correlated with risky sexual behaviour and was highest in the men from Mauritius where HIV was associated with drug use. Prevention among seafarers in this part of the world should focus on reducing unsafe sex, as well as drug use.

P3.7

DECREASED INCIDENCE OF GONORRHEA AND CHLAMYDIA AMONG WOMEN WHO ACHIEVED CONSISTENT USE OF MALE OR FEMALE CONDOMS

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Background: How effectively consistent use of male and female condoms prevents sexually transmitted disease (STD) is unclear.
Methods: Women attending public STD clinics in Alabama, who participated in a behavioral intervention promoting female and male condom use, were interviewed about sexual behavior and condom use, and tested for STD at six one-month intervals. Proportional hazards models were employed to evaluate determinants of STD incidence.
Results: Incidence rates for gonorrhea and chlamydia were 16 and 23 per 1,000 months, respectively, among 920 women completing at least one follow-up visit. Younger age, recent gonorrhea or syphilis (self-report or diagnosis at baseline), and multiple sex partners predicted gonorrhea and Chlamydia incidence. Higher coital frequency and a new partner predicted gonorrhea incidence only. Problems related to condom use were frequent and were associated with higher STD rates. Consistent use of either condom type, without evidence of over-reporting or use problems, resulted in longer infection-free follow up (adjusted HR: 0.3; 95 percent CI: 0.1, 0.5).
Conclusions: During consistent condom use, STD incidence did not appear to differ by the type of condom predominantly used. Consistent condom use reduces STD risk, but incorrect use and failure partially offset effectiveness.

P3.70

HIV PREVALENCE AND ASSOCIATED RISK FACTORS IN THE GENERAL POPULATION OF THREE DISTRICTS OF KARNATAKA STATE, SOUTHERN INDIA

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Background: As a part of the monitoring & evaluation of Avahan, the India AIDS initiative of the Bill & Melinda Gates Foundation, cross-sectional surveys were undertaken in the general population of three districts of Karnataka: Mysore, Belgaum and Bellary, to measure HIV and STI prevalence and assess related risk factors. We examined the HIV prevalence and the risk factors among men and women separately.
Methods: In each district, a target sample of 6000 adult male and female was randomly selected. Urine and blood samples were collected from all consenting participants for HIV testing. An individual was deemed HIV positive if samples were found positive on two different tests. HIV prevalence was estimated for various socio-economic and behavioural factors. Logistic regression that considers the sample design

was used to examine the strength of association between potential risk factors and HIV infection. Separate logistic regression models were fitted for males and females.
Results : Overall, the combined data for the three districts showed that HIV prevalence rates were 1.18% and 1.16% among males and females, respectively. A logistic regression analysis for males indicated that lack of circumcision [Odds ratio (OR)=0.33, p=0.014], and having ever paid for sex (OR=3.2, p=0.034) were significantly associated with HIV, after controlling for age, place of residence and district. In the case of females, the factors significantly associated with HIV were having 2 or more lifetime sexual partners (OR=4.6, p=0.024), having ever used a condom (OR=3.3, p=0.008) and being widowed, divorced or separated (OR=11.2, p<0.001), when other variables such as district, age and place of residence were controlled for.
Conclusions: Sexual risk factors were associated with prevalent HIV in this survey, that also showed the increased vulnerability of previously married women. This is also the first large population-based study in India showing the protective effect of circumcision on HIV in men.

P3.72

INITIAL ANTIRETROVIRAL THERAPY (ART) IN A 20-YEAR OBSERVATIONAL COHORT OF PATIENTS FOLLOWED AT A REFERENCE CENTER IN THE CITY OF SÃO PAULO, BRAZIL
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Background: Several data have shown that Brazil's implementation of a large-scale, universal distribution program of antiretroviral drugs has been important to improve the quality of life and to increase survival of patients with HIV/AIDS. However, there still are few assessments, such as the present study based on actual patient follow-up and detailed routine data describing characteristics of patients on ART and ART prescriptions.
Methods: Exploratory study of a retrospective cohort of 4,162 HIV-infected individuals, 13 years and over on ART at the São Paulo STD/AIDS Reference Center from 1985 to 2005. Information was collected from patients' medical records at institution's epidemiology department during routine disease surveillance.
Results: In the cohort studied, 72% of individuals were men, median age was 34 years, 72% were white, 63% had at least 8 years of schooling, and 89% filled out AIDS definition criteria at initial treatment. As to exposure category, 45% were heterosexuals, 44% were MSM and 12% were IDU. 83% were treatment naíve and median CD4 upon initial treatment was 316. After monotherapies (1985-1995) and bitherapies (1996-1998), the 1999-2005 period was characterized by prescriptions of tritherapies: initially 2NRTI+PI, mostly including indinavir and nelfinavir, then lopinavir/r and atazanavir, followed by 2NRTI+NNRTI, mostly efavirenz. The combination of zidovudine, lamivudine and efavirenz was the most prescribed regimen in 2005. At the end of the study period, 68% of individuals were still on treatment, 17% were lost to follow-up and 15% had died.
Conclusions: The present study describes one of the largest cohort of individuals on ART in Brazill. Brazilian national guidelines have greatly influenced treatment patterns at CRT-DST/Aids, and this study shows the development of ARV treatment regimens throughout this time period.
FUNDING: Agence Nationale de Recherches sur le SIDA (ANRS)

P3.73

PREVALENCE OF HIV, STI, AND ASSOCIATED RISK BEHAVIORS IN COMMUNITY- AND CLINIC-BASED SAMPLES OF MEN WHO HAVE SEX WITH MEN IN LIMA, PERU
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Background: Additional research is needed to define factors contributing to the increased risk of HIV/STI transmission among MSM in Peru. As a secondary analysis in a study of sexual identity and HIV/STI acquisition among MSM, we examined recruitment method, disease prevalence, and risk behavior in the study population.
Methods: We recruited 560 men reporting recent male sexual contact using two methods: 438 were enrolled at a municipal STI clinic specializing in care of MSM in Lima, Peru and 122 were recruited through outreach visits by clinic staff to surrounding neighborhoods. Participants completed a survey and provided blood for HIV-1 EIA/Western Blot, Syphilis RPR/TPPA, and HSV-2 ELISA, and urine and rectal swabs for gonorrhea/chlamydia (GC/CT) NAT.
Results: 20.9% of all participants were infected with a curable STI: 10.0% with syphilis (RPR>1:8),

5.5% with urethral GC/CT and 6.0% with rectal GC/CT. Though dysuria and urethral discharge symptoms were more common in the clinic population, the community sample had a higher prevalence of urethral CT (5.7% vs 3.6%; p=0.03) and rectal GC (8.6 vs 3.0%; p<0.01). The prevalence of HIV was higher among clinic participants (26.3% vs 8.2%; p<0.01) while HSV-2 prevalence was similar. No significant differences in sexual behavior were noted between the populations. Among MSM who reported not previously testing positive for HIV (7.4% of whom were HIV-infected), 21.8% (79/362) reported recent receptive unprotected anal intercourse (UAI) and 17.7% (62/350) reported insertive UAI with an HIV-infected or unknown status partner.

Conclusion: MSM from both clinic and community populations in urban Peru are at high risk for transmission of HIV and STIs, including rectal and urethral GC/CT. The high frequency of risk behavior among men receiving care in MSM-specific facilities indicates that innovative research studies adapted to delivery of care through public health systems are urgently needed to control the spread of HIV and STIs in this population.

Prevalence of HIV/STIs and Associated Risk Behavior in STI Clinic and Community-based Samples of MSM, Lima, Peru; 2007.			
		Recruitment Population	
	Clinic	Community	Combined
Demographics			
Age (Median ± IQR)	28 (23-36)	26 (20-33)**	28 (23-35)
Education Level (≥High School Graduate)	77.5% (339/438)	80.7% (96/122)	77.7% (435/560)
Sexual Risk Behavior			
Median Number of Male Sex Partners ± IQR (Past 3 Months)	2 (1-4)	2 (0-4)	2 (1-4)
Any UAI with Serodiscordant Partners (Past 6 Months):			
Insertive			
HIV-infected Subjects	31.5% (23/73)	33.3% (2/6)	31.6% (25/79)
HIV-uninfected Subjects	16.3% (43/264)	22.1% (19/86)	17.7% (62/350)
Receptive			
HIV-infected Subjects	47.8% (33/69)	33.3% (2/6)	46.7% (35/75)
HIV-uninfected Subjects	21.0% (58/276)	24.4% (21/86)	21.8% (79/362)
HIV/STI Prevalence			
HIV	26.3% (115/438)	8.2% (10/122)**	22.3% (125/560)
Syphilis (RPR≥1:8)	10.3% (45/438)	9.0% (11/122)	10.0% (56/560)
HSV-2	56.6% (248/438)	50.8% (62/122)	55.4% (310/560)
Urethral GC	2.5% (11/438)	0.8% (1/122)	2.1% (12/560)
Urethral CT	3.6% (16/438)	5.7% (7/122)*	4.1% (23/560)
Rectal GC	3.0% (13/435)	8.6% (10/117)**	4.2% (23/552)
Rectal CT	2.3% (10/435)	2.6% (3/117)	2.4% (13/552)

*p<0.05 kwallis, chi-2 test, fisher's exact used when needed			
**p<0.01 chi-2 test, fisher's exact used when needed			

P3.74

KNOWLEDGE AND BEHAVIOR ASSESSMENT OF WOMEN ATTENDING A SEXUALLY TRANSMITTED INFECTION CLINIC IN VITÓRIA, BRAZIL

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Background: Population surveys investigating sexual behavior and practices were implemented with the emergence of the HIV/AIDS epidemic. These surveys sought to better understand the relationship between sexual behavior and HIV sexual transmission. Objectives: To assess sexual risk behaviors among women attending a sexually transmitted infection clinic in Vitória, Brazil.
Methods: A cross-sectional study among women attending an STI/AIDS clinic from March to December 2006. The standardized risk assessment questionnaire included questions on socio-demographic characteristics, exposure and behaviors, and knowledge regarding STI and HIV prevention.
Results: A total of 276 (96.8%) women participated; 109 (39.5%) HIV-infected and 167 (60.5%) HIV-negative Median age was 31 (IQR:24, 36), 31 (11.2%) reported frequent alcohol use, 61 (22.1%) illicit drug use and 6 (2.2%) injection drug use. HIV infected women were more likely to ask their partners to use condoms than HIV negatives (31.2% vs. 4.9%, p=0.02), and were more likely to use a condom at last intercourse (65.1% vs. 32.9%, p<0.01). Among all patients, questions regarding risk of HIV transmission through sexual intercourse (99.6%) and needle sharing (99.2%) were most frequently answered correctly, while questions regarding risk of HIV transmission through blood donation (56.9%) were least often answered correctly.
Conclusion: Though this population reports adequate access to services for HIV and STI, they report little access to knowledge regarding sexuality. As a result, many are exhibiting unsafe sexual behaviors. Implementing targeted counseling to women attending STD clinics is necessary to provide opportunities for risk behavior education.

P3.75

LINKING INTIMATE PARTNER VIOLENCE AND SEXUALLY TRANSMITTED INFECTIONS: FINDINGS FROM BRAZIL

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Background: Intimate partner violence (IPV) has been linked to increased risk of sexually transmitted infections (STIs). However, behaviors that mediate the association between IPV and STIs are not well characterized. IPV is prevalent in Brazil; an estimated 25% of women in São Paulo report experiencing IPV, and the incidence of STIs is increasing.
Objective: To explore the association between IPV and STIs and possible mediating behaviors.
Methods: We conducted a cross-sectional analysis of 781 women, ages 18-40, from a working class neighborhood of São Paulo. Women were tested for chlamydia, gonorrhea and trichomoniasis using PCR and were randomized to face-to-face or computerized interview on sexual history and risk behaviors, including ever having experienced forced sex or physical abuse in the last year. Bivariate and multivariate generalized linear models were used to explore the associations between STIs, IPV and mediating behaviors, adjusting for interview type.
Results: 28% of women reported having experienced a form of IPV and 13% were positive for any STI. Women with a history of IPV were more likely to have a prevalent STI (RR=1.4, 95% CI 1.0-2.1) and to report nine of 13 risk behaviors, including having multiple recent partners (RR=1.5, 95% CI 1.1-2.1) and partners with concurrent partners (RR=1.8, 95% CI 1.5-2.2). These behaviors, in turn, were significantly associated with having a prevalent STI after controlling for health-seeking behaviors and socio-demographic characteristics.
Conclusion: This analysis supports the idea that women who have experienced IPV are at increased risk for STIs, which may be attributable to increased likelihood of concurrent partners or to partners' concurrent partners. Considering the prevalence of IPV among women in São Paulo, local STI prevention and treatment initiatives may be enhanced by incorporating discussion of partner(s)' risk as well as strategies which address sexual and physical abuse.

P3.76

VALIDATION OF PATIENT REPORTED YEAR OF HIV ACQUISITION USING DIFFERENT BACKCALCULATION METHODS AMONG HIV-INFECTED BLACK CARIBBEANS IN THE UK

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Background: Increasing new HIV diagnoses among black Caribbeans (BC) in the UK is of major public health concern. In a south London study on HIV-infected BC (LIVITY), key findings include reported UK HIV acquisition (54%); from a white source partner (17%), and in the recent past (since 2000) (31%). Given the public health implications of these findings, we sought to validate the reliability of patient reported year (yr) of infection, and therefore reported source country and partner.
Methods: 250 HIV-positive BC completed a multi-part questionnaire, reporting probable yr of HIV acquisition, with source country and partner. Serial CD4 counts after HIV diagnosis and prior to antiretroviral treatment (ART) were abstracted for 157 BC. Three methods were used to calculate probable yr of HIV infection using CD4 cell counts: (1)Samet method (2001,AIDS,15:77-85) assumes an initial CD4 count of 800 cells/µl, and CD4 decline of 60 cells/µl/yr, to estimate patients' length of HIV infection; (2)Linear regression using square root transformed CD4 counts, to impute the yr when CD4 count equalled 800 cells/µl; (3)Taffe method (2008,Stat Med,27:4835-53) uses repeat CD4 counts to produce a seroconversion window and date of infection is then modelled using median conditional imputation.
Results: Median CD4 count at diagnosis was 328 cells/µl (IQR=142-491). Of 157 patients, 61 were excluded from analyses (no CD4 counts prior to ART/missing HIV acquisition dates). Of remaining patients, 50 had >1 CD4 count prior to ART. 28%, 19% and 59% of imputed dates matched within 3 yrs of perceived dates for methods 1, 2 and 3, respectively.
Conclusions: Backcalculation approaches are limited by late presentation of BC patients and therefore lack of serial CD4 data. Agreement between backcalculated and patient reported yr of HIV infection was greatest with method 3, occurring in >50% of BC patients. This strengthens the LIVITY study findings regarding HIV acquisition source country and partner.

P3.77

MAPPING INDIVIDUAL STD CASE DATA: GEOMASKING EVENTS TO PROTECT PATIENT PRIVACY

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Background: A major challenge in mapping health data is protecting patient privacy while maintaining the spatial resolution necessary for spatial surveillance and outbreak identification. With individual location information, measures are required to prevent patient re-identification, particularly in areas with low population density. We have developed a geomasking technique, referred to as the donut method, for use with STD data. The donut method extends current methods of random displacement by ensuring a user-defined minimum level of geoprivacy. In donut geomasking, each geocoded address is relocated in a random direction by at least a minimum distance, but less than a maximum distance, while retaining the address in its original census block group.
Methods: The donut method (DM) was assessed by simulating a disease field and injecting spatial case clusters over a 4-county region. K-anonymity, defined as the number of people among whom a specific de-identified case cannot be reversely identified, was used to measure geoprivacy. The sensitivity and specificity of cases identified by the SaTScan Spatial Bernouilli Model scanning algorithm measured cluster detection. Three scenarios, each with disease fields of ~2500 controls and 150 cases, were masked using DM, simple random perturbation (RP) and aggregation. For each scenario, 20 iterations were conducted at each of 10 geoprivacy levels (maximum k-anonymity), totaling 600 iterations. DM minimum k was set at 10% of maximum k.
Results and Conclusions: On average, DM and RP performed better than aggregation in identifying cluster cases. At all levels of geoprivacy, DM geoprivacy measures were at least 42.4% higher and cluster detection measures less than 7.1% lower as compared to RP. Overall, the donut method provides a consistently higher level of privacy protection with minimal decrease in cluster detection performance, especially at low values of k-anonymity where the risk to individual geoprivacy is greatest.

P3.78

AN EVALUATION OF PRIVACY PROTECTION WHEN GEOMASKING STI DATA

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Background: Geomasking (GM) is necessary to protect privacy when mapping STI cases. Most GM algorithms assume a homogeneous population distribution when determining the distance to move an

individual. Although specific population information is often unavailable, many US counties have databases including every household, making it possible to GM at a known level of privacy protection. We recently developed a GM method, referred to as the donut method (DM), to allow spatial epidemiological studies of STIs. We examined privacy protection with DM by comparing estimated and actual k-anonymity (k), where k is defined as the number of people from which a de-identified case cannot be distinguished.
Methods: We obtained GIS shapefiles with detailed census block group information and E911 files with specific locations of households from rural and urban North Carolina counties. Using DM, households were displaced more than a minimum and less than a maximum distance, but within the original census block group. The estimated k for each household was calculated as k=pi*r^2*d [r=radius (displacement distance) and d=household density]. The actual k was calculated as the number of households from the E911 file that were closer to the original location than the displacement distance.
Results and Conclusions: Overall, the correlation between estimated and actual k was relatively low (correlation coefficients = 0.41-0.50). Within individual census block groups, the correlation coefficients varied substantially because of variation in household density. To ensure a minimum protection of 5 households with <1% error, at least 15 households must be included in the displacement area when using the homogeneous distribution assumption. Estimated k is often an inadequate proxy for actual k. When GM algorithms assuming a homogeneous population distribution are used, researchers and public health officials should consider using a greater maximum distance to ensure an adequate level of privacy protection.

P3.79

DYNAMIC NETWORK VISUALISATION OF OUTPUTS FROM INDIVIDUAL-BASED MODELS OF SEXUALLY TRANSMITTED INFECTIONS: THE QUEST FOR AN APPROPRIATE TOOL
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Background: Tools for dynamic visualisation of network data, like "network movies", have been used in social sciences. For sexually transmitted infections (STIs), such tools could assist us in appreciating outputs of individual-based models of STI transmission. We scope out the challenges in constructing tools for dynamic visualisation of STI networks, identify several features desirable for such a tool, and software that could be used.
Methods: The review covered articles from social sciences, mathematical modelling of STIs, and various software tools and libraries, which were identified through search engines and reference lists of articles.
Results: While "network movies" have been used in social science research, these have not been used with recent individual-based models for STIs. Key challenges in constructing "network movies" alluded to in network literature are the choice of an appropriate time-window for aggregating data, and difficulties in visualising large networks. We surmise that time-window issues may be further compounded in STIs, since dynamic visualisation must account for two different time-scales, one for relationships and one for infections. In addition, the number of agents in STI models generally exceeds the capacity of visualisation tools. Features relevant to STI transmission identified from modelling include partnership length and type, gap length and concurrency, frequency of sex and condom use, and natural history of infection (eg. timing of infection, progression and recovery). Options to visualise these features would be needed, along with algorithms for filtering simulation data and reducing the number of entities displayed to a manageable number. Of existing software reviewed, the JUNG (JAVA Universal Network/Graph) Framework shows promise.
Conclusions: There is a case for developing concepts and building a software tool customised for the dynamic visualisation of outputs from individual-based models of STI transmission.

P3.8

RATES OF CHLAMYDIA AND GONORRHEA AMONG PRIVATELY INSURED MEN AGED 20-64 BETWEEN THE YEARS 2001-2005
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Objectives: To compare the rates of chlamydia (CT) and gonorrhea (GC) in a population of privately insured men ages 20-64 years to the rates of chlamydia and gonorrhea in published surveillance data for the years 2001-2005, because reported data might be biased.
Methods: We used the Medstat Marketscan database, which is weighted to be representative of privately-insured persons, approximately 69% of the U.S. population. We identified cases of CT, GC, and non-gonoccoccal urethritis (NGU) using ICD-9 diagnosis codes and calculated the weighted rates per 100,000 member years of men aged 20-64 years, using Stata 9.0. We compared these rates to national-level reporting-based surveillance data for the U.S. for CT and GC. NGU is not reportable and is a broad

diagnosis with many causes other than CT. It may also serve as a substitute diagnosis for chlamydia in the absence of diagnostic testing.
Results: The rates of CT and GC in the Table demonstrate similar patterns between the study population and surveillance data. The rates of CT show a steady increase in both groups. The rates of NGU have fallen as chlamydia rates in the study population have increased. The rates of GC are generally similar between groups for the majority of years, although the rates in the study population are consistently ≥ 20% higher.
Conclusions: The overall rates of CT and GC within the study population display similar trends with regard to the rates of chlamydia and gonorrhea surveillance data. Our rates for GC were higher than those in the surveillance data, possibly indicating that the rates of GC may be underreported. The rise in rates of CT could indicate increased chlamydia screening and testing in men.

Table. Rates of chlamydia, gonorrhea, and NGU per 100K men 20-64 years (member years for study population)

		2001	2002	2003	2004	2005
Study population	Chlamydia	70	73	75	93	133
	Gonorrhea	239	216	183	203	216
	NGU	283	273	250	244	252
Surveillance Data	Chlamydia	139	158	167	183	200
	Gonorrhea	171	164	152	148	149

P3.80

CORE AREAS IN RURAL ENVIRONMENTS
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Objective: Sexually transmitted infections (STIs) have geographically definable core areas in urban environments. Our objective was to map gonorrhea (GC) and syphilis rates for the rural southern state of North Carolina (NC), USA, to determine if this phenomenon applied to rural environments.
Methods: We mapped quarterly GC rates from January 1, 2005 to March 31, 2008 and yearly syphilis rates from 1999 to 2007 at the census tract and county levels. Rates were calculated using cases reported to the NC State Health Department STI surveillance program. Moran's I was used as a global measure of clustering rates (range -1 dissimilar clustering, 0 no clustering, +1 similar clustering) and Getis-Ord's Gi was used to identify local clusters of low and high rates of infection. Geographic areas with clusters of high rates were assessed for persistence over time to differentiate between outbreaks and core areas (persistence greater than 2 years for GC, and 5 years for syphilis).
Results: Globally, Moran's I indicated clustering of similar rates at both the census tract and county level for GC (range 0.1 to 0.5) and syphilis (range 0.13 to 0.37). Locally, maps of Getis-Ord's Gi's indicated clusters of high rates in rural eastern NC (larger commercial farms), but clusters of low rates in rural western NC (small subsistence farms). GC clusters in rural NC persisted for 4 years. One syphilis cluster in rural NC persisted for 5 years; however, this was a recognized outbreak.
Conclusions: Geographically definable clusters of GC and syphilis infection were observed for some rural parts of NC at the census tract level and county levels. Many rural GC clusters persisted for more than 2 years suggesting core areas of infection. Persistence of syphilis clusters in rural areas were less definitive. Consequently, the dynamics around GC transmission in rural environments may share similarities urban environments.

P3.81

COMPARABILITY OF RESULTS FROM PAIR AND STANDARD MODELS OF SEXUALLY TRANSMITTED INFECTIONS
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Background The "standard model" for sexually transmitted infections treats partnerships as instantaneous events summarised by partner change rates, but pair models account for time within partnerships (transmission occurs) and gaps between partnerships (no transmission). We compare the two approaches for modelling several STIs.
Methods We formulated pair models and standard models of gonorrhoea (GC) and Chlamydia (CT) as

Susceptible-Infectious-Susceptible (SIS) infections with asymptomatic and symptomatic states, and HIV as a Susceptible-Infectious (SI) type pathogen with multiple stages of different infectivity. In the pair model, transmission occurred at a fixed probability per coital act, while in the standard model per partnership transmission probabilities were estimated based on the number of sex acts in partnerships of a given length, with and without accounting for disease stages shorter than partnership lengths; partner change rates were the inverse of combined gap and partnership lengths. We compared predictions on the critical proportion of sex acts which must be protected (ε) for different gap and partnership lengths, when using the same parameter values and on calibrating the standard model to produce the same prevalence as the pair model.
Results In an SI-type infection with multiple disease stages, the contribution of acute infections in the standard model exceeds what is estimated when modelling serially monogamous pairs. For SIS-type infections, the standard model does not account for repeat infections within partnerships, so that SIS infections can persist over a wider range of partnership lengths in the pair model. Calibrating the standard model to the pair model results in similar predictions for the value of ε in HIV but results diverge for GC and CT with longer partnership lengths.
Conclusions Results from standard and pair models can be fairly similar for SI infections, but not SIS infections when assuming longer partnerships.

P3.82

GONORRHOEA AIN'T GONE: DISSEMINATION OF ANTIMICROBIAL RESISTANT STRAINS DEPENDS ON THE DYNAMICS OF CORE GROUPS
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Background: Gonorrhoea (Gr) is epidemiologically dependent on relatively small numbers of individuals with high rates of sex partner acquisition (so-called "core groups") in order to avoid extinction. However, rapid emergence of resistance to several antibiotic classes in recent years has been associated with a contemporaneous resurgence in Gr rates.
Methods: We built a behavior-structured transmission model to identify the role of core groups in disseminating resistant Gr isolates in the population. We also used this model to evaluate the relative impact on Gr control of several competing antibiotic-use strategies, including use of resistance "thresholds", combination therapy, random allocation of therapy, and use of a hypothetical "point of care" test to direct treatment.
Results: The model was well calibrated to available surveillance data. In the absence of resistance, core group-focussed treatment was the most effective strategy, with elimination of Gr in the population. However, in the presence of a small but finite risk of resistance, core group-focussed treatment resulted in most rapid dissemination of resistant infection to all risk groups, and rebound in Gr incidence. Random allocation of antimicrobial therapy was associated with more durable Gr control than the use of a resistance "threshold" or the routine use of combination therapy. The most effective control strategy included a hypothetical point-of-care test for identification of resistant infection and targeted therapy.
Conclusions: Treatment of core groups is a highly effective Gr control strategy in the absence of antibiotic resistance, but core group-focussed control programs may also facilitate dissemination of resistant Gr, and collapse of control efforts. Random treatment allocation appears to be the most durable empirical Gr control strategy, but development of point-of-care testing, permitting targeted antibiotic use for treatment of Gr, would be a useful advance in disease control.

P3.83

WHY IS CHLAMYDIA ENDEMIC; A MATHEMATICAL MODELLING STUDY
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Background: Chlamydia is endemic in the heterosexual population in many developed countries. Possible reasons include a long duration of untreated asymptomatic infections, or risky behaviour with casual and (concurrent) partnerships. We explored the effects of these factors in a mathematical model.
Methods: We developed a pair-wise deterministic compartmental model of heterosexuals aged 15–35 years in 3 sexual activity classes. The model explicitly describes the formation of both steady and casual (one-off sexual contact) partnerships depending on activity class and sex. Casual partnerships can be formed between any two single persons of the opposite sex; persons in steady partnerships can have concurrent partners but have fewer partners than persons without steady partner. We used data from UK population-based studies to estimate levels of casual partnerships and the percentage of asymptomatic infections. Chlamydia status in the model can be susceptible, symptomatic infected or asymptomatic infected. We estimated steady-state levels of chlamydia prevalence.

Results: Increasing the duration of symptomatic infection did not change chlamydia prevalence substantially but the duration of the asymptomatic period did; a 10% increase resulted in a 60% increase in prevalence. When casual partnerships were also included in the model chlamydia prevalence was, on average 3 times higher. The same prevalence was reached with a 26% shorter duration of asymptomatic infection than in a model with no casual partnerships. Increasing the number of casual partners by 10% did not have a substantial impact on prevalence.
Conclusions: We show that a long period of asymptomatic untreated chlamydia is essential for sustaining the infection, but that casual partnerships also account for a substantial part of the transmission dynamics. Interventions aimed at shortening the asymptomatic period, such as regular screening would reduce prevalence, but behavioural change should also be promoted.

P3.84

SCREENING FOR CHLAMYDIA SHOULD LEAD TO REDUCED REINFECTION RATES IN THE MEDIUM TO LONG TERM

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Background: Increases in Chlamydia incidence have been observed in recent years in many developed countries. The arrested immunity hypothesis proposes that early treatment of Chlamydia may reduce or prevent the acquisition of immunity such that treated individuals are more susceptible to reinfection than those who have recovered naturally. It has thus been suggested that control programs involving early treatment may be, at least in part, responsible for increases in Chlamydia incidence.
Methods: We developed a mathematical model of Chlamydia transmission, accommodating multiple Chlamydia reinfections, to investigate the impact of treatment on incidence, prevalence, and transmission dynamics under various assumptions regarding immunity and susceptibility to reinfection.
Results: In the absence of routine screening, results from the model indicate that assumptions regarding the duration of naturally acquired immunity have little impact on prevalence. However, assumptions regarding a degree of reduction in susceptibility to reinfection following a prior infection have a significant impact on prevalence. If routine screening is introduced at moderate to high coverage we find that while overall susceptibility and susceptibility to an initial infection increase gradually in the population over time, the susceptibility to subsequent infection decreases in the medium to long term (5-50 years, Table 1).
Conclusion: Screening is likely to increase the overall population-level susceptibility to infection over time but susceptibility to multiple Chlamydia reinfections is likely to decline. Given the strong link between recurrent Chlamydia infection and PID, our model suggests that screening should be beneficial in reducing the incidence of PID.

Table 1. Proportion of the population that is susceptible to Chlamydia infection overall and for each infection assuming naturally acquired immunity of 1-2 months (median and interquartile range). Screening rate: 50% per year.

	After 0 years screeening	After 5 years screeening	After 10 years screeening	After 20 years screeening	After 50 years screeening
Overall	0.91 (0.83-0.97)	0.94 (0.87-0.98)	0.95 (0.89-0.99)	0.96 (0.92-0.99)	0.98 (0.97-0.99)
1st infection	0.49 (0.38-0.63)	0.54 (0.44-0.66)	0.60 (0.51-0.71)	0.70 (0.63-0.78)	0.87 (0.84-0.91)
2nd infection	0.23 (0.2-0.24)	0.22 (0.2-0.23)	0.19 (0.17-0.20)	0.14 (0.13-0.15)	0.062 (0.057-0.064)
3rd infection	0.12 (0.08-0.13)	0.11 (0.08-0.13)	0.10 (0.07-0.12)	0.075 (0.050-0.087)	0.032 (0.021-0.037)
4th infection	0.061 (0.030-0.083)	0.057 (0.028-0.079)	0.050 (0.024-0.070)	0.037 (0.018-0.052)	0.016 (0.007-0.022)

P3.85

EFFECTIVENESS OF VACCINATING BOYS ON THE TRANSMISSION OF HPV: ANALYSIS OF THE BASIC REPRODUCTION NUMBER R0

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Objectives: In many countries universal vaccination of girls against infection with human papillomavirus was recently introduced or will be introduced soon. The decision of whether of not to include boys in the national immunization programmes depends on the strength of indirect effects of vaccinating boys on the incidence in girls and the resulting incremental cost effectiveness. Our aim was to assess the contributions of males and females, respectively, to the transmission dynamics of HPV using the concept of the basic reproduction number.
Methods: Based on a model stratified by age and sexual activity we derived a formula for the basic reproduction number R0 for HPV. The reproduction number is a geometric mean of two factors describing the average numbers of secondary cases in men by one infected woman and vice versa. We consider differences in infectivity between men and women and between transient and persistent infections. Where possible, we based our choices of parameters on available literature data. We investigated the how the reproduction number depends on transmission probabilities, the duration of the infectious period and on vaccination coverage of men and women.
Results: Assuming that persistent infections contribute substantially to transmission, women produce many more secondary infections in men than vice versa. The exact ratio depends on the duration of infectiousness during transient infections, and on the transmission probabilities per partnership. Even with a substantially higher transmission probability from males to females, the transmission chain is driven by female to male transmission.
Conclusions: If vaccination coverage among women is above a critical threshold, vaccination of men does not add anything to effectiveness. If both women and men are vaccinated at the same level of coverage, the fraction of the total population that needs to be vaccinated for elimination is higher than when vaccinating women only.

P3.86

EXPLAINING HETEROGENEOUS ADOLESCENT HIV PREVALENCE IN SOUTHERN AND EASTERN AFRICA

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Objectives: Adolescent HIV prevalences vary substantially across Africa. Reasons may include variation in adolescent risk factors and/or HIV prevalence among adults with whom they form partnerships. We aimed to determine the relative contribution of adult HIV prevalence and adolescent factors in explaining adolescent HIV prevalence across Southern and Eastern Africa using data from four countries and mathematical modelling.
Methods: Detailed data on 16-20 year olds, and data on older adults in the same geographic areas, in two high(South Africa,Zimbabwe) and two lower(Tanzania,Uganda) prevalence countries were analysed. A deterministic model of HIV, stratified by age, gender and sexual activity, was used. Age mixing was modelled by fitting gamma distributions to data on age-difference by single-year of age and gender. Three counterfactual scenarios were modelled to explore the relative effect of adult HIV prevalence and adolescent factors.
Results: Few risk factors were markedly more common in the populations with high adolescent HIV prevalence. Adolescent risk factors that were more common were reported GUD and discharge, and adolescent females reported a higher proportion of older partners in South Africa and Zimbabwe, than in Tanzania.

	South Africa Males	South Africa Females	Zimbabwe Males	Zimbabwe Females	Uganda Males	Uganda Females	Tanzania Males	Tanzania Females
Partners that are >1 year older than respondent (%)	8.6	77.6	9.7	83.8	N/A	N/A	5.8	34.1
Ever had GUD (%)	4.6	5.8	3.5	4.9	2.0	2.0	N/A	N/A
Ever had genital discharge (%)	7.1	18.8	5.7	9.8	2.1	11.0	N/A	N/A

The fitted models showed the relative contribution of adult HIV prevalence and adolescent factors in explaining adolescent HIV prevalence. Observed differences in reported adolescent behaviour were, in isolation, insufficient to explain the large differences in adolescent prevalence.
Conclusions: Adolescent epidemics do not occur in isolation and are greatly influenced by adult prevalence and behaviour. Understanding which factors have the greatest influence on adolescent HIV prevalence is important for designing interventions. These analyses show how the interaction between partner age-difference, cofactor STI prevalence and adult HIV prevalence may be key in explaining differential HIV prevalence in adolescents in Eastern and Southern Africa.

P3.87

THE STRAW THAT BROKE THE CAMEL'S BACK? HIV EPIDEMIOLOGY AND BEHAVIOURAL SURVEILLANCE AMONG MSM IN NEW ZEALAND: THE QUESTION OF EPIDEMIC TIPPING POINTS

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Objectives: New Zealand is a low HIV prevalence country (<5% prevalence among MSM), however HIV diagnoses among MSM rose after 2000. The analysis sought a better understanding of the likely epidemiological and behavioural drivers of this increase.
Methods: A detailed examination of HIV epidemiological surveillance data between 1985-2005 was coupled with offline and online behavioural surveillance among MSM in the main epicentre of Auckland from 2002.
Results: HIV diagnoses among MSM who had been infected in New Zealand increased from 21 annually between 1997-2000 to a peak of 66 in 2005. The estimated diagnosed HIV prevalence pool accelerated from 2000. Despite the advent of HAART, the diagnosed incidence-to-prevalence pool ratio (IPR) was sufficient to sustain endemic HIV transmission depending on the assumptions used.
No large-scale changes in unprotected sex, partner numbers or testing were observed through offline surveillance between 2002 and 2006. The proportion of offline respondents who reported recently having sex with men met online however increased from 26.6% in 2002 to 41.7% in 2006. An online surveillance extension in 2006 revealed that MSM who had been omitted from offline surveillance reported worse outcomes across several HIV risk indicators.
Conclusions: Moderate changes involving elevated unprotected sex for some MSM, and alterations to sexual mixing, may have pushed the reproductive rate of HIV beyond the new epidemic threshold set by the increase in longevity among positive MSM from the mid-1990s. These changes need not have been great if the reproductive rate of HIV was already situated just below the epidemic tipping point. In this case, a resurgent outbreak of HIV may even have been triggered by subtle shifts in key determinants. The analysis raises questions about small but epidemiologically-significant changes in behaviours, epidemic cycles, the interpretation of existing behavioural surveillance streams, and the need for sexual network research.

P3.88

MODELLING THE EFFECT OF HIV VIRAL LOAD HETEROGENEITY ON TRANSMISSION DYNAMICS

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Background: HIV set point viral load varies significantly between individuals. It is the best predictor of transmission and a useful marker for disease progression. The relationship between transmission and survival means that those with mid-ranged viral loads generate most new infections over their lifetime. The role of variable viral load in transmission dynamics is investigated using mathematical models.
Methods: A deterministic model of HIV was developed accounting for asymptomatic viral load heterogeneity and its effect on transmission and survival(heterogeneous). It was parameterised using published data relating viral load to infectiousness and duration of asymptomatic infection. It was compared with a null model where infectiousness did not vary and the duration of the asymptomatic period is exponentially distributed (homogenous model). Three methods of parameterising the homogenous model were used, estimating mean rates from data and by matching R_0 to the heterogeneous model.

	Transmission rate (years-1)	Mean duration of asymptomatic period	R_0	Endemic Prevalence

		(year)		
HETEROGENEOUS MODEL	-	-	1.44	0.31
Method of parameterisating the homogeneous model				
Transmission and duration of the mean viral load	0.25	5.91	1.67	0.40
Mean transmission rate and duration	0.23	6.45	1.66	0.39
Fitted to R_0 by simultaneously varying infectiousness and duration	0.12	9.98	1.44	0.31

Results: The heterogeneous model has a lower R_0, predicts 22.5% lower prevalence, and a slower epidemic growth rate than the homogenous model using infectiousness and duration from data. When the two models have matched R_0 the growth rate of the heterogeneous model is substantially higher. Differential mortality means the distribution of viral loads observed in the population will change with stage of the epidemic, even in the absence of selection pressure. Different initial viral load distributions produce very different epidemics.
Conclusion: Our results show that heterogeneity in viral load is a key determinant of epidemic dynamics and small population differences in viral load distribution can have a large impact on the epidemic. A model which accounts for this produces more realistic dynamics. Variation in infectiousness and duration should be an essential component of HIV transmission models and their analysis.

P3.89

LINEARITY AND NON-LINEARITY IN HIV/STI TRANSMISSION: IMPLICATIONS FOR THE EVALUATION OF SEXUAL RISK REDUCTION INTERVENTIONS
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Objectives: To investigate how linearity or non-linearity in the relationship between the number of unprotected sex acts (or the number of sex partners) and the risk of acquiring HIV or a highly-infectious STI (such as gonorrhea or chlamydia) affects the validity of sexual behavior change measures as indicators of the effectiveness of HIV/STI risk reduction interventions.
Methods: A mathematical model of HIV/STI transmission was used to examine the influence of the number of sex acts and number of sex partners on the likelihood of transmission. The critical parameter in these analyses was the per-act HIV/STI transmission probability, which is substantially smaller for heterosexually-transmitted HIV than for highly-infectious STIs.
Results: The risk of acquiring HIV through vaginal intercourse is essentially a linear function of the number of unprotected sex acts and is nearly independent of the number of sex partners. Consequently, the number of unprotected sex acts is an ideal marker for HIV risk, whereas the number of sex partners is largely uninformative. In general, the number of unprotected sex acts and the number of sex partners are unreliable markers for the risk of acquiring a highly-infectious STI due to the highly non-linear transmission dynamics of these STIs.
Conclusions: The contrasting extent to which HIV and highly-infectious STIs deviate from the linearity assumption that underlies behavioral outcome measures has important implications for the use of these measures to assess the risk reduction effectiveness of HIV/STI prevention interventions.

P3.90

MAPPING HIV and STI BEHAVIOURAL SURVEILLANCE IN EUROPE
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Background: Used in conjunction with biological surveillance, behavioural surveillance provides data allowing for a more precise definition of HIV/STI prevention strategies.
Method: A questionnaire was sent to all EU Member States and EFTA countries requesting data on their overall behavioural and second generation surveillance systems and on surveillance in the general population, youth, MSM, IDU, CSW, migrants, PLWHA, and STI clinics patients. Data collected included information on system organisation (e.g. sustainability, funding, institutionalisation), topics covered in surveys and main indicators.

Results: Response rate: 28/31 countries. Sixteen countries report an established behavioural surveillance system. There are wide differences as regards the year of initiation, number of populations surveyed, data collection methods used, organisation of surveillance and coordination with biological surveillance. The populations most regularly surveyed are the general population (13 countries), youth (14), MSM (13) and IDU (14). STI clinic attendees, CSW and PLWHA are surveyed in only a small number of countries and less regularly, and few countries have undertaken behavioural surveys among migrant or ethnic minority populations. Topics most frequently covered are similar across countries although the construction of indicators varies.
Conclusions: A general framework for behavioural surveillance will be developed, suggesting processes to establish consistent HIV/STI behavioural surveillance systems across Europe; a set of common indicators across populations and specific indicators should be agreed upon with all Member States for each population group, taking into account existing international indicators. In choosing data collection methods, priority should be given to robustness, sustainability and cost effectiveness.

P3.91

LOW RISK POPULATION, HIGH RISK SUBGROUPS: A COMPARISON OF RISK FACTORS FOR FIVE SEXUALLY TRANSMITTED INFECTIONS

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Objectives: To compare the risk factors for five sexually transmitted infections(STIs) in attendees at two regional Irish STI clinics.
Methods: Using diagnostic, demographic and behavioural information from two STI clinics from January 1999-June 2008, multiple logistic regression models were used to identify risk factors associated with first episodes of genital warts(GW), genital herpes simplex virus(HSV), non-specific urethritis(NSU), chlamydia(CT) and gonorrhoea(GC).
Results: In the time period examined, 20085 patients made 27125 visits and received 15422 diagnoses. Number of first visit diagnoses was 11960. The prevalence of GW, HSV, CT, NSU & GC was respectively 18.1%, 1.3%, 8.7%, 6.8% and 0.4%. 87% of GC was diagnosed in men, 76% of HSV in women. For all STIs, women U20 yrs had a higher risk of infection (ORs ranging 1.67-5.01; 95% CIs ranging 1.08-6.9) as did men aged 20-25 yrs (ORs ranging 1.73-5.56; 95%CIs ranging 1.23-7.59) when compared to all other age groups. With the exception of GC, increased risk for all STIs were associated with heterosexuals and inconsistent condom use. For bacterial infections, multiple partners in the last 3 months was associated with a higher risk of STI diagnosis for men (ORs ranging 1.17-1.47;CIs ranging 1.01-1.77) however having 2 or 3+ partners was negatively associated with GW (ORs 0.74 & 0.49;CI 0.62-0.87, 0.37-0.66). Male and female smokers were at an increased risk of GW diagnosis (ORs 1.78 & 1.33;CIs 1.61-1.97, 1.21-1.56) and female smokers at increased risk of CT diagnosis (OR 1.38;CI 1.21-1.56). IV drug use was strongly associated with GC diagnosis in men (OR 13.83;CI 2.79-57.52).
Conclusions: This study is the first to report risk factors of STIs in Ireland using STI clinic data. Our data confirm the importance of age, condom use and number of sexual partners as important risk factors for STI diagnosis. Age specific behavioural interventions that target increased condom use may be effective in reducing STIs in Ireland.

P3.92

THE CHANGING EPIDEMIOLOGY OF SEXUALLY TRANSMITTED DISEASES FOR 10 YEARS IN KITAKYUSHU, FUKUOKA, JAPAN

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Objectives: To study the epidemic situation and tendency of sexually transmitted diseases (STDs) in Kitakyushu, the northern city in Kyushu island, Japan.
Methods: Analyzing the incidence number, the age and the gender of STDs, that is, gonococcal infection, chlamydial infection, non gonococcal non chlamydial infection, syphilis and condyloma acuminatum for 1997-2007 in Kitakyushu whose has 980.000 population. We collected the Information about STDs cases reported by the urologists, gynecologists and dermatologists at 35 sentinel hospitals in Kitakyushu.
Results: The total number of all STDs peaked to be four thousand and seven hundred three cases in 2002, and keeps to be over 4000 cases. The largest number was reported in gonococcal infections in male and chlamydial infection in female for 10 years. The number of gonococcal infection increased in late 1990s, peaked in 2002 and slightly decreased afterwards. Non gonococcal infection peaked in 2001. The highest incidence was observed in 20s in both genders. In 2007, male to female ratio was 3.69 in all

STDs. The gonococcal infection was 23.5 %, chlamydial infection was 22.0 %, and non gonococcal non chlamydial infection was 17.7 % in both genders.
Conclusions: STDs in Kitakyushu had been increasing until 2002, especially in gonococcal- and chlamydial infections in 20s in both genders. After the peak in 2002, the number of gonococcal and chlamydial infection tuned out to decrease in both genders.

P3.93

STI SURVEILLANCE IN AN HIV-LOW-PREVALENCE COUNTRY: RESULTS FROM THE GERMAN STD-SENTINEL

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Objectives: The new Infection Protection Act was implemented in 2001 and only syphilis and HIV were stated reportable STIs. Within the STD-Sentinel a subset of German health care providers voluntarily report STIs.
Methods: Since the end of 2002 local health authorities, specialized outpatient clinics and practitioners continually report examination and infection data, demographics and risk behaviour. Patients are asked to return questionnaires which are linked to doctors' reports and provide further information about patients' social state and sexual behaviour.
Results: Between 2003 and 2008, 533608 clients attended the sites, 6% (4903/81983) were positive for chlamydia, 3.6% (2972/81646) for gonorrhoea, 1.1% (3026/267901) for HIV, 3% (2771/92651) for syphilis and 2.5% (1981/77713) for trichomonas. Among the total of 9096 STD patients 44% were women and the overall mean age was 32 years, men being significantly older. Women were more often of foreign origin (67% vs. 26%, $p<0.001$), particularly from Eastern or Central Europe (39%). "Health check" was significantly more often reported by women as the reason for attendance (58% vs. 42%, $p<0.001$) compared to "health problems" in men (26% vs. 74%). Doctors constituted in 66% of women sex work as the possible source of infection, in 65% of men homosexual contacts. 8% (128/1627) of all patients with syphilis were co-infected with HIV, 10% (267/2672) of all patients with chlamydia were gonorrhoea co-infected. 33% of patient questionnaires were returned. 61% of men reported casual partners as their perceived source of infection, 30% of women named regular partners and 34% customers. Since 2005, 21% of men and 15% of women reported consistent condom use, whereas 21% of men and 9% of women reported never using condoms with casual partners.
Conclusions: In the sentinel, surveillance of high-risk groups, such as MSM, sex workers and migrants is assured, however, data cannot be interpreted as STI rates in the general population.

P3.95

REPORTED HISTORY AND TREATMENT OPTIONS FOR STI's AMONG FISHERMEN

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Objective: To describe the prevalence and type of reported previous STIs and treatment sought by Fishermen.
Methods: We screened fishermen for participation in a Phase one randomized double blind placebo-controlled cross over trial to evaluate the safety and acceptability of an ethanol emollient gel as a topical male microbicide. At baseline, we collected information on socio-economic and demographic characteristics, history of previous STIs and where they sought treatment.
Results: Of the 168 fishermen, over a half (54 %) had at least basic education and two-thirds (66%) were married (5 % polygamous). The median age of sexual debut was 16 years, and the median number of sexual partners' lifetime was 10 (Mode 10; range 1-200). More than half (59%) reported previous STIs and possible diagnosis as gonorrhea (38%) and syphilis (32%), Chlamydia (11%) and HSV-2 (15%). Notably, almost half (47%) of STI were genital ulcers. A third (33%) did not seek treatment, while 32% sought treatment from public hospitals. The rest sought treatment from private hospitals (20%) or used traditional herbs (15%). Almost half (47%) of the fishermen sought treatment after five days of the onset of symptoms. Although of borderline significance ($p=0.059$), those with genital ulcers wasted more than five days before seeking care.
Conclusion: The high prevalence of the reported ulcerative diseases coupled with delay in seeking care may contribute the high HIV prevalence in this population.

P3.96

TRENDS IN REPORTABLE SEXUALLY TRANSMITTED INFECTIONS IN CANADA (1997-2008)

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Background: Canada has well-established mechanisms in place for the surveillance of three nationally notifiable sexually transmitted infections: chlamydia (CT), gonorrhea (GC), and infectious syphilis.
Methods: The Public Health Agency of Canada (PHAC) receives reportable STI data from provincial and territorial (P/T) ministries of health, which in turn obtain data from local and regional health authorities. These data are compiled at the national level to examine trends over time by age, sex, and geographical distribution of cases across the country.
Results: Reported rates of CT, GC, and infectious syphilis have continued to rise since 1997, with projected 2008 rates of 239.3, 37.8, and 4.0 per 100,000 respectively. As in previous years, females aged 15-24 are disproportionately affected by CT infection, while syphilis primarily affects males.
Table 1. Percentage change in STI rates between 1997 and 2008 (projected)

	1997	Projected 2008	Percent change 1997-2008
Chlamydia	113.9	239.3	110.2
Gonorrhea	14.9	37.8	153.7
Syphilis	0.4	4.0	900.0

Conclusions: The past decade has seen an alarming increase in reported STI rates in Canada. A number of explanations have been postulated for this observed rise, including safe sex fatigue, HIV treatment optimism, NAAT for diagnosis of CT and GC, and syphilis outbreaks among MSM. Further work, including targeted research and modelling, is required to understand what is driving these observed trends. It is clear that national goals set in late 1996, around the time of nadir for all three infection rates, may no longer be appropriate or feasible. A process to re-evaluate these goals and to establish new national STI targets, as appropriate, is currently being planned.

P3.97

SEXUALLY TRANSMITTED INFECTIONS AMONG RURAL AND URBAN MOZAMBICAN WOMEN ATTENDING TO A MICROBICIDES DEVELOPING PROGRAMME (MDP) FEASIBILITY STUDY

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Background: HIV pandemic has increased in Mozambique, particularly in women, with estimated HIV prevalence rising from 13,6% in 2002 to 18,1% in 2005. Vaginal microbicides, if proved effective, would complement the current interventions to prevent HIV as they could be initiated by women. We have completed enrolment to the first feasibility study being conducted in Mozambique to evaluate the site's preparedness to conduct a randomized controlled trial of a candidate microbicide.
Objectives: To describe the prevalence of selected sexually transmitted infections (STIs) and bacterial vaginosis among women from urban and rural areas in Mozambique enrolled in a microbicide feasibility study.
Methods: From August 2007 to October 2008, sexually active women aged 18 to 60 years were screened, and considered eligible if HIV negative, not pregnant, and able to provide contact details. Women were recruited from urban (Maputo) and rural (Manhica) locations and the target enrolment was 500. At screening RPR and HIV serology were performed and at enrolment endocervical samples were collected for *Neisseria gonorrhoeae* (NG) and *Chlamydia Trachomatis* (CT) through PCR; a high vaginal swab for *Trichomona Vaginalis* (TV) using In-Pouch; and a vaginal swab for Bacterial Vaginosis (BV) according to the Ison-Hay score on Gram stain. Bacterial vaginosis was considered to be present if the Ison-Hay was >III. Women are followed for 40wks and have 12weekly HIV rapid tests, and gynaecological samples collected at 24wks.
Results: 790 women were screened in the two locations and 505 enrolled. Between 393 and 424 of the enrolment samples have been processed. The preliminary results are shown in the table below:

Laboratory diagnosis	Maputo	Manhiça
At screening	N=366	N=424

HIV n(%)	37 (10.1%)	96 (22.6%)
RPR n(%)	11 (3%)	29 (6.8%)
At enrolment	N=173-196	N=188-251
NG	6/173 (3.4%)	1/221 (0.4%)
CT	7/173 (4%)	9/188 (4.8%)
TV	10/193 (5.2%)	20/223 (8.9%)
BV	82/196 (41.8%)	128/251 (50.9%)

Conclusions: Although the prevalence of the majority of infections was higher in the rural cohort in Manhica, the table does not adjust for age. Of note, the one infection more prevalent in Maputo is NG,an infection associated with partner change and unprotected sex.

P3.99

RISK FACTORS FOR HIV INFECTION AMONG FISHERMEN IN A PHASE I MALE MICROBICIDE TRIAL

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Objective: To establish risk factors for HIV infection among fishermen screened for possible enrolment in a Phase I male microbicide trial
Methods: For a randomized double-blind placebo-controlled crossover trial, we screened 168 fishermen to enroll 34 to assess the safety and acceptance of either 62% or 15% ethanol in emollient gel. At screening, we collected data on socio-economic, demographic, sexual behavior and hygiene practices. We also pre- and post-test counseled the participants and obtained specimens for STI testing including HIV. Appropriate treatment and/or referral were provided.
Results: Of the 168 fishermen screened, two thirds (66.1%) were married and 71.4 % had ever practiced transactional sex with a median of 10 lifetime sexual partners. Only 21(12.5%) used condoms in their last sexual act prior to the interview. HIV prevalence was 26.9% and HSV2 57.6%. The mojority (79%) of HIV sero positive participants had been married. Transactional sex, reported history of STIs and HSV 2 seropositivity were associated with HIV positive sero status ($p<0.05$). In multivariate analysis, HSV 2 serostatus independently predict HIV positive sero status [AOR 7.380 (95% CI 2.495-21.824)].
Conclusions: HSV 2 is likely the key to high HIV prevalence. Suppression treatment for HSV2 for HIV prevention if proved successful may play an important role in reducing the spread of HIV in this population.

P4.1

EVALUATION OF THE "YOU NEVER KNOW WHO YOU'LL MEET" YOUTH STI AWARENESS CAMPAIGN IN AUSTRALIA

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Background: Notifications of chlamydia infections more than doubled in the past five years in Victoria, Australia, with the majority among those aged under 25 years. Between June and September 2007 a multimedia campaign was conducted which aimed to increase condom use and testing for sexually transmitted infections (STIs) among 18 to 25 year olds.
Methods: To evaluate the campaign impact we measured chlamydia testing levels and self-reported sexual behaviour and STI testing among people aged under 25 years using various data sources: (i) a registry of government rebated chlamydia tests; (ii) a chlamydia sentinel surveillance network of five medical clinics targeting young people; (iii) an online cross-sectional survey conducted just prior to and during the campaign; and (iv) an existing annual youth sexual behavioural survey. We used time-series regression to assess trends in testing levels before, during and after the campaign and a chi2 test to assess changes in behaviour.
Results: There was a steady increase in the number of chlamydia tests rebated by the government (average increment of 28 tests per month, $p<0.01$) but it began one year before the campaign and was

not accelerated during the campaign. The sentinel surveillance network had no increase in monthly chlamydia tests. The online survey found only 37% recalled the campaign and there was no change in the reported frequency of STI testing in the past year (20% v 16%, p=0.29) or always using condoms in the past month (22% v 25%, p=0.62) between the two time points. The annual behavioural survey found there was no change in the reported frequency of always using condoms with casual partners in the past year (59% v 65%, p=0.12) but there was an increase in the proportion always using condoms with new partners in the past three months (50% v 59%, p=0.02) between 2007 and 2008.
Conclusions: The available data suggest the campaign had little impact on chlamydia testing and condom use among youth in Victoria.

P4.100

USE OF COMPUTER-ASSISTED SELF-INTERVIEW TO ASSESS PRODUCT USE IN MICROBICIDE TRIALS: LESSONS LEARNED IN HPTN 035

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Objectives: To describe the successes and limitations associated with the collection of audio computer-assisted self-interview (ACASI) data in a vaginal microbicide safety and effectiveness trial (HPTN 035).
Methods: Women enrolled in the Phase IIb trial of BufferGel and Pro 2000/5 (HPTN 035) at the Blantyre and Lilongwe, Malawi sites were asked to complete an ACASI survey on sexual behavior and adherence to study product use using handheld personal computers (HPCs). Participants entered their responses directly into the HPC. Preprogrammed audio, text, graphics, and skip patterns guided the participant through the ACASI survey. Consistency checks allowed the participant to loop back and reconcile responses to questions that compared the number of sex acts when product was used to the total number of sex acts. Each day the HPC was used, the ACASI surveys were saved, backed up, merged to a central site computer, then uploaded to a secure web portal hosted by the study data management center in Seattle, WA, USA.
Results: A total of 672 ACASI surveys were completed. All surveys were successfully exported from the HPC and uploaded and only nine needed to be excluded due to duplicate surveys (n=3, missing data (n=4), administration of the wrong survey (n=1), or inconsistent survey dates (n=1). While few technical problems arose, in some instances battery drainage resulted in resetting of internal HPC dates, leading to erroneous survey dates.
Conclusions: The advantages of using HPC with ACASI to collect sexual behavior and adherence data include real-time consistency checks, reliable data transfers and daily data updates. Given the few technical issues encountered with administration of ACASI surveys in this study, and the fact that these issues can be readily addressed/resolved, ACASI is planned to be used in future Microbicide Trials Network clinical trials.

P4.101

TEST-RETEST RELIABILITY AND PREDICTORS OF UNRELIABLE REPORTING IN A SEXUAL BEHAVIOR QUESTIONNAIRE FOR US MEN

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Background: Accurate knowledge about sexual behaviors is important for the development of prevention strategies targeting sexually transmitted diseases; however, there have been few studies assessing the reliability of questionnaires designed for community samples of adult men.
Methods: Test-retest reliability analyses were conducted on a self-administered questionnaire completed by 334 men who had been recruited in Tucson, Arizona, for a longitudinal study of human papillomavirus. Reliability coefficients and refusal rates were calculated for 39 sexual and non-sexual behavior questionnaire items. Predictors of unreliable reporting for lifetime number of female sexual partners were also assessed.
Results: Refusal rates were generally low with slightly higher refusal rates for questions related to immigration, income, the frequency of sexual intercourse with women, lifetime number of female sexual partners, and the lifetime number of male anal sex partners. Kappa coefficients were substantial or almost perfect for all sexual and non-sexual behavior items. All intraclass correlation coefficients were greater than or equal to 0.85. Reliability dropped somewhat, but was still substantial, for items that asked about household income and the men's knowledge of their sexual partners' health including abnormal Pap tests and prior STDs. Age and lifetime number of female sexual partners were independent

predictors of unreliable reporting while years of education were associated with more reliable reporting.
Conclusions: These findings among a community sample of adult men indicate high test-retest reliability for sexual and non-sexual behavior questions, consistent with similar studies of women and adolescents.

P4.102

STD PROGRAM PERFORMANCE MEASURES: ARE THEY PERFORMING?
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Background: In 1999 CDC began developing Performance Measures for 58 STD programs in order to improve program performance.
Methods: To assess progress toward program improvement, we evaluated trends in performance measures data reported to CDC. To estimate the effort involved in collecting and using Performance Measures to improve performance, we reviewed CDC records.
Results: Performance Measures relate to some core STD program activities such as screening (coverage), treatment (timeliness), partner notification (timeliness, treatment), and surveillance data (timeliness, completeness).
Annual 3-day meetings of 16 persons from around the country discuss the measures. Data are checked, corrected, compiled, and reported to programs twice per year. Six seminars have explored the story behind the numbers, 8 "performance improvement webinars" have been conducted, and 10 site visits by CDC performance measures teams have resulted in 165 recommendations for program improvement. Up to 18 persons from CDC and the programs meet twice per month to discuss the measures.
Programs have submitted data on 12 measures twice per year since 2004; 3 measures have been added and 3 dropped. By the end of 2008, the database included nearly 7500 data points reported from sites and 8000 compiled by CDC from existing sources. Since 2005, data have been at least 95% complete. Data validity has improved, but combined data showed no major improvement in performance for any of the measures. Examples: chlamydia screening of females in juvenile detention was 54% in 2005 and 59% in 2007; and gonorrhea was treated within 14 days of specimen collection for 60% in 2005 and 52% in 2007. Some programs improved on specific measures, but just as many got worse.
Conclusions: Despite considerable investment of time and money over the past 10 years, there is no clear indication that Performance Measures have improved performance. Additional time, emphasis, or approaches could lead to improvement.

P4.103

THE USE OF GEO-PROCESSING FOR SITUATIONAL ANALYSIS OF SEXUAL HEALTH IN THE UPPER SOLIMÕES REGION OF THE BRAZILIAN AMAZON
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Objectives: We used geographical information system (GIS) to conduct a mapping survey as part of a multi-level cross-disciplinary situational analysis of sexual health (SH) in three localities of a remote cross-border area of the Brazilian Amazon.
Methods: Thematic maps identifying the circuits of entertainment of the population, location of health services and others points of interest were developed in each locality. The reference points were matched with information obtained through anthropological research identifying places "where people meet", "where alcohol or sex are commercialized", "where to rent a room for having sex". The identified "leisure circuits" include bars and clubs where residents (and visitors) go to "have fun".
Results: We produced cartographic databases that generated various thematic maps: (i) maps of the geographic distribution of typological points of interest; (ii) map of reference points classified and scored with respect to practices that influence SH; (iii) maps of areas of interest showing larger concentration of high-risk activities; and (iv) maps of the public and private health infrastructure. The maps will be used to determine sampling framework for the next phase of epidemiological research on STI/HIV/SH to be conducted in these localities. We will later use the maps to create awareness of policy makers and other stakeholders to the extent and diversity of risk-taking in their localities and to inform the development of SH interventions.
Conclusions: GIS mapping contributes substantially to the situational analysis in SH. It can be used practically to train local health professionals and other stakeholders in using spatial epidemiology to understand distribution of risk and can help guide SH research and intervention strategies.

P4.104

MEASURING FOR CHANGE: RESEARCH AND ADVOCACY RESULTS FROM THE PEOPLE LIVING WITH HIV STIGMA INDEX IN THE UK AND DOMINICAN REPUBLIC

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Background: Stigma and discrimination continue to pose a critical barrier to achieving universal access to prevention, treatment, care and support. Much of what we know about the stigma attached to HIV is anecdotal or fragmented, and does not include the perspectives of people living with HIV. The People Living with HIV Stigma Index fills this gap in our global understanding.
Method: The Index is a new research initiative to measure stigma, by and for people living with HIV. The index is the product of an ongoing partnership between two networks of people living with HIV(GNP+ and ICW), UNAIDS and IPPF. The index was piloted in 2006 in five countries (Kenya, Lesotho, Trinidad and Tobago, India and South Africa), and implemented in the Dominican Republic in 2008 and in the UK in 2009. The research in each country is led by people living with HIV in partnership with local academic institutions. In the Dominican Republic, 900 interviews were conducted in four geographical regions, with a focus on women, gender violence and young girls. In the UK, interviews are underway with 1000 people living with HIV and includes a focus on the impact of law and police investigations on the experiences of stigma.
Results: The paper presents findings from the qualitative and quantitative aspects of the research in both countries. They indicate that the process of conducting the interviews was valuable sharing information about rights, laws and policies that support people living with HIV and highlight the complex dimensions of experiences of stigma or discrimination relating to being HIVpositive.
Conclusions: The research findings provide evidence to inform better policy and practice (legal and public health) that is grounded in the real experiences of HIV positive people. The methodology illustrates how the process of research can be just as significant as the results for measuring-and making a difference to-the stigma experienced by people living with HIV. **www.stigmaindex.org**

P4.105

EFFECT OF ACASI ON REPORTING SEXUAL BEHAVIOR, CONDOM USE AND ADHERENCE TO GEL USE IN A MICROBICIDE CLINICAL TRIAL (HPTN 035)

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Objectives: Assess differences in sexual behaviors, condom use, and gel use reported via audio computer assisted self interviewing (ACASI) compared to face-to-face interview (FTFI) in a microbicide clinical trial.
Methods: 663 women enrolled in a microbicide safety and effectiveness trial (HPTN 035) in Blantyre and Lilongwe, Malawi randomly assigned to use vaginal gels (gel arm) or no gel (no gel arm) consented to an ACASI on sexual behavior, condom use, and adherence to study gel. Responses via ACASI and FTFI on same day were compared using bivariate analyses; multivariate models assessed characteristics associated with differences by mode of interview.
Results: Mean age was 26 years; 67.1% had not completed primary school. Reported adherence to gel use at last sexual act was lower in ACASI than FTFI (73.5% vs. 77.4%, p=0.06) Reported condom use at last sexual act was lower in ACASI in the gel arm (60.3% vs 65.7%, p=0.04) and in the no gel arm (62.3% vs 65.1%, p=0.52). More women reported anal intercourse in ACASI than FTFI (4.8% vs 0.2% P < 0.0001). In ACASI more women reported more than 1 sex partner in the past 3 months (1% vs 0%), and no partners (12.8% vs 5%). In multivariate analyses higher education (OR 0.66, 95% CI 0.46-0.96) was associated with reporting different answers. Higher education (OR 0.58, 95% CI 0.39 -0.84) and owning home (OR 1.71, 95%CI 1.02-2.87) were associated with reporting differences in condom use. Being from Blantyre (OR 0.42, 05% CI 0.22-0.77) was associated with different gel use reports.
Conclusions: Reported adherence to coitally dependent products was lower and anal intercourse higher when assessed via ACASI than FTFI, especially for women of lower socio-economic status. The study confirms ACASI may provide more accurate assessments of sensitive behaviors such as adherence to product use and sexual behavior in HIV prevention trials.

P4.106

CONSISTENCY OF REPORTING SEXUAL BEHAVIOR AND ADHERENCE VIA ACASI IN A VAGINAL MICROBICIDE CLINICAL TRIAL IN MALAWI (HPTN 035)

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Objectives: Investigate consistency in reporting of sexual behaviors in audio computer assisted self interviewing (ACASI), determine which questions produce inconsistent answers, and identify characteristics of women who report inconsistent answers.
Methods: Women enrolled in a microbicide safety and effectiveness trial (HPTN 035) were randomly assigned to use gels during vaginal intercourse, or no gel. 663 participants from Blantyre and Lilongwe, Malawi, consented to complete an ACASI survey. Questions asked about number of sex acts in the past week (Q1), number of acts in which a condom only was used (Q2), gel only was used (Q3), and number of acts both (Q4) or neither were used (Q5). Consistency checks were programmed so that questions were repeated whenever Q2, Q3, Q4 or Q5 exceeded Q1 but not when Q2+Q3+Q4+Q5 exceeded Q1. Multivariate models assessed characteristics associated with inconsistent answers.
Results: The mean age was 26 years; 67.1% had not completed primary school. In the no-gel arm, 15% of participants reported an inconsistent answer. In the gel arm, 19.2% provided one inconsistent answer while 8.1% reported two and 1.4% reported three inconsistent answers. In the gel arm, inconsistent responses were given more frequently for more complicated questions about both gel and condom use (12%), followed by gel and no condom use (11%). Changed responses were consistent 83% of the time. Multivariate models showed that women with more education (OR=0.70; 95% CI: 0.49-0.98) and those who reported condom use at last act (OR= 0.66; 95% CI: 0.45-0.96) had lower odds of reporting an inconsistent response.
Conclusions: Although less educated women were more likely to provide inconsistent responses, most women were able to change their answers to consistent responses. However, due to programming limitations, future trials using ACASI would benefit from simple behavioral questions, which would reduce the likelihood of inconsistent responses.

P4.107

COMPARISON OF PATIENT SELF-COLLECTED GENITAL SWABS WITH PHYSICIAN ASSESSMENT FOR DIAGNOSIS OF RECURRENT GENITAL HERPES BY POLYMERASE CHAIN REACTION

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Background: The use of polymerase chain reaction (PCR) detection of herpes simplex virus (HSV) is being increasingly used in the diagnosis of genital herpes (GH). Patients are being more involved in medical diagnosis by taking their own swabs. The aim of this study was to correlate physician diagnosis and stage of genital herpes with HSV PCR results from patient self collected swabs.
Methods: Data were collected as part of the Famciclovir Short Course Herpes Therapy (FaST) 2-day versus 5 day treatment. Immunocompetent men and women, over age 18 with proven genital herpes, and at least 2 recurrences in the last 12 months were eligible. Patients noticing an outbreak swabbed the lesion and presented for physician assessment within 24 hours. Verbal and written instructions on swab collection were provided at trial entry.
Results: Between January 2003 and February 2006, 751 recurrences were evaluated in 512 patients (274 males, 238 females) mean age 39.8 (range 18-79). Sixty-three percent of the self collected swabs were positive (59.8% HSV-2, 3.4% HSV-1, 0.2% HSV 1&2). HIV status did not alter HSV detection. Thirty-seven % of recurrences (95.5% clinician confirmed) were PCR negative (female 41%, male 32%, $p < 0.02$). Papule, blister or ulcer stages were more likely to yield positive results.
Conclusions: Patient self collection of genital HSV swabs during symptoms can be performed successfully. Swabbing at the ulcer stage yields the highest positivity. Females are more likely to have negative results than males. Patients should be counselled about possible false negative results, even when lesions are present and a sensitive diagnostic test is used.

P4.108

OUTREACH TESTING FOR HIV AND STI AMONG GAY MEN: A FEASIBILITY STUDY IN HIGH RISK SETTINGS IN ANTWERP, BELGIUM

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Objectives: This study investigates the feasibility, acceptability and yield of outreach testing among men having sex with men (MSM) at risk for HIV and STI, in settings where they meet. A second research

question was whether these men were followed up within the regular health system.
Methods: Two large gay venues were selected, a gay sauna and a fetish-club. A multidisciplinary team visited each venue 5 times in a period of 4 months and offered free and anonymous counseling and testing for HIV, Syphilis, Chlamydia and Hepatitis B and C serology. Participants filled in a survey on socio-demographic information, sexual practices and service provision by general practitioners (GP). Tests results were delivered by cell phone after 1 week by standardized text messages, with the request to contact the organizing centre in case of a positive result.
Results: Overall, 137 MSM underwent testing. Participants' mean age was 41 years. Facilitators of sexual risk behavior, such as alcohol and drug use during sexual intercourse, were reported frequently (n= 45; 34% and n=27; 21% respectively). Seven men (5%) tested positive for HIV. Overall, 18% (n=25) had – at the time of the test - an active, transmittable STI. Men at highest risk for HIV/STI-infection – as assessed by self report and positive test results - had significantly less often a GP (p=.007). Of the participants, all but 1 (incorrect phone number) received their test results. Delivery of a standardized text message to inform about test results was evaluated positively (mean score 8.3/10).
Conclusions: The methodology is feasible and broadly accepted by customers and owners of the venues. While the method's workload is high, it has a high yield compared to other screening programs. Outreach testing in gay venues is a suitable method to reach MSM at risk for HIV/STI who are inadequately covered by the regular health system. This may improve STI detection and thereby contributes to secondary prevention.

P4.109

ADEQUACY OF SELF-COLLECTED ANAL CYTOLOGY SWABS INCORPORATED IN A VENUE-BASED SURVEY OF HIV AND RISK BEHAVIOURS AMONG MEN WHO HAVE SEX WITH MEN (MSM)
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Objectives: Self-collection of anal swabs is increasingly proposed as a collection method for anal cytologic testing in MSM. In Canada, a secondary HIV surveillance system among MSM (M-Track) provides an existing mechanism for collection of biological specimens from MSM in community venues (bars, clubs, events, businesses). At the Vancouver site we added self-collection of an anal swab to determine if this methodology could be used to estimate the community prevalence of abnormal anal cytology in MSM.
Methods: Participants in M-Track self-completed a survey (demographic, risk, and medical information) and provided a dried blood spot (DBS) for HIV testing. Participants completing a DBS were asked to self-collect an anal swab using the ThinPrep (PreservCyt) specimen collection system according to a previously validated method (Lampinen et al., 2006) either on-site or by follow-up at community clinics/agencies, which was then tested for anal cytology, HPV, and rectal STI.
Results: Between September 9 and December 9, 2008, a total of 375 participants completed a DBS. Among these individuals, 133 (35.5%) also agreed to self-collect a rectal swab (128 [96.2%] providing the specimen on-site). Of 130 specimens processed for cytology, 50 (38.4%) specimens were unsatisfactory for analysis, of which 27 (54%) consisted of anucleated squamous cells only, 17 (34%) were obscured by debris, 7 (14%) contained scanty cells, and 2 (4%) had poor cell preservation. Specimen collection will continue through February 2009.
Conclusions: The feasibility of recruitment of MSM in community venues for self-collection of anal swabs has been demonstrated. However, in this study venue-based self-collection of anal swabs resulted in a greater proportion with unsatisfactory results compared to use of the same methodology in a clinic setting, or to reports from other studies of clinic or home-based self-collection.

P4.11

SYPHILIS OUTBREAK THAT WAS CONTAINED IN RURAL IRELAND
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Background: In a small satellite clinic a 20 year old man with a rash was diagnosed with infectious Syphilis in 2003. Follow-up of his contacts was done during the following two months.
Methods: All methods of contacting patients were used: Telephone, contact informing them, house calls and alerting GPs in the area. Blood samples were taken out of clinic hours, at weekends and on house calls to facilitate patients. Contacts of the previous 2 years were sought.
Results: All contacts, except 1, were indigenous heterosexual Irish and between 16-24 years old. 21 contacts were successfully identified in 3 generations, of which 5 (3,1,1) tested positive. 7 contacts were

contacted by telephone (2 abroad), 5 by house calls as only house location known and first names supplied, 1 was sent to STI clinic by GP after GP alerts, 1 was identified by sister (who was also a contact), 1 patient came at request of contact, while 1 was identified at Maternity Hospital (38/40 pregnant). Unfortunately 4 were not contacted despite house calls. The 5% from direct contact referral is in line with UK publications. GPs proved valuable to diagnose (2 partners) and to treat patients who had left the area and gone to areas where there was not any GU/ STD clinics (2 sisters). Poor recall and lack of identity hampered identification. The source was not identified as the index patient committed suicide before completion. No further cases have been identified in the area since then.
Conclusions: Intense provider referral was needed to limit this outbreak, with 9 house calls required to test 5 contacts. To stem an epidemic the following are needed: 1. Good sensitive intensive early provider referral which is time consuming, 2. House calls with blood sampling possible on site, 3 Mobile phone access between patient and provider, and 4. GP alerts.

P4.110

HIV TESTING AMONG MEN WHO HAVE SEX WITH MEN IN LONDON

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Background: There is evidence of continuing HIV transmission among men who have sex with men (MSM) in the UK and a high proportion of HIV positive MSM remain unaware of their status. This has lead to the recommendation that MSM should test annually for HIV in the UK.
Methods: Testing patterns of 689 MSM attending 6 gyms in central London were investigated using a confidential, self administered questionnaire in May-June 2008. The questionnaire included questions about when and where men had their last HIV test, the result of the test and their attitudes towards the recommendation for annual HIV testing. Chi-squared tests were used to assess statistical significance of results.
Results: The majority of men surveyed (69%, 469/678) agreed with the recommendation that MSM should test annually for HIV infection and an additional 40 men thought testing should be more frequent. HIV positive men were more likely to agree with the recommendation (80%, 122/152) than HIV negative (71%, 321/454, p=0.02) or untested men (36%, 25/69, p=0.00). Of those who did not agree with the recommendation (n=149), 83 men thought that that testing should be based on risk. Overall, 90% (n=615) of the sample had ever had an HIV test, of whom 75% (460) reported that their last HIV test was negative. Among men whose last HIV test result was negative, 62% (283) had tested in the last 12 months. NHS sexual health clinics were the most popular place for testing. Of those men who had never had an HIV test the most common reason was that they did not believe that they had been at risk.
Conclusions: The majority of London MSM in this survey agreed with the recommendation for annual HIV testing and two thirds of HIV negative men had tested in the previous 12 months. Annual HIV testing for MSM is acceptable to most MSM and should continue to be promoted in the UK including expanding facilities for HIV testing.

P4.111

MEN WHO HAVE SEX WITH MEN: AN OVERVIEW OF RISK BEHAVIOURS USING SECOND GENERATION SURVEILLANCE IN CANADA, 2005-2007

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Background: M-track is a second generation surveillance system that aims to measure HIV, HCV, sexually transmitted infections (STIs) trends and associated risk behaviours among MSM across Canada.
Methods: Data were collected from 2005-2007 in five sites (Montreal, Ottawa, Toronto, Winnipeg and Victoria). Participants were recruited primarily through venue-based convenience sampling, and asked to complete a questionnaire and provide a dried blood specimen (DBS). DBS were tested for HIV, HCV and syphilis.
Results: A total of 4,840 men participated, 69.5% provided a DBS. Over half (55.4%) of participants were between 25 and 44 years; 81.9% self-defined as homosexual; 63.4% completed a college or university education; and 43.1% had a personal income greater than $39,999 (CAD). Among participants reporting sex with a male partner in the last 6 months (n=4142, 89.7%), 60.8% reported being under the influence of a drug (not including alcohol) during sex on at least one occasion, most commonly marijuana (37.2%), poppers (31.3%), cocaine (17.1%), or Viagra® (16.9%). Injection drug use ever was reported by 13% of participants. Sex with a casual partner (previous six months) was reported by 77.1% of participants, with 35.8% reporting at least one episode of unprotected anal intercourse (UAI).

UAI with a casual partner believed to be of discordant HIV status was reported by 12.4% of HIV- participants and 35.8% of HIV+ participants.
Conclusions: Results indicate that a proportion of participants engaged in sexual and other risk behaviour. Information from M-track will be useful for planning prevention programs and services for MSM.

P4.112

USE OF SEXUAL HEALTH SERVICES BY ETHNIC MINORITY MEN WHO HAVE SEX WITH MEN (MSM) IN BRITAIN

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Background: Anecdotal reports suggest that an increasing number of ethnic minority men who have sex with men (MSM) are attending sexual health clinics in Britain. In this paper we examine use of, and satisfaction with National Health Service (NHS) sexual health clinics among ethnic minority and white MSM living in Britain.
Methods: Between August 2007 and March 2008, MSM living in Britain were asked to complete an anonymous, confidential online survey. The research was advertised on a range of websites used by ethnic minority and white MSM, as well as in bars, clubs and sexual health clinics across Britain.
Results: 1241 ethnic minority MSM completed the questionnaire (mean age 30 years) including 399 black Caribbean or African men and 379 South Asian men (ie men of Indian, Pakistani or Bangladeshi origin). 13,717 white British MSM (mean age 36 years) also completed the questionnaire. Overall nearly half the MSM (43.1%) said they had used an NHS sexual health clinic in the previous 12 months (ethnic minority MSM 46.9%, white British MSM 42.8%, $p<0.01$). Nearly one-third (32.4%) of the South Asian MSM said they were very anxious attending the clinic compared with 18.1% of black MSM and 17.6% of white British MSM ($p<0.001$). Over a quarter of South Asian MSM (27.0%) and nearly one-in-five black MSM (18.4%) said they were worried that if they told the clinic staff that they had sex with men, people in their community would find out. One-in-five MSM were diagnosed with an STI at their most recent clinic visit (ethnic minority MSM 20.0%, white British MSM 21.4%, $p=0.5$). The majority of men in all groups (95%) were satisfied with the service they received although ethnic minority MSM were more likely to be "satisfied" rather than "very satisfied", compared with white British MSM.
Conclusion: While overall levels of satisfaction with NHS sexual health clinics were high, ethnic minority MSM were more likely to experience anxiety attending the clinics than white British MSM.

P4.113

KNOWLEDGE, ATTITUDES, AND PRACTICES REGARDING SYPHILIS SCREENING AMONG MEN WHO HAVE SEX WITH MEN - SAN FRANCISCO, 2008

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Objectives: After three annual decreases, syphilis cases in San Francisco (SF) increased >50% in 2008, with 94% of 460 cases occurring among men who have sex with men (MSM). SF Department of Public Health recommends syphilis screening among MSM every 3-6 months. We investigated factors associated with MSM meeting syphilis screening recommendations.
Methods: We used time-location sampling to select SF venues frequented by MSM and a day and time during June-November 2008 when MSM were likely present. During each time, we counted men present and approached them for in-person interviews. We asked men to identify the recommended screening interval and to state whether they believed they were at risk for syphilis. We defined meeting syphilis screening recommendations as self-reporting any syphilis test within 6 months of interview. We weighted data to account for complex sampling. We performed multivariate logistic regression to identify factors associated with meeting syphilis screening recommendations.
Results: Among 301 MSM, 73.0% identified the recommended screening interval; 52.9% felt at risk for syphilis; and 43.4% met syphilis screening recommendations. Adjusted odds of meeting syphilis screening recommendations were significantly higher among MSM who identified the recommended screening interval (odds ratio [OR], 2.6; 95% confidence interval [CI], 1.2-5.7) or reported having a sexually transmitted disease within the previous 12 months (OR, 2.6; 95% CI, 1.2-5.6). Age, race/ethnicity, human immunodeficiency virus status, methamphetamine use, number of male sex partners, and belief regarding syphilis risk were not associated with meeting screening recommendations.
Conclusions: SF MSM identifying the recommended syphilis screening interval had higher odds of meeting screening recommendations. Interventions to encourage screening should emphasize the recommended screening interval.

P4.114

MEN WHO HAVE SEX WITH MEN PREFER RAPID TESTING FOR SYPHILIS AND MAY TEST MORE FREQUENTLY USING IT

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Background: Increased screening for syphilis among men who have sex with men (MSM) may help control syphilis, which has reemerged in this group internationally. Rapid testing for syphilis, which can be undertaken in clinical and non-clinical settings, has the potential to increase the uptake and frequency of syphilis screening of MSM.
Methods: We offered rapid testing for syphilis using the Determine® Syphilis TP immunoassay to MSM attending a major gay community event in Melbourne, Australia in January 2009. After undergoing finger prick testing of whole blood, men were asked to complete a questionnaire on their views about the rapid test and provided with test results after 15 minutes.
Results: Of 143 men tested, 6 had reactive results. One (0.7%) had untreated infection while 5 (3.5%) had past treated syphilis. One hundred and forty men completed the questionnaire. The median number of male sex partners reported for the prior 12 months was 4 (range: 1-200). Of those who reported anal sex, 45% used condoms inconsistently. Thirty five percent had never been tested for syphilis before. Seventy nine percent of men indicated that if the rapid test was available at a clinic they would prefer to be tested for syphilis using the rapid test over conventional serology using venepuncture, while 67% indicated they would test more frequently for syphilis under such circumstances. Fifty three percent indicated they would be likely to self test for syphilis if the rapid test was available for home use, while 47% indicated they would test for syphilis more frequently if it was available for home use.
Conclusions: Most MSM who experienced rapid testing for syphilis preferred rapid testing for syphilis over conventional serology. Use of rapid testing for syphilis in clinical and non-clinical settings has the potential to increase the frequency of syphilis screening among MSM, enhancing syphilis control.

P4.115

TRENDS OVER TIME IN RISK BEHAVIOUR OF MSM WITH LGV PROCTITIS. DOES THE EPIDEMIC SPREADS INTO THE COMMUNITY AT LARGE?

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Background: The Lymphogranuloma venereum proctitis (LGVP) epidemic among men who have sex with men (MSM) with high risk behaviour is ongoing since 2004. Recently, heterosexual infections with the L2 MSM specific genovar have been reported in Spain and Portugal indicating transmission outside the MSM community. We hypothesised that the LGVP epidemic spreads from a core MSM group to a bridging MSM population.
Methods: Risk behaviour i.e. fisting, anal drug/toy use, no. of anonymous contacts, receptive unprotected anal intercourse (RUAI), darkroom/sex party visits and demographics (ethnicity, hiv status), were obtained by questionnaires in MSM with LGVP from 2004 until 2009. Consecutive cases were divided in 2 equal portions. Characteristics of LGVP cases in the 1st period vs. the 2nd period were compared using chi2.
Results: Episode 1 consisted of 49 cases from August 2004-March 2007, episode 2 of 49 from April 2007–January 2009. Comparing period 1 vs. 2, the no. of anonymous partners per case in the last 6 months decreased significantly (>11 partners/case from 53 to 29%, p=0,03). Moreover, a decrease was noticed in fisting (resp 35 and 20%), use of toys (resp. 35 and 18%), anal drugs (resp. 14 and 6%), dark room (resp 71 and 55%), and sex parties (resp 35 and 27%), although not significant. The proportion of cases with a South American or Caribbean background increased from resp 10 to 18% (p=ns). Hiv+ status (resp 80 and 75%) and RUAI (resp 90 and 88%) remained unchanged.
Conlusions: Risk behaviour among MSM with LGVP seems to decrease in the second period of the epidemic. This is indicated by the number of anonymous partners reported. Although not significant, other risk parameters like fisting, toy/anal drug use, frequenting darkrooms and parties also indicate lower exposure over time. Early in the epidemic the majority of LGVP cases were of Dutch Caucasian background. In the second period a larger proportion of cases originates from South America or the Caribbean, indicating a spread of LGVP into other MSM ethnic groups.

P4.116

LOW PREVALENCE OF URETHRAL MYCOPLASMA GENITALIUM IN MEN WHO HAVE SEX WITH MEN

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Objectives: Mycoplasma genitalium is a frequent cause of acute nongonococcal urethritis, accounting for 15-25% of male NGU. Little data is available on the prevalence of M. genitalium infection in men who have sex with men (MSM), and results of previous studies are diverging. The objective of this study was to determine the prevalence of urethral M genitalium in MSM attending a drop-in STI clinic.
Methods: This is a retrospective study of MSM tested for M genitalium between January 2006 and May 2008. Patients attending the drop-in service completed a questionnaire requesting information on demographics, sexual behaviour and symptoms at the first visit in each series of consultations. In MSM, tests for Chlamydia trachomatis and M genitalium as well as an urethral smear were performed routinely, urethral Neisseria gonorrhoeae in symptomatic patients only. First void urine was tested for M genitalium by realtime polymerase chain reaction (PCR). Patients with a positive M genitalium test were treated with azithromycin and reattended four to five weeks later for test of cure.
Results: 21 (1.3 %) of 1588 MSM were diagnosed with a urethral M genitalium infection. In comparison, M genitalium infection was identified in 364/8986 (4.1%) in the male heterosexual group. Four of the 21 M genitalium positive patients were known to be HIV seropositive. Among the M genitalium-positive MSM, one was coinfected with N gonorrhoeae and one with C trachomatis in urethral specimens. Excluding these two, 16/17 patients had urethritis with a polymorphonuclear leucocyte (PMNL) count ≥ 5 in urethral smears. Eight of these patients had a discharge and four dysuria.
Conclusions: The prevalence of urethral M genitalium in the MSM population tested is low and is only a third of that found in the heterosexual male clinic attendees. Based on these figures, M genitalium testing is no longer routinely offered to asymtomatic MSM.

P4.117

ACCEPTABILITY AND USE OF THE DIAPHRAGM AND REPLENS GEL FOR HIV PREVENTION IN SOUTHERN AFRICA

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Background: This study assessed the acceptability and use of the diaphragm and lubricant gel for as a part of a large RCT to determine the effectiveness of the methods in preventing HIV prevention in women. Understanding factors influencing the transition from acceptability to subsequent use provides important insights into behavioral decision-making.
Methods: 2452 intervention-arm women were enrolled from clinics in Southern Africa and followed quarterly for 12-24 months (median 21mos). Product-use counseling was provided at every visit. Information on acceptability and use was collected by face-to-face interviews at Month 3 and Exit. Using multivariable logistic regression models with a GEE approach, we explored associations between product attributes and their consistent use (use for every sex act).
Results: Participants were "very comfortable" inserting, removing, and wearing the diaphragm at Month 3 (range 88%-90%), and Exit (range 91-94%). Approval of the gel consistency, quantity and the applicator was also high. At Exit, although 71% disclosed product use at every sex act, 41% felt it was "very important" she could use the diaphragm covertly. Consistent use was independently associated with several aspects of acceptability: at Exit, consistent disclosure of use (AOR 1.9, 95%CI:1.1-3.5); an overall high diaphragm rating (AOR 1.9, 95%CI: 1.5-2.4) and perception of partner approval (AOR 1.8, 95%CI: 1.4-2.3) were the most significant factors.
Conclusions: Despite being a diaphragm-naïve population, we found high acceptability of the diaphragm and gel for preventing HIV/STIs, and overall acceptability was associated with consistent use. Despite the underlying rationale for female-initiated HIV prevention methods, male partner disclosure of use and his perceived approval were critical components of women's acceptability and use. Strategies to enlist partner support and enhance couples communication could improve adherence in trials of cervical barriers and gels for STD/HIV prevention.

P4.118

TRENDS IN HIV-PEP REQUESTS AND OUTCOME IN MSM; COMPARISON OF SIDE EFFECTS AND COMPLIANCE BETWEEN TWO PEP REGIMENS

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Objectives: To evaluate trends in HIV-PEP requests, follow-up and outcome in MSM in Amsterdam, the Netherlands, 2000-2007. To compare safety and compliance between two PEP regimen.
Methods: Retrospectively, all HIV-PEP requests by MSM in Amsterdam between 2000-2007 are analyzed. Until 2005, a 28 day course of combivir 2dd 300/150mg and nelfinavir 2 dd 1250 mg (regimen 1) and from 1-1-2005, combivir 2dd 300/150mg and atazanavir 400mg 1dd was the standard of choice of HIV-PEP in Amsterdam. Patients were tested for alanine aminotransferase (ALT) at 0, 14 and 28 days, and for HIV at 3 and 6 months. Side effects were registered systematically.
Results: In 8 years, the number of PEP prescribed increased steadily, 26/309 MSM (9%) requested PEP more than once. (table) On regimen 1 (n=99), diarrhoea was significantly more often reported than on regimen 2 (73% vs 11%, OR 14; 95% CI 7.5-25.5; p=0.000). On regimen 2 (n=140), 7 men became jaundiced because of an increase of indirect bilirubin (regimen 1: 0). There was no difference in other side-effects studied. Two patient had serious side-effects: one on regimen 1 developed rash, flu-like symptoms and elevated ALT, another on regimen 2 nausea, diarrhoea and a rash. The proportion of patients that completed their course was 90% and 91% respectively. Of the men who completed their course, 9% showed a mild increase in ALT. This was not related to regimen, nor to side effects. Unless another cause than PEP use was found, ALT levels declined after PEP was finished. Six patients tested HIV positive at initiation of PEP, and 5 seroconverted during 6 months follow-up. These seroconversions were unlikely caused by PEP failure, but rather by additional unsafe sex contacts.
Conclusions: Although the annual number of PEP requests continues to rise, this number remains low. The five seroconversions were unlikely to be caused by PEP failure. Patients on regimen 1 had significantly more side-effects, however, compliance with both regimen was equally high.

	2000	2001	2002	2003	2004	2005	2006	2007
1st time	19	18	27	32	35	39	60	63
2nd time	0	0	2	1	3	3	5	5
3rd time	0	0	0	0	3	0	2	1
4th time	0	0	0	0	0	1	0	0

P4.119

PEPSE FOR HIV – THREE YEARS OF THE SOUTH WEST LONDON EXPERIENCE

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Background: In 2006 BASHH published guidelines for post-exposure prophylaxis following sexual exposure to HIV (PEPSE). Given the ensuing awareness campaigns and protocol development across the South West London HIV & GUM Clinical Services Network (SWAGNET), we reviewed SWAGNET PEPSE cases, hypothesising that with time: 1) Caseload increased 2) Demographic features changed 3) Meeting BASHH audit standards* improved.
Methods: Retrospective notes review of cases commencing PEPSE between 1st January 2006 and 31st December 2008 for all SWAGNET clinics, including those commencing PEPSE outside the sexual health clinic.
Results: For the 219 cases we identified (Table 1), there was no significant increase in PEPSE cases with time even when compared as proportions to HIV cohort size. Over 3 years there was no significant change (X^2) in proportion of: males, heterosexuals, cases where contact was known HIV seropositive or reported condom usage, averaging: 84.0%, 44.3%, 44.3% & 37.4% respectively. Only 12 cases took multiple PEPSE courses.

TABLE 1	2006	2007	2008
PEPSE Cases	62	79	78
Total HIV Cohort (SOPHID)	1874	2066	2171
PEPSE proportion to HIV Cohort [95% C.I.]	3.3 [+/-0.8%]	3.8 [+/-0.8%]	3.6 [+/-0.8%]

The percentage meeting BASHH standards over the 3 years, averaged: 97.3%, 98.6%, 72.1% & 50.8% for a, b, c & d respectively*. There was no significant improvement year on year. No HIV sero-conversions were detected.

Conclusions: For this study group:
- PEPSE demand did not rise significantly and only a small number requested repeated PEPSE course.
- Case demographics have not changed, suggesting little effect of targeted awareness campaigns.
- Failure to complete the 28 day course and final HIV testing persists despite formalised protocols & care pathways. Alternative approaches are required to improve this.
* a) commencing PEPSE <72 hours of exposure, b) PEPSE correctly indicated c) 28 days' treatment completed d) HIV tested at 4 or 6 months from start.

P4.12

WHEN ONCE IS NOT ENOUGH: EPIDEMIOLOGY AND DISEASE PRESENTATION AMONG PERSONS WITH MORE THAN ONE SYPHILIS DIAGNOSIS, FLORIDA, 2000-2007

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Objectives: The last 3 syphilis epidemics in the U.S. peaked after 5-6 years, but rates have now increased for 8 years. We wondered if this might be due to repeat diagnoses among HIV+ men who have sex with men (MSM) who are frequently screened.
Methods: The Florida Department of Health database of syphilis cases diagnosed during 2000-2007 was used to compare repeaters with non-repeaters using bivariate and multivariate analyses. Repeat cases were reviewed to verify accurate diagnosis.
Results: Of 19,609 persons diagnosed with syphilis, 386 (2.0%) were repeaters (range 2-4 diagnoses); 57 females, 67 heterosexual males, and 262 MSM. For each of these groups, HIV infection was more common among repeaters (p=<0.001). Time between first and second diagnoses was 2.5 years (range 122 days to 7.8 years) for both HIV+ and HIV- repeaters. In multivariate analysis repeaters were more likely to be MSM (OR 4.7), HIV+ (OR 2.6), white (OR 2.2), ages 31-35 vs. >45 years (OR 1.6,) and live in Miami-Dade or Broward Counties (OR 1.9). HIV+ MSM were less likely to present with primary disease (p=<0.01 at initial presentation or at second diagnosis p=0.19) than HIV-MSM.

	Primary Syphilis	Secondary Syphilis	Early Latent	Late Latent
HIV+MSM initial (n=1783)	6.0%	37.8%	39.0%	17.2%
HIV+ MSM repeat (n= 148)	5.4%	29.1%	56.8%	8.8%
HIV- MSM initial (n=2588)	11.4%	32.9%	38.7%	17.0%
HIV-MSM repeat (n=114)	9.7%	33.3%	43.0%	14.0%

Conclusions: Most syphilis diagnoses in the current Florida epidemic are among persons infected for the first time. The small number of repeaters are often HIV+ MSM, who are often symptomatic and thus likely to have new infections. HIV+ MSM are less likely to present with primary syphilis than HIV- MSM, perhaps because infection is acquired during oral or receptive anal sex.

P4.120

EIGHT YEARS EXPERIENCE OF PROPHYLAXIS AFTER SEXUAL EXPOSURE TO HIV AT CLINIQUE L'ACTUEL - MONTREAL

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Objective: Describe non-occupational post-exposure prophylaxis (PEP) use in a large urban sexual health clinic cohort.
Methods: All patients consulting for PEP since 2000 were included in this prospective study. Patients were assessed at BL and then followed for 6 months. Decision to administer PEP was based on risk evaluation. We investigated the major determinants of completion of PEP follow-up (FU). FU was considered complete if the patient came back for HIV screening at 3 or 6 months. Determinants were analysed by multiple logistic regression.
Results : 639 consultations (84% male, median age 33 years) for PEP were registered. 81% for a first PEP (2% for > third PEP) and 86% for a moderate/severe risk of exposure. Median delay before consultation was 29 hours, without significant variation over time (p=0.289). Risk assessment drove PEP administration, with 98% of patients treated after a high risk of exposition. Regimen most often used was a combination of CBV-LPV with a shift to TVD-LPV since 2007. 58% of treated patients complained of

adverse effects and 4% of them even stop the medication. Only half of the patients completed FU. Complete FU was more likely in patients who received treatment (OR=2.035; p=0.002), in MSM (OR=1.624; p=0.014) and in older patients (OR=1.047; p<0.001). By 6 months, 6 MSM seroconverted for HIV (rate of seroconversion = 1.9%). 5 of them received one month HAART within 72 hours after exposition but had had other risky behaviours in between.
Conclusion :PEP may be an effective prevention strategy, as repeat PEP consultation was rare. Low rates of seroconversion in this high risk population suggests a preventive effect for these patients. While the high rate of loss to follow up is a limitation, those most at risk were more likely to complete follow-up, giving added opportunities for prevention counselling. Further study of PEP as a prevention strategy is warranted.

P4.121

ASSESSING THE IMPACT OF A COMMUNITY MOBILIZATION PROGRAM DESIGNED TO ELIMINATE DISPARITIES IN HIV DISEASE
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Background: A community mobilization program was developed in 2000, implemented from 2001 through 2007, and evaluated for impact on minority populations. In a community mobilized to prevent HIV infection, members are aware of their individual and collective vulnerability and are motivated to do something about their vulnerability (UNAIDS, 2007). The objective of our research was to determine if community residents were aware of the program and their vulnerability, and if they had done something to address the problem.
Methods: Cross-sectional computer-assisted telephone surveys of randomly selected African American, Hispanic, Haitian and other Caribbean 18-39 year-old adults living in 12 high AIDS-incidence ZIP-code areas of Broward County were conducted in 2001, 2003, and 2007. Interviews were conducted in English, Spanish, or Haitian Creole.
Results: Awareness of the REACH 2010 program, knowledge of high AIDS incidence, and participation in HIV/AIDS prevention efforts increased during the duration of the project (Table).

	Has	heard	about	Believes	AIDS	is	Did	something	to solve
	REACH	2010	project	higher	in	Broward	the	AIDS	problem
Population	2001	2003	2007	2001	2003	2007	2001	2003	2007
African American	6.2%	10.1%	10.7%	37.0%	45.3%	55.6%	7.2%	9.8%	10.0%
Hispanic	5.4	6.5	6.0	22.5	30.1	35.0	3.7	3.0	5.8
Haitian	3.8	8.0	8.1	22.7	29.0	44.6	4.8	5.6	6.6
Afro Caribbean	5.4	10.2	10.2	22.3	32.8	44.4	3.5	5.5	5.0
Total	5.4%	8.5%	8.8%	27.5%	35.2%	45.4%	5.1%	6.0%	7.3%
(N)	(2001)	(2002)	(2009)	(2001)	(2002)	(2009)	(2011)	(2002)	(2009)

Conclusions: Although increases in program awareness, recognition of vulnerability, and participation were observed, the majority of residents were not reached by project interventions or motivated to participate in mobilization efforts.

P4.122

ACCESS TO HIV CARE FOR WOMEN TESTING HIV POSITIVE IN ANTENATAL CARE SERVICES: MISSED OPPORTUNITIES
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Background: Although it is known that mortality before or, due to late initiation, soon after starting highly active antiretroviral therapy (HAART) is high, little is known about the proportion of patients who test HIV-positive that access assessment for HAART, and the individual, societal, and health system barriers they face. Pregnant women are often offered HIV counselling and testing relatively early as part of antenatal care (ANC), yet their connection with HAART services remains inefficient.
Methods: A systematic search of the English-language literature and conference abstracts was conducted to identify publications addressing linkages between HIV testing in ANC and access to HAART.

Results: Four publications, all from 2007/08, quantified the proportion of women testing positive in ANC who attended HIV services: in a study in Mozambique, this proportion was 26% (n not known); in Kinshasa, it was 35% (174/497); in Malawi, 74% (213/289); and in Zambia a study found that 44% of women referred from ANC underwent screening for HAART (302/680), and of those eligible, 46% (33/72) started HAART. No studies presented in-depth qualitative data on these topics demonstrating a striking gap in understanding of how women experience an HIV diagnosis in pregnancy, how this affects health-seeking behaviour for themselves and their infants, and what support could be provided to facilitate their pathway to treatment.
Conclusions: Important questions remain around how women's perceptions of illness, health care and giving birth may change in light of the knowledge of their HIV status and their prospects of accessing HAART as well as how different health delivery systems affect their uptake of services. Additional attention is required to the period between HIV testing in ANC and assessment for HAART to understand how many women disengage from services at this point and, most importantly, what the underlying reasons are behind this so that recommendations can be made to reduce these missed opportunities.

P4.124

POPULATION-LEVEL EFFECT OF HIV ON ADULT MORTALITY IN MALAWI, AND PROGRESSIVE REVERSAL OF THIS EFFECT IN THE FIRST 2 YEARS OF ANTIRETROVIRAL PROVISION
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Background: Malawi made free antiretroviral therapy (ART) available in 2004. A clinic providing ART opened in the north of Karonga district in June 2005, and one in the south of the district in September 2006.
Methods: We used a demographic surveillance system (DSS) to measure adult mortality among 15-59 year olds in a population of approximately 30000, in the southern part of Karonga district. We compared mortality rates in 3 periods: Pre-ART (2002-end June 2005), the period during which ART was available only in the north of the district (July 2005-end September 2006; "first" ART period), and the period when it was available within the DSS area (October 2006-end July 2007; "second" ART period"). Cause of death was established by verbal autopsy.
Results: All-cause mortality among adults aged 15-59 years old and living within 1km of a tarmac road was 13.2, 9.4, and 8.8 per 1000 person-years in the pre-ART, first ART, and second ART periods respectively. The corresponding figures in the area >1km from a tarmac road were 6.9, 7.6, and 5.6 respectively. Overall, the rate ratio comparing the second post-ART to the pre-ART period was 0.72 (0.57-0.91), p=0.006. AIDS mortality fell from 8.3 to 3.5 per 1000 person-years between the pre-ART and second post-ART periods in the roadside area (RR=0.42) and from 4.2 to 2.4 per 1000 person-years in the more remote area (RR=0.58). There was little change in non-AIDS mortality between the pre- and post-ART periods. The percentage of deaths attributed to AIDS fell from 67% in the pre-ART period to 57% and 47% in the first and second post-ART periods respectively.
Conclusions: Adult mortality in northern Malawi has fallen by 30% since free ART provision was introduced, and AIDS mortality by around 50%. With the introduction of an ART clinic relatively close to people's homes, the reduction was similar in roadside and more remote areas.

P4.125

ADHERENCE TO ANTI-RETROVIRAL THERAPY AMONG PATIENTS IN BANGALORE, INDIA
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Background: Human Immunodeficiency Virus (HIV) has an estimated prevalence of 0.9% in India (5.2 million). Anti-retroviral drugs are the treatments of choice and non-adherence is an important factor in treatment failure and development of resistance, as well as being a powerful predictor of survival. This study proposes to assess adherence to ART in HIV+ patients in Bangalore, India a country where 10% of those who need get therapy.
Methods: As a consequence of this a cross-sectional anonymous questionnaire survey of 60 HIV+ patients was carried out on patients attending HIV outpatient services in Bangalore, India. Consent was obtained from each participant. Translation was done when required. Data was analysed using SPSS.
Results: A response rate of 53/60 (88%) was achieved. Mean patient age was 39.85 yrs, with 50% aged

30-40. 73.6% of participants were male. 60% were fully adherent. Mean family size =4.8 (1-13). 21% lived <50kms & 21% >400kms from clinic. Adherence was statistically significantly linked to regular follow-up attendance (70.5%, p=0.002). No other results were statistically significant but trends were found. Better adherence were seen in older patients (>40=50%, <40=15%), males, those from larger families, those who had AIDS (AIDS=72%, Well= 50%), those taking fewer tablets (<5 =76%, 5-9=41%) and without food restrictions (Without=70%, With= 48%). Commonest side-effects causing non-compliance were metabolic reasons (66%) and GIT symptoms (50%). No differences were seen for education level, family income, distance travelled to clinic, time since diagnosis, or time on ART.
Conclusions: From this we conclude that regular attendance for follow up was statistically significant for adherence. Positive trends were seen in those in larger families, older, those who had AIDS, simple regimes, and without side-effects. Education income, distance travelled and length of time diagnosed or treated had no effect.

P4.126

SOCIOBEHAVIORAL RESEARCH ON HPV AND CERVICAL CANCER PREVENTION IN DEVELOPING COUNTRIES: REVIEW OF EVIDENCE AND DIRECTIONS FOR FUTURE RESEARCH

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Background: Incidence of HPV-induced cervical cancer has fallen dramatically in industrialized settings due to improved access to women's health services and increased awareness, but it continues to be a leading malignancy in women in developing countries. Numerous studies report lack of coverage, resources and trained personnel for undertaking widespread cervical cancer screening in developing countries; yet there is no systematic review chronicling the evidence from socio-behavioral and anthropological research in these settings.
Methods: We undertook a systematic literature review through multiple search engines (including PubMed, Google Scholar, SSRN) using the MeSH terms 'HPV' and 'cervical cancer' combined with key words 'social science', 'behaviors', 'knowledge', 'attitudes', 'perceptions', etc. with a focus on studies conducted in developing countries. Extracted articles were searched manually along with extensive cross referencing to identify most appropriate reports.
Results: Major elements addressed in over 40 relevant publications included (i) knowledge and perceptions about risk of HPV and cervical cancer (ii) personal and societal barriers and facilitators for screening; (iii) effective educational campaigns to increase screening; (iv) cultural interventions aimed at decreasing gender disparities; (v) creation of culturally sensitive health services; (vi) altering clinical environments to increase the comfort of women during examination; and (vii) structural interventions to reduce the financial burden on the system and individuals.
Conclusion: In the context of expanding HPV vaccination programs and secondary prevention programs worldwide, there is a significant need for increased research in socio-behavioral sciences to complement clinical and epidemiological studies in this area. These studies can more accurately reveal gaps in education, screening, and treatment access and can enhance evidence for policy development and resource allocation.

P4.127

MOTHERS AND DAUGHTERS: DESIGNING A CAMPAIGN FOR HPV VACCINE UPTAKE

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Objectives: To inform a social marketing campaign to increase the uptake of the HPV vaccine by mothers of girls 11-12 years old.
Methods: Four focus groups (n= 40 participants) were held in racially diverse locations with mothers of girls ages 11-12 who had not received the HPV vaccine. Fourteen key informants from public health, health care, schools and the community were interviewed. Discussion guides asked about knowledge and attitudes about HPV, cervical cancer and the HPV vaccine; trusted sources of information; preferred communication channels; access to the vaccine; and possible campaign messages. Discussions were audiotaped, transcribed and analyzed using content analysis.
Results: Although mothers said they had heard of HPV and the HPV vaccine, many had low knowledge levels and were undecided about having their daughters vaccinated. Many were highly skeptical of the safety and efficacy of the new vaccine. Cost and where to get the vaccine were big concerns. Many emphasized the importance of involving their daughters in the decision. Mothers responded readily to the concepts of love and trust between mother and daughter in one message design and to the emphasis on protection against cervical cancer in a second design. Key informants offered creative suggestions about

increasing vaccine access.
Conclusions: Communication strategies to increase uptake of the vaccine by mothers of 11-12 year old girls need to include information about HPV and the safety and efficacy of the HPV vaccine. Message designs that include partnership between mother and daughter on the decision to vaccinate may resonate.

P4.128

HUMAN PAPILLOMAVIRUS (HPV) VACCINE ACCEPTABILITY (USE AND NON-USE) IN COLLEGE-AGED WOMEN (18-26)
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Objective: The goal of this qualitative study was to identify factors (attitudes, beliefs, practices) of HPV vaccine acceptability among college-aged women.
Methods: Thirty-six semi-structured interviews were conducted with women between the ages of 18 and 25 followed by two focus groups to validate identifying decision themes. A purposeful sampling strategy captured the attitudes of women who had already been vaccinated and women not yet vaccinated as well as women currently sexually active and women not currently sexually active. Vaccine decision narratives were first open-coded for whether they reflected vaccine acceptance or resistance. Subsequent, axial coding identified constructs relevant to vaccine decision-making. Constructs from the health belief model provided an initial lens for possible constructs relevant to decision-making.
Results: Findings showed that (a) HPV susceptibility was primarily understood by relationship status among college-aged women, (b) cost and availability comprised self-efficacy barriers for HPV vaccination, (c) long-term vaccine safety concerns comprised response-efficacy barriers for HPV vaccination, (d) disease framing shaped perceptions of vaccine benefits, and (e) parental and provider normative messages were reported most frequently as the impetus for actual vaccination. Additional decision themes that emerged were the use of metaphors to explain resisting vaccination and delay strategies for those uncertain about vaccination.
Conclusions: Implications of these findings are discussed for designing effective HPV vaccine messages aimed at reaching college-aged women.

P4.129

HPV, HIV AND IMPACT OF ANTIRETROVIRAL THERAPY: CURRENT EVIDENCE AND DIRECTIONS FOR FUTURE RESEARCH
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Background: With hundreds of thousands of HIV-infected women now accessing life-prolonging antiretroviral therapy (ART) in developing counties, there is a need for better understanding of human papillomavirus (HPV) and HIV coinfection, especially in the context of ART. We reviewed the literature documenting the impact of ART on development of HPV-induced cervical intraepithelial neoplasia (CIN) in HIV-infected women.
Methods: We conducted a systematic literature search using multiple search engines (PubMed, Google Scholar, SSRN). MeSH (Medical Subject Headings) and title key words ('HPV', 'cervical cancer', 'HIV/AIDS', 'antiretroviral therapy') were combined in an algorithm that maximized the yield of the search strategy. Extracted articles were searched manually and extensive cross referencing of articles was undertaken for retrieving appropriate manuscripts, conference abstracts, and reports.
Results: Cervical cancer is an AIDS-defining malignancy, yet inadequate research has been undertaken to fully understand the natural history, epidemiology, and prevention and treatment strategies for cervical cancer in HIV-infected women. Some studies have suggested a beneficial impact of ART in reducing incident HPV infection and cytological abnormalities, while other studies refute these findings and suggest no impact. Published studies differ in their screening and diagnostic protocols, duration and type of ART use, recruitment and referral strategies, types of HPV genotyping assays, and definitions of screening test/disease positivity. Furthermore, virtually no studies address these topics in populations of HIV-infected women in resource-limited nations.
Conclusions: Innovative study designs (including quasi-experimental trials) and operations research including sentinel surveillance techniques need to be undertaken to understand the impact of increasing access to ART on incidence of HPV, CIN and cervical cancer among HIV-infected women.

P4.13

ARE FOLLOW-UP SYPHILIS SEROLOGY VISITS NECESSARY AT ONE AND TWO MONTHS IN PATIENTS TREATED FOR EARLY SYPHILIS

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Objective: BASHH guidelines recommend 1,2,3,6 and 12 month patient visits for repeat syphilis serology following treatment of early syphilis. This study assesses the utility of the 1 and 2 month visits.
Methods: Retrospective case note review of patients diagnosed with primary, secondary or early latent syphilis at our GU medicine clinic between 1/4/07 and 31/10/08. Data was collected on demographics, syphilis treatment(s), follow-up serology results, time taken to achieve a negative or serofast VDRL titre and recall activity.
Results: Clinic notes for 114 patients with early syphilis were available. 98% of patients were male and 92% MSM. 134 cases of syphilis were identified: 22% A1, 39% A2 and 35% A3 (4% undocumented). 64% of patients had pre-existing HIV infection and 12% acquired HIV and syphilis concurrently. 82% cases received Benzathine penicillin.
After initial treatment a negative or serofast VDRL was achieved in 81/134 (60%) cases (17 by 3m, 21 by 6m, median 114 days). Of the remaining 53 (40%): 36 have/are achieving a continual drop in VDRL titre but have not yet become serofast/negative; 2 (1%) had an increased VDRL titre by 2m (1 was re-treated at 4m and 1 was lost to follow-up); 5 (4%) had no titre change by 3m, of whom 4 did not re-attend thereafter and 1 was re-treated after 6m; 2 had a decrease in VDRL titre but a rebound at 12m, suggesting a new infection; 8 were lost to follow up after treatment.
19 patients had more than one episode of syphilis. Excluding one case re-treated on grounds of persistent symptoms only, all other episodes were treated at least 3 months after initial treatment (median 248 days, range 113-599days). Recall attempts for 1m and 2m serology visits totalled 82 and 55 respectively.
Conclusion: 1m and 2m post-treatment syphilis serology visits can be avoided providing the patient attends at 3m, complies with treatment/advice, partner notification is complete and symptoms improve. This may reduce recall admin time and is more convenient for the patient.

P4.130

HPV VACCINE UPTAKE AMONG A SAMPLE OF ADOLESCENT FEMALES IN THE U.S.

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Objectives: U.S. research on HPV vaccine acceptance has largely focused on parents and providers of adolescent females prior to vaccine availability. Less is known about post-licensure vaccine acceptance among adolescent girls.
Methods: Cross sectional data (n=4,271) on HPV vaccine status was taken 2 years post-licensure (Feb-June 2008) from a larger study aimed at increasing sexual health care seeking among Los Angeles public school students age 11-20 years. Chi-square analyses tested for bivariate associations of independent variables and vaccine status (vaccinated, unvaccinated, don't know). Variables significant at the $p<.25$ level were entered into a multinomial multivariate regression.
Results: Nearly one quarter (23.9%) of the sample did not know their HPV vaccine status and 13.9% had received at least one shot. In the multivariate model, adolescents were more likely to be vaccinated than not if they were in age groups above 11-12 years (ORs range from 2.07-2.26), played a school sport (OR=1.28), and saw a doctor for a check-up (OR=3.03), birth control (OR=1.90), or STD test (OR=2.09). Respondents were less likely to be unsure of their status if they were in the older age groups (ORs range from .23-.35), and if they saw a doctor for a check-up (OR=.57), sickness (OR=.77), or birth control (OR=.54). Latinas were more likely to not know their status than to be vaccinated when compared to whites (OR=2.66).
Conclusions: Many U.S. adolescent females are unaware of their vaccination status. Young adolescents, the main target of U.S. vaccination efforts, are less likely to be vaccinated and more likely to not know their vaccination status, perhaps resulting from parental control of their health care. It's unclear what implications not knowing vaccination status may have on adolescents' future health behavior. Sexual health care and sports-related health visits may be being used as HPV vaccine opportunities.

P4.131

PERUVIAN FSWS: UNDERSTANDING HPV AND BARRIERS TO VACCINATION

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Objectives: To determine the level of awareness of human papillomavirus (HPV), and to investigate the potential acceptability of HPV vaccine among female sex workers (FSWs) in Peru.

Methods: Behavioral and vaccine related knowledge data were collected from FSWs aged 18-29 in Lima, Peru. These questionnaires were administered individually by trained interviewers at Patrucco Clinic and surrounding sex venues using convenience sampling.
Results: The average age of the 319 women in our study was 24 years, and the mean age of first sex work was 20.5 years. Less than half (44%) of FSWs had heard of HPV and 47% correctly reported HPV as the cause of cervical cancer. Sixty five percent of women reported that condoms prevent HPV infection, while only 7% knew of a vaccine to prevent cervical cancer. Overall, clinic attendees were more knowledgeable about HPV than women approached at sex venues. Nearly 100% of participants would like to receive HPV vaccine, but many listed potential barriers to vaccination such as being afraid. Only eight women said they would not pay for an HPV vaccine, while the average amount women were willing to pay is 27.7 dollars (range 1.8-357 dollars). 99% of women reported being able to complete all 3 vaccine doses.
Conclusions: FSWs are a population at high risk of HPV infection and subsequent cervical cancer, thus they should have access to HPV vaccine. Due to low knowledge of HPV and cancer, FSWs should be targeted for HPV education campaigns. Barriers to vaccination of FSWs can be overcome.

P4.133

FACTORS ASSOCIATED WITH COMPLETION OF THE HUMAN PAPILLOMAVIRUS VACCINE SERIES
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Background: Previous experience with the Hepatitis B vaccination series has shown that certain patient characteristics are associated with poor completion of the series. The purpose of this study was to describe the completion rates and timeliness of the HPV vaccination series based on similar patient demographic and sexual history factors.
Methods: Patients at university-based and community-based pediatric practices who initiated the HPV vaccine series between 1/01/2007 and 7/01/2007 were identified using CPT code 90649 for billing of the HPV vaccination. Electronic medical records were reviewed for the patient's age, ethnicity, type of insurance, distance from home to the clinic, reason for the clinic visit, sexual activity status, and history of Pap test, HPV DNA test, or sexually transmitted infection within the 3 years prior to initiating the vaccine series. Bivariate relationships between patient characteristics and vaccine series completion were conducted, and those variables that were significant were entered into a logistic regression analysis using backward stepwise elimination.
Results/Conclusions: Three hundred and fifty two charts were evaluated. The series completion rate for the overall sample was 54.8%. Race/ethnicity, type of insurance, and the reason for clinic visit 1 and 2 were associated significantly with HPV vaccine series completion. The mean number of weeks between vaccinations was associated significantly with the reason for clinic visit 2 and 3. In order to improve HPV vaccination series completion, particular attention needs to be paid to improving adherence among Hispanics and among those without private insurance.

P4.134

ATTITUDES REGARDING HPV VACCINE AMONG U.S. WOMEN OVER 26 YEARS OF AGE
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Objective: This study examined U.S. women's attitudes towards the HPV vaccine.
Methods: Women (n = 38) were recruited from a university-based gynecological practice to participate in a qualitative study regarding HPV vaccine. Semi-structured interviews were transcribed and coded thematically.
Results: Participants had a mean age of 40, with 39% being African-American, 37% Caucasian, and 20% Hispanic; 39% worked in the clinic. All but 4 of the women had heard of the HPV vaccine, but the knowledge was sometimes inaccurate. Participants were in favor of all women having access to the HPV vaccine, and for some, this was based on a general positive view towards prevention. Many women described a targeted approach to vaccination, noting that those in monogamous relationships did NOT necessarily need the vaccine. In contrast, other participants felt that a woman would not necessarily know if a partner was having an affair. Women associated risk with sexual behaviors and health status. These included currently being single, having a family history of cancer, or just general poor health. Those with a history of abnormal pap smears also were viewed as at risk. It was not clear whether participants thought these women had shown themselves to be vulnerable or the participants did not understand the prophylactic nature of the vaccine. For some women, having risky sexual behaviors in the past was a reason to get vaccinated. Women viewed older age as a reason to get vaccinated due to waning immunity or as a reason to not get vaccinated, due to less engagement in sexual behaviors. For

the most part, women did not endorse that vaccination would be associated with a change in sexual behavior.
Conclusions: If HPV vaccines are made available to adult women, educational efforts should focus on the prophylactic nature of the vaccines and on the benefits to vaccination in a long term monogamous relationship.

P4.135

HPV VACCINE INITIATION IN COMMUNITIES WITH HIGH RATES OF CERVICAL CANCER; LOS ANGELES, CALIFORNIA, USA
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Background: The human papillomavirus (HPV) vaccine, recommended for routine use in 11-12 year-old girls, holds promise for reducing the cervical cancer burden in the U.S. However, adolescents who live in underserved communities with the highest cervical cancer rates may be least likely to receive it.
Objectives: To determine vaccine uptake among adolescent girls and assess barriers to and facilitators of vaccination and intent to vaccinate in an underserved population.
Methods: Between October 2007-June 2008, 512 telephone surveys were conducted with parents/guardians of 11-18 year old girls attending public school in the Los Angeles area.
Results: Respondents were mostly Latino (82%) and African American (15%). Spanish was the language of choice for 71% of the sample. Almost all reported their daughter had seen a provider in the past year (93%) and 29% reported a healthcare provider had recommended the daughter be vaccinated for HPV. Overall, 23% reported their daughter had received at least one dose of HPV vaccine. Of those with unvaccinated daughters (390), 62% said they "probably will/definitely will" vaccinate their daughter within the next year, 18% said they "probably won't/definitely won't", and 21% were undecided. Vaccination and intent to vaccinate did not differ by age of daughter nor respondent race/ethnicity. Provider recommendation was listed as the most influential among 79% of parents with vaccinated daughters and 76% with unvaccinated daughters.
Conclusions: The reported HPV vaccine initiation rate in this underserved community was similar to that found in the nationally representative National Immunization Survey. However, a significant proportion of parents were still undecided about the vaccine. Important strategies for increasing vaccination rates include educational campaigns for parents and provider education about the importance of recommending the HPV vaccine.

P4.136

SCREENING FOR BACTERIAL VAGINOSIS AMONG PREGNANT WOMEN IN SYRACUSE'S HEALTH START PROJECT: A PROPENSITY SCORE ANALYSIS
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Background and Objective: There are no studies that have evaluated the effectiveness of bacterial vaginosis (BV) screening to lower adverse pregnancy outcomes. The objectives of this study are to: (1) estimate the prevalence of adverse pregnancy outcomes: low birth weight, preterm delivery and very preterm delivery in Syracuse, New York, (2) determine whether screening for BV is causally associated with lower incidence of adverse pregnancy outcomes, and (3) demonstrate the use of propensity score analysis in STI research.
Method: Prenatal BV screening using Gram stain compared to usual prenatal care using American College of Obstetrics and Gynecology (ACOG) guidelines. Methods: 2,335 pregnant women aged 14-48 years were included. We use propensity scores analysis to estimate the odds ratio associated with being unscreened.
Results: The prevalence of preterm, very preterm and low birth weight in this population were 10.15% [95% CI, 8.95%-11.45%], 2.01% [95% CI, 1.48%-2.54%) and 8.05% [95% CI, 6.98%-9.22%], respectively. Compared to screened women, the unscreened women had crude odds ratios of 1.14 (95% CI=0.85-1.53), 1.88 (95% CI (1.04-3.39), and 1.13 (95% CI (0.92-1.76), for preterm delivery, very preterm delivery and low birth weight, respectively. After matching on propensity score, the corresponding odds ratios for being unscreened were 0.98 (95% CI=0.66-1.46), 1.51 (95% CI (0.61-3.74), and 1.38 (95% CI (0.87-2.17), respectively.
Conclusion: Prevalence of adverse pregnancy outcomes in this population was common. Before adjustment, the usual care group had a 14% to 88% increase in the odds of developing adverse pregnancy outcomes, however, propensity score analysis suggested that these increases were not

statistically significant. Propensity scores is a valuable but underutilized methodological approach for supporting causal inference in observational studies and complex sample surveys.

P4.137

VAGINAL MICROBIOTA FREQUENTLY UNDERGO RAPID FLUCTUATIONS

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Objective: The etiology of bacterial vaginosis (BV) remains unknown. Few studies have described longitudinal changes in vaginal microbiota.
Methods: Thirty-nine women self-collected vaginal specimens twice-weekly for 16 weeks as part of a vaginal douching cessation study. BV was defined by Nugent's score ≥ 7. Conditional logistic regression was used to evaluate daily, time-varying behaviors associated with a woman's incident BV episode(s) as compared to her persistently BV-negative sample(s).
Results: The mean age was 36.8 years; 56.4% were African-American. 46.2% had BV in the first four weeks of observation. Rapid fluctuation in BV was observed in 226 transitions to BV or spontaneous remission. Of the 33 women who completed the 16-week observation, 19 fluctuated between normal and BV (the focus of this analysis), 9 were persistently normal and 5 fluctuated to an intermediate state. None persisted in the disrupted BV state. Duration of BV was often short (51%), lasting one sample interval (3 days). Among women who had at least one BV episode, the mean number of episodes per woman was 8.7 (SD=7.4, range: 1-22). In an adjusted model, lubricant use one day prior to specimen collection (aOR: 11.09, 95% CI: 1.50-82.07) and rectal sex two days prior (aOR:4.48, 95% CI:2.80-7.17) were associated with BV onset. There was a trend for douching one day prior (aOR: 3.81, 95% CI: 0.76-19.02).
Conclusion: Recent report of rectal sex or lubricant use was associated with incident BV. This longitudinal analysis also revealed rapid compositional fluctuations of the vaginal microbiota which indicate that BV recurrence rates obtained from longer interval-censored studies may be underestimated.

P4.138

EPIDEMIOLOGY OF BACTERIAL VAGINOSIS (BV) IN THE GENERAL POPULATION OF URBAN WEST AFRICA

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Background: The burden of BV, HIV and STIs is usually reported through studies among sex workers or pregnant women, but few data are available from the general population.
Methods: We conducted two clustered population-based among adults aged 15-49 years old surveys in 2000 in Bobo-Dioulasso and 2003 Ouagadougou, the two largest urban areas in Burkina Faso. Participants consented to being interviewed, examined, tested and treated for curable diagnosed STIs. After recruitment at home, women were invited to consult the study laboratory where genital samples were taken to detect genital infections. BV was diagnosed using the Nugent scoring system.
Results: 2439 women consented to participate in the study and 1408 consulted the laboratory for genital sampling. The HIV prevalence was 6.0% (95% confidence interval (CI), 4.6-7.9) in Bobo and 6.2%(CI, 4.4%-8.7%) in Ouagadougou. BV was identified in 53 women (6.2%; CI, 4.7%-8.0%) from Bobo-Dioulasso and 40 women (7.3%; CI, 5.3%-9.9%) from Ouagadougou. In multivariable analyses gathering both datasets, BV was associated with trichomoniasis (Odds Ratio (OR), [CI]; 2.0 [3.3-7.3]), positive HSV-2 (OR, CI; 3.0 [2.0-7.1)]), and HIV (OR, [CI]; 1.9 [1.1-6.0]). Age > 20 years (OR, [CI]; 1.50 [1.01-2.8]) and initiated sex at <18 years old (OR, [CI]; 2.1 [1.3-3.1]) were also strongly linked with BV.
Conclusion: The prevalence of BV in the general population was high. Our data confirm the strong association of BV with HSV-2 infection, HIV infection, trichomoniasis, and older age.
We suggest that all women presenting with vaginal discharge or BV during routine examination should benefit from HIV opt-out testing and serological HSV-2 diagnosis where available. In addition, women with asymptomatic BV may benefit from metronidazole therapy to cover a co-infection with Trichomonas vaginalis.

P4.139

THE COMPOSITION OF THE NORMAL VAGINAL LACTOBACILLUS MICROBIOTA MAY DETERMINE THE RISK OF BACTERIAL OVERGROWTH OF THE VAGINA

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Background: Disappearance of the vaginal lactobacilli and concomitant overgrowth with other bacteria as observed with bacterial vaginosis is primarily attributed to behavioural factors such as sexual intercourse and douching. It is not known to which extent interindividual differences in vaginal *Lactobacillus* community composition contribute to bacterial overgrowth of the vagina.
Objectives: To document the natural history of the normal vaginal microflora (VMF) on the *Lactobacillus* species level during pregnancy.
Methods: In a prospective cohort study vaginal swabs were obtained on three occasions among 100 unselected pregnant women (mean GA of 8.6 (SD 1.4), 21.2 (SD 1.3), and 32.4 (SD 1.7) weeks) to allow for Gram-stain assessment, culture, and terminal restriction fragment length polymorphism (tRFLP) analysis.
Results: Normal VMF were found to consist of one or more of four *Lactobacillus* species, i.e., *L. crispatus*, *L. jensenii*, *L. gasseri* and *L. iners*, though the latter two could not be consistently differentiated because the obtained tRFLP fragments differ only one base. Conversion from normal VMF to abnormal VMF occurred at a rate of 2.4%, 7.2%, and 14.5% with *L. crispatus*, *L. jensenii*, and *L. gasseri/L. iners* comprising VMF, respectively. Overall, normal VMF at baseline shifted to abnormal VMF on follow-up at a rate of 16.9%, whereby according to tRFLP and culture, 92.3% of these cases involved a departure from grade I VMF comprising *L. gasseri/iners*, whereas the presence of *L. crispatus* rarely preceded a conversion to abnormal VMF.
Conclusions: Our data suggest that *L. jensenii* and *L. gasseri/iners* in particular, elicit significantly poorer colonisation resistance in comparison to *L. crispatus*.

P4.14

USE OF EMERGENCY MEDICAL FACILITIES FOR THE TREATMENT OF NEISSERIA GONORRHOEAE INFECTION IN THE UNITED STATES

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Objectives: Treatment of *Neisseria gonorrhoeae* infections in emergency medical facilities is not desirable due to high costs and difficulties in providing appropriate treatment and partner management. This analysis describes patients diagnosed with gonorrhea in emergency medical facilities and how they differ from those diagnosed in other facility types in the United States (US).
Methods: Gonorrhea morbidity data obtained through STD Surveillance Network (SSuN) sentinel surveillance system (a subset of counties in California, Colorado, Minnesota, Virginia, and Washington states) were used. US Census data were used to determine if case lived in census tract with ≥ 20% of population living below the federal poverty line.
Results: From Jan. 2007 to Aug. 2008, 16,084 gonorrhea cases were reported; provider type was available for 15,645 (97.3%). Overall, 15.5% of cases were seen in emergency medical facilities (range by site:4.3-29.6%), 31.1% in STD clinics, and 29.8% in primary care clinics. More women sought care in emergency medical facilities (20.6%) than did men (12.0%) ($p<.0001$); more blacks (20.4%) sought care in emergency medical facilities than Hispanics (8.9%) and whites (7.5%) ($p<.0001$); and more patients ages 15-19 and 20-29 sought care in emergency medical facilities than older agegroups ($p<.0001$). More cases sought care at emergency medical facilities on weekends (41.3%) than on weekdays (13.3%)($p<.0001$); more patients attending emergency medical facilities lived in poverty (22.7%) than in non-poverty (12.9%) census tracts ($p<.0001$). Trends were generally consistent across sites.
Conclusions: One in six gonorrhea cases in the U.S. are diagnosed in emergency medical facilities; they are more likely female, black, younger, seeking care on weekends, and living in poorer neighborhoods. Interventions should ensure these patients receive appropriate treatment and prevention services in emergency medical facilities, and non-emergency alternatives are available.

P4.140

CASE CONTROL STUDY OF ANOVAGINAL DISTANCE AND BACTERIAL VAGINOSIS AMONG STD CLINIC ATTENDEES

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Objective: To test the hypothesis that a short anovaginal distance may increase the risk of bacterial vaginosis (BV) due to fecal contamination and disruption of the vaginal microbiota.
Methods: Women attending two STD clinics in Baltimore, Maryland who complained of a vaginal discharge were asked to participate in a study to measure mucosal immune responses. Women were eligible for the Parent study if they were over age 18 and not actively menstruating or pregnant. In this sub-study of all enrolled women, a small plastic ruler was used to measure the anatomic distance from the posterior fourchette to the anus with the participant in the lithotomy position. Cases of BV, defined by Amsel's clinical criteria (n=67), were compared to controls (n=33) without BV. We used linear and logistic regression models to adjust for potential confounders.
Results: A total of 100 women were recruited (median age 28.6 years, 93% Black, 5.1% gonorrhea infection, 8.9% Chlamydia infection, 10.0% trichomonas infection). Mean anovaginal distance was 3.22 cm (SD: 0.74, range 1.8-5.2) for controls and 3.37 cm (SD: 0.76, range: 1.8-5.7) for cases (p=0.38). There was also no difference between cases and controls when comparing median values, quartiles, and after adjusting for potential confounders, including vaginal douching, condom use and menstruation. In addition, there was no apparent association between anovaginal distance and pH or amount of vaginal discharge.
Conclusions: In this group of high-risk women with multiple co-infections, there was no apparent association between anovaginal distance and risk of BV.

P4.141

STAGE OF PUBERTY AND VAGINAL FLORA DEVELOPMENT
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Background: Few studies have investigated vaginal flora changes by pubertal stage among never sexually active adolescents.
Methods: 49 never sexually active Ugandan adolescent girls aged 13-18 years provided weekly self-collected vaginal swabs and behavioral/health information for up to 2 years. Vaginal flora were assessed using Nugent gram-stain criteria. Pubertal stage was defined as: never experiencing menarche during follow-up (premenarcheal); achieved menarche during follow-up, and postmenarcheal at baseline. Baseline Nugent scores and average counts of lactobacillus and *Gardnerella*-like organisms per field were compared using Fishers exact tests for categorical variables and Kruskal Wallis tests for continuous variables. Longitudinal mixed-effects models were used to estimate mean changes (β) in vaginal flora during follow-up.
Results: 9 participants remained premenarcheal, 20 achieved menarche over follow-up, and 20 were postmenarcheal. For each group, the median baseline Nugent score was 8 (IQR: 7-8), 4.5 (IQR: 1-8), and 1 (IQR: 0-3.5), respectively (p=0.002), and the prevalence of scores 7-10 was 78%, 35%, and 15% (p=0.005), respectively. Median counts of lactobacilli were 0, 10, and 30 (p=0.004) and median counts of *Gardnerella*-like organisms were 30, 16.5, and 0.5 (p=0.002), respectively. Regression analysis showed a significant increase in lactobacilli count (β= 0.259, 95% CI: 0.231, 0.287) and a significant decline in *Gardnerella*-like counts (β = -0.297, 95% CI:-0.346,-0.247) in premenarcheal girls over weekly visits; however, there was no change in the postmenarcheal girls (β=0.005, 95% CI:-0.019, 0.030; β= -0.018, 95% CI:-0.059, 0.024, respectively).
Conclusion: Lactobacilli counts are low prior to menarche and increase with gynecologic age. This may be due to rising estrogen levels increasing glycogen in the vaginal epithelium and facilitating lactobacillus growth early in pubertal development and prior to onset of first menses.

P4.142

QUANTITATIVE PCR (qPCR) ASSESSMENT OF VAGINAL BACTERIAL COMMUNITIES IN WOMEN WITH AND WITHOUT BACTERIAL VAGINOSIS (BV)
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Objectives: We used qPCR to assess vaginal flora among 37 women in our STD clinic to determine if quantitative assays for a selected group of organisms would be helpful in characterizing these microbial communities.
Methods: By Nugent score (NS), 16 subjects had BV, 8 were intermediate, and 13 were normal. Organisms assayed included those most commonly found in several recent molecular vaginal flora surveys. We designed qPCR assays targeting 16S rRNA genes to quantify 17 individual species, an assay

to quantify members of the genus *Prevotella* and a broad range assay to quantify bacteria. Assay specificity of each qPCR assay was verified by melting curve analysis and by amplicon sequencing.
Results: *L. iners* and *Prevotella* spp. were present in all 37 cases, 95% of whom were African American. Among women with NS <7, *L. iners* dominated the flora of 11/21 cases. *L. crispatus* or *L. jensenii* dominated the flora of 4/13 women with normal NS. Communities with intermediate NS of 4-6 were divided between those that were dominated either by *L. iners* or by *Prevotella* spp. *Prevotella* spp. dominated the vaginal flora of all 16 BV cases but at the level of individual species an uncultivated organism designated BVAB1 was predominant in 7 of the BV cases (11% to 42% of total rRNA sequences). In 2 cases, *G. vaginalis* and *L. iners* were predominant and BVAB1 was very low. Using concentration thresholds, the abundances of several species, as well as total bacterial abundance, were sensitive and specific for the diagnosis of BV.
Conclusions: *L. iners* and *Prevotella* spp. appear to play a significant role in the vaginal flora of women seen in our STD clinic. There appears to be a distinct subset of BV cases characterized by high concentrations of the uncultivated organism, BVAB1. Quantitative assessments of bacterial species are an important component of research designed to fully describe and understand the ecology of human vaginal microbial communities and may be useful diagnostically.

P4.143

RELATIONSHIP BETWEEN SPECIFIC VAGINAL AND CERVICAL BACTERIA AND CERVICITIS IN WOMEN
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Background: A pathogen is not identified in most women with cervicitis. Bacterial vaginosis (BV) is a polymicrobial process associated with cervicitis. The role of specific BV related bacteria in cervicitis has not been previously assessed.
Methods: Women age 18 and older attending a STD clinic underwent examination with collection of paired vaginal and endocervical swabs. All were tested for *C. trachomatis, N. gonorrhoeae, T. vaginalis*, and BV. Quantitative bacterium-specific PCR was performed on vaginal and cervical swabs with assays for Bacterial Vaginosis Associated Bacterium (BVAB) 1, 2, and 3; *Megasphaera* phylotype 1; *Atopobium vaginae; Gardnerella vaginalis; Leptotrichia/ Sneathia* species; *Lactobacillus* genus; and *Lactobacillus crispatus*. Associations between cervicitis (defined as ≥1 of purulent cervical exudate, cervical friability, or ≥30 PMNs per hpf on endocervical Gram stain) and subjects' characteristics, co-incident STI, and presence of specific bacteria were analyzed.
Results: Among 84 women, 8 (9.5%) had cervicitis. After adjusting for age and presence of STIs, BVAB3 present in the cervix (aOR 12.3, CI 1.7-109.6, p=0.01) or vagina (aOR 9.34, CI 1.3-83.8, p=0.03) was associated with cervicitis. Associations between cervicitis and the presence of *Megasphaera* (aOR 5.6, CI 0.8-62.5, p=0.08) or *Leptotrichia/ Sneathia* species (aOR 7.7, 0.8-387.2, p=0.09) at the cervix were suggestive. Women with higher concentrations of BVAB3 (aOR 1.9, CI 1.2-3.2, p=0.01) or *Leptotrichia/ Sneathia* species (aOR 1.4, CI 1.03-2.1, p=0.03) in cervical samples, or in vaginal samples (BVAB3 aOR 1.8, CI 1.2-2.7, p=0.008 and *Leptotrichia/ Sneathia* aOR 1.3, CI 1.0-1.8, p=0.05), were more likely to have cervicitis.
Conclusions: Cervicitis is associated with the presence of specific bacteria, including BVAB3, in the female genital tract. Further investigation of the role of specific BV bacteria in cervicitis and upper genital tract infection in women is warranted.

P4.144

RISKS FOR ACQUISITION OF BACTERIAL VAGINOSIS (BV) AMONG WOMEN WHO REPORT SEX WITH WOMEN
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Objectives: Describe risks for BV acquisition in a prospective cohort study of women reporting sex with other women.
Methods: Women 16-35 years reporting sex with women (>1 prior year) were followed for one year with examinations at quarterly visits and for genital symptoms at any time. Risk of incident BV was estimated with Cox regression analysis. Species-specific 16S rRNA PCRs for various BV-associated bacteria (BVAB) were applied to vaginal fluid obtained at enrolment. Sexual behaviors were ascertained by computer-assisted interview (CASI).
Results: Of 335 women enrolled, 239 had no BV at baseline; 199 were seen in follow-up (median duration of follow-up, 355 days, median 4.0 visits per subject). Forty women experienced >1 BV episode (median time to diagnosis, 5 mos.). Risks for incident BV were presentation <14 days since start of

menses (hazard ratio (HR) 2.3 (95% CI, 1.2-4.7), report of new (since last visit) female sex partner with BV history (HR 3.63 (1.1-11.9), change in vaginal discharge (HR 2.6 (1.3-5.2)) and detection of any of several BVAB in vaginal fluid at enrollment (BVAB1 (HR 6.3 (1.4-28.1)), BVAB2 (HR 18.2 (6.4-51.8)), BVAB3 (HR 12.6 (2.7-58.4)), G. vaginalis (HR 3.9 (1.5-10.4)), Atopobium vaginae (HR 4.2 (1.9-9.3)), Leptotrichia spp (9.3 (3.-24.4)), Megasphaera-1 (HR 11.5 (5.0-26.6)). Detection of Lactobacillus crispatus at enrollment was associated with reduced risk for subsequent BV (HR 0.18 (0.08-0.4). No sexual behavior was associated with incident BV, including oral-vaginal/anal, digital vaginal/anal, or unprotected vaginal/anal intercourse with male.
Conclusions: Vaginal detection of several BVAB in BV-negative women predicted subsequent BV, suggesting that changes in vaginal microbiota may precede BV by weeks or months. Given lack of association for sexual practices, the significance of association with report of a new female partner with BV remains unclear.

P4.145

MODELING RECURRENT BACTERIAL VAGINOSIS: AN APPLICATION OF A TWO-STATE MARKOV TRANSITION MODEL
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Background: Treatment of bacterial vaginosis (BV), a common cause of vaginal discharge in women of childbearing age, is a great challenge in medical practice owing to its high rates of persistence and recurrence after successful treatment. Assuming that the sequence of BV statuses follows a binary Markov chain, these recurrences can be characterized in terms of a two-state Markov process to determine factors associated with recurrent BV.
Methods: We used a Markov process model to determine transition intensities for women converting from a BV-free state to recurrent BV state and to assess the impact of a male partner genital hygiene intervention on the risk of recurrence.
Results: Our analysis was based on data from 223 couples aged 18-45 participating in a randomized clinical trial assessing the effect of a male hygiene intervention (genital washing with a product containing 62% ethyl alcohol) on recurrent BV. The instantaneous risk that a BV-free woman whose male partner was randomized to a hygiene intervention would transition to a recurrent BV or recovery state during the study was 1.51; 95% CI (0.82-2.76) and 0.78; 95% CI (0.39-1.56) respectively. A woman's amount of bath water and frequency of underwear change were independently associated with a significant reduction of the risk of transitioning to recurrent BV; transition hazard ratios (THRs) of 0.25, 95% CI (0.08-0.75) and 0.39; 95% CI (0.17-0.93) respectively. Adjusted for male prognostic factors, the instantaneous risk of transitioning to recurrent BV was 2.47, 95% C (1.09-5.60).
Conclusions: The use of the male hygiene intervention by male partners did not reduce the risk of transitioning to recurrent /persistent BV among women treated with metronidazole. Rather, the use of this microbicide containing 62% ethyl alcohol by male partners was associated with a non-significant increase in the risk of recurrent BV.

P4.146

BACTERIAL VAGINOSIS IN GREENLAND.
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Objectives: To determine the prevalence and risk factors of bacterial vaginosis (BV) in women from Greenland.
Methods: Self-taken vaginal smears were obtained from 86 women and categorised by Nugent's criteria. Participants completed an interviewer administered sexual health survey. First-void urine and vaginal swabs were examined by PCR for *Mycoplasma genitalium* (Mg), *Chlamydia trachomatis* (Ct), ureaplasmas, *Neisseria gonorrhoeae* (Ng) and *Trichomonas vaginalis* (Tv).
Results: Among the 86 women, 83 provided evaluable smears (median age 21 years; range 15-64). BV was found in 34 (41% [95% CI: 28-57%]), and 10 (12% [95% CI: 6-22%]) had intermediate flora. None of the women had Tv infection. No difference in age was found between those with BV and those without. Among 59 women describing themselves as Greenlanders, 26 (44%) had BV, and among 21 women describing themselves as being both Greenlanders and Danish, 7 (33%) had BV (p=0.4). Only 2 women described themselves as Danish and were not included in the analysis.
No relationship between BV and STIs, i.e. Ct, Mg, or Ng (individually or in combination) was found. The median number of lifetime male partners was 10 (range 0-250), but no relationship between BV and

the number of partners could be found.
Conclusions: The prevalence of BV in Greenland is very high, but no obvious correlations between BV and previously described risk factors could be found. The high number of lifetime sexual partners in this population may mask this risk factor in explaining the high prevalence of BV. Obviously, this small study would not detect less important risk factors. Further studies on the risk factors and consequences of BV are warranted both in Greenland and in other Inuit societies.

P4.147

ASSOCIATIONS BETWEEN HERPES SIMPLEX VIRUS TYPE 2 (HSV-2) AND BACTERIAL VAGINOSIS (BV) IN A COHORT OF HIV-1 INFECTED WOMEN IN BURKINA FASO

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Objectives: Observed associations between herpes simplex virus type 2 (HSV-2) and bacterial vaginosis (BV) remain poorly understood. We describe the relationships between HSV-2 and BV among HIV-1 infected women not needing highly active antiretroviral therapy in Burkina Faso.
Methods: 136 HSV-2 and HIV-1 seropositive women were randomised in a double-blind placebo-controlled trial of HSV suppressive therapy. Genital samples were collected at 12 visits over 3 months (including 6 visits before initiating study drugs), and analysed for HSV-2 DNA shedding (real-time PCR) and vaginal flora (Nugent's score). Associations between genital HSV-2 DNA and BV were investigated using generalized estimating equations logistic regression.
Results: Among the 68 women in the placebo arm, the prevalence of HSV-2 DNA genital shedding and BV over 12 visits were 15.2% (116/761) and 29.1% (222/774), respectively. Genital HSV-2 DNA was associated with an increased prevalence of BV when detected at the concomitant visit (41.4% in presence of shedding vs 26.7% in absence, OR=1.58, 95% CI 1.13-2.21) or at the previous visit (38.8% in presence of shedding vs. 26.6% in absence, OR=1.35, 95% CI 0.88-2.07). Similarly, genital HSV-2 DNA was more likely to be detected if BV was present at the previous visit (21.1% if BV present vs. 13.4% if absent, OR=1.40, 95% CI 0.87-2.25).
However, prescription of metronidazole (for BV or Trichomonas vaginalis) was not associated with a reduced risk of genital HSV-2 DNA at the subsequent visit (OR=1.03, 95% CI 0.65-1.62); and analyses including all 136 women randomised to valacyclovir or placebo found no impact of HSV-2 treatment on BV occurrence (OR=0.86, 95% CI 0.58-1.28).
Conclusions: BV and HSV-2 genital shedding were associated in this population of HIV-1 infected women, but we did not find any effect of HSV-2 or BV treatment. Further research is needed to elucidate the possible mechanisms by which the infections might interact.

P4.148

MODELLING THE COST-EFFECTIVENESS OF HSV-2 SUPPRESSIVE THERAPY FOR REDUCING HIV PROGRESSION AND INFECTIVITY AMONG HIV INFECTED WOMEN IN SOUTH AFRICA

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Background: Recent clinical trials have shown the effectiveness of HSV-2 suppressive therapy for decreasing HIV plasma viral load (PVL) in HIV/HSV-2 co-infected women. We modelled the cost-effectiveness (CE) of this intervention for reducing HIV transmission and delaying progression to AIDS in co-infected women.
Methods: Resource and cost data for rolling out HSV-2 suppressive therapy in a primary health care setting were collected in Johannesburg. The effectiveness of HSV-2 therapy was estimated using trial data on its effect on HIV PVL, and a recent literature review of the effect of decreases in PVL on HIV disease progression and infectivity. A Markov model simulated 300 ARV-naïve women (CD4 >200 cells/μL) receiving HSV-2 therapy, and its effect on HIV progression and transmission to their male partners. The CE of different HIV incidence/drug cost/efficacy scenarios were modelled.
Results: Existing trial data suggests HSV-2 suppressive therapy could reduce the HIV infectivity/progression of co-infected women by 20-50%. The table shows the estimated CE per life year gained for different scenarios. The CE is much improved if the cheapest internationally available acyclovir pill cost ($0.03 for 400mg, international drug price indicator guide) is used instead of the cheapest cost in South Africa ($0.25), and if suppressive therapy is assumed to effect HIV progression. This is because 1-2 life years are gained per woman obtaining HSV-2 therapy if it is assumed to reduce progression by 25-50% whereas <1 life year is gained in their male partners through reducing the women's infectivity.

		CE with effect on HIV infectivity only included	CE with effect on HIV infectivity only included	CE with effect on HIV infectivity and progression included	CE with effect on HIV infectivity and progression included
HIV incidence per 100 person years in male partners	Daily drug cost (2 times 400mg ACV)	Low efficacy (25% decrease)	High efficacy (50% decrease)	Low efficacy (25% decrease)	High efficacy (50% decrease)
5	US$ 0.5	US$ 15,409	US$ 7,496	US$ 1,371	US$ 648
10	US$ 0.5	US$ 10,168	US$ 4,828	US$ 1,312	US$ 618
5	US$ 0.06	US$ 5,119	US$ 2,490	US$ 455	US$ 215
10	US$ 0.06	US$ 3,378	US$ 1,604	US$ 435	US$ 205

Conclusions: Compared to a $3,000 threshold for cost-effective interventions in South Africa (1993 WDR threshold in 2008 US$), HSV-2 suppressive therapy would be an affordable strategy for reducing HIV transmission/disease progression in HSV-2 co-infected women. However, cheaper drugs need to be made available and empirical data is needed on the effect of HSV-2 therapy on HIV progression and transmission (PiP).

P4.149

COST-EFFECTIVENESS OF CHLAMYDIA TRACHOMATIS SCREENING IN DUTCH PREGNANT WOMEN

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Objective: The cost-effectiveness analysis of screening for C. trachomatis during pregnancy.
Methods and data: To evaluate a Chlamydia screening program for pregnant women, we designed a pharmaco-economic decision analysis model, which included the health outcomes of C. trachomatis infection such as the aversion and prevention of PID, infertility and chronic abdominal pain as well as ectopic pregnancy, premature delivery and neonatal disease. We estimated the cost-effectiveness from a societal perspective using the prevalence data from a population-based prospective cohort study in Rotterdam. Chlamydial infection was diagnosed using a polymerase chain reaction on pooled urine specimens. Azithromycin was used to treat women and their partners; erythromycin to treat infants. Averted and prevented costs were calculated by linking the health outcomes with health care costs and productivity losses. Cost-effectiveness was expressed as net costs per major outcome prevented.
Results: The investment to detect 1000 pregnant women with C. trachomatis was estimated at €383,000, but the cost savings on complications were estimated at €805,300 indicating net cost savings. Sensitivity analysis showed that net cost savings remained with a test price up to €30, an averted proportion of complications of 25% and risk for PID from 0% up to 40%. Scenario analysis showed an even further improvement with targeted screening for women with first pregnancies or below 30 years of age.
Conclusions: C. trachomatis screening of all pregnant women in the Netherlands is cost-saving, but could be even further improved with targeting at women below 30 years of age or with first pregnancies only.

P4.15

IMPACT OF ACICLOVIR 400MG BID ON HSV DNA IN TANZANIAN WOMEN: RESULTS OF AN INTENSIVE LONGITUDINAL STUDY

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Background: Recent randomised controlled trials (RCTs) have examined the effect of herpes simplex virus (HSV) suppressive therapy on genital HIV-1 RNA detection. Most trials have shown a significant reduction but some have reported less or no effect. One reason for this may be inadequate suppression of HSV in some of the regimens used. Here we present new data from an intensive sub-study of one trial in Tanzania, to assess impact of aciclovir 400 mg bid on HSV shedding in this population.

Methods: A sub-sample of HSV-2 seropositive women who were enrolled in a placebo-controlled RCT of aciclovir 400mg bid were invited to participate in an intensive sub-study. Participants attended a clinic 3 times per week for 4 weeks and information was collected on reported adherence and signs/symptoms of sexually transmitted infections. Women had a genital examination when swabs were taken from the cervix, vagina and external skin and analysed for HSV DNA using in-house real-time PCR. Logistic regression models with general estimating equations and an exchangeable correlation matrix were used to assess the effect of aciclovir on HSV DNA detection.
Results: 78 women were enrolled, of whom 77 (50 HIV seronegative, 27 HIV seropositive) attended at least two visits. The median age was 29 years (inter-quartile range (IQR) 26-33) and median reported age at first sex was 16 years (IQR 15-18). Thirty percent of women reported a history of genital ulcers. Aciclovir was associated with a significant reduction in the percentage of visits with HSV DNA detected among HIV negative (3% vs. 11%; OR=0.28; 95%CI 0.12, 0.66) but not HIV positive women (14% vs. 19%; OR=0.69; 95%CI 0.26, 1.85; p-value for interaction by HIV status=0.17; Table). Similarly, aciclovir was associated with lower quantity of HSV DNA among HIV negative but not HIV positive women.
Conclusions: This regime of aciclovir (400mg bid) may be insufficient to fully suppress HSV reactivations in HIV seropositive women in this population.

		HIV seronegative			HIV seropositive		P interaction (treatment & HIV status)
No. (%) visits HSV DNA detected	Aciclovir No. (%) (N=275)	Placebo No. (%) (N=309)	OR (95%CI)	Aciclovir No. (%) (N=160)	Placebo No. (%) (N=155)	OR (95%CI)	
Any swab	9 (3)	33 (11)	0.28 (0.12, 0.66)	23 (14)	30 (19)	0.69 (0.26, 1.85)	0.17
Cervical swabs	3 (1)	16 (5)	0.20 (0.05, 0.82)	15 (9)	15 (10)	0.97 (0.29, 3.23)	0.09
Vaginal swabs	6 (2)	21 (7)	0.30 (0.10, 0.95)	16 (10)	18 (12)	0.85 (0.25, 2.88)	0.22
Vulval/perineal/perianal swabs	3 (1)	31 (10)	0.10 (0.03, 0.35)	17 (11)	26 (17)	0.59 (0.18, 1.92)	0.05

P4.150

COSTS OF TREATING STIS IN AN HIV PREVENTION PROGRAMME IN CAMBODIA, LAOS AND VIETNAM

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Objectives: To assess the costs of treating STIs in a community HIV prevention programme in selected provinces of Cambodia, Laos and Vietnam between 2002-4.
Methods: Expenditure and achievements in terms of costs incurred and numbers of STIs treated were reviewed. The strategies to address the STI problem were very different between the three countries. Cambodia targeted female sex workers (FSWs) through the 100% condom use programme which promoted monthly attendance and checks at a specialist STI clinic. STI clinics were also promoted for the general population. In Laos, periodic presumptive treatment was undertaken in service women and STI care and treatment services were strengthened in district health centres and hospital outpatients. In Vietnam existing STI clinics were strengthened and treatment provided. In addition STI services were provided at the commune level in areas where high numbers of FSW were found.
Results: Excluding costs of renovation, equipment, furniture and training, the respective unit costs in

US$ for all STI cases managed and STI cases in FSW were, in Cambodia 9 and 7, Laos 44.64 and 32.69 and Vietnam 8.17 and 3.99.
Conclusions: Costs in Laos were elevated as STI services were poorly developed and few recognised STI drugs were available at the start of the project. The costs of the targeted programme in Cambodia were very low and reflect the success of the targeted STI/HIV control programme in limiting the spread of HIV. In Vietnam there are many STI clinics in operation but the quality of medication available varied considerably resulting in significant STI drug costs. Overall, STI services can be delivered through programmes using public services through Ministry of Health systems in a cost effective manner but require projects of longer duration and repeated STI surveys to determine efficacy.

P4.151

SYPHILIS TESTING ALGORITHMS, EIA-FIRST OR RPR-FIRST? A COST-EFFECTIVENESS ANALYSIS
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Background: Automated treponemal EIA tests have led some labs to use new syphilis screening algorithms. We compared the traditional algorithm that starts with a non-treponemal test (RPR), followed, if +, by a treponemal test (EIA); vs new algorithms that start with EIA followed, if +, by RPR, and if RPR-, another treponemal test (TPPA).
Methods: We assumed: treatment if RPR+ EIA+ or EIA+ RPR- TPPA+; prevalence (0.5%, most late latent); previously infected and adequately treated (5%); likelihood of developing tertiary syphilis if untreated syphilis (28% if EIA+ RPR+, 2.8% if EIA+ RPR-); likelihood of subsequent inadvertent treatment (70%); EIA specificity (0.99); TPPA concordance with false + EIA (0.5); and estimates of sensitivity and specificity from the literature. Costs: EIA ($5), RPR ($6), TPPA ($18); $20 to determine whether or not a person was previously infected; $50 to treat early syphilis and $100 to treat late latent; $600 for missing an infection ($60 for EIA+RPR- infection- the risk of progressing to tertiary syphilis was assumed to be 10-times less). We used a cohort decision analysis model from a health-care system perspective.
Results: For a cohort of 200,000 individuals (1,000 infected), the EIA-first option cost $1.7m and the RPR-first option cost $1.4m. EIA-first identified 11,450 for follow-up, and treated 1,950. RPR-first identified 3,876 and treated 906. Most of the difference was due to persons who were EIA+ RPR- TPPA+ (n=1,036). Treating them would prevent one case of tertiary syphilis. The number of persons unnecessarily treated is a function of the specificity of the EIA (0.99) and the lack of independence of the EIA and TPPA. The estimated cost-effectiveness ratios were $1,680 (EIA-first) and $1,662 (RPR-first) per case treated.
Conclusion: Under our assumptions, EIA-first has higher costs and many more uninfected persons are treated. Use of an independent confirmatory treponemal test, rather than TPPA, would reduce this overtreatment.

P4.152

COST AND COST EFFECTIVENESS OF HERPES SIMPLEX VIRUS-TYPE 2 (HSV-2) SUPPRESSIVE THERAPY IN HIV-1 AND HSV-2 INFECTED WOMEN IN JOHANNESBURG, SOUTH AFRICA
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Background: Health interventions for HIV-positive individuals who are not eligible for antiretroviral therapy in South Africa are inadequate. A randomised placebo-controlled trial in Johannesburg has demonstrated the effectiveness of herpes simplex virus-type 2 (HSV-2) suppressive therapy with twice daily acyclovir (ACV) 400mg in decreasing HIV-1 plasma viral load in HIV-1/HSV-2 seropositive women not eligible for antiretroviral therapy (ART). This suggests a potential to decrease HIV transmission. The cost of HSV-2 suppressive therapy has not yet been analysed and related to its effectiveness in Africa.
Methods: We collected costs (in 2008 US$) and quantities of items needed to roll out HSV-2 suppressive therapy along with STI syndromic management in a standard primary health care (PHC) setting in Johannesburg. We used this information and trial data in a Markov model that established the time spent in HSV-2 suppressive therapy and short-term effectiveness for a cohort of 300 antiretroviral-naive women with CD4 cell count >200 cells/μL.
Results: The incremental cost of adding HSV-2 suppressive therapy to current HIV care without ART at the PHC level was US$298 per woman per year or a total of US$393,731 over the 24 years needed for all women to exit the intervention. At a unit cost of US$0.25 per ACV tablet, drugs were the largest cost

category representing 76% of the total costs. The table shows that when the ACV unit cost was reduced to the lowest internationally available price of US$0.03, total costs decreased by 66% to US$134,580. The cost per log decrease in HIV plasma viral load was US$242, the cost per episode of symptomatic HSV-2 averted was US$925, and the cost per episode of genital HSV shedding averted was US$245, all over the first three months.
Conclusions: The individual and public health benefits of HSV-2 suppressive therapy suggest it might be a cost-effective addition to HIV care in South Africa, but the cost of acyclovir should be considerably lowered.

Effects of unit cost of acyclovir on the proportion of total cost in US$ (2008) attributed to each category.				
	Baseline: ACV US$0.25	Baseline: ACV US$0.25	ACV US$0.03	ACV US$0.03
Category	Cost	Percentage	Cost	Percentage
Administration	$194	0.05%	$194	0.14%
Diagnostics	$259	0.07%	$259	0.19%
Drugs	$300,980	76%	$41,829	31%
Equipment	$12,172	3%	$12,172	9%
Staff	$80,010	20%	$80,010	59%
Utilities	$116	0.03%	$116	0.09%
TOTAL	$393,731	100%	$134,580	100%

P4.153

COSTS OF VARIOUS DRUG REGIMENS FOR EPISODIC TREATMENT OF RECURRENT GENITAL HERPES
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Objectives: To review costs of various drug regimens for episodic treatment for recurrent genital herpes.
Methods: The latest STI treatment guidelines published by BASHH 2007, CDC 2006 and WHO 2003 were reviewed for recommended treatment regimens for episodic treatment of recurrent genital herpes. The costs for these different regimens were assessed using the latest International Drug Price Indicator Guide (IDPIG) for 2007 taking the median supplier unit price per tablet.
Results: The cheapest regimen was Aciclovir (ACV) 800mg tds for 2 days at US$ 0.31. Prices for other regimens were as follows: ACV 200mg x5/day for 5 days US$1.04, ACV 400mg tds for 5 days US$1.35, ACV 800mg bd for 5 days US$0.52, valaciclovir (VCV) 500mg bd for 3 days US$14.04, VCV 500mg bd for 5 days US$23.4,VCV 1Gram od for 5 days US$23.4. Prices for famciclovir were not given.
Conclusions: ACV 800mg tds for 2 days is by far the cheapest regimen and should be considered as first line episodic treatment for recurrent genital herpes by National STI control programmes. The price of generic ACV has decreased considerably recently and should now be affordable in most developing country settings. Giving treatment for genital herpes would raise awareness of the condition and would provide a treatment option rather than the conservative management that is currently practiced in most developing country settings.

P4.154

AN ECONOMIC EVALUATION OF SCHOOL-BASED SKILLS BUILDING BEHAVIOURAL INTERVENTIONS FOR PREVENTING SEXUALLY TRANSMITTED INFECTIONS IN YOUNG PEOPLE
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Background: Reducing teenage pregnancy and sexually transmitted infections (STI) is a priority. We conducted an economic evaluation of the cost-effectiveness of school-based behavioural interventions in young people.
Methods: We developed an economic model to estimate the total number of STI cases averted, consequent Quality Adjusted Life Year (QALY) gain and savings in medical costs, based on potential changes in sexual behaviour. The parameters for the model were derived from a systematic search of the literature on the effectiveness of interventions, natural history and epidemiology of STIs, sexual

behaviour and lifestyles, health related quality of life, and costs.
Results: The costs of teacher-led and peer-led behavioural interventions, based on the resources estimated from the relevant RCTs in our systematic review, were £4.30 and £15 per pupil, respectively. For a cohort of 1000 boys and 1000 girls aged 15 years, the model estimated that the behavioural interventions would avert three STI cases and save 0.5 QALYs. Compared to standard education, the incremental cost-effectiveness of the teacher-led and peer-led interventions was £12,922 and £55,313 per QALY gained, respectively. The results were most sensitive to the intervention effect and the STI transmission probability.
Conclusions: The results of the economic evaluation are considered illustrative due to the limited effect of the intervention on behavioural outcomes, and paucity of data for other input parameters. Teacher-led interventions are likely to be cheaper than peer-led interventions.

P4.155

HIV/AIDS AND RAPE: MODELING PREDICTIONS OF THE INCREASE IN INDIVIDUAL RISK OF HIV INFECTION FROM FORCED SEX IN CONFLICT AND POST-CONFLICT SETTINGS
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Background: A high proportion of girls, women and some boys and men will experience forced sex in their lifetimes. In conflict and post-conflict settings, rape, coerced sex and transactional sex are common. There is debate about the degree to which this may contribute to the HIV epidemic. This project used mathematical modeling to estimate the extent to which different situations of violence, coercion or population movement may increase an individual's risk of HIV acquisition.
Methods: An existing mathematical model of HIV acquisition was adapted to incorporate factors, identified from the literature, which may increase the likelihood of HIV transmission, such as genital injury, and higher prevalences of HIV and STIs among perpetrators. It was assumed that genital trauma increases the per-sex-act risk 1.5-, 3- or 6-fold, depending on the extent of trauma, and that HIV and STI prevalences are twice as high among high-risk/violent males compared to non-violent males. An analytical equation to describe the relative probability of acquiring HIV infection in conflict versus comparable non-conflict scenarios was developed.
Results: The preliminary findings shown in Table 1 suggest that, for a range of plausible conflict scenarios, an individual's risk of HIV may be increased substantially.
Conclusions: Recent debate about whether rape could be fueling HIV is unconstructive, and confuses population- and individual-level effects. Both HIV and sexual violence are significant public health problems, and require effective responses. In non-conflict, conflict and post-conflict settings, an experience of rape may result in a large increase in an individual's HIV-risk. The findings suggest the need for a more comprehensive HIV prevention response, including post-rape services, referral to HIV services if needed, as well as counseling, legal, and socio-economic support.

TABLE 1: EFFECT OF CONFLICT ON INDIVIDUAL RISK OF HIV INFECTION

Conflict scenario	Comparison scenario	Risk ratio
Effect of violence and coercion:		
Adult female, forced to have sex by unknown combatant assailants	Same number of consensual sex acts with one partner from own community	4.3
Adult female raped by 3 men at refugee camp and also has low-risk male partner that she has 3 consensual sex acts with	Only has 3 consensual sex acts with low-risk male partner	5.3
Anal rape of adult male/female by 3 men at refugee camp and also has low-risk partner that s/he has 3 consensual sex acts with	Only has 3 consensual penile-vaginal sex acts with low-risk partner	86
Adult female trades sex with several male members of peacekeeping force	Same number of consensual sex acts with one man from own community	1.5
Adult woman, quarter of sex acts are forced by her highly exposed male partner	Same number of consensual sex acts with male partner who has not been to higher risk situation	1.6
Effect of population movement:		
Influx of higher exposed population to an area of lower exposure	No population movement, otherwise same behavioral patterns	1.4

Influx of lower exposed population to an area of higher exposure	No population movement, otherwise same behavioral patterns	0.6

P4.156

COST-SAVINGS WITH HERPES SIMPLEX VIRUS SCREENING IN PREGNANCY: TOWARDS A NEW PARADIGM

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Background: Congenital herpes simplex virus (HSV) infections are an uncommon but potentially devastating consequence of genital HSV infection in women. Most medical strategies aimed at prevention of neonatal HSV have focused on preventing transmission by women with prevalent genital herpes infection, but epidemiological evidence suggests that infants at highest risk of neonatal HSV infection are born to women with incident HSV acquired during the third trimester. Given this natural history, serologic screening of pregnant women to identify and safeguard those who are HSV seronegative represents an obvious preventive strategy. We used a decision analytic model to project the economic attractiveness of such a strategy relative to other currently accepted health interventions.
Methods: We created a mathematical model to simulate the natural history and costs of HSV transmission in pregnancy. The model was used to perform stochastic Monte Carlo simulations, with probabilities, costs, and consequences of infection drawn at random from plausible distributions. In our base case, screening was restricted to women, as recognition of maternal seronegativity is sufficient to trigger preventive interventions.
Results: Model projections were well calibrated to Canadian sentinel surveillance data on neonatal HSV incidence and HSV-1:HSV-2 ratio. In a simulated cohort of 1 million pregnant women, serological screening prevented 105 cases of congenital HSV with cost savings of $306,000. Screening remained cost-saving in the face of plausible variation in test characteristics, HSV transmission risk, and intervention effectiveness.
Conclusions: Type-specific HSV serology represents an important tool for prevention of congenital HSV infection. Unlike other screening practices for infection prevention in pregnancy, HSV screening is projected to be effective and cost-saving when used to identify the absence, rather than the presence, of infection. This new preventive paradigm warrants further investigation.

P4.157

HEPATITIS B VIRUS SCREENING: AN AUDIT OF HEPATITIS B VIRUS SCREENING TEST REQUESTS

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Objective: To audit hepatitis B virus (HBV) screening test requests against national guidelines and to examine the cost effectiveness of the requests in the context of our core genitourinary medicine (GUM) services and payment by results tariff.
Method: All HBV screening tests i.e. hep B core antibody (HepBcAb) surface antigen (sAg) and surface antibody (sAb) requests from GUM between 1st January 2008 and 31st May 2008 were analysed retrospectively. The investigations undertaken were audited against the national guidelines.
Results: Two hundred and fifty five patients were tested in a five-month period. None of the screening test requests were in line with the national guidelines for testing. Seventy-five (29%) had all three (sAg, cAb and sAb) tests performed. 102 (40%) had sAg and cAb tests performed, thirty three (12.9%) had sAg only, twenty nine (11%) sAb test only and six (2%) had sAg and sAb test performed. Finally four (1.5%) had both cAb and sAb test performed. Out of seventy-five who were tested for all three sAg, cAb and sAb there were forty-three negative results and thirty-two sAb positive results. Forty-three patients did not need this test. The cost of each test in our Trust is £12.75; this means there was a loss of revenue of £1096.
Conclusion: There are many demands for GUM services and with limited resources and payment by results cost savings could be made by appropriate testing with cAb screening test as the primary screening investigation and sAb screen used for post vaccination testing. While sAg screening test could be used if there were a specific indication. This would be in line with the national guidelines.

P4.158

GETTING RESEARCH INTO POLICY - HSV-2 TREATMENT GUIDELINES IN HIV INFECTION AND THE CASE OF GHANA

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Objectives: This study explores the mechanism through which research influences policy looking specifically at HSV-2 treatment policy in light of the acknowledgement of a co-factor effect between HSV-2 and HIV. It ultimately seeks to identify mechanisms through which evidence informs national policy in the developing world context, with Ghana as a case study.
Methods: Data from this study was collected in spring/summer 2008 through interviews conducted with researchers, program managers and policy-makers at both the WHO conference to update GUD treatment guidelines in Geneva, and in Ghana.
Results: The major findings of this study were that international policy changed as the result of an accumulation of evidence, and with the strong involvement of policy-makers throughout the research process. In addition, the investigations into HSV-2 as a cofactor of HIV generated the political will necessary to reform HSV-2 treatment policy. Policy transfer is top-down, however, the call for research was the result of a bottom-up process in which the observed synergy between HSV-2 and HIV in developing countries informed the international research agenda. Playing a pivotal role in the Ghanaian policy context are intellectual clubs, groups of professionals linked through congenial relationships. These 'clubs' serve as the primary conduit of information between researchers and policy-makers, for whom communication is lacking, and may serve as the main internal agent of change nationally. Local research agendas are often set by external pressures, such as donor priorities, and these pressures are cited as a further barrier to the communication between researchers and policy-makers, and so research and policy, within Ghana.
Conclusion: International policy on HSV-2 care was only able to change due to the policy window provided by HSV-2's link with HIV. National policy in Ghana changes in response to donor pressure, due to an influential champion or due to the power of intellectuals clubs.

P4.159

CDC STD TREATMENT GUIDELINES: NEW RECOMMENDATIONS

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Objective: Development of 2010 STD Treatment Guidelines. 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.
Methods: An evidence-based approach incorporating 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 by national and international STD experts consultants and various professional organizations.
Results: Selected highlights include an expanded discussion on individual and population level prevention methods; new antimicrobials for bacterial vaginosis and genital warts; expanded discussion of Mycoplasma genitialium in urethritis/cervicitis; treatment implications of antimicrobial resistance among various pathogens; treatment approach to protocolitis among MSM; utility of spinal fluid examination in syphilis/HIV infection; syphilis management using treponemal EIA testing; alternative antimicrobial regimens in the management of gonorrhea; expanded discussion on nucleic acid testing in sexual assault, and indications for use in nongenital sites.
Conclusions: The approach to development of CDC STD guidelines continues to evolve reflecting changes in STD epidemiology, the health care environment, delivery of clinical services, and availability of data addressing effectiveness. The rapidly evolving health care system in the United States presents multiple challenges for guideline development, utilization, and dissemination.

P4.16

SEXUAL RISK BEHAVIORS AND ILLICIT DRUG USE AMONG WOMEN WHO HAVE SEX WITH WOMEN

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Background: Illicit drug use is a risk for higher risk sexual behaviors. Little research has been done on illicit drug use in same sex reporting women. We evaluated use of illicit drugs in these women and assessed relationships with sexual behaviors and STD history.
Methods: Women 16-35 years who reported sex with >1 woman in the previous year were self-referred to a research clinic. All underwent computer-assisted self-interview. Comparisons were made using

Fisher's exact and T-tests.
Results: Of 291 subjects (median age 25 y), 255 (87.6%) reported any lifetime drug use. Of those 188 (64.6%) reporting recent (past year) drug use, 73 (38.8%) identified as bisexual, 62 (33.0%) as lesbian, 47 (25.0%) as queer, 5 (2.6%) as "other" and 2 (0.5%) as straight. By drug, 172 (51.2%) reported marijuana, 48 (14.3%) cocaine, 41 (12.2%) ecstasy, 16 (4.8%) methamphetamine and 5 (1.5%) heroin. Risks for sex with a male in the past 60 days included any recent cocaine (RR 3.46 [95% CI, 1.7-6.7]) or methamphetamine use (RR 3.17 [95% CI, 1.1-6.7]). Risks for sex with a male in the past 90 days included any recent drug use (RR=3.13 [95% CI, 1.8-5.8]), with specific risks associated with marijuana (RR=3.15[95% CI, 0.9-18.9]), methamphetamine (RR 3.2 [95% CI, 1.1-6.7]), ecstasy (RR 3.01 [95% CI, 1.0-8.0]) and cocaine (RR 2.7 [95% CI, 1.8-5.8]). Recent use of several drugs was associated with a history of C. trachomatis infection, including methamphetamine (RR 4.56 [95% CI, 1.3-12.0]), ecstasy (RR 3.01 [95% CI, 1.0-8.1]) and cocaine (RR 2.95 [95% CI 1.1-7.6]). Women who reported ever having traded sex for money or drugs more likely reported recent cocaine use (RR 3.43 [95% CI, 1.5-7.5]).
Conclusions: Same sex reporting women who report illicit drug use engage in some higher risk behaviors, particularly with male sex partners, compared with those who do not report drug use. Among those who reported cocaine, marijuana or ecstasy, there was a significant history of C.trachomatis infection.

P4.160

SEXUALLY TRANSMITTED INFECTIONS AMONG HIV- INFECTED PATIENTS IN IBADAN, NIGERIA

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Background: HIV-infected persons in care may be an important target group in which to conduct regular screening for Sexually Transmitted Infections (STIs) to prevent enhanced transmission of HIV. There is paucity of data on the burden of STIs among PLWHA in Nigeria. The study was designed to provide information on the sexual behavior and prevalence of STIs among PLWHAs attending ART clinic at the University College Hospital, Ibadan, Nigeria.
Methods: This is a descriptive cross-sectional survey of PLWHAs attending ART clinic between January 2006 and December 2007. Endocervical and high vaginal swabs were collected to establish diagnosis after clinical examination and informed consent.
Results: There were 5,207 patients with a mean age of 34.67 years (SD= 9.16; range 19-77years). About 10% (542) had various STIs. The male to female ratio was 1:4.2. Two hundred and forty-seven (45.6 %) of those with STIs were treatment naive to HAART. Of the 542 PLWHAs with STIs, 27.9% reported condom use, 3.3 % had undetectable viral load (< 200 copies/ ml) while 272(50.1 %) had low CD4 count (< 200 cells / mm3). The most common STI diagnosed was vaginal candidiasis (41.1%). Other STIs diagnosed were genital warts, bacterial vaginosis, trichomoniasis, chancroid, gonorrhea, syphilis, tinea cruriz and molluscum contagiosum. Increase in risky sexual behavior was found to be significantly associated with low level of education (P<0.001). Treatment experienced patients were found to be significantly associated with increased use of condom (OR= 3.23 (95% CI: 2.15, 5.00).
Conclusion: HIV-infected patients in care may be infected with STI. This poses a higher risk of transmission of STIs and HIV. There is need for routine screening for STIs and education for behavior change in HIV care facilities.

P4.162

PREVALENCE OF HERPES SIMPLEX VIRUS TYPES 2 AND 1 ANTIBODIES AMONGST HIV POSITIVE AND NEGATIVE MEN WHO HAVE SEX WITH MEN ATTENDING GUM CLINICS

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Objectives: To describe the epidemiology of herpes simplex virus (HSV) types 2 and 1 amongst HIV positive and negative men who have sex with men (MSM) attending genito-urinary medicine (GUM) clinics in England and Wales.
Methods: Samples collected in 2003 from the unlinked anonymous survey of GUM clinic attendees were tested for HSV2 and HSV1 antibodies (HSV2-Ab and HSV1-Ab). The prevalence of HSV2-Ab and HSV1-Ab was measured by HIV status, 'recency' of HIV infection (derived using Serologic Testing Algorithm for Recent HIV Seroconversions) and other key clinical and demographic co-factors. Prevalence risk ratios (RR) were estimated at the univariate and multivariate level, using modified Poisson regression.
Results: 56% of HIV positive MSM were HSV2-Ab positive, compared to 15% of HIV negative MSM (adjusted RR: 2.26 [CI: 2.03-2.52]). The prevalence of HSV2-Ab was also higher in men born abroad,

older age-groups and in clinic attendees in London. Among HIV positive individuals, the prevalence was high regardless of 'recency' of HIV infection or knowledge of HIV status. Overall 71% of men were HSV1-Ab positive, including 76% of HSV2-Ab positive men and 86% of HIV-Ab positive men. HIV was independently associated with HSV1-Ab, although its association was less strong than with HSV2-Ab.
Conclusions: Given the role HSV2 plays in the acquisition and onward transmission of HIV, the high prevalence of HSV2-Ab amongst MSM, particularly HIV positive MSM, attending GUM in England and Wales, suggests that HSV2 is contributing to the sustained levels of HIV incidence amongst MSM in these countries. Public health interventions that focus on HSV2 control could therefore have an important role in HIV prevention. Further research is required in the role of genital HSV1 for HIV incidence, given the high prevalence amongst MSM in England and Wales.

P4.163

PREVALENCE OF AFRICAN-PLASMID AND MULTIPLE MUTATIONS AT MTR LOCUS LEADS TO HIGH PENICILLIN RESISTANCE IN CLINICAL ISOLATES OF NEISSERIA GONORRHOEAE
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Background: Neisseria gonorrhoeae, (NG) causes gonorrhoea, a sexually transmitted disease. Although curable with single dose of antibiotics, it continues to remain highly prevalent due to resistance to various antibiotics including penicillin and tetracycline. Presence of beta-lactamase encoding plasmids and/or chromosomal mutations have led to multidrug resistance (MDR) in clinical isolates. Mutations in gene of efflux pump(mtr) has been shown to be associated with hydrophobic MDR. High prevalence of NG infection and presence of highly resistant isolates prompted us to study the molecular mechanism of MDR in clinical isolates.
Method: a) Plasmid isolation and PCR amplification to analyse β-lactamase producing plasmids. b) PCR amplification and sequencing of the mtrR and mtrE amplicons of MDR clinical isolates and mutation analysis using clustalW. c) Structural analysis of MtrE and MtrR using Insight II program.
Results: Plasmid analysis showed that all PPNG isolates (41 isolates) contained a 3.2 MDa African type of plasmid. Among MDR isolates, mutations were found in helix turn helix motif of regulatory protein, MtrR (L33V, G45D) and in its C' terminal (Y105H) region. Mutant MtrR shows reduced binding to its promoter in vitro. This may lead to increased expression of MtrCDE efflux pump in MDR isolates. Analysis of nucleotide sequence of MtrE also showed distinct mutations (I429S, K165E, K191R, and R285G) in different clinical isolates with K191R as the most frequent mutation observed. In silico modeling indicates that above mutations are responsible for disturbance of hydrogen bonding resulting in structural changes in MtrE protein which may be responsible for altered efflux activity. Strains with mutations in both MtrR and in MtrE showed higher MIC values (16 to 22 µg/ml). PPNG strains with mutant MtrR or MtrE had even higher MIC for penicillin (32 µg/ml).
Conclusion: Mutations at multiple loci act in synergism with each other to confer high penicillin resistance to NG strains.

P4.164

DISSEMINATION AND ADOPTION OF A PREVENTION WAITING ROOM VIDEO IN U.S. SEXUALLY TRANSMITTED INFECTIONS (STI) CLINICS: THE SAFE IN THE CITY EXPERIENCE
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Objectives: Successful diffusion and adoption determine the impact of new interventions. Thus, factors including communication channels, awareness, as well as real and perceived barriers to implementation must be considered. The objective of this research was to evaluate the uptake and implementation of a newly released educational video for use in STI clinics that was shown to reduce new STI by 10% in a controlled effectiveness trial: Safe in the City (SITC).
Methods: A telephone survey was administered to a random sample of 73 clinic directors representing 76 US STI clinics. Topic survey analysis and Fisher's exact test were used to categorize responses and analyze associations.
Results: Of the 76 clinics, 17 (22%) were aware of the intervention and 13 (17%) had ordered the SITC intervention package. Most (74%) clinic directors reported using state or local public health entities as primary channels of new information; however use of these channels was associated with lower awareness of the new intervention ($p<0.05$). By contrast, personal networking (word of mouth), conference presentations, and Internet (specifically STDPreventionOnline.org) were significantly associated with intervention awareness ($p<0.01$). Major impediments to adoption of the intervention included lack of DVD equipment (55%) and sharing waiting room space with programs serving populations (especially children) for whom the video was deemed inappropriate (47%).

Conclusions: Marketing efforts for new interventions should consider communication methods that make use of recognized diffusion channels such as thought leaders, interpersonal communication, and communities of practice. Some barriers to adoption, such as lack of equipment, have relatively inexpensive solutions yet may have legacy and social considerations. However, overcoming structural barriers such as shared waiting areas will require innovative alternatives to conventional practice.

P4.165

HIGH PREVALENCE OF NEISSERIA GONORRHOEAE AMONG MEN THAT SOUGHT CARE AT STD CLINICS OF SIX BRAZILIAN CAPITALS

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Objectives: To estimate Neisseria gonorrhoeae prevalence among men that sought care at STD clinics and to identify its association with socioeconomic demographic and behaviors variables.
Methods: A transversal multicentric study including men that sought care at STD clinics from six Brazilian capitals. Urine samples were examined by PCR. Sociodemographic and behaviors data were obtained by specific questionnaires. Odds ratios (OR) were calculated and Fischer exact tests and chi-square tests were used for statistical analysis. Results: 936 men were enrolled with a mean age of 26.7 years. Urine samples was obtained of 766 men. Overall gonoccocal prevalence was 18,5% . Higher prevalence rates were observed among people with more than one sexual partner in the last 12 months (29.3% - men who have sex with men and 11.2% - heterosexual men), afro-descendent (24.6%), lower schooling (21.8%) and single (21.4%). Prevalences were 17.2%, 24.6% and 30.6% among heterosexual, bisexual and homosexual men, respectively. Risk of being infected with N. gonorrhoeae was two-fold higher to homosexual men (OR 2,12; 95%CI 1,06-4,2; p=0,031).
Conclusions: Higher gonoccocal prevalence and risk were observed among men who have sex with men. This evidences the need of developing actions for prevention, diagnosis and treatment at primary care for this population.

P4.17

RISK BEHAVIORS AND KNOWLEDGE OF SEXUALLY TRANSMITTED INFECTIONS AMONG AFRICAN AMERICAN LESBIANS PARTICIPATING IN FOCUS GROUPS IN MISSISSIPPI

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Background: Little is known about the sexual risk behaviors of African American (AA) women who have sex with women (WSW) to inform safer sex education and risk reduction strategies. We conducted focus group discussions in an attempt to better understand the sexual risk behaviors and health care needs of AA WSW living in Mississippi.
Methods: Eligible AA WSW were recruited from local lesbian and bisexual venues. Participants completed a brief demographic and sexual history questionnaire. The semi-structured interview format covered topics including perception of risk for acquiring and transmitting sexually transmitted infections (STIs), sexual risk behaviors, and sexual practices.
Results: Twenty AA WSW, aged 20-45, participated in one of four focus group sessions. Many of the respondents admitted to participating in high-risk activities including alcohol use during sex, sex during the menstrual period, and sadomasochism. However, participants were knowledgeable regarding the need for protective measures such as condoms, dental dams, and the cleaning of sex toys during sexual activities to reduce their risk of acquiring or transmitting STIs. Many of the participants expressed an explicit concern for their partners' welfare as a reason for engaging in safer sex practices. Non-traditional lesbian families appeared to play a significant role in providing support and social networking for this group of women.
Conclusions: Although the majority of women appeared to be knowledgeable in ways to prevent transmission of STIs, many reported engaging in behaviors that may increase their risk of infection. STI prevention counseling in this group of women may need to take into account the aforementioned discrepancy between knowledge and behavior. In addition, non-traditional lesbian families appeared to play an important role in these women's lives. Further study into the psychosocial dynamics of lesbian families is needed.

P4.18

AN EXPLORATORY SURVEY OF SEXUAL RISK BEHAVIOR AND PERCEIVED SUSCEPTIBILITY TO SEXUALLY TRANSMITTED INFECTIONS AMONG AFRICAN AMERICAN LESBIANS

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Background: Traditionally, women who have sex with women (WSW) have been thought to be at low risk of acquiring or transmitting a sexually transmitted infection (STI). This belief is being challenged through case reports, small studies, and surveys with the majority of data collected in Caucasian WSW. Very little research is available focusing on the unique medical needs or cultural issues regarding STI risk reduction in African American (AA) WSW.
Methods: Eligible AA WSW were recruited from local lesbian and bisexual venues to participate in focus group sessions. Participants completed a brief demographic and sexual history questionnaire. Participants also completed psychometrically-sound validated surveys designed to assess risky sexual behaviors, self-efficacy to refuse risky sexual behaviors, perceived susceptibility to STIs, and perceived barriers to HIV testing.
Results: Twenty AA WSW, aged 20-45, participating in one of four focus group sessions, completed the questionnaire and surveys. The mean number of lifetime sexual partners was 63.7 +/- 104.1 SD with a majority of participants reporting a history of unprotected sexual intercourse. In addition, there was a high risk of alcohol use during sexual activity. Most women did not think it would be difficult to get tested for HIV although approximately half of the women expressed fear of their results not being kept confidential. A majority of the participants believed they are at risk of STI infection in the future.
Conclusion: This small sample of AA WSW appears to have multiple risks for STI infection including a high percentage of lifetime sexual partners, alcohol use during sex, and increased perception of their own risk of STI infection. Implications of this research indicate that prevention counseling focusing on this population should include safe sex education, risk reduction practices, and substance abuse education.

P4.19

PREVALENCE OF AND RISK FACTORS FOR HIV AND OTHER STI IN A COHORT OF WOMEN INVOLVED IN HIGH RISK SEXUAL BEHAVIOUR IN KAMPALA, UGANDA

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Objectives: To determine baseline prevalence of HIV and other STI, baseline sociodemographic and behavioural characteristics in a newly established cohort of women involved in high risk sexual behaviour in Kampala. This is the first systematic study of HIV and other STI in this population group in Uganda.
Methods: Women involved in sex work were recruited from the red-light-areas in Kampala. Sociodemographic and behavioural information was collected using structured questionnaires. Gynaecological examination was performed; blood and genital samples were tested for HIV/STI.
Results: The first 500 women were enrolled between April and October 2008. Reported condom use in the last month was high (80%) with paying clients, lower (53%) with other non-marital partners (casual or regular non-paying partners) and only 5% with marital partners. One in four women (24.2%) reported daily alcohol use and 46 (9.2%) women reported using drugs (mainly marihuana and khat). Vaginal discharge disease was confirmed in 303 (60.6%) and GUD in 43 (8.6%) women. The HIV-1 seroprevalence was 36.6%. HSV-2 antibodies were detected in 402 (80.4%) women. Forty-seven enrolled women (9.4%) were RPR+/TPHA+ and 14 (2.8%) had active syphilis (RPR titer ≥1/8). Gonorrhoea and chlamydia infection were diagnosed in 81 (16.2%) and 49 (9.8%) of women respectively. *T. vaginalis* culture was positive in 93 (18.6%) women and bacterial vaginosis and candidiasis were diagnosed in 56.4% and 14.0% of women respectively. PCR testing for *M. genitalium* and genital ulcer aetiologies are being conducted and results will be reported.
Conclusions: High prevalences of HIV/STI persist in women involved in high risk sexual behaviour in Kampala. Preventive interventions including accessible STI care services are needed for this target population group and their partners. This is particularly important given that recent epidemiological studies suggest that the HIV infections in Uganda may on the increase again.

P4.2

BEHAVIORAL INTERVENTION FOR PREVENTION OF STI, UNINTENDED PREGNANCY, SUBSTANCE USE AND ABUSE

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Objectives: 1) To implement a controlled randomized trial of a risk-reduction intervention consisting of small group sessions, individual counseling and support groups for minority adolescent women; and 2) To evaluate the effects of the adolescent intervention model versus enhanced counseling for this group on high-risk sexual behavior, substance use, abuse recurrence, contraceptive use, unintended pregnancy and STI/HIV at 6 and 12 months follow-ups.
Methods: Mexican- and African-American adolescent women (n=562, aged 14-18 years) with STI and history of psychological, sexual or physical abuse were recruited from public-health clinics in a metropolitan area of the US. Following enrollment participants received targeted physical exams including contraception counseling and interviews including assessments for abuse, sexual risk behavior, substance use, contraceptive use and STI. Participants were encouraged to return for unscheduled visits as needed for counseling or suspected STI or pregnancy. Scheduled follow-up rates at 6 (85%) and 12 (88%) months was high Participation in risk-reduction interventions was also high (90%). Surveillance for STI and pregnancy occurrence at off-site clinic visits was conducted and documented throughout the study.
Results: Overall, at study entry, participants reported early first coitus, high numbers of partners, concurrent relationships and high STI and re-infection rates. Data from 6 and 12 months follow-ups identified sexual risk behavior reduction and significantly fewer STI re-infections, decreased abuse, unintended pregnancy and substance use among intervention versus control participants.
Conclusions: Behavioral interventions can modify sexual risk behavior and contraceptive use among minority adolescent women for reduction of STI/HIV, unintended pregnancy, substance use and abuse.

P4.20

CONCURRENT SEXUAL RELATIONSHIPS AND THE RISK OF STIs INCLUDING HIV AMONG FISHERMEN

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Objective: To determine if concurrent sexual relationships are associated with STI prevalence among fishermen.
Methods: During a Phase I randomized double-blind placebo-controlled crossover trial to evaluate the safety and acceptance of an ethanol in emollient gel microbicide, we collected data on socio-economic and demographic characteristics in addition to information about three most recent sexual partnerships including start and end dates. We also pre- and post-test counseled them for STI including HIV and obtained specimens for STI testing. Appropriate treatment and /or referrals were provided.
Results: We screened 168 fishermen for possible enrollment. The median number of sexual partners in the past six months was 2 (Mode 2; Range 1-15). About two-thirds (65%) reported concurrent sexual relationships: 54% reporting one and 46% two concurrent relationships. Condom use was 12.7% & 29.1% among those with one and two concurrent relationships respectively. STI prevalence was: HIV 27%, HSV-2 58% and syphilis 1.8%. Of those in concurrent relationships, 60% were below 28 years old and over two-thirds (68%) had at least one of the three STIs tested. Almost half (42%) of those who had an STI had not used condoms ($p<0.001$) with any of the three most recent sex partners and expected to have sex with them. Those in a concurrent relationship were more likely not to use a condom with all their three most recent sexual partners [OR=3.70; (95% CI 1.80-7.63)] compared to those in non-concurrent relationships. Those who had a concurrent relationship in the past six months were more likely to test HIV positive [OR 1.68; (95% CI 1.06 -2.67)].
Conclusion: Concurrent relationships coupled with low condom use may contribute to the high prevalence of HIV infection among fishermen.

P4.21

PREVALENCE AND RISK FACTORS FOR HIV AND SEXUALLY TRANSMITTED INFECTIONS AMONG RELATIVELY LOW-RISK 18 – 24 YEARS OLD WOMEN IN KENYA

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Objective: To investigate the prevalence and risk factors for sexually transmitted infections (STI) among relatively low-risk young women aged 18-24 years old in Kisumu, Kenya.
Method: We performed a cross-sectional analysis of women screened for participation in a phase 1 randomized placebo controlled microbicide trial. Prevalent cases of STIs including HIV, bacterial vaginosis and yeast infection were identified through laboratory tests. Behavioral risk factors were assessed in structured interviews.
Results: A total of 250 women were evaluated. Women reported a median of two (range 1 – 7) lifetime

number of sexual partners, and a median of one (range 0 – 3) sexual partner within the last three months. Twenty one (8.4%) of 250 women were HIV seropositive, 95 (39.6%) were HSV-2 seropositive, 14 (7.9%) had Chlamydia trachomatis, 2 (1.1%) had Neisseria gonorrhoeae, 21 (11.7%) had Trichomonas vaginalis and 2 (0.8%) had syphilis detected. Bacterial vaginosis and yeast infection were diagnosed in 62 (26.1%) and 33 (18.1%) of the women, respectively. In bivariate analyses, sexual debut before 18 years of age, HSV-2 seropositivity, and lack of post-secondary education were associated with HIV infection. In multivariate analyses, only HSV-2 seropositivity (Adjusted (A) OR 7.2 95% CI 2.0-26.4) remained associated with HIV infection. Being married (AOR 8.6, 95% CI 1.8-39.8) and having no post-secondary education (AOR 1.7 95% CI 1.0-3.0) were associated with HSV-2 infection.
Conclusion: In this young, relatively low-risk female population, viral STIs including HIV and HSV-2, and not bacterial STIs, were very common. Behaviors such as condom use and the development of female-controlled methods to reduce the risk of HIV and HSV-2 are urgently required.

P4.23

HIV DIAGNOSIS, DISCLOSURE AND PROTECTED SEX AMONG DRUG INJECTORS IN ST PETERSBURG, RUSSIAN FEDERATION
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Background: As part of a larger, longitudinal study in St. Petersburg, Russian Federation, self-reported data on HIV testing, transmission-related practices and disclosure to most recent sex partners, and specimens for HIV antibody testing were collected from 387 drug injectors. HIV prevalence was found to be 50% but had been previously diagnosed in only 36% of positives. We assessed the frequency of disclosure of positive serostatus to recent sex partners and whether such diagnosis and disclosure of seropositivity were associated with protected sex.
Methods: Data from structured interviews and HIV test results were used to compare knowledge of injectors' serostatus, disclosure of serostatus to most recent sex partners, and perception of partners' serostatus, with sexual practices at last encounter using Chi-square tests.
Results: Among injectors previously diagnosed as positive, 78% (32 of 41) reported disclosing their serostatus to their most recent partner and disclosed most to partners perceived to be positive ($p < 0.01$). Among seropositives aware of their status, disclosure was weakly associated with protected sex; cell sizes precluded stratification by partner serostatus. Seropositives who knew of their infection were more likely to have discussed their serostatus to most recent partners than were seronegatives or undiagnosed seropositives ($p < 0.01$, $p < 0.01$). Diagnosed seropositives were more likely than undiagnosed seropositives to report protected sex with their most recent partner, but this difference was significant only with partners they perceived to be seronegative (89% v 33%; $p = 0.01$), not whose serostatus was unknown or perceived positive.
Conclusions: HIV-seropositive injectors were more likely to have protected sex only when they 1) were aware of their infection and 2) understood their partner to be negative. Expanded testing and encouragement of disclosure among injectors and the populations from which they draw partners could promote both factors.

P4.24

SEXUAL RISK BEHAVIOR PATTERNS ASSOCIATED WITH HIV/HBV CO-INFECTION AMONG FEMALE DRUG USERS IN SOUTH AFRICA
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Background: Co-infection of HIV and viral hepatitis B (HBV) is prevalent among drug using women in South Africa and is associated with adverse prognosis of both infections. While many drug using women have more than one risk factor for co-infection, no studies have examined patterns of sexual risk behaviors associated with co-infection.
Methods: Patterns of sexual risk behaviors associated with HIV and HBV co-infection status were explored in a cross sectional sample of 200 South African female drugs users recruited in the Pretoria region of South Africa using Latent Class Analysis; classes were used in a multinomial regression model of no-infection, single-infection and co-infection.
Results: Results of the LCA suggested a three class solution with optimal fit. The three classes included: (1) a low sexual risk class with no sex trade and low probability of sexual risk behaviors (class 1: 19%); (2) a moderate/high sexual risk class with sex trade yet some condom use and less frequent endorsement of ever having had a casual partner (class 2: 55%); and (3) a high sexual risk class with sex trade and less frequent condom use and more frequent endorsement of ever having had a casual partner (class 3: 26%). Multinomial regression models indicated that participants in the higher risk classes had higher odds of co-infection compared to the low risk class. Specifically, compared to the low

sexual risk class, drug using women in the moderate/high sexual risk class had 5.96 odds of having HIV and HBV co-infection (95% CI= 1.50, 23.79). Drug using women in the high sexual risk class had 5.10 odds of having HIV and HBV co-infection compared to the low sexual risk class (95% CI= 1.39, 18.75).
Conclusions: The findings inform STD prevention in vulnerable popualtions and suggest that sex trade behavior is by itself an extremely potent risk factor of HIV and HBV co-infection regardless of the level of condom use if condom use is not practiced during each sexual act.

P4.25

SEXUAL MIXING PATTERNS BY GEOGRAPHY, RACE/ETHNICITY, AGE, AND SEXUAL ACTIVITY DURING A HETEROSEXUAL SYPHILIS OUTBREAK IN NORTH CAROLINA

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Background: We describe the sexual mixing patterns during an outbreak of early stage syphilis in eastern North Carolina, when incidence increased from ~15 cases/100,000 person-years to > 80/100,000.
Methods: State health department surveillance records were used to compile the sexual networks among cases and their infected sex partners, diagnosed with syphilis during Oct 1998 - Dec 2002. We assessed sexual mixing patterns with respect to residential zip code and county, race/ethnicity, age, and sexual activity. The extent of assortative sexual mixing was measured with the "assortative coefficient" (AC). In social/sexual networks, AC values < 0 are rare; values > 0.35 reflect assortative and values < 0.15 reflect discordant mixing.
Results and Conclusions: A total of 1419 cases formed 1234 sexual partnerships that were distributed across 386 network components; the largest component comprised 241 cases and 378 partnerships. Overall, 78% of partnerships were heterosexual and most were among people residing in the same county (87%); 57% lived in the same zip code. Age mixing age was discordant (AC=0.13 95%CI [0.10, 0.16]), particularly for adolescent females. Among women < age 20, 25% had partners ≥age 30. The majority of cases were Black (61%), and 17%, 16%, and 6% were white, Native American, and Hispanic, respectively. Mixing for race/ethnicity was assortative (AC= 0.43 [0.39, 0.46]). Native Americans comprised half of the cases (119) in the largest network component. 28% of cases were monogamous. Although mixing with respect to concurrent sex partners was highly assortative (AC=0.72 [0.76, 0.66]), degree assortativity for total sex partners indicated greater discordant mixing (AC=0.23 [0.20,0.26]). 61% of women and 56% of men, who had 2 sex partners, were linked to cases with 3-21 sex partners. These mixing patterns suggest the outbreak was localized, yet extended to lower risk persons.

P4.27

SOCIO-DEMOGRAPHIC AND ECONOMIC FACTORS ASSOCIATED WITH SYPHILIS RATES IN THE UNITED STATES: 2001-2005

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Background: Infectious syphilis rates in the United States declined 90% between 1990 and 2000, but these rates have been increasing since 2001. In this analysis we want to explore the associations of socio-demographic and economic factors with syphilis incidence rates at the county level, and generate hypotheses regarding factors that may influence these rates.
Methods: Average annual incidence rates (per 100,000 population) of P & S syphilis for 3140 U.S. counties were calculated from cases reported to CDC from 2001 to 2005. 1308 counties which reported at least one case of syphilis during this period were considered in this analysis. Data for 42 selected socio-demographic and economic factors for 2001-2005 were obtained from the US Census Bureau. Pearson's correlation coefficients were calculated to assess associations between these variables and infectious syphilis rates. A multiple regression model with syphilis rates as dependent variable, and socio-demographic & economic factors as independent variables was built to find factors associated with syphilis rates.
Results: Thirty four of the 42 socio-demographic and economic factors were significantly ($p < 0.05$) associated with the average (2001-2005) syphilis rates. In multivariate regression model nine factors; percentage of white population, percentage of high school graduates, no. of social security beneficiaries per 100,000 population, percent of households with income more than $75000, percent owner occupied housing, no. of housing units per square mile, no. of robberies per 1000 population, personal per capita income, and percentage of households with children under 18 years of age accounted for 37% of the variation among these rates.
Conclusions: Socio-demographic and economic factors are highly correlated with the average annual 2001-2005 syphilis incidence rates among the U.S. counties. Control strategies based upon socio-

demographic & economic factors associated with syphilis incidence rates may reduce the disease incidence.

P4.28

EPIDEMIOLOGIC AND CLINICAL CORRELATES OF MYCOPLASMA GENITALIUM (MG) IN A U.S. POPULATION AT HIGH RISK FOR STI

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Objectives: To study the epidemiologic and clinical correlates of MG infection in two STI clinics in the Southeastern U.S.
Methods: Women (n=275) 18 and older were recruited from STI clinics in New Orleans (NO), LA and Jackson, MS. Demographic, behavioral and clinical information were collected. Endocervical swabs were tested for CT, GC, and MG (Genprobe AC2 assay) and used for gram stain; vaginal swabs were tested for MG, by the AC2 assay and used for gram stain and wet mount. MPC was defined as either yellow endocervical discharge or a mean cervical PMNL count ≥30. Data were analyzed using SAS.
Results: The study population was 99% African American (AA). MG was diagnosed in 16.7 % of women. These women had a median age of 23 compared to 24 among women without MG. Number of sex partners in the last year and last 2 months did not correlate with MG infection nor did the occurrence of a new partner in the last 2 months. Infection rates for CT and GC were 18% and 10% respectively. MG was present in 24% of women with CT compared to 15% of those without CT. (P=0.056 by 1-tailed Chi Square test). There was no association with GC infection. MPC was diagnosed in 54% of women. The proportion of infected women with MPC was as follows: CT 74%, GC 73% and MG 54%. P values were 0.003, 0.044 and 0.98 respectively. MG also was not associated with cervical friability. Median endocervical PMNL counts in MG positive women were 25 vs. 32 in women without MG.
Conclusions: MG is common in this population but does not appear to be associated with endocervical inflammation as is the case with CT and GC. These data are consistent with a previous study of 400 women conducted in the NO STI clinic (Lillis R., et al. Presented at the 2004 IDSA meeting). Both studies show strong association of MPC with CT and GC but not with MG. AA women may respond differently to MG than do Caucasian and Asian women in whom an association of MPC with MG has been described.

P4.29

RECTAL BEHAVIORS, REPORTED SYMPTOMS, AND ANORECTAL SIGNS OF MEN AND WOMEN IN LOS ANGELES AND BALTIMORE

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Background: Prevalence of rectal symptoms, signs and behaviors among men and women are needed for STI/HIV research such as microbicide trials.
Methods: From October 2006-December 2008, 645 men and women from the UCLA IPCP U19 0606414 in Los Angeles and Baltimore completed computer-administered self interviews about sexual and hygiene behavior and anorectal symptoms and underwent high resolution anoscopy (HRA) at x 16 magnification to detect distal rectal and anal clinical signs. Half of men sampled practiced receptive anal intercourse (RAI) in the past month and half of women in the past year. Frequencies of behaviors, reported symptoms, and HRA-noted clinical signs are presented. Associations of signs and symptoms were analyzed; demographics and behaviors with numbers of signs were tested using multivariate regression.
Results: Overall 53.8% were male, 52.6% African-American, 38.1 % HIV positive, with median age of 41.3 years. By HRA 20% had hemorrhoids, 4.2% swelling, 3.8% internal bleeding, 3.6% leucoplakia, and 3.2% erythema which had the most and strongest associations with symptoms (ORs 2.6-4.5). 23% reported itching associated with 5 signs, 11% reported outside burning associated with 5 signs. In multivariate models more signs by HRA were associated with: having RAI and being older (OR 1.02, CI 1.00-1.04), HIV+ and older (OR 0.96, CI 0.93-0.99), Hispanic (OR 0.22, CI 0.05-0.9), Black and male (OR 0.45, CI 0.23-0.89), other ethnicity and male (OR 0.27, 9 CI 0.08-.89), and more partners past month (OR 1.01, CI 1.0-1.02).
Conclusions: Findings report baseline levels of rectal signs, symptoms and behaviors expected in STI/HIV prevention trials for those who do and do not practice RAI. Most detected signs were associated with reported symptoms, suggesting self-reports may be useful for interim monitoring of side effects and to help discriminate microbicide and/or applicator-induced findings from possible baseline norms.

P4.3

COMMUNITY DEFINITIONS OF COMMUNITY: WHY THEY ARE SO IMPORTANT FOR HIV AND STD PREVENTION

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Background: Community-level interventions must be counted among the most effective available for preventing HIV and other STD. Community has been defined as "a collective of people identified by common values and mutual concern for the development and well-being of their group or geographical area" (Green & Kreuter, 1999:504), but members of distinct communities may have different conceptualizations of what constitutes a community, and how belonging (or not) affects their personal lives. We assessed how various conceptualizations influenced the perceptions and behavioral patterns of racial and ethnic minority young adults.
Methods: A cross-sectional computer-assisted telephone survey of randomly selected African American, Haitian, other Caribbean, and Hispanic 18-39 year-old adults living in 12 high AIDS-incidence ZIP-code areas of Broward County was conducted in 2007. Interviews were conducted in English, Spanish, or Haitian Creole, depending upon the preferences of respondents. Responses were tabulated by self-reported ethnicity and analyzed by Pearson's Chi-square test.
Results: Half (50.3%) of the 2,009 respondents equated "their community" with "their neighborhood," but African Americans (53.4%) were most likely and Hispanics (46.6%) least likely to do so (P<.001). Haitians were significantly more likely than others to identify with the place where they grew up (13.3%), ethnic group (6.3%), or nationality (6.3%). African Americans (32.6%) and Haitians (29.7%) were much more likely than other Caribbean (15.7%) and Hispanic (13.8%) young adults to agree that AIDS was affecting their communities more than diabetes, drug abuse, or gonorrhea (P<.001), but African Americans and Hispanics were more likely to have taken steps in the past 12 months to address the problem of HIV/AIDS.
Conclusions: Successful community-level interventions evolve out of an understanding of how diverse groups perceive STD, assess their relative importance, and decide how best to eliminate them.

P4.30

INFLUENCE OF FOREIGN TRAVEL ON RISK OF SEXUALLY TRANSMITTED INFECTIONS

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Background: Casual travel sex may result in the acquisition and introduction of novel strains of sexually transmitted infections (STIs). This study investigated the impact of changes in sexual behaviour associated with international travel on the epidemiology of STIs.
Methods: We carried out a cohort study. University students were invited to complete a series of questionnaires online, before and after the summer break. Univariable and multivariable Poisson regression was used to estimate relative risk of factors associated with casual sex during holidays.
Results: The cohort study suggests that people who travelled abroad are more likely to develop new sexual partnerships (aRR 2.70, 95% CI 1.11-6.61). The risk factors associated with casual travel sex identified in this cohort include young age, male gender, single, travelling alone or with friends and a previous history of multiple sexual partners or an STI. Additionally, we identified that sexual relations after holidays are also more likely in those who travelled abroad (RR 1.29, 95% CI 1.09-1.53). Greater testing for STIs after the summer break was also associated with foreign travel.
Conclusion: International travel enhances people's risk taking behaviour leading to greater rates of casual sex and unprotected intercourse. These findings are consistent with the results of a previous systematic review of observational studies. The changes in sexual behaviour are sustained even after travel, resulting in people who travelled abroad widening their sexual networks and increasing the chance of onward transmission of infections acquired abroad.

P4.31

THE ANATOMY OF AN EPIDEMIC: LYMPHOGRANULOMA VENEREUM (LGV) IN THE UK: 2004 TO 2008

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Objectives: To explore the development of the epidemic in terms of the characteristics of those infected, the geographic spread of disease, and the implications for the delivery of sexual health services.
Methods: Multivariable poisson regression

Results: The UK LGV epidemic, the largest in Europe, is largely endemic driven with primary transmission foci in London, Brighton and Manchester. Between 4 Oct 2004 and 31 Dec 2008, 6608 specimens were received of which 854 were found to be LGV positive. 99% of cases were seen in men who have sex with men (MSM) with a median of 3 (range 0-215) sexual partners in the past 3 months. Geo-mapping showed that most diagnoses were made within London (72%), Brighton (8%) and Manchester (4%) with sporadic cases seen through the rest of the UK. Multivariable analysis showed that over time there was a significantly higher number of diagnoses made in 2005 compared to other years (rate ratio=2.27, 95%CI 1.70-3.04:p<0.001). A higher frequency of cases was also significantly associated with white ethnicity (RR=8.39, 95%CI 6.59-10.67:p<0.001), age ≥25 (RR=22.97 95%CI 15.83-33.31:p<0.001), HIV infection (RR=2.47: 95%CI 2.08-2.94:p<0.001), attending clinical services with symptoms (RR=5.50 95%CI 4.47-6.75:p<0.001), and being diagnosed within London (RR=2.56, 95%CI 2.17-3.03;p<0.001). Of those infected with HIV, 51% (251/491) were on HAART.
Conclusions: The association with symptomatic disease and the limited number of detected cases suggests that the LGV epidemic is sustained through sexual contacts within dense sexual networks. The characteristics of onward HIV transmission, such as recent HIV infection and higher viral load, illustrate the close links between the epidemics. Control is centred on offering testing during routine clinical care to HIV positive MSM who have symptoms of LGV infection and have a positive test result for *Chlamydia trachomatis*.
Submitted on behalf of the LGV Incident Group

P4.32

GENITAL HERPES IN CANADA: DECIPHERING THE HIDDEN EPIDEMIC
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Background: Genital herpes (GH) is the most common cause of genital ulceration but not reportable in Canada. Past research in the U.S. has found that less than 10% of seropositive reported a diagnosis of GH. This paper investigates the rates of diagnosed and treated cases of GH in Canada from 2002 to 2007.
Methods: Primary case-diagnosis data on GH was obtained from the Canadian Disease and Therapeutic Index, a proprietary database maintained by IMS Health Canada, which collects "diagnosis visits" from a representative sample of office-based physicians stratified by geographic regions and representing all major specialties.
Results: Between 2002-07, approximately 84,398-122,456 cases in Canada were diagnosed annually with GH and treated. During this period, between 62,502-110,082 single-episode cases (~74%-93%) made at least one physician visit. In 2007, 118,044 patients (356.2 per 100,000 population) were diagnosed and treated with GH in Canada. The annual rate of diagnosis of GH ranged from 261.2 per 100,000 population to 386.6 per 100,000 population, and the unicohort risk (the number of people expected to produce a single case) of diagnosis with GH ranged from one in 258.7 persons to one in 382.9 persons. These data include both incident and prevalent GH cases, but are likely an underestimate since they only represent "diagnosed and treated cases."
Conclusion: This is the first time that administrative data have been used to estimate the annual incidence of diagnosed cases of GH in Canada. Systematic national seroepidemiological and clinical research studies are required to gather prevalence and incidence data and to assess the determinants of genital herpes in Canada. Without these studies it is difficult to determine the actual burden of infection and to allocate appropriate diagnostic, treatment, and preventive counselling services.

P4.33

GENITAL ULCERATIONS ASSOCIATED WITH RECURRENT EPSTEIN-BARR VIRUS INFECTION IN AFRICAN WOMEN
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Background: Epstein-Barr virus (EBV) infection in genital ulcers has rarely been reported and only during primary EBV infection. We report prevalence and characteristics of EBV detection in genital samples of women with genital ulcer disease participating in a randomised controlled trial of episodic HSV-2 treatment in Ghana and Central African Republic.

Methods: At trial enrolment, HIV, HSV, EBV and syphilis serologies were performed and presence of HSV, CMV, EBV, Haemophilus ducreyi, Treponema pallidum, Klebsiella granulomatis and lymphogranuloma venereum was sought by PCR from an ulcer swab. Levels of EBV DNA and transcripts of the Gp350 major EBV envelope glycoprotein were quantified in whole blood and the acellular fraction of a cervicovaginal lavage (CVL) using real time PCR. EBV genotypes were determined by Gp350 sequencing.
Results: Of 441 enrolled women, HIV seroprevalence was 46% and HSV2 seroprevalence 78%. Lesional HSV-2 DNA was detected in 50% and lesional EBV DNA in 36 (8.2%), of whom 24 had no other detectable ulcer aetiology and 4 had CMV-EBV co-infection. All 36 women had a serological pattern of past EBV infection and most were HIV-1 (97%) and HSV-2 (89%) seropositive. Among 24 women with lesional EBV DNA only, 10 also had EBV DNA detected on a cervical swab and 15 (out of 21) on CVL. EBV DNA loads in CVL and blood were 7.82 and 5.32 log10 copies/ml, respectively. In 65% of EBV-positive CVL, Gp350 transcripts were detected with a mean 7.4 log10 copies/ml, suggesting local viral replication. Most blood samples (97%) were positive for EBV-1 DNA only, while 38% of CVL were positive for EBV-2 or EBV-1 and EBV-2 DNA.
Conclusion: Our results suggest that replicative EBV infection can be observed in the genital tract of women with genital ulceration, and not only during a primary EBV infection. The detection of late transcripts and the compartmentalization between blood and the genital tract suggest a role of EBV as an aetiology of genital ulcerations in this population.

P4.34

EPIDEMIOLOGY OF HSV-2 INFECTION IN RURAL AND URBAN BURKINA FASO
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Background: There is an epidemiological evidence that HSV-2 infection enhances both HIV susceptibility and subsequent sexual transmission. Both infections are very common in sub-Saharan Africa, with considerable variation between geographical areas and population groups. As few data on HSV-2 prevalence are available from West Africa, the aim of this study was to describe the prevalence of HSV-2 among the general population and pregnant women in Burkina Faso.
Methods: We conducted i) a two-stage clustered population-based survey among adults aged 15-49 years in Ouagadougou, the capital city of Burkina Faso, and ii) a cross-sectional among attendees of all antenatal clinics from 4 provinces of the country. HSV-2 infection was diagnosed using a specific IgG2 ELISA test (Kalon®).
Results: A full set of data was available for 3962 out of the 4870 participants enrolled . The prevalence of HSV-2 among pregnant women (n=2018) was 18.0% (95% confidence interval [CI]; 16.3%-19.7%) overall, with 17.3% (CI, 15.5%-19.2%) in rural areas and 21.4% (CI, 17.2%-26.2%) in semi-urban areas. Of the 883 women and 791 men enrolled in Ouagadougou, prevalence of HSV-2 was 23.7%(CI, 20.9%-26.6%) and 15.3%(CI,12.9%-18.0%) respectively. The prevalence of HIV was 2.6%(CI, 1.9-3.4) among antenatal attenders (2.0% in rural areas and 5.6% in semi-urban areas) and 4.3%(CI,3.4%-5.4%) in the urban area. In multivariable analyses, women with older age ($p<0.001$), living in the urban area ($p=0.009$), using oral contraceptives($p=0.004$), with bacterial vaginosis (BV) ($p<0.001$) and with HIV ($p<0.001$) have an increased prevalence of HSV-2. Among men, increased age ($p<0.001$) and HIV ($p=0.02$) are factors independently associated with HSV2.
Conclusion: HSV-2 prevalence was similar as recent reports from the general population in Western Europe. The urban-rural gradient of HIV-1 prevalence was also observed for HSV-2 infection. This study also confirmed the relation between HSV-2 and BV.

P4.35

TRANSCRIPTION MEDIATED AMPLIFICATION TO DETECT AETIOLOGICAL AGENTS OF URETHRITIS IN SYMPTOMATIC MEN IN PRETORIA, SOUTH AFRICA.
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Objective: To determine the prevalence of urethritis pathogens (*Neisseria gonorrhoeae* (NG), *Chlamydia trachomatis* (CT), *Trichomonas vaginalis* (TV) and *Mycoplasma genitalium* (MG) in symptomatic men using a transcription mediated amplification (TMA) assay.
Methods: Endourethral swab and urine specimens were collected from 300 men presenting with discharge and/or burning of micturition to a private medical practitioner in Pretoria from August 2007 and June 2008. The swab was spread onto a microscopic slide and Gram stained for microscopic evaluation of urethritis (the presence of five or more polymorphonuclear leukocytes (PMNLs)/high power

field (HPF)). Urine specimens were analysed for NG and CT using GenProbe Aptima Combo2 and for TV and MG with GenProbe research TMA assays.
Results: NG was detected in 16.7%, CT in 12.3%, MG in 17.3% and TV in 8.0% of the patients. Microscopic evidence of urethritis was seen in 37.7% of the urethral smears from patients with discharge and in 9.7% of those with burning on micturition only. NG was detected in 42 (44.6%) of the 94 patients with discharge, followed by MG (19.1%), CT (9.5%) and mixed infections with NG and MG in 6.3%. In the 206 patients without discharge, MG was detected most frequently (10.2%), followed by CT and TV (both 6.7%) and NG (1.9%) Mixed infections with CT + MG; TV +MG and CT + TV were seen in 2.9% of these specimens.
Conclusions: The study showed a high prevalence of all urethral pathogens in adult men with symptoms of urethritis. Whilst NG was the commonest pathogen detected, *M. genitalium* was found in higher percentage of men with urethritis than *C. trachomatis*. The findings of this study have implications for adequate and comprehensive management of symptomatic men presenting with urethral complaints.

P4.36

DETECTION OF MYCOPLASMA GENITALIUM, UREAPLASMA UREALYTICUM AND CHLAMYDIA TRACHOMATIS IN MEN PRESENTING WITH NGU IN SINGAPORE
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Background: Chlamydia trachomatis is known to cause up to 50% of non-gonococcal urethritis (NGU) and Mycoplasma Genitalium and Ureaplasma Urealyticum have been shown to cause an additional 10 to 20%. Up till recently, these latter two organisms have not been easy to isolate. Recent advances in diagnostics have enabled the use of PCR to detect Mycoplasma Genitalium, Mycoplasma Hominis and Ureaplasma Urealyticum in urine from men presenting with symptoms of urethritis. The objective of this study was to determine the role of Mycoplasma Genitalium, Mycoplasma Hominis, Ureaplasma urealyticum and Chlamydia trachomatis in men presenting with acute NGU in Singapore.
Methods: Male patients with symptoms and a positive urethral swab microscopy confirming NGU were recruited into the study. Urine was collected (after holding urine for at least 4 hours) and tested by PCR for Chlamydia Trachomatis, Ureaplasma Urealyticum, Mycoplasma Hominis and Mycoplasma Genitalium. Patients with confirmed NGU were treated with doxycycline 100mg bd for 1 week and a microscopic test of cure was performed at 2 weeks.
Results: 96 patients diagnosed with NGU were recruited into the study. Mycoplasma genitalium was detected in 11.5 %, Mycoplasma Hominis in 5.2%, Ureaplasma urealyticum in 2.1% and Chlamydia trachomatis in 38.5% of patients. Four patients (4.1%) were coinfected, with 2 patients having both Chlamydia trachomatis and Mycoplasma hominis, 1 patient having Mycoplasma genitalium and hominis and 1 patient having both Mycoplasma genitalium and Chlamydia trachomatis coinfection.
Conclusions: This study confirms that Mycoplasma genitalium has a significant role to play as a causal organism of acute NGU. These results from our Asian population are similar with that found in studies conducted in Caucasians. Chlamydia trachomatis was the causal organism in 38.5% of our patients. This study also highlights a possible role of Mycoplasma hominis and Ureaplasma urealyticum as possible pathogens in NGU.

P4.37

MYCOPLASMA GENITALIUM ANTIBODIES AND LONG TERM REPRODUCTIVE SEQUELAE AFTER PELVIC INFLAMMATORY DISEASE
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Objective: As Mycoplasma genitalium has been identified as a cause of pelvic inflammatory disease (PID), our objective was to determine the risks of long term sequelae among PID patients with serologic evidence of M. genitalium infection.
Methods: We studied a pilot sample of 45 women with mild to moderate PID enrolled in the PID Evaluation and Clinical Health (PEACH) Study from whom both baseline and follow-up archived sera were available. Pregnancy, live birth, infertility, chronic pelvic pain, and recurrent PID were assessed over a mean of 84 months. M. genitalium antibodies measured using Western Blot were assessed in relation to sequelae, adjusting for age, race, chlamydia, and gonorrhea. Models predicting pregnancy, infertility, and live birth were additionally adjusted for baseline infertility history.
Results: At baseline, 26 women (58%) had serologic evidence of M. genitalium infection. Women who tested positive were more likely to have histologically confirmed endometritis (OR 10.5, 95% CI 1.9 - 59.3). In the final year of follow-up, 34 women (76%) tested positive for antibodies, representing cumulative M. genitalium exposure. Although comparisons were not statistically signficant, these women were more likely to be categorized as infertile (AOR 4.3, 95% CI 0.3 - 64.1) and less likely to have

become pregnant (AOR 0.2, 95% CI 0.0 - 3.4) or experienced a live birth (AOR 0.1, 0.0 - 1.9). Consistent with our prior finding that women with M. genitalium upper genital tract infection are more likely to have muted symptoms, those with serologic evidence of M. genitalium were less likely to have chronic pelvic pain (AOR 0.3, 95% CI 0.0 - 1.6) or be diagnosed with a recurrent episode of PID (AOR 0.6, 95% CI 0.1 - 4.1).
Conclusions: Among women with mild to moderate PID, a positive M. genitalium antibody test was common, and exhibited a trend toward associations with increased infertility and decreased pregnancy, live birth, chronic pain, or recurrent PID diagnosis.

P4.38

THE MICROBIOLOGICAL AND SOCIOBEHAVIORAL CORRELATES OF MYCOPLASMA GENITALIUM INFECTION IN WOMEN WITH CLINICALLY SUSPECTED PELVIC INFLAMMATORY DISEASE
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Objective: *Mycoplasma genitalium* has been identified as a cause of pelvic inflammatory disease (PID), the inflammation of the female upper genital tract which may result in serious reproductive sequelae. As the demographic, behavioral and sexual risk profile of women with *M. genitalium* is not well understood, we sought to describe the risk factors of *M. genitalium* among women presenting with clinically suspected PID.
Methods: Data from 586 participants in the PID Evaluation and Clinical Health Study were analyzed. Sexual history, demographic and behavioral characteristics were compared between women testing positive and negative for *M. genitalium* as determined by polymerase chain reaction (PCR), and between *M. genitalium* positive women and *Chlamydia trachomatis* and/or *Neisseria gonorrhoeae* positive women. As the profiles of women with cervical *M. genitalium* were similar to women with endometrial *M. genitalium*, comparisons using combined cervical and/or endometrial *M. genitalium* results are presented.
Results: Being younger than 25 years old (OR 2.7, 95% CI 1.5-4.8), smoking (OR 2.0, 95% CI 1.3-3.3) and *C. trachomatis* and/or *N. gonorrhoeae* infection (OR 2.4, 95% CI 1.4-4.2) were independently associated with *M. genitalium*. Over 66% (43/65) of women who tested positive for *M. genitalium* were positive for *C. trachomatis* and/or *N. gonorrhoeae*. Characteristics of women with *M. genitalium* only were similar to women with *C. trachomatis* and/or *N. gonorrhoeae*.
Conclusions: Women who tested positive for chlamydia or gonorrhea were significantly more likely to have an *M. genitalium* infection than women who tested negative for chlamydia or gonorrhea. The demographic, behavioral and sexual characteristics of *M. genitalium* positive women were similar to women with chlamydial and/or gonococcal-PID.

P4.4

IMPLEMENTING THE UK NICE RECOMMENDATIONS ON ONE-TO-ONE RISK REDUCTION DISCUSSIONS IN A SEXUAL HEALTH CLINIC: CHALLENGES AND OUTCOMES
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Objectives: To evaluate implementation of NICE guidance (2007) that a structured 15-20 minute discussion based on a theory of behaviour change should be offered to all patients at risk of an STI or under 18 conception. Preparation included three hours training in Motivational Interviewing (MI) for health advisers, to whom patients were referred for risk reduction, followed by individual supervision from a clinical psychologist over two months.
Methods: Case notes were reviewed for evidence of risk reduction discussions for 115 patients seen by a HA during February 2008. 'In-depth discussions' were assumed if detailed documentation suggested a consultation time of 15 minutes. Use of MI was assumed if concepts relating to the model were used in documentation, such as 'readiness to change', 'importance / confidence' assessment,' decisional balance' and 'developing discrepancy'.
Results: Of 115 patients interviewed by a HA, 67 (58.3%) were at risk / eligible for structured discussion. Condoms discussion was documented for 58/67 (86.6%). Evidence of in-depth discussion was recorded for 17/67 (25.4%), but only 2/17 suggested MI had been used. Perceived contributory factors included lack of time, focus on partner notification or other priorities, telephone interviews unsuitable for MI, and poor documentation.
Conclusions: Condom use was addressed with the majority of at-risk patients, but structured discussions recommended by NICE were only offered to a minority, despite additional HA training. Further HA resources are required to accommodate extended interview time. Further training, and a pro forma to prompt and document use of MI, may be beneficial.

P4.40

REACHING MSM THROUGH THE INTERNET BY ESTABLISHING COLLABORATIVE PARTNERSHIPS BETWEEN PUBLIC HEALTH AND ONLINE COMMUNITIES

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Background: The continued growth of Internet based MSM communities, often at risk for HIV and other STIs, demands that public health organizations partner in more meaningful ways with each other and with online venues to reach at risk populations. Public health and community based organizations have been slow to incorporate Internet technology into their programs.
Methods: Through CDC funding, National Alliance of State and Territorial AIDS Directors (NASTAD) and National Coalition of STD Directors (NCSD) have partnered to consult with Adelson Consulting Services to create and support a National Public Health and Internet Liaison that acts as a coordinator, program facilitator, and point of contact between communities online and public health organizations, coordinating outreach, partner services and health communication efforts.
Results: Through the creation of a Public Health and Internet Liaison there is a coordinated effort, both at the community level and the national level, to facilitate collaborative relationships between health departments, CBOs, and online communities for Internet interventions. Internet technology increases potential collaborations and is an efficient tool that assists in HIV/STD prevention, education, and disease intervention within online communities through information distribution and collaboration.
Conclusions: A national level liaison has been, and can be, an effective negotiator for health communication and public services messages conducted through online venues. A national level liaison is able to provide support to departments and organizations looking to perform partner services or outreach in a centralized, coordinated manner. Outreach, partner services, and health communication are well tolerated, effective, and have been integrated into the most popular MSM online communities they serve. Having a Internet Liaison has strengthened the relationship between two major National organizations; NASTAD and NCSD.

P4.41

AN INTERNET SURVEY OF LUBRICANT USE AND PREFERENCES FOR ANAL SEX IN LATIN AMERICA

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Background: Successful introduction of Rectal Microbicides (RM) will require understanding lubricant use and preferences among people who practice anal intercourse (AI) but few data exist specific to Latin America and the Caribbean (LAC) where RMs may eventually be introduced.
Methods: An international internet survey was conducted during 29 weeks in 2007 which examined lubricant use and preferences among men and women reporting AI in the previous six months.
Results: Of 8,495 worldwide respondents, 202 (2.4%) were from LAC, reported AI in the previous 6 months and answered questions regarding lube use and preferences. Respondents represented 24 countries with the majority from Mexico (63 or 31.2%), Brazil (34 or 16.8%) and Puerto Rico (22 or 10.9%). Most (88.6%) were male and age groups were fairly evenly distributed: 27.7 % under 25 years; 25.5% between 25-34; 31.7% between 35-44; and 15.4% over 45 years old. Unprotected receptive AI was common: 39.1% never or rarely used a condom. Reasons for *not* using lube during anal sex included: used saliva (56.2%), lube unavailable (41.9%), used lubricated condom (24.8%), and self or partner was rushed (25.7%); a minority reported disliking lube (6.7%), lube cost (7.6%) or partner refusal of use (4.8%). Lube use did not interrupt sex for 69.9% of respondents. Few participants specifically preferred lubes that were flavored (10.1%), colored (0.6%) or fragranced (9.2%), but 72.8% preferred water-based lubes.
Conclusions: RMs formulated as water-based, flavorless, colorless and odorless lubricants would likely be acceptable to this population if available. No major lube use barriers were identified, but RMs may require special interventions for those who only use saliva, lubricated condoms or are rushed. The internet study design and small sample size dominated by 3 countries may not represent the entire LAC region, warranting expanded investigation.

P4.42

DEVELOPMENT AND IMPLEMENTATION OF A SYSTEMATIC SELECTIVE INTERNET-BASED CHLAMYDIA SCREENING PROGRAM, THE NETHERLANDS 2008-10: RATIONALE AND DESIGN

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Objectives: Available data suggest that screening for Chlamydia trachomatis (Ct) in highly urbanized areas and according to risk profiles could be the way forward. The Dutch Minister of Health issued a directive to develop and implement a demonstration program for sustainable Ct screening. Here, we describe the rationale, design and implementation of the program.
Methods: A Delphi procedure, involving different actors and based on best available evidence, resulted in embarking on a systematic, proactive, selective, internet-based program.
Results: Using population registers, invitational letters (n=315.000) with personal login code are sent to all 16-29yr citizens in Amsterdam, Rotterdam and to municipalities of S-Limburg. Sexually active persons are invited to participate twice in three years. In the lower prevalence S-Limburg area, invited persons perform self-selection on-line by filling in a validated risk-score. Internet and sms are instrumental to logistics, communication and data collection. At the program's website (www.chlamydiatest.nl), eligible's find relevant information, can order sampling materials, view instruction video's and get their personal test result. Ct-positives can print a referral letter, and partners can be notified (also) by a email service. Screening is operational since April 2008. Preliminary results show a positivity rate of 4.3%. Almost 20% requested a test package of which 80% was returned (see abstract process evaluation).
Conclusions: This large-scale screening program aims to make a step forward in Ct-control activities in the Netherlands and to demonstrate feasibility, (cost-)effectivity and impact. The outcome of this program will be leading for the decisions about a national roll-out of screening.

Three local PHS implement the screening; STI AIDS Netherlands coordinates the project that is funded by the Dutch Organisation for Health Research and Development (ZonMw). The Centre of infectious Disease Control, RIVM, performs the evaluation.

P4.44

PREDICTORS OF DELAYED SEXUAL DEBUT AMONG 15-24 YEAR-OLD YOUTH IN THE GENERAL POPULATION

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Objective: To determine predictors of delayed sexual debut among 15-24 year-old youth in the general population.
Methods: In this cross-sectional study, every 4th household was systematically sampled in randomly selected clusters and everyone aged 15-49 who slept in the house the night before the interview was eligible. Data were collected on socio-economic and demographic attributes and then behavioral and cultural factors. Bivariate analysis was used to establish factors associated with delayed sexual debut defined as experiencing first sex after age 16 which is the age of legal sexual assent. The factors that were significant at bivariate level were then modeled into Cox proportional regression using the forward stepwise method to determine those that were independently associated with delayed sexual debut.
Results: Of the 910 youth aged 15-24, 55% were female and 95% were Christians. About half (53%) had completed at least a primary level of education and 80% were of Luo ethnicity. Delayed sexual debut was reported by 24% of women versus 27% of men (HR 0.68; 95% CI 0.51-0.81) and by 32% of participants with post-secondary education versus 20% with primary level education (HR 0.74; 95% CI 0.54-0.998). Female participants (HR 0.68; 95% CI 0.51-0.81) and those with electricity in the house (HR 0.68; 95% CI 0.49-0.93) were less likely to report delayed sexual debut, while those who reported having smoked marijuana were more likely (HR 1.57; 95% CI 1.06-2.33). After adjusting for confounders, women were less likely (Adjusted Hazard Ratio [AHR] 0.69; 95% CI 0.52-0.93) and those with electricity in the house were less likely (AHR 0.71; 95% CI 0.52-0.98) to have delayed sexual debut.
Conclusion: Young women and youth with higher socio-economic status (having electricity) were less likely to delay sexual debut. Therefore, STI/HIV prevention programs, including efforts that encourage delayed sexual debut, should ensure that these at risk populations are reached.

P4.45

SEXUAL HEALTH CONCEPTS OF ADOLESCENTS TO BUILD SELF-EFFICACY IN AN URBAN TOWNSHIP OF SOUTH AFRICA

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Objectives: We sought to assess knowledge, attitudes, and barriers to condom use amongst youth in an urban township of Alexandra in South Africa whereas national HIV cases amongst youth 15-24 are over 1 million and a 16% prevalence amongst girls under 20 years of age is reported. Understanding youth perspectives around sexual health may reveal unmet educational, clinical, and social support needs as a framework for an HIV/STI prevention intervention.
Methods: In October 2008, we conducted 4 focus groups with a total of 40 teens aged 16-19 from Alexandra youth centers. We conducted focus groups based on gender and age in English and local languages. Teens discussed perceptions of STIs, condoms, accessibility of health services, commodities and information. Teens also viewed existing, short animations promoting condom use to prompt discussion and understand acceptable images. Data were analyzed using NVivo7 software.
Results: Teens reported high awareness about STIs/HIV symptoms and care and expressed desire to gain more practical information about STIs/ HIV, including condom use. We identified a persistent theme of distrust of no-cost government condoms, described as unnatural, inhibiting sensation, not "special", likely to break, and infected with HIV or other STIs. Teens lacked knowledge of water-based lubricants but reported use of "oils" (oil-based lubricants). Both boys and girls reported that young men tend to see pregnancy as desirable, while girls were mixed, reporting pros and cons. Teens were generally interested in condom skills building and the use of animation for prevention messages.
Conclusion: Alexandra teens face multiple challenges to correct and consistent condom use. Important intervention components should include accurate information about condom efficacy and use of lubricants. Intrinsic cultural values around masculinity and intimacy conflict with consistent condom use and may need to be addressed.

P4.48

SEXUAL ATTITUDES AND BELIEFS CONCERNING SEXUAL RELATIONSHIPS AMONG ADOLESCENT WOMEN WITH STI AND INTERPERSONAL VIOLENCE

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Objective: Learning about intimacy in relationships with others is another important developmental task during adolescence. The occurrence of interpersonal violence disrupts intimacy development which informs the process for becoming a sexual being. Society can assist adolescent women experiencing interpersonal violence to understand their sexual nature and make informed sexual decisions. This requires a contextual understanding of adolescent sexual development and effects of interpersonal violence on this process. This study describes attitudes and beliefs concerning sexual relationships among African-and Mexican-American adolescent women with interpersonal violence and STI.
Methods: African- and Mexican-American women (n=562) (aged 14-18 years) with STI and interpersonal violence were recruited from public-health clinics. Detailed self-report questionnaires concerning demographics, interpersonal violence and sexual attitudes and behavior were administered at study entry. Comparisons were conducted by self-reports of interpersonal violence.
Results: The environment in which these adolescent women interacted consisted of violence in the context of drugs, alcohol, runaway, juvenile delinquency and school dropout. Pregnancy and STI were outcomes or precursors within this environment. Depression and suicidal ideation were prevalent. Differential effects of abuse, particularly sexual abuse on attitudes and beliefs were identified. The attitudes and beliefs generated as a result of conflict within their environments translated to low expectations for relationships and limited control of cause and effect within sexual relationships and environments.
Conclusions: This study presents groundwork needed to provide an understanding about the contextual meaning of sexual relationships of adolescent women with interpersonal violence and STI and evolution of their attitudes and beliefs for sexual health promotion.

P4.49

A SYSTEMATIC REVIEW OF SCHOOL-BASED SKILLS BUILDING BEHAVIOURAL INTERVENTIONS FOR PREVENTING SEXUALLY TRANSMITTED INFECTIONS IN YOUNG PEOPLE

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Background: Prevention of sexually transmitted infections (STIs) remains a high priority. We conducted a systematic review of the effectiveness of behavioural interventions.
Methods: A number of sources, including electronic bibliographic databases, were searched for the period 1985 to March 2008. Eligible studies were: Randomised Controlled Trials (RCTs), evaluating school-based skill development interventions for safer sex (e.g. negotiation skills) amongst young people aged 13 to 19 years, reporting at least one sexual behavioural outcome. Studies were synthesised using narrative methods and, where possible, a meta-analysis. A qualitative thematic analysis of process evaluation data was also conducted.
Results: Fifteen RCTs met the inclusion criteria, most of which were conducted in the United States. Of the 15 RCTs, 12 were judged to be methodologically sound and were included in the analysis. In general there were few statistically significant differences in sexual behavioural outcomes between study groups. A meta-analysis was conducted for the general outcome of condom use. The fixed-effect odds ratio was 1.07 (95% Confidence Interval 0.88 to 1.30) indicating no significant difference overall between groups. Some statistically significant effects in favour of the intervention were found for measures of self-efficacy, and knowledge.
Conclusions: School-based behavioural interventions which provide information and teach young people skills for safer sex can bring about improvements in knowledge, and increased self-efficacy. There was limited impact on behaviour, although this may in part be due to relatively short follow-up and/or poor fidelity of implementation. Future RCTs could evaluate the effectiveness and appropriateness of sustained curriculum activities, accompanied by whole school approaches to sexual health, with input of parents, health services and other relevant stakeholders.

P4.5

FAMILY-BASED INTERVENTION FOR IMPROVING SEX-RELATED COMMUNICATION AND KNOWLEDGE IN LATINA MOTHERS AND DAUGHTERS IN LOS ANGELES COUNTY, USA
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Objectives: Describe the impact of a culturally-based, family intervention on sexual communication comfort levels and HIV/AIDS knowledge in Latina family dyads.
Methods: The intervention (8 hours total) was tested with 50 Latina mother and adolescent daughter dyads. Intervention content, and joint group discussions and activities focused on increasing: 1) knowledge of sexual risk, 2) recognition of cultural factors that impact risk, 3) parent-adolescent communication about sex, and 4) skills and self-efficacy in risk reduction. Changes in self-reported comfort with and communication about sex were assessed at pre-intervention, immediate posttest, and at one-month follow-up; changes in HIV knowledge were measured from pre-intervention to immediate posttest.
Results: Respondents estimated the number of conversations about sex with their related study participant (mother or daughter) in the past month at pre-intervention and follow-up. A significant increase in the reported number was observed in both groups. The paired t-statistic for adults was 4.004 (one-sided $p < 0.0001$) and for the youth, $t = 2.779$ ($p = 0.004$). Comfort levels with communication about sex with family and partners from pre-intervention to immediate post increased from 3.4 to 3.9 (on a scale from 1-5) for adults ($p<.001$) and from 3.2 to 3.7 for youth ($p=.003$). A significant increase in HIV knowledge scores was also observed for adults (paired t-statistic = 7.661; $p < 0.0001$), and for adolescents (t-statistic = 7.558; $p < 0.0001$).
Conclusions: This intervention shows promise in increasing communication about sexual health between Latina mothers and daughters.

P4.50

UTILIZATION OF HEALTH SERVICES IN U.S. PHYSICIAN OFFICES AND OUTPATIENT CLINICS BY FEMALE ADOLESCENTS: IMPLICATIONS FOR IMPROVING CHLAMYDIA SCREENING
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Objectives: Chlamydia screening of young sexually active women in the United States is low. Interventions targeting providers most likely to see sexually active young women will have the greatest impact. Our objective was to understand utilization patterns of adolescents and young women seeking health services in U.S. primary care physician offices and hospital outpatient clinics.
Methods: We analyzed data from two nationally representative health services surveys to estimate utilization patterns of women aged 9-26 years by two-year intervals and physician or outpatient clinic specialty from 2003-2006. Visits were classified as preventive or prenatal using provider-coded reasons for the visit, and as reproductive using diagnostic or procedural codes for pregnancy, contraception, STDs, or cervical cancer screening services provided at the visits.

Results: The number of physician visits by women aged 25-26 years (9.0 million) was about two times greater than the number of visits by girls aged 9-10 years (4.9 million). The proportion of visits to family practitioners (FP) increased slightly with age from 25% at aged 9-10 years to 30% at aged 25-26 years. With increasing age, a decreasing proportion of visits were made to pediatricians (PED) and an increasing proportion to obstetrician-gynecologists (OBGYN). By aged 17-18 years, a larger proportion of visits were made to OBGYN (33% of 7.0 million visits) and to FP (34%) than to PED (23%). The proportion of visits for reproductive health services peaked at 53% of 7.5 million physician visits at aged 21-22 years. Similar utilization patterns were observed for outpatient visits.
Conclusions: The healthcare utilization patterns of young women should guide the development of provider interventions to increase chlamydia screening. OBGYN and FP conducted the largest proportion of healthcare visits made by young women. These providers should be priority targets for interventions to increase chlamydia screening rather than PED.

P4.51

CHARACTERISTICS OF PREGNANT TEENAGERS ACCESSING AN INNER LONDON GUM SERVICE
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Background: Women ≤18 yrs in the UK have high rates of STIs and unintended pregnancy (UP). The UK Teenage Pregnancy Strategy aims to halve the rate of <18yrs pregnancy by 2010. We identified characteristics of pregnant teenagers (PTs) accessing a GUM service to enable targeting of interventions to reduce STIs and UP.
Methods: Retrospective case note review of all PTs ≤18 yrs attending a GUM service from 1/1/05 to 10/10/08.
Results: 124 case notes of 196 pregnancies were reviewed. Median age was 17yrs. Median age at coitarche was 15yrs. Black Caribbean and Mixed-Race PTs were over-represented (30% vs 19%; 20% vs 13%) and White British PTs were under-represented (21% vs 34%) compared to 1322 non-pregnant age-matched female clinic attendees. ≤18yrs pregnancy rate was 14.8%. 2/124 pregnancies were planned and 69/124 PTs intended to have a TOP. 26/124 reported previous pregnancy and 20/124 previous TOP. 77/124 had previously accessed a GUM service and contraception discussions were documented in 67/124 PTs in the preceding year. Contraceptive used: 92/124 condoms; 38/124 OCP; 3/124 Long Acting Reversible Contraception (LARC). None had used IUD/IUS. 31/124 had used Levonelle. 35/124 had previously had an STI diagnosed and 25/102 screened had an STI diagnosed at presentation. 105/124 had a regular partner. 28/46 with documented number of lifetime partners, reported only 1. Details of an additional 70 pregnancies will be included in the final presentation.
Conclusions: The majority of pregnancies were unplanned with many intending TOP. Impact of ethnicity needs further evaluation. STI rates were high despite a low number of lifetime partners. Increased uptake of LARC, promoting condom use, reinforcement of contraceptive advice and partner testing, may have a significant impact on reducing rates of STIs and UPs among women in this group. Integrated sexual health services may be an effective way of delivering this and timing of interventions in relation to coitarche needs to be considered.

P4.52

SUBSTANCE USE AND SEXUALLY TRANSMITTED INFECTION AMONG YOUNG ADULTS IN THE UNITED STATES
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Background: There are few studies of the longitudinal association between substance use and biologically-confirmed sexually transmitted infection (STI). Since substance use may influence STI risk differently for white and minority populations, analyses should be conducted stratified by race/ethnicity.
Methods: We used Wave I (1995: adolescence) and Wave III (2001-2002: young adulthood) of the National Longitudinal Study of Adolescent Health (N=13,123) to examine racial/ethnic differences in longitudinal associations between substance use in adolescence and sexual risk behaviors and STI in adulthood.
Results: STI prevalence was higher among blacks (18.6%) and Latinos (7.8%) than among whites (3.2%). Among whites, analyses adjusting for socio-demographic factors and baseline STI suggested that alcohol and marijuana were strongly associated with STI in adulthood; every five year delay in initiation of alcohol use was associated with a 30% reduction in adulthood STI risk (adjusted risk ratio (RR): 0.72, 95% confidence interval (CI): 0.57-0.93); adolescents who drank at least three times per week had greater than twice the risk of adult STI (RR: 2.48, 95% CI: 1.08-5.72); and marijuana use in the month prior to the Wave I survey was associated with approximately twice the likelihood of STI in adulthood. Among minorities, there is little evidence that alcohol and marijuana use contribute to STI. In

this group, while one-time experimentation with crack/cocaine in adolescence was associated with greater than twice the risk of STI in adulthood, more frequent crack/cocaine use in adolescence was not associated with adult STI.
Conclusions: Given the associations between substance use and STI among whites, treatment and prevention programs for substance use and STI should be integrated. Substance use was not a strong predictor of adult STI among minorities. Further research into modifiable factors of STI among minority groups is needed.

P4.53

CHLAMYDIA, *MYCOPLASMA GENITALIUM*, GONORRHOEA, AND BACTERIAL VAGINOSIS IN SEXUALLY ACTIVE FEMALE STUDENTS: A CROSS-SECTIONAL STUDY.
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Objectives: To assess the prevalence and frequency of multiple infections with *C. trachomatis*, *M. genitalium*, *N. gonorrhoeae* and bacterial vaginosis (BV) in female students recruited to the POPI (Prevention of Pelvic Infection) trial.
Methods: Design: Cross sectional study.
Setting: 20 London universities and Further Education colleges.
Participants: In 2004-6, 2529 sexually active female students completed a questionnaire on sexual health and provided self-taken vaginal swabs and smears. Mean age of participants was 20.8 years (range 16-27), mean age at first sexual debut was 16.4 years (range 11-26), 27% were from black ethnic minorities and 32% were smokers. In 2008 their stored swabs were tested for *C. trachomatis* and *M. genitalium* by nucleic acid amplification techniques. Vaginal smears were Gram stained and analysed for BV using Nugent's criteria. (In addition *N. gonorrhoeae* results will be available by this May.)
Results: In the 2244 participants for whom three results are available, the prevalence of chlamydia was 5.9% (133/2244 95% C.I. 5.0-7.0%), the prevalence of *M. genitalium* was 3.3% (73/2244, 2.6-4.1%), and the prevalence of BV was 20.4% (457/2244, 18.7-22.1%). Of 133 women with chlamydia, 40% (53) had co-existing BV and 6% (8) were co-infected with *M. genitalium*. Similarly, of 73 women with *M. genitalium*, 41% (30) had BV and 11% (8) had chlamydia. Five women had all three infections.
Conclusions: Although the prevalence of sexually transmitted infections was relatively low in this community based cohort, nearly half of those with *C. trachomatis* or *M. genitalium* had concurrent BV. The high prevalence of BV in *M. genitalium* infected women contrasts with earlier findings. Follow-up data after 12 months will explore whether concurrent BV and bacterial STIs increases the risk of developing pelvic infection.

P4.54

PREDICTING CONDOM USE IN YOUNG WOMEN: DEMOGRAPHICS, BEHAVIORS, ATTITUDES AND KNOWLEDGE IN A POPULATION-BASED SAMPLE IN BRAZIL
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Context: Reducing sexual risk through condom use remains the primary goal of HIV prevention efforts among young women in Brazil. This study assessed condom use and related attitudes and behavior in young sexually active women in Vitória, Brazil.
Methods: From March to December 2006, a cross-sectional sample of women aged 18 to 29 years was recruited into a single stage, population-based, household study. Condom use at last intercourse was assessed as a principal outcome describing protective sexual behavior.
Results: Of 1,200 eligible women identified, 1,029 (85.8%) enrolled. Among them, 904 (87.9%) reported any history of sexual activity; median age was 23 (interquartile range 20, 26) years. Only 36.6% reported condom use at last intercourse; those who did were more likely to report commercial sex work (OR 9.01 [1.46-55.55]), to state that STI prevention was a primary reason for using condoms (OR=6.84 [4.81-9.71]), to have been previously diagnosed with an STI (OR=2.39 [1.36-4.21]), to report that "it is easy to tell a sex partner they will not have vaginal/anal sex without a condom" (OR=2.30 [1.56-3.39]), to report that sexual intercourse is only risky when people have anal sex (OR=1.98 [1.22-3.22]); and less likely to be married (OR=0.65 [0.54-0.78]), and to find it difficult to use condom consistently in all sexual encounters (OR=0.36 [0.25-0.52]).
Conclusions: Women who reported condom use were more concerned with preventing STI, and to report less difficulty insisting on condom use with partners. Results provide information for ongoing prevention intervention efforts to increase condom use among young women.

P4.55

TRICHOMONAS VAGINALIS INFECTION IN A PROBABILITY SAMPLE OF BALTIMORE, USA ADOLESCENTS AND YOUNG ADULTS

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Background: T. vaginalis is the most common curable sexually transmitted infection in the USA, although its epidemiology is not well understood. Accurate monitoring of T. vaginalis in the population is crucial if we are to develop effective strategies for infection prevention and control. Surveillance data do not exist either for the national or local populations.
Methods: The Monitoring STIs Survey Program (MSSP) uses telephone audio computer-assisted self interview (T-ACASI) technology and urine collection kits sent out and returned by U.S. mail to monitor trends in STIs among a probability sample of residents of Baltimore, MD. We report population and sub-population weighted estimates of T. vaginalis prevalence and associated risk behaviors from the first two years (September 2006 through September 2008) of MSSP.
Results: Among 1,559 Baltimore residents aged 15 to 35 years, 6.1% (95% CI 4.7, 7.4) tested positive. One in ten (9.7%, 95% CI 7.7, 12.2) women tested positive; among Black females, the estimated prevalence was 12.4% (95% CI 9.6, 15.8). The majority (79%) of infections were asymptomatic. Many behavioral factors were associated with increased risk of infection in bivariable and multivariable analyses.
Conclusions: Undetected T. vaginalis is common in the Baltimore population. Our results provide strong support for routine screening for TV in populations at elevated risk of infection. The MSSP demonstrates a new approach to public health surveillance for monitoring the prevalence of undetected infections in populations.

P4.56

IS EDUCATION THE LINK BETWEEN ORPHANHOOD AND HIV/HSV-2 RISK AMONG FEMALE ADOLESCENTS IN URBAN ZIMBABWE?

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Background: As the population of orphans grows in AIDS-affected settings, recent studies describe a heightened risk of HIV and sexual risk behaviours among adolescent orphans compared to their non-orphaned peers. This study explores the role of education in explaining the excess sexual risk previously documented among unmarried female orphans in urban Zimbabwe.
Methods: School attendance and attainment were assessed by type of orphanhood, and for their association with markers of sexual risk (HIV and/or HSV-2 infection) among 743 participants drawn from a random sample of 15-19 year old girls identified in a cross-sectional survey in Highfield, Harare, in 2004. Multivariable logistic regression was used to assess the role of educational status in explaining the higher prevalence of adverse sexual outcomes among unmarried orphans compared to non-orphans, adjusting for possible confounders.
Results: Double orphans had significantly lower educational attendance and attainment than non-orphans. Maternal orphans had higher odds of school dropout, although this association weakened when adjusted for recent mobility. Educational status was strongly associated with HIV/HSV-2 risk, but explained only a small part of double orphans' sexual risk and did not explain the HIV/HSV-2 risk of maternal and paternal orphans. High overall levels of secondary school participation and school fee assistance provided to vulnerable families may have reduced the schooling disparities between orphans and non-orphans in Highfield.
Conclusions: Despite strong links between education and HIV/HSV-2, schooling did not explain the excess sexual risk among orphans in this setting. Orphans' odds of HIV/HSV-2 risk remained high when controlled for school attendance and attainment and potential confounders. As evidence of orphans' disproportionate sexual risk emerges in a range of settings, further research on other causal pathways is needed to understand and rectify this risk.

P4.57

THE ROLE OF SEX PARTNER DRUG USE AS AN INDEPENDENT PREDICTOR OF STI RISK AMONG ADOLESCENT GIRLS

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Background: STI prevention programs have focused on reducing drug use with sex. However, studies have shown that sex partner drug use, independent of individual use, is associated with STI risk. It is not evident why sex partner drug use is an independent risk factor for an STI. We hypothesize that sex partner drug use is a marker for other partner STI related risk characteristics such as concurrency, incarceration, and STI history.
Objective: To examine whether having a drug using sex partner is associated with partner concurrency, partner incarceration history and partner STI history.
Methods: A cohort of 298 adolescent girls, aged 14 - 19 at baseline, were recruited from an adolescent health clinic or an STD clinic in Baltimore, MD and interviewed semi-annually for 3 years.
Results: Girls who reported that their main sex partner ever used drugs were twice as likely to report these partners had a history of an STI [OR = 1.99, 95%CI=1.35, 2.92]. Girls who perceived their main partners to have other sex partners were 2.27 times more likely to report that those partners had ever used drugs compared to girls who did not perceive concurrency or said they didn't know [95% CI=1.57, 3.26] and girls who perceived their partners to be concurrent were more than six times more likely to report that their partner had had an STI [OR = 6.42, 95%CI=4.37, 9.42]. Girls who reported that their main partners had ever been incarcerated were 3.71 times more likely to report that those partners ever used drugs [95%CI=2.68, 5.15] and were almost twice as likely to report that those partners had an STI [OR = 1.93, 95%CI=1.33, 2.79].
Conclusion: These findings suggest that drug using sex partners are at high risk for STI and risk may be mediated by partner's concurrency and/or incarceration history. Structural interventions that interfere with girls' partnering with high risk partners may have a greater impact on reducing STI rates among girls than targeting individual behaviors alone.

P4.58

DO ADOLESCENT MEDICINE PHYSICIANS OUTPERFORM OTHER HEALTHCARE PROVIDERS ON ASSESSMENT OF ADOLESCENT PATIENTS' RISK FOR STDS?
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CDC, US

Objectives: One in four adolescent girls have at least one STD, highlighting the importance of providers assessing their adolescent patients' risk for STDs. We estimated the frequency of assessing adolescent patients' risk for STDs between adolescent medicine providers and six other specialties, and examined associations between risk assessment and provider, practice, and patient characteristics.
Methods: A nationally representative survey of U.S. health care providers in selected specialties was conducted in 2004. Among providers performing regular adolescent checkups, the proportion of providers who reported "always" asking adolescents about their sexual behavior to assess risk for STDs were compared to those who did not. Multivariate modeling ascertained whether certain provider, patient, and practice characteristics were associated with risk assessment.
Results: Of providers who performed regular checkups for adolescents (n=2959), 47% reported "always" assessing adolescent patients' risk for STDs. No association was seen between assessment and patient characteristics in the model. Compared to adolescent medicine providers, family practitioners were less likely to "always" assess adolescents' risk for STDs (aOR, 0.3; 95% CI, 0.2, 0.4), as were internists (aOR, 0.5; 95% CI, 0.3, 0.7), and physician assistants (aOR, 0.3; 95% CI, 0.3, 0.4). Female compared to male providers were twice as likely to ask adolescents about their risk behaviors (aOR, 2.0; 95% CI, 1.5, 2.7). Providers in public practices were more likely to assess STD risk than those in private practices (aOR, 1.7 95% CI, 1.2, 2.6).
Conclusions: Provider specialty and gender were significant predictors of sexual risk assessment rather than their patients' characteristics. Interventions should be developed to increase STD risk assessment of adolescents for all providers, but especially non-adolescent medicine physicians.

P4.59

CIRCUMCISION AND SEROLOGICALLY DETERMINED HUMAN PAPILLOMAVIRUS INFECTION AND IN A BIRTH COHORT
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Background: Circumcision has been reported to affect infection with human papillomavirus (HPV) in men, but results are inconsistent. In spite of this uncertainty, protection from HPV infection and subsequent lower risk of cervical cancer has been suggested as a reason to circumcise boys.
Methods: We have undertaken the first population-based study of the relationship between circumcision and serological evidence of HPV infection. We followed males in a cohort born in Dunedin, New Zealand in 1972/73, from age 3 to 32 years. Seropositivity for the oncogenic HPV-16 and 18, and the non-oncogenic types 6 and 11 at age 32 were studied in relation to circumcision status at age 3. Information

about family factors and sexual behaviour was used to adjust for potential confounding.
Results: Seropositivity to any of these types was associated with lifetime number of sexual partners (p= 0.03), and lower moral-religious emphasis of the family of origin (p<0.001).
Circumcision did not appear to be protective. The adjusted odds ratio (95% confidence interval) for seropositivity among the circumcised compared to the uncircumcised for HPV-16 and/or 18 was 1.4 (0.85-2.2), for HPV-6 and/or 11 was 1.1 (0.43-2.8), and for any of these types, 1.4 (0.89-2.2).
Conclusions: These data do not support the hypothesis that circumcision provides major protection against HPV acquisition by men, but do not rule out the possibility that circumcised men have less persistence of HPV infection – as some studies utilising HPV DNA analysis have suggested - which may result in some reduction in risk of transmission to women.

P4.6

SELF-CARE AND STI/HIV PREVENTION: INVESTIGATING NATIVE CATEGORIES OF SOCIAL CLASSIFICATION IN THE UPPER RIO SOLIMOES REGION OF THE BRAZILIAN AMAZON
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Background: Between 2007-2008 we performed an anthropological study to investigate the forms of STI/HIV self-care and prevention adopted by the populations living in a remote cross-border localities of the Brazilian Amazon region, in a context of low-level health interventions, as part of a multi-level cross-disciplinary project on sexual health.
Methods: Working in three municipalities, we observed daily activities and local festivals, we conducted in-depth interviews using snowballing recruitment techniques, and we collected narratives from health professionals, community leaders, University students, MSM, male and female sex workers, and people living with HIV/AIDS.
Results: The adoption (or rejection) of STI/HIV prevention practices was based on the notion of "confiança" (trust), sustained in the evaluation of the risk of alterity, rather than on perception of behavioural or biological "risk". The concept of "confiança", opposed to "danger", was marked by the classification of people as being "daqui" (from here) or "de fora" (from outside).Those "daqui" can be "trusted". This self-classification was related to family bonds, place of birth and residence, and duration of residence in the locality. Following structural characteristics of family ties, people classified as "de fora" could be included in the "confiança" circle because of affinities and depending on their potential for acting in the systems of reciprocal exchanges. Once considered "daqui", individuals were eligible as potential partners, lovers, boyfriends or girlfriends. Even though these classifications were important for regular social relations, they did not follow strict rules and cannot guide evaluations of vulnerability of individuals and social groups.
Conclusions: Perceptions of STI/HIV risk in these communities appear to diverge from the classical notion of risk and vulnerability identified by health services, which may have lead to the development of inappropriate interventions.

P4.60

ATTITUDES TOWARDS CIRCUMCISION OF MALE CHILDREN FOR PREVENTION OF HIV-1: A STUDY AMONG HETEROSEXUAL HIV-1 SERODISCORDANT COUPLES IN KAMPALA, UGANDA
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Background: The ultimate success of male circumcision (MC) for HIV prevention will depend on targeting two generations: adults, to reduce infections in the near-term, and children, to prevent transmissions in the future. We sought to examine attitudes among parents towards MC of male children for HIV prevention. We targeted HIV serodiscordant couples, who may be particularly aware of HIV risk.
Methods: Heterosexual HIV serodiscordant couples attending a research clinic in Kampala, Uganda were interviewed separately between May and August 2008 using a standard questionnaire.
Results: 318 couples were interviewed, 163 (51.3%) in which the HIV infected partner was male and 155 (48.7%) in which the HIV infected partner was female. Overall, 90.2% (285/316) of men (91.9% of HIV positive/ 88.4% of HIV negative) and 94.6% (300/317) of women (95.5% of HIV positive / 93.8% of HIV negative) expressed interest in circumcision of male children for HIV prevention in the future. Among men, being HIV seropositive [adjusted odds ratio (AOR) 2.6, 95% confidence interval (CI) 1.1-6.0], being circumcised (AOR 7.1, CI 1.6-32.1), discussion of benefits of MC for HIV prevention with partner (AOR 6.2, CI 0.8-48.5), and awareness of the effect of MC on reducing HIV susceptibility (AOR 6.3, CI 2.5-15.9) were positively associated with interest in MC for a male child, after adjustment for religion, age, ethnicity, education, and employment.

Conclusions: MC of child for HIV prevention was highly favored by members in HIV serodiscordant relationship in Kampala. Among men, understanding of the benefits of MC in reducing HIV risk, being HIV infected, and discussion with female partner about MC for HIV prevention were highly associated with positive interest in MC of child for HIV prevention in the future. Our results underscore the importance of targeting and counseling both partners in HIV serodiscordant couples about MC in order to increase willingness of HIV negative men and their male children to be circumcised.

P4.61

TRENDS IN RATES OF NEONATAL CIRCUMCISION IN THE UNITED STATES, 1998-2005

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Background: Recent trials demonstrate the benefits of adult circumcision for HIV prevention, increasing interest in how neonatal circumcision can reduce HIV risk. This analysis describes recent trends in neonatal circumcision in the U.S.
Methods: Hospital discharge data for 1998-2005 from the Nationwide Inpatient Sample of Healthcare Cost and Utilization Project (HCUP) were used to assess trends in circumcision rates per 100 newborn delivery hospitalizations. Circumcision was defined by International Classification of Diseases, 9th Rev, Clinical Modification, code=640. Prevalence rate ratios for factors associated with circumcision were assessed using Cox regression.
Results: Circumcision was performed during 9,649,832 (57%) of 16,821,479 newborn male delivery hospitalizations during the 8-year period; however, rates decreased significantly from 60% (1998) to 55% (2005) (p for trend<0.0001). This decline was driven by sharp decreases in circumcision for deliveries with public insurance in the South (62% to 45%, p for trend<0.00001) and private insurance in the Northeast (77% to 70%, p for trend=0.0003). In adjusted analyses, circumcision was higher among deliveries with private versus public insurance (67% vs. 45%, adjusted PRR(95% CI)=1.76(1.70,1.82)), in the Midwest, Northeast, or South versus West regions (74%, 67%, and 61%, vs. 30%; adjusted PRRs=3.53(3.23,3.87), 2.91(2.64,3.18), and 2.80(2.56,3.07)), in rural versus urban hospitals (66% vs. 56%, PRRs(95% CI)=1.29(1.24,1.34)), and among full-term, healthy newborns compared with pre-term, low birthweight, or full-term newborns with health problems (61% vs. 54%, PRR(95% C.I.)=1.22(1.20,1.23)).
Conclusions: Following increases in neonatal circumcision in the U.S. through 2000, rates have significantly declined this decade. The decline varies widely by region, and, within some regions, by payer. Understanding trends in neonatal circumcision may have implications for HIV prevention in the U.S.

P4.62

CIRCUMCISION AMONG MEN WHO HAVE SEX WITH MEN IN LONDON

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Background: Recent studies conducted in Africa provide evidence that male circumcision offers a level of protection against heterosexual acquisition of HIV infection in men. However, the impact of this intervention on HIV transmission among men who have sex with men (MSM) remains unknown as does the feasibility of conducting a circumcision trial in this population.
Methods: In May 2008 689 MSM attending 6 gyms in central London were asked to complete a confidential, self-administered questionnaire. Information was collected on participants' demographic characteristics, HIV status, sexual behaviour, circumcision status and their attitudes towards circumcision. Chi-squared tests were used to assess statistical significance.
Results: Just over a quarter of MSM completing the questionnaire (29% n=193) were circumcised. Of the circumcised men, 43% (n=83) were born outside the UK. Uncircumcised men were more likely to be HIV positive than circumcised men although this difference was not significant (25% v 19%, p=0.09). Circumcised and uncircumcised men reported comparable rates of unprotected anal intercourse with a partner of unknown or discordant HIV status (16% v 17%, p=0.8). Where a preference was expressed, uncircumcised and circumcised MSM both said they preferred partners of the same circumcision status as themselves (90% and 58% respectively). Uncircumcised men were more likely to say there were drawbacks to circumcision, while circumcised men were more likely to believe in the benefits of circumcision. Only 10% (46/443) of uncircumcised men indicated that they would be willing to participate in future research on circumcision and HIV transmission.
Conclusions: These findings indicate that investigating circumcision and HIV transmission among London MSM would be problematic as few men would be willing to participate in the necessary research. The attitudes of uncircumcised MSM suggest that few would find circumcision an acceptable strategy for HIV prevention.

P4.63

CIRCUMCISION REDUCES THE PROBABILITY OF GONOCOCCAL AND NONGONOCOCCAL URETHRITIS AMONG HETEROSEXUAL MEN ATTENDING STD CLINICS

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Objective: To determine whether circumcision status predicted gonococcal (GC) and non-gonococcal urethritis (NGU) among heterosexual men.
Methods: We used data from the first visit of heterosexual men receiving care at either of two STD clinics in Baltimore, Maryland, between 1992 and 2002. Data collected for routine care included demographic, behavioral variables, and clinical data (clinician-verified circumcision status, Gram's stain of urethral exudates, GC culture). NGU was defined as > 4 WBC/high power field on microscopy and a negative GC culture; GC was defined as a positive urethral culture. We used logistic regression to adjust for potential confounders and calculate odds ratios (OR) and 95% confidence intervals (CI).
Results: Of 45,323 men with at least one visit, 14,423 were not tested for GC or NGU and excluded. Of the remaining 30,900, median age was 27 years, 96.4% were Black, 15.7% were uncircumcised, and 1.9% were HIV positive. The prevalence of GC and NGU was 23.3% and 51.2%, respectively. After adjusting for potential confounders (age, race, HIV status, condom use, number of sex partners in preceding month, contact to a GC/Chlamydia-infected partner, and prior GC/NGU history), uncircumcised men had a higher probability of GC and NGU than circumcised men (OR 1.17, 95%CI: 1.08-1.26, $p<0.001$ and 1.20, 1.05-1.37, $p=0.006$, respectively). There was no effect modification (interaction) between age or race and circumcision status.
Conclusions: In this STD clinic population with a high disease burden, circumcision had a small but significant beneficial impact on decreasing the odds of GC and NGU urethritis.

P4.64

DOCUMENTING THE SUCCESS OF CHLAMYDIA CONTROL IN BRITISH COLUMBIA

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Background: The effectiveness of Chlamydia trachomatis (Ct) control programs has been questioned in light of increasing Ct case rates even where control is a priority such as British Columbia (BC), Canada. Ct case rates in BC declined from 1992 – 1997 (185.5 to 104.2/100,000) but then rose steadily to 213.1 in 2006. The primary goal of Ct control, however, is a reduction in complications such as pelvic inflammatory disease (PID) and ectopic pregnancy (EP) leading to improved reproductive health. Monitoring these conditions often relies on tracking hospital discharge and day surgery (DAD) diagnoses but this data has been challenged because of a perceived shift to outpatient management of Ct complications and because of inadequate medical coverage for persons at risk.
Methods: Over 95% of BC residents participate in the provincial Medical Services Plan (MSP) which reimburses all insured medical services. From 1992-2006, we tracked PID and EP trends by analyzing MSP data for unique patients with at least 1 related physician billing per year (database 1) and DAD data for unique patients with at least 1 related hospital or day surgery discharge ICD-coded as the most responsible discharge diagnosis (database 2). We also tracked EP-related procedures from 1997-2006.
Results: From 1992 – 2006, the PID-related rate declined by 69% (607.8 to 188.6) in database 1 and by 75% (252.5 to 62.9) in database 2. Over the same 15 year period, the EP-related rate declined by 38% (197.9 to 121.7) in database 1 and by 60% (122.3 to 51.1) in database 2. Finally, the EP-related procedure rate declined by 44% (107.7 to 60.3) from 1997-2006.
Conclusions: The BC Chlamydia control program has been successful. Reproductive health has improved, as evidenced by significant declines in PID and EP, in spite of increasing Ct case rates. In this analysis, the DAD database accurately reflected overall trends in PID and EP.

P4.65

SELF TRIAGE CARD DOES NOT INCREASE CHLAMYDIA TRACHOMATIS TESTING IN VOCATIONAL SCHOOL STUDENTS

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Background: Based on a nationwide Chlamydia trachomatis (Ct) screening and resulting Ct predictors, we developed a self-triage card to identify high Ct risk individuals. Here, we assess effect of the triage card on Ct testing behaviour.
Methods: Data were obtained from a (ongoing) class-randomized intervention trial (PRESS Study) at a

vocational school, The Netherlands. All participants (n=305, mean age 19) filled in a questionnaire, received STI education and were offered Ct testing. Intervention group received the triage card with five questions, indicative of high Ct risk. A high score was followed by a positive Ct test advise. (Interim) regression analyses were performed.
Results: Of participants, 78% were women, 91% were of Dutch nationality and 82% lived with their parents. Overall, 87% ever had sex with on average 4 partners (range 1-50). Correlation between card and questionnaire score (containing similar questions) was good (r=0.73), meaning the card is a valid instrument in measuring high Ct risk. No differences were noted between intervention and control group in that overall (i) 66% had high Ct risk (intervention: 72%, control: 65%), (ii) test rate was 58% (intervention: 58%, control: 57%), which was higher ($p<0.001$) in high risk (overall 67%; intervention: 64%, control: 69%) than low risk groups (39%; intervention: 42%, control: 36%) and (iii) Ct prevalence was 4.8% (intervention: 4.6%, control: 4.9%). All Ct diagnoses were in the high Ct risk group, were history of STI testing was only 27%.
Conclusions: Although recruitment is ongoing and power will be increased, we do not expect the effect size of the intervention to change substantially. Therefore, there is no evidence of an additional positive effect of a self triage card on testing rate or on Ct diagnoses in vocational school students. When provided with Ct testing facilities and education, self selection mechanisms seem enough to increase Ct testing rate from 27% to 67% in the high Ct risk group.

P4.66

HAS THE ECTOPIC PREGNANCY RATE DECREASED IN THE UNITED STATES? A STUDY OF THE POSSIBLE IMPACT OF CHLAMYDIA SCREENING
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Objectives: To assess the effectiveness of chlamydia (CT) screening programs, it is important to monitor long term outcomes of untreated CT. The clinical diagnosis of PID is a poor outcome because it is too nonspecific. In this study we estimated trends in the rate of diagnosis and treatment of ectopic pregnancy in the United States.
Methods: We analyzed data from Medstat, a large claims database of more than 200 U.S. commercial health plans, and estimated time trends in the rate of ectopic pregnancy among women aged 15-44 years by five-year age group and by region from 2002-2006. We also estimated the proportion of cases that were treated surgically and medically with methotrexate.
Results: We identified 7,107 ectopic pregnancies during 2002-2006. The overall rate of ectopic pregnancy among women aged 15-44 years did not change, from 5.73 cases per 10,000 woman-years in 2002 to 5.77 in 2006. This time trend did not change by age group or by region. Rates were highest among women aged 25-34 years (table). Methotrexate treatment increased from 10.3% in 2002 to 22.0% in 2006 ($p < 0.0001$).

Age (years)	Mean annual rate, 2002-2006 (cases per 10,000 woman-years)
15-19	1.0
20-24	5.1
25-29	10.7
30-34	11.7
35-39	6.6
40-44	1.8

Conclusions: The rate of ectopic pregnancy among U.S. commercially insured women did not change from 2002-2006. CT screening is recommended for all sexually active women aged 25 years and younger, while ectopic pregnancy peaked at aged 25-34 years. Thus, it might take up to 10 years to see the impact of increases in CT screening on ectopic pregnancies. Our data suggest that increased CT screening in the United States (as measured over the last 8 years by HEDIS) is either insufficient to impact ectopic pregnancies, or that it is too soon to see the impact of these increases. Because of its power to detect small changes in the rate of ectopic pregnancy, the Medstat claims database might be a useful tool to evaluate the impact of chlamydia screening programs on the key outcome of ectopic pregnancy.

P4.67

FIRST PHASE OF THE STEPWISE CHLAMYDIA SCREENING IMPLEMENTATION IN THE NETHERLANDS: PARTICIPATION RATES AND IMPLICATIONS FOR MEASURES OF EFFECT

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Background: Following a Chlamydia t. pilot screening, the Dutch Ministry of Health issued a directive to develop a large-scale demonstration program for sustainable, selective, systematic, internet-based Chlamydia Screening among 16-29 yr old citizens in Amsterdam, Rotterdam and S-Limburg and to evaluate its feasibility and (cost) effectiveness.
Methods: To evaluate the effects of screening on population prevalence of Ct and PID, a phased implementation (stepped wedge) was applied by grouping neighbourhoods into three random, risk-stratified subgroups. This design allows for impact-analyses over time and comparison of estimates of prevalence before screening and after 1 or 2 screening rounds. We determined participation and positivity rates in the first two months of screening and studied their potential implications on program outcomes by simulation methods.
Results: In April-June 2008, 57.000 invitations were sent. Overall participation was 15% (returned sample/invitees), which is lower than the anticipated 30%. Overall, 4.3% were Ct-positive (F: 4.3%, M: 4.2%). Simulations showed that with these participation- and positivity rates, it will be feasible to detect (with 80% power level) a decline of 0.5 -0.8% in Ct-prevalence from 1st to 2nd screening-round in the large cities. To detect a 1.0% decline in subgroups of the phased implementation and in S-Limburg, participation rates should be substantially higher (30%-40% for subgroups and 20% in S-Limburg).
Conclusion: The overall participation rate was lower than anticipated. The impact of one screening round on Ct prevalence may not reach statistical significance on subgroup level but seems sufficient on city level. Future analysis and modelling will include the impact of two screening rounds, effects in specific risk-groups also in relation to ongoing Ct diagnostics at STI clinics/GPs. Specific recommendations to enhance participation rates in the second screening round should be considered.
Program funding: ZonMw

P4.68

PROCESS EVALUATION OF THE CHLAMYDIA SCREENING IMPLEMENTATION NETHERLANDS: RESULTS FROM THE FIRST OPERATIONAL PHASE

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Objective: In April 2008, a selective, systematic, and internet-based Chlamydia Screening started among 16-29 year old citizens in Amsterdam, Rotterdam and S-Limburg. The process evaluation examined the extent to which the screening program is operating as intended and determined whether the target population is reached.
Methods: Performance monitoring was conducted to provide information on key aspects of how the program is operating. Data from the screening database was analysed, which includes automatically generated data from the IT process, data from municipal administrations, laboratory results, individual track records and questionnaires.
Results: During the first two months of screening (57.000 invitations), requests for test packages, return of samples and time processes were monitored. Time between the invitation and package request varied between 2 and 196 days (median: 16 days). The reminder letter contributed significantly to the package request (36% responded after the reminder). Of persons requesting a package, 79% returned a sample to the laboratory (median time: 9 days) of whom 44% returned it after the reminder(s). 4.3% was Ct-positive. 0.5% of the Chlamydia tests failed. 93% of the participants checked their test results on the website (73% within 2 days). Of all Ct-positives, 5.7% didn't check their results online. The overall process time between the date of invitation and checking of the test result varied between 11 and 233 days (median: 45 days).
Conclusion: The process evaluation indicated that, overall, this comprehensive program with IT-, logistic-, and laboratory components, is functioning well. Reminder letters and - emails contributed considerably to the participation rate. Means to improve the return of samples need further investigation, but extra reminders could be a relative simple, cheap and targeted improvement.
Program funding: ZonMw

P4.69

METHODS FOR MAXIMISING RETENTION OF YOUNG WOMEN IN A LONGITUDINAL STUDY OF CHLAMYDIA INFECTION

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Objectives: Women aged 16 to 25 years can be a transient population and research requiring follow-up contact within this age group may require considerable resources for maintaining retention. We describe methods used to increase retention in a longitudinal study of these women.
Methods: The Chlamydia Incidence and Re-Infection Rates study is a cohort study of young Australian women that aims to measure Chlamydia trachomatis incidence over 12 months. Research assistants recruited 1120 women from 30 general practices and sexual health clinics across Australia. Follow up was sent through the post 3-monthly and included self-collected swabs and questionnaires. A freecall telephone number, a study email address and web-site were provided for the participants to notify changes in address. Women received a cash payment or shopping voucher for each swab returned, to the value of $10 (AUD) at 3 months, $20 at 6 and 9 months and $50 at 12 months. Study packs included a small gift such as sweets, condoms or cosmetics. Women were sent a text message (SMS) one week prior to mail-out advising them to expect the pack and to report changes in address. Reminders included an SMS after 2 weeks if no response, then up to 5 telephone calls if required.
Results: Overall, 62% of eligible women were recruited. To date, 642 (57%) women should have completed the study. Retention at 3, 6 and 9 months has been 82.9%, 76.6% and 74.5% respectively. The current retention at 12 months is 72.4%. There has been no difference in retention by age (<21 years versus 21+ years; OR 1.1; 95% CI: 0.8, 1.6) or by clinic (sexual health versus general practice; OR 1.1 95% CI: 0.8, 1.6).
Conclusion: While the impact of the different methods has not been explored using a randomised study design, a 72% retention is high compared with other similar studies. Employing a study research assistant to recruit women and regular communication via SMS and email has assisted in retaining women over the study period.

P4.7

DIFFICULT TO REACH KEY POPULATIONS. STI/HIV PREVENTION AMONG SUB SAHARAN AFRICAN WOMEN IN THE NETHERLANDS

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Objective: To break taboo on discussing STI/HIV prevention and stigma against HIV.
Methods: African women do not express themselves openly nor discuss sexual issues in the presence of males. Studies show that stigma and taboo within African communities on sexual issues and HIV remain high. Mainstream prevention activities often reach men, because of their role and presence in the public domain and face problems in reaching women. As a result, women only platforms, referred to as Kitchen parties, which are part of the social network within the African communities for women to celebrate events such as marriage and child birth, were used to discuss STI/HIV prevention and stigma. Ten kitchen parties were conducted with groups of 25 women, moderated by health care experts, and explored socio-cultural and economic issues around sexuality that heighten or reduce risk to STI's.
Results: African women still engage in cultural practices that make them vulnerable to STIs and HIV. Socio-cultural practices around sexuality such as restoration of virginity, maintenance of sexual organs and traditional rituals around sexuality of new born babies predispose the women and also babies to catching STIs, especially HIV. Women speak openly about their experiences with health care experts and when among themselves. The poor integration of women into the new host society leave them dependent on transactional and risky sexual relationships.
Conclusion: Attitudes towards PLWHIV change when women discuss openly with each other and share positive experiences. Health institutions should appeal to social structures within difficult to reach key populations to reach them.

P4.70

CHLAMYDIA TRACHOMATIS INFECTION: WOMEN WITH LOW EDUCATION LEVEL ARE AT HIGHER RISK TO BE UNDIAGNOSED IN THE FRENCH GENERAL POPULATION

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Objectives: To identify factors associated with Chlamydia trachomatis (Ct) infection among women aged 18-29 years in France.
Methods: Among a random sample of French residents, aged 18-69 years, interviewed by telephone for a survey on sexual behaviours (2006 CSF Survey), a sub-sample of sexually experienced individuals, was invited to submit a home sample for Chlamydia trachomatis (Ct) testing. The testing kit (vaginal swab) was mailed to those who agreed to participate. The samples were sent by post to the Chlamydia reference laboratory to be tested by PCR. Data were weighted to take into account the unequal selection probabilities, and were post-stratified according to census. Logistic regression was performed on the population of women aged 18-29 to identify factors associated independently with Ct infection.
Results: Among the 1336 women aged 18-29 years eligible, 52% have sent a sample. High risk behaviour and high educational level were associated with highest participation rate. Overall Ct prevalence was 3.2% (95% CI: 2.0-5.4), whereas only 0.9% of women reported a history of Ct infection in the five previous years (95% CI: 0.4-2.1). Among women participating, 23% had never heard of Ct. This proportion was higher in women with low educational level (32%). Ct infection was independently associated with usual behavioural risk factors as more than 2 sexual partners in the last year, and as a new or a casual partner at last intercourse. Ct infection was also independently associated with low educational level and with having sexual relation with a woman in the past year. In the group of women with low educational level, the prevalence was high (12.5%; 95% CI:4.1-13.5).
Conclusions: Home testing, well accepted in our survey, could be promoted in young women. Ours results suggest that Ct infections are under diagnosed in women with low educational level. Adapted strategy may be needed to target these women who are more reluctant to accept home testing.

P4.71

FACTORS ASSOCIATED WITH CHLAMYDIA TRACHOMATIS INFECTION DURING PREGANCY - A CASE- CONTROL ANALYSIS
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Objectives: This analysis aim to describe factors associated with Chlamydia Trachomatis (CT) infections among pregnant women at a large urban medical center servicing a diverse population.
Methods: we accessed clinical records at the Johns Hopkins Bayview Medical Center from July 2005 through February 2008. The study population included all pregnant women who gave birth to a singleton newborn of at least 20 weeks gestation, and who had antenatal care information available. A case-control was performed. The analyses included estimating the prevalence of CT infection in each category of the explanatory variables, and logistic regression.
Results: 2127 women were included in this analysis. The prevalence of CT infection during pregnancy was 4.7%. Half of the women have between 20 and 29 years of age; 42% were white; and 41% were married. After adjusted analysis, the significant risks for CT infection were maternal age of 19 years or less, being black, maternal smoke, and have a Neisseria Gonorrheae test positive.
Conclusions: The low prevalence of CT infection found in this study could be linked with opportunistic screening performed in the US. This study confirm that demographics factors as being young and black, used commonly to define who should be screened, are risk factors for CT infection. We did not find an association between drug use during pregnancy and CT infection, probably because most of the drug users were older women and CT infection was more prevalent among young women.

P4.72

CHLAMYDIA SCREENING OF YOUNG SEXUALLY ACTIVE, MEDICAID-INSURED WOMEN BY RACE AND ETHNICITY, 2002 – 2005
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Objectives: Over one million cases of chlamydia were reported to CDC in 2007. Black women, young women, and women with Medicaid insurance are disproportionately burdened by chlamydia. No large scale clinical data are available for estimating chlamydia screening by race and ethnicity. The purpose of this study was to estimate the chlamydia screening rates of young sexually active, Medicaid-insured women by race and ethnicity and by age from 2002 to 2005.
Methods: Using Medicaid child claims data from 8 states for women aged 15-21 years who were enrolled for 330 days or more and who had at least one claim during the year of analysis, we estimated the proportion of sexually active women aged 15-21 years screened for chlamydia by race and ethnicity and by age. Medical diagnostic and procedural codes were used to identify sexually active women and

chlamydia screening. Chi-square tests were used to determine significant differences in screening by race and ethnicity and by age.
Results: Chlamydia screening increased by 29% in 4 years, from 34% in 2002 to 44% in 2005. In all years, black women had significantly ($p < 0.05$) higher screening rates compared to white women (Table), even when stratified by age. Women aged 19-21 years had significantly ($p < 0.05$) higher screening rates than women aged 15-16 years.
Table. Proportion of sexually active Medicaid-insured women, aged 15–21 years, screened for chlamydia by race and ethnicity: 2002–2005

	2002	2003	2004	2005
Race and ethnicity				
White	28	36	38	39
Black	40	49	49	51
Hispanic	30	37	38	41

Conclusions: Screening has increased substantially over time and black women were more likely to be screened than white women. However, screening rates remain suboptimal for all women. As interventions to increase screening are developed and implemented, the estimation method described in this paper can be used to track chlamydia screening trends by race and ethnicity and make interventions more cost-effective.

P4.73

SOCIOECONOMIC VARIATIONS IN CHLAMYDIA SCREENING COVERAGE AND POSITIVITY IN ENGLAND: ANALYSIS OF THE NATIONAL CHLAMYDIA SCREENING PROGRAMME IN 2008
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Background: The National Chlamydia Screening Programme (NCSP) was established to control chlamydia in people under 25 years. All parts of England have data since Jan 08. This study aimed to examine socioeconomic variations in NCSP delivery and chlamydia positivity.
Methods: 350,000 anonymised NCSP records (Jan-Sept 08) were linked to the Index of Multiple Deprivation 2007 (ID2007) to assign a level of socioeconomic deprivation. Records were stratified into age bands:13-15, 16-17, 18-22 and 23-24 years. NCSP coverage (no. tests/target population) and chlamydia positivity (positive results/all results) were examined by ID2007 quintile, stratified by age band and sex. The significance of differences in coverage between quintiles was assessed by a Pearson X^2 test for association. Odds ratios for positivity were calculated between the most and least deprived groups, adjusted by logistic regression for potential confounders: sex, behaviour (2+ partners in 1 year), ethnicity and screening setting.
Results: Overall, NCSP coverage was 4.41%, with positivity 8.15% (95%CI [8.07;8.24]). There was a socioeconomic gradient across coverage ($X^2<0.01$) - from 6.08% (95%CI [6.05;6.12]) in the most deprived areas to 3.24% [3.21;3.27] in the least deprived areas - and positivity, from 9.28% [9.11;9.45] in the most deprived areas to 6.60% [6.37;6.83] in the least deprived. The adjusted odds of a positive result was 1.37 [1.31;1.43] times higher in the most deprived than the least deprived areas. Within age bands, coverage was highest in 16-17 year olds in the most deprived areas (10.58% [10.47;10.70]), yet positivity was highest in 18-22 year olds in the most deprived areas (10.35% [10.10;10.61]).
Conclusions: This study provides a baseline to monitor socioeconomic trends in NCSP delivery. Coverage was highest in deprived areas where positivity rates were also highest but total coverage was low and the age groups with highest positivity were not those with highest coverage.

P4.74

CHLAMYDIAL INFECTIONS AMONG YOUNG ADULTS IN BALTIMORE, MD, USA: TRENDS ACROSS THE LAST DECADE
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Background: STI surveillance provides estimates of diagnosed chlamydial infections as reported to local health departments. Population-based surveys provide an alternate and complementary estimate of STI prevalence and behaviors associated with undiagnosed infection. Together they provide a more complete

profile of STI epidemiology within local populations and over time.
Methods: The Baltimore STD and Behavioral Survey (BSBS) combined probability sampling with household interview and collection of urine specimens to estimate chlamydial infection among 18-35 year olds in 1997-98 in Baltimore, MD, USA. A similar behavioral survey (Monitoring STIs Survey Program, MSSP), using telephone interview and mail-out specimen collection, was administered in 2006-07. Data derived from case reports to the Baltimore City Health Department (BCHD) during these same periods are analyzed.
Results: Survey estimates of CT were slightly higher in 2007-08 (4.1, se 0.7) than 1997-98 (3.0, se 0.8) and varied substantially by gender. Whereas more females tested positive in 1997-98 (4.3% v 1.6% for males), in 2007-08 4.6% of males tested positive in comparison to 3.7% of females (p=0.5). Survey reports of diagnosed CT in the past year were similar during the two periods (3.2% and 4.0%) but higher among females (4.4% v 1.9% in the BSBS and 5.2% v 2.5% in the MSSP). Weighted population prevalence estimates of case reports to the BCHD provided the lowest overall estimates of infection, 2.1% in 1997-98 and 3.2% in 2007-08; reports were higher among females than males (3.6 v 0.5 in 1997-98 and 5.1 v 1.2 in 2007-08).
Conclusions: Diagnosed and undiagnosed chlamydial infections appear to have increased moderately in the last decade among young adults in Baltimore. In contrast to self-reports and case reports of higher rates of diagnosed CT infections among females across the decade, recent survey estimates suggest an equal burden of undiagnosed infection among males and females.

P4.75

INCIDENT CHLAMYDIA TRACHOMATIS INFECTIONS IN HIGH SCHOOLS
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Objectives: To determine the incidence of new infections with Chlamydia trachomatis among high school students in an urban US school district.
Methods: Between 1995 and 2005, a total of 20,224 high school students were tested for C trachomatis at least once in an annual screening using a commercial nucleic acid amplification test in urine specimens, regardless of sexual activity or symptoms of sexually transmitted diseases (STDs). Of those, 7,950 were screened more than once. The incidence of new infections was calculated among participants with an initial negative test result. Students whose initial test result was positive (n=524) were excluded from analysis. A new infection was estimated to have occurred half-way between the most recent negative test and the following positive test.
Results: The 3,945 male and the 3,481 female students tested more than once and had an initial negative test result contributed respectively 7,552 and 6,096 person-years of time at risk during which 415 males and 601 females developed a new infection (incidence rates: 5.5 new infections/100 p-yrs for males and 9.9 new infections/100 p-yrs for females. Among students who developed a new infection, the median time between the initial negative test and the following positive test was 10.6 months (11.7 months among males and 9.8 months among females).
Conclusions: There is a high incidence of chlamydia among male and female students in the school district. Although recommendations for regularly screening male adolescents for chlamydia have not been developed, the rate of acquisition of a new infection in this study indicates that in areas with high prevalence of STDs, annual chlamydia screening for adolescent males may be indicated.

P4.76

CAN TRENDS IN PELVIC INFLAMMATORY DISEASE DIAGNOSES IN GENERAL PRACTICE BE USED TO EVALUATE CHLAMYDIA SCREENING PROGRAMMES?
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Objectives: Screening for asymptomatic chlamydia infection to prevent complications including pelvic inflammatory disease (PID) is becoming increasingly widespread in developed countries. Monitoring trends in PID is essential to assess the impact of screening but is complicated by poor diagnostic specificity. We investigated whether a large primary care database could be used to estimate PID incidence and thereby inform evaluation of the National Chlamydia Screening Programme in England.
Methods: Analyses included female patients (≥12yrs) in the General Practice Research Database (GPRD) during 2000-2007. The GPRD covers approximately 5.5% of the UK population. Episodes of care with "READ"/"Oxmis" codes denoting PID diagnoses or symptoms were classified into 'definite', 'probable' and 'possible'. Incidence was calculated per 100,000 person years (py). Trends were assessed using Poisson regression.
Results: The overall PID incidence ranged from 112/100,000py (95%CI:109-114) for definite cases, to

162/100,000py (95%CI:159-164) for definite plus probable cases, increasing to 604/100,000py (95%CI:599-609) when possible cases were included.
During 2000-2007, the incidence of definite/probable PID decreased by 11.3% per year (95%CI:10.6-12.0, Wald test p<0.001). A decline was apparent among all age groups but largest among those aged 12-15yrs (19.3% per year, 95%CI:10.0-28.6, p<0.001) and 16-19yrs (13.3% per year, 95%CI:11.2-15.4, p<0.001). A similar pattern was seen when possible cases were included though the overall decline was less marked (1.3% per year, 95%CI:0.9-1.6, p<0.001). There was heterogeneity in incidence by geographical area.
Conclusions: The choice of PID definition had a major impact on the absolute incidence. There was evidence of a decline in incidence in recent years, particularly among young people. Further analyses will investigate the association between trends in PID and chlamydia screening activity, and consider any changes in PID coding practice.

P4.77

COMMUNITY-BASED TRIAL OF SCREENING FOR CHLAMYDIA TRACHOMATIS TO PREVENT PELVIC INFLAMMATORY DISEASE: THE POPI (PREVENTION OF PELVIC INFECTION) TRIAL
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Objectives: To see if screening and treatment of genital chlamydial infection reduces the incidence of pelvic inflammatory disease (PID) over 12 months. Secondary aims were to conduct exploratory studies of the role of bacterial vaginosis (BV) in the development of PID and of the natural history of chlamydial infection.
Methods: Design: Randomised controlled trial with follow up after 12 months. Setting (unique non-healthcare): 20 London universities and further education colleges. Participants: 2529 sexually active female students aged ≥27 were asked to complete a questionnaire on sexual health and provide self-taken vaginal swabs. Intervention: Samples from intervention women were tested for chlamydia by polymerase chain reaction. Samples from control women were stored and analysed after a year. Infected women were referred for treatment within 2 weeks of diagnosis. Main outcome measure: Incidence of clinical PID over 12 months in intervention and control groups. Possible cases of PID were identified from questionnaires and record searches. Three independent researchers blinded to group allocation used modified Hager's criteria to classify cases into probable, possible or not PID.
Results: Between 2004-2006, 2529 women were recruited. Mean age was 21, 40% were from ethnic minorities and 43% reported ≥2 partners in the past year (Table). Follow up after 12 months was 93% (2351/2529). We endeavoured to obtain clinical records for 396 women with possible symptoms or treatment of PID. We are currently pursuing final data for 45 participants. Preliminary assessment suggests 1.7% (39/2351, 95%CI 1.1 to 2.2) may have had probable (n=26) or possible (n=13) PID during 12 months follow up.
Conclusions: This is the first UK trial of screening for chlamydia to prevent PID. Following confirmation of PID diagnoses, rates of PID in intervention and control groups will be presented.

Characteristics of 2529 participants at baseline

Mean age	21 years (range 16-27)
Black ethnicity	27% (688/2512)
Mean age of first sexual intercourse	16 years (range 11-26)
Mean number of sexual partners in the previous year	2 (range 0-35)
Chlamydia positive	5.6% (142/2528)
Bacterial vaginosis positive	20.5% (487/2376)

P4.78

HOW MUCH TUBAL INFERTILITY IS CAUSED BY CHLAMYDIA? PRELIMINARY RESULTS FROM A MODELLING APPROACH BASED ON SCOTTISH DATA
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Objective: Little information is available on the attributable risk of tubal factor infertility (TFI) in women with a current or previous diagnosis of Chlamydia trachomatis infection. Recently published results

indicate that the risk is lower than originally reported in the 1980s/1990s. Our study aim is to determine, using a statistical modelling approach, the probability of TFI following past or current chlamydial infection in women in Scotland.
Methods: Using data from a variety of sources, a Bayesian model is employed. The analysis is based on the probability of an individual ever having chlamydial infection, ever having TFI, and ever having a previous chlamydial infection given a diagnosis of TFI. Diagnosed and undiagnosed chlamydial infection are considered and age is factored into the statistical analysis which will be carried out in R and Winbugs.
Results: Routinely collected Scottish chlamydia test data have been synthesised with Scottish data from NATSALII to produce a reliable estimate, by age group, of the probability in those aged 16-44 of ever having chlamydial infection; the population prevalence is estimated at 4%, 3%, and <1% in those aged 16-19, 20-24, and 40-44, respectively. Modelled data on re-infection rates estimate 30 per 100 person years (py) at age 20 reducing to eight per 100py at age 40. Other parameters investigated for the model include estimates of TFI prevalence, (from published studies), and the probability of chlamydia in those with TFI using a meta-analysis of case-control studies.
Conclusion: While questions remain about the natural history of infection, the availability of a reliable age-related probability estimate of the risk of TFI for women undergoing chlamydia testing is a useful public health tool.

P4.79

USING SOCIAL MARKETING TO PROMOTE CHLAMYDIA AND GONORRHEA HOME TESTING AMONG YOUNG WOMEN OF COLOR
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Background: In 2009, the Los Angeles County (LAC) STD Program (STDP) launched a new chlamydia (CT) and gonorrhea (GC) home test kit program targeting African American and Latina females age 25 and younger. Kits, comprised of Gen-Probe APTIMA self-collected vaginal swabs, and test results are both accessed through an existing website created as part of the "I Know" CT/GC social marketing campaign. This campaign was developed in 2007 to increase CT/GC testing in the same target populations.
Methods: The "I Know" campaign brand was used to promote the new home test kit program, beginning in June 2009. Campaign elements include cable TV, movie theater, and online ads, posters and retail displays, school promotions, street outreach, and publicity through free media. Data on use of the kit, including total orders, test results, re-testing by positives in 3 months, and how users learned about the kit, is collected through the website. Treatment of positives is also being tracked through STDP nursing and field staff. Initial findings will include 2-3 weeks of data following the June launch.

P4.8

IDENTIFYING AND ADDRESSING MEN'S STI-RELATED KNOWLEDGE, BELIEFS, EXPERIENCES AND INFORMATION NEEDS IN GAUTENG, SOUTH AFRICA
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Objectives: To explore determinants of STI healthcare-seeking and HIV-testing behaviors, and identify information needs among men in Gauteng province, South Africa.
Methods: We conducted exploratory focus groups with healthy men, recruited from community settings; and individual interviews with STI patients, recruited from community clinics. Two teams of two researchers used semi-structured guides to collect data, taking notes and expanding them after each group/interview. Results were analyzed using a notes-based strategy with three independent reviewers, and coded in NVIVO.
Results: A total of six focus groups and 19 interviews (N=77) were conducted with men (ages >18yrs). HIV awareness was high; many men viewed it as a death sentence. Of those who were aware of HIV treatment, most had little knowledge or lacked confidence in its efficacy. Men's knowledge of STI acquisition, symptoms, prevalence, treatment, and sequelae was limited. Beliefs that certain conditions could cause STIs and that STIs could turn into HIV were common. This, along with a lack of information, led many patients to fear the implications of their STI diagnosis. Stigma emerged as a major barrier to STI communication, care seeking, and HIV testing. Men expressed a strong desire for more information and 'safe places' to learn about STIs in the community.
Conclusions: STI knowledge gaps may perpetuate fear, stigma and STI/HIV transmission, serving as barriers to STI care and HIV testing. Materials have since been developed and tested to address identified misconceptions & promote STI/HIV prevention/testing/treatment among those at highest risk, including STI patients & their partners.

P4.80

NEITHER MYCOPLASMA GENITALIUM NOR CHLAMYDIA TRACHOMATIS IN EARLY PREGNANCY ARE ASSOCIATED WITH SUBSEQUENT SPONTANEOUS ABORTION AMONG YOUNG WOMEN

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Objectives: Spontaneous abortion (SAB), the loss of a conceptus prior to 20 weeks, is the most common adverse outcome of pregnancy. As genital tract infections may cause SABs and the prevalence and consequences of the sexually transmitted pathogen Mycoplasma genitalium (Mg) in pregnant women is unknown, we sought to examine the relationship between prenatal Mg infection and SAB.
Methods: We conducted a nested case-control study among young, predominately African-American pregnant women recruited from an urban emergency department. Mg was measured by polymerase chain reaction (PCR) in urine collected at less than 16 weeks gestation from 82 women who subsequently experienced a SAB and 134 control women who maintained their pregnancies past 22 weeks gestation. Clinical, demographic and behavioral characteristics of cases and controls were compared. The relationship between Mg and subsequent SAB was evaluated, adjusting for age, smoking, Chlamydia trachomatis infection, and previous SAB.
Results: The prevalence of Mg at enrollment was slightly less than that of C. trachomatis (5.6% vs. 6.9%). Compared to women without Mg, Mg-positive women were more likely to report a history of other STDs (100% vs. 59.6%, p=0.008). After adjusting for C. trachomatis, Mg was associated with nulliparity (AOR 3.4, 95% CI 1.0-11.6), history of pelvic inflammatory disease (PID) (AOR 3.9, 95% CI 0.9-16.1), and problems getting pregnant (AOR 4.8, 95% CI 0.9-25.7). Neither Mg (AOR 0.6, 95% CI 0.1-2.3) nor C. trachomatis (AOR 0.4 95% CI 0.1-1.6) were independently associated with SAB, even after excluding women with vaginal bleeding at enrollment.
Conclusions: Out study suggests that pregnant women with positive urine PCR for Mg do not have an increased risk of SAB, but report a history of reproductive morbidities, including other STDs and PID. These findings suggest that there may be relationship between Mg and subfertility.

P4.81

CORRELATES OF STD UNDERREPORTING AMONG FEMALE SEX WORKERS IN CHINA

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Background: Underreporting of STD is a significant issue in STD screening and intervention. Data were limited on this issue among various at-risk populations including female sex workers (FSWs). This study focused on FSWs in China, assessed the STD underreporting and its demographic and cognitive correlates.
Methods: A cross-sectional survey was administered in a sample of 454 FSWs recruited from community settings in Guangxi, China. Among these participants, 91% (n=411) provided biological specimen for STD testing. Bivariate and multivariate analyses were conducted to identify the demographic and cognitive correlates of underreporting of STD by comparing FSWs who reported a STD (n=88) with FSWs who did not report a STD but tested positive (n=134).
Results: About 20% (n=88) of the sample reported a history of STDs prior to STD testing. Of 411 FSWs tested for STDs, 42% were infected with at least one STD, 78% of whom did not report a STD history. Multiple logistic regression controlling for key demographic variables (age, education, marital status, and social desirability) revealed that shorter length of sex work, lower income, lower sexual risk, and lower knowledge of STD symptoms, and lower perceived vulnerability to STD infection were associated with the underreporting.
Conclusion: Underreporting of STD in the current study might be largely due to unaware of STD infection because of perceived lower risk, lower vulnerability of infection, and lack of knowledge of STD symptoms. The future STD intervention and testing efforts should identify and target these women with high risks but low awareness and encourage them to seek timely and appropriate testing and treatment.

P4.82

RISK FACTORS FOR N. GORNORRHEA AND C. TRACHOMATIS INFECTIONS IN FEMALE SEX WORKERS IN ANDHRA PRADESH, INDIA

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Objective: To determine the prevalence and risk factors for N. gonorrhea (Ng) and C. trachomatis (Ct) infection in female sex workers (FSWs) in a metropolitan city in Andhra Pradesh, India.
Method: One hundred and forty two consecutive female sex workers attending sexually transmitted disease (STD) clinics between October 2008 and Jan 2009 were enrolled. The study participants were interviewed to obtain data on socio demographic and behavioral risk factors for STDs. High vaginal swabs were collected and were tested by Gen APTIMA Combo Ng/Ct assay. Univariate analysis was performed to assess the associations between NG/Ct infections with various study variables.
Results: The overall prevalence of Ng and Ct was12.7 % and 14.1 % respectively. Over 13% of asymptomatic FSW were infected with Ng/Ct. FSWs who were in sex work for more than 5 years (p= 0.02), who had no knowledge of STDs (p= 0.034) and those who had no exposure to intervention from NGO (p= 0.041), were significantly more likely to have CT infection. The prevalence of Ct infection was significantly more in the participants who never used condoms than those who used condoms every time (60.0% Vs 10.8%, p=0.009 OR 12.40 95% CI 1.86 – 82.58). FSWs who perceived some risk of getting STI were more likely to have Ng infection.
Conclusions: High prevalence of Ng and Ct infections was seen in the study population of FSWs. Interventions should focus on women who had no access to NGO services and health education. Determinants of higher condom use should be explored for their better acceptance

P4.83

THE UALE PROJECT: DECLINE IN THE INCIDENCE OF HIV AND SEXUALLY TRANSMITTED INFECTIONS AND INCREASE IN THE USE OF CONDOMS AMONG SEX WORKERS, GUATEMALA
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Objectives: To assess the impact of an integral STI/HIV prevention and treatment intervention on the incidence of sexually transmitted infections (STIs) and HIV, the use of condoms, and HIV-knowledge among sex workers (SWs).
Methods: An open-enrolment cohort of 1554 SWs attending STI clinics integrated within the primary health care facilities in Escuintla, Guatemala. They were offered 6-monthly STI/HIV screening and condom promotion. We evaluated trends in the use of condoms, HIV-related knowledge, and STI/HIV incidence. Generalised estimating equations (GEE) were used to control for repeated measurements.
Results: Over 3 and half years, there was a significant increase in the proportion of consistent condom use from the intake trough the third follow-up visit (94.29%-99.11% with new clients, and 90.36%-97.22% with regular ones), as well as in knowledge about HIV-prevention (95.99%-97.22%) and HIV transmission (30.21%-49.40%). Over follow-up visits (table 1), we observed a significant decline in the incidence of gonorrhoea from 11.30/100 person-years (PY) at the first follow-up visit to 6.44/100PY at the third follow-up visit (p-value=0.021), chlamydia from 10.71/100PY to 6.21/100PY (p=0.018), trichomoniasis from 6.88/100PY to 4.81/100PY (p=0.032) and candidiasis from 8.23/100PY-6.17/100PY (p=0.023). The downward trend in the incidence of active syphilis (both VDRL and TPHA tests positive) was not significant (11.97/100PY and 8.61/100PY, at first and third follow-up visit, respectively). HIV incidence significantly declined over time from 1.85/100PY in 2005 to 0.42/100PY in 2008.
Conclusions: The intervention was feasible and has shown to be effective in reducing STI and HIV incidence and in increasing condom use with clients and HIV-related knowledge.

Table 1. STI Incidence over 3 follow-up rounds among SWS attending the STI clinics in Escuintla, Guatemala										
Visit	Neisseria gonorrhoeae		Chlamydia trachomatis		Trichomona vaginalis		Active syphilis		Candida Albicans	

	IR (100PY)	RR (95% CI)	IR (100PY)	RR(95% CI)	IR (100PY)	RR(95% CI)	IR (100PY)	RR(95% CI)	IR (100PY)	RR(9 CI)
First follow-up	11.30	1	10.71	1	6.88	1	11.97	1	8.23	1
Second follow-up	6.55	0.58(0.37-0.92)	7.17	0.67(0.42-1.07)	6.54	0.95(0.42-1.15)	13.04	1.09(0.68-1.64)	6.34	0.77(1.38)
Third follow-up	6.44	0.57(0.33-0.97)	6.21	0.58(0.33-1.01)	4.81	0.70(0.56-1.61)	8.61	0.72(0.37-1.41)	6.17	0.75(1.26)
p-value for trend α	0.021		0.018		0.032		0.092		0.023	
IR: incidence rate, RR: relative risk, PY: person year, CI: confidence interval										
α Indicating the trends by using generalised estimating equations.										

P4.84

EVALUATING INTERVENTION IMPACT IN THE ABSENCE OF BASELINE DATA: 'RECONSTRUCTION' OF CONDOM USE TIME TRENDS USING RETROSPECTIVE ANALYSIS OF SURVEY DATA

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Background: Avahan, the India AIDS Initiative of the Bill and Melinda Gates Foundation, is a large-scale targeted intervention. Data on condom use prior to Avahan initiation in 2003 are not available. We used cross-sectional survey data to 'reconstruct' condom use rates in pre-survey years, and to assess the relationship between Avahan and time trends in condom use among female sex workers (FSW).
Methods: Data from surveys carried out from 2006-8 in 21 of the districts covered by Avahan in four southern states of India were used (n=7,525). FSW reporting consistent condom use (CCU) with clients were asked for how long they had used condoms consistently. Data on length of time using condoms, and length of time selling sex, were converted into number of FSW using condoms (numerator) and selling sex (denominator) by year, to give yearly rates of CCU from 2001 to the year of the survey. GEE (generalised estimating equations) linear regression time trend analysis, in conjunction with inflection point analysis, was used to determine the yearly rate of increase in CCU from 2001 – overall, and pre- and post-Avahan initiation in 2003 (inflection point) - and to assess significance of CCU time trends.
Results: In all 21 districts, the rate of increase in CCU from 2001 to the time of the surveys was highly significant. Overall CCU increased from 28% (22%) with occasional (regular) clients in 2001, to 75% (68%) in 2006, respectively. The yearly rate of increase in CCU was significantly greater after [slope 2003-6: 12.7% (12.1%) per year for occasional (regular) clients] than prior to Avahan [slope 2001-3: 5.0% (4.9%) per year for occasional (regular) clients] implementation ($p<0.0001$).
Conclusions: The findings indicate a positive relationship between implementation of the Avahan programme and rates of CCU increase among FSW. This method of analysis may be useful in other contexts for retrospective analysis of condom use time trends and assessing intervention impact.

P4.85

HIV AND STI PREVALENCE IN THE GENERAL POPULATION, SEX WORKERS AND CLIENTS OF MYSORE, BELLARY AND BELGAUM DISTRICTS, KARNATAKA STATE, SOUTHERN INDIA

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Objectives: To assess HIV/ STI prevalence and related behaviours in the general (GPS) and high risk populations (IBBA) of 3 Karnataka districts in the context of the monitoring and evaluation effort of Avahan, the India AIDS Initiative of the Bill & Melinda Gates Foundation).
Methods: The studies were carried out from late 2005 to 2008. We randomly selected 18,000 rural and urban GPS subjects aged 15 to 49, and 1200 female sex workers (FSWs) and 800 clients in the urban areas of the same districts in 2 rounds of IBBA surveys in 2004/5, and 2006/8. After providing informed consent, each participant was administered an extensive questionnaire, and consent was sought for blood and/or urine samples for HIV and STI testing.
Results: HIV prevalence rates in the GPS were 0.8% (Mysore); 1.2% (Bellary) and 1.4% (Belgaum). In Belgaum, the female HIV rate was higher than in males (1.6% to 1.3%); whereas the rate was higher among men in Mysore (1.0% vs.0.7%) and Bellary (1.2% vs.1.1%). Also, the rural HIV rate in Belgaum was higher than the urban rate (1.7% vs. 0.6%), compared to higher urban than rural rates in both Mysore (0.9% vs. 0.7%) and Bellary (1.4% vs.1.2%). Unlike HIV, Belgaum had the lowest rate of syphilis among the three districts (0.4% vs. Mysore 1.4% and Bellary 1.24%). Chlamydia rates were very low in all three districts (Mysore 1.1%; Belgaum 0.4%; Bellary 0.1%). In all areas, there was a significant association between HIV in men and history of sex with FSWs. Rates of HIV in FSWs in the 3 districts varied in round 1 IBBA: Belgaum 34%; Mysore 26%; Bellary 16% and round 2: Belgaum 27%; Mysore 24%; Bellary 14%. Client HIV rates, available for Belgaum and Bellary did not vary (6.2% vs. 6.0% respectively).
Conclusions: These studies show heterogeneity in the HIV epidemic with distinct inter-district and intra-district variation. HIV rates in risk groups are high -targeted interventions appear to be the correct approach for reducing these rates.

P4.86

UNDERSTANDING BIAS IN THE SELF-REPORTED NUMBERS OF CLIENT PARTNERS OF FEMALE SEX WORKERS IN KARNATAKA STATE, SOUTH INDIA

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Objectives: Self-report data on sexual behaviour may be biased for many reasons (e.g. recall bias). This study aimed to detect and understand bias in the self-reported monthly numbers of client partners (clients/month) of female sex workers (FSWs) in south India.
Methods: Data were analyzed from cross-sectional biological and behavioural surveys of FSWs in five districts in Karnataka state, supported by the India AIDS Initiative of the Bill & Melinda Gates Foundation. Five frequency measures of clients/month were defined from questions on client frequency (clients per: last day; typical day; typical week) and time period (days worked per: month; week*4.3). Four measures of bias were calculated as the difference between four frequency measures and the fifth (with the smallest overall mean and variance). Pearson correlation coefficients (PCC) were calculated for frequency and bias measures. Negative binomial regression was used to examine the relationship between characteristics of FSWs and the five frequency measures of clients/month.
Results: Overall, 2285 FSWs were sampled. Mean bias measures combining districts were significantly different from zero (Bias 1-4=1.6-8.6 clients/month). The five frequency measures for clients/month were all significantly positively correlated, with greater correlation across measures comprised of similar client frequency questions (0.93-0.98, $p<0.001$) than time period (PCC=0.72-0.78, $p<0.001$). Across the five frequency measures, effect sizes and p-values were similar for variables including age, marital status, duration of sex work, sex work typology, literacy and doing other paid work.
Conclusions: In multivariate analysis, trends are preserved across the five frequency measures for the self-reported monthly numbers of clients per FSW. Stronger correlations were observed between measures with the same client frequency (e.g. typical) than the same time period (e.g. days per month). Results will help direct the choice of measure in future studies.

P4.87

THE ECONOMICS OF SEX WORK IN SOUTH INDIA

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Objectives: This study seeks to understand how economic factors operate in tandem with socio-demographic and sex work characteristics of female sex workers (FSWs) to influence their numbers of client partners.
Methods: Data were analyzed from cross-sectional biological and behavioural surveys of FSWs in five districts in Karnataka, supported by the India AIDS Initiative of the Bill & Melinda Gates Foundation. The outcomes included: average monthly numbers of client partners per FSW (clients/month); amount charged per client in rupees (amount charged); and monthly sex work income (clients/month multiplied by amount charged). Univariate and bivariate trends in outcomes were examined overall and by district. Kruskal-Wallis and Wilcoxon Rank Sum tests were used to tests for differences between groups.
Results: 2285 FSWs were sampled. As FSW age increased, income decreased more dramatically (~70%) than amount charged (~55%), since younger FSWs also had higher clients/month ($p<0.001$). Brothel-based FSWs had more than double the clients/month compared to home-based or public-places-based FSWs, but charged 20%-40% less; monthly sex work income was thus only 1.6-fold greater for brothel-based FSWs ($p<0.001$). Married FSWs charged more than cohabiting and single FSWs but had the fewest clients, and income was similar across categories ($p<0.005$). FSWs in the mainly urban districts charged between 2-4.6-fold more than rural districts, despite reporting lower clients/month ($p<0.001$). Across districts, literate FSWs charged between 1.3- and 1.6-fold more than those who were not literate ($p<0.001$).
Conclusions: Some FSWs may have higher numbers of clients to compensate for a lower amount charged (e.g. brothel-based), while for others (e.g. younger FSWs), the ability to charge more may motivate higher numbers of clients. These results should be explored further to understand the impact of economics on risk behaviour and implications for prevention.

P4.88

FEMALE SEX WORK DIFFERENCES IN THE STATES OF ANDHRA PRADESH AND KARNATAKA, INDIA

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Background: The Avahan project in India focuses on targeted interventions for sex workers in 4 south India states. Profiles of commercial sex in these states have not been compared in detail to date, yet this is important for evaluating intervention efforts.
Methods: We conducted Special Behavioural Surveys (SBS) in randomly selected sex worker populations in rural and urban parts of one district of Andrah Pradesh (Guntur) and urban areas of 3 districts of Karnataka (Belgaum, Bellary and Bangalore) between 2006-7, total 1,959 women.
Results: Bellary and Guntur were characterized by high proportions of home based sex workers; Bangalore high proportions of public place sex workers and Belgaum by women in brothels. Despite working at home, 75% married women in Guntur and Bellary reported their husbands were unaware of their work, much lower than mostly brothel based women in Belgaum (44%). Almost all women in Guntur had repeat clients, higher than other districts. Two-thirds (66%) of women in Belgaum worked >20 days a month (mean 3.4 clients on last day), compared to between 26-42% of women in other 3 districts (mean 2.4-3.1 clients on last day). Anal sex with new clients was much more reported in Bellary (21%) and Guntur (19%), but FSWs in these districts were also much more likely to report condom use (75-76% with new clients). FSWs in Guntur were highly mobile, much more than other districts (34% also work in other places). They were also much more likely to know their HIV status (97%) compared to 3 Karnataka districts (43-68%). The FSW HIV rates (data from other surveys) were 33.9% in Belgaum; 15.7% in Bellary; 12.7% in Bangalore and 21.3% in Guntur.
Conclusions: The longer intervention program duration in Guntur is reflected in some of the data on condom use and knowledge of HIV status. However, there are other significant differences in FSW work and HIV rates in the 4 districts that warrant different approaches to interventions.

P4.89

UNDERSTANDING OUT-MIGRATION AMONG FEMALE SEX WORKERS IN SOUTH INDIA-CROSS SECTIONAL STUDY

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Background: Migrant sex workers are known to be vulnerable for HIV. There is substantial female sex worker (FSW) mobility between the borders of Maharashtra and Karnataka, and little programming emphasis on migrant FSWs in India. Thus, understanding the determinants of migration among FSWs assumes importance. This study evaluates socio-demographic, structural and contextual factors that contribute towards migration among FSWs from Karnataka.
Methods: A cross sectional face-to-face interview of 1567 FSWs from 142 villages in 3 districts of northern Karnataka, India was conducted comparing socio-demographic, structural and contextual determinants of migration of FSWs. Villages having 10+ FSWs and a large number of migrant sex workers were selected following a mapping of FSWs. Multinomial logistic regression was conducted for the three outcomes of non-migrant, migrant and mobile sex workers.
Results: In bi-variate analyses age, sex work typology, marital status, dependent children, reasons to enter sex work and household size were significantly associated with migration. Multivariate analysis revealed that FSWs <25 years (49%), brothel (82%) and street-based (77%) FSWs were more likely to be migrants compared to other FSWs. Similarly, Devadasi FSWs (56%), FSWs entering sex work for financial reasons (53%) and household size >9 (90%) were likely to be migrant SWs. In contrast, the FSWs with >3 dependent children (41%) were likely to be mobile SWs, while home based SWs were more likely to be non-migrants (66%).
Conclusion: Young, Devadasi, non-home based sex workers with no dependent children and a large household size, entering sex work due to financial needs with sex work being the only source of income are more likely to migrate for sex work. These FSWs should be the focus for planning HIV/STI interventions among migrant sex workers in India.

P4.9

ATTITUDES OF ADULT WOMEN TOWARDS RECEIPT OF STI VACCINATION

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Objectives: We examined attitudes of adult women (older than 27 years) toward receipt of STI vaccination.
Methods: Parents accompanying their children to medical appointments completed surveys. STI vaccine acceptability was assessed via a 6-item scale. Each item described a STI vaccine uniquely defined in terms of efficacy (50%; 70%, 90%), severity of infection prevented (acute, chronic, fatal), and whether condoms could prevent infection. Respondents rated willingness to receive each vaccine on a 0 to 100 scale. We assessed associations of vaccine acceptability with age, race/ethnicity, relationship status, and STI history using correlation, ANOVA, and multiple linear regression.
Results: Of 441 adults recruited, 258 were women ages 27-55 (M=39). They were 24% non-Hispanic Black, 35% non-Hispanic White, and 38% Hispanic. Vaccine acceptability scores ranged from 0 to 100 (M=78,SD=26). Age was significantly, but modestly negatively associated with acceptability (r=-.13,P<.05). Hispanic (M=89) and Black (M=88) women rated the vaccines higher than White women (M=75;P<.01). Women not-married and with no live-in partner rated the vaccines higher (M=84) than women married or with a live-in partner (M=75;P<.05). Those with a STI history had higher acceptability scores (M=84) than those with no STI history (M=76;P<.05). Hispanic ethnicity, Black race, and STI history remained significant independent predictors in a step-wise multiple linear regression analysis.
Conclusions: These results suggest that many adult women are interested in HPV vaccination. Minority women, who are disproportionately impacted by cervical cancer, had higher acceptability scores, supporting the argument that STI vaccination has the potential to reduce health disparities related to cervical cancer. It will also be important to communicate the benefits of STI/HPV vaccination for women with no STI history and who are in apparent monogamous relationships.

P4.90

FIELD EVALUATION OF POINT-OF-CARE SYPHILIS SCREENING AMONG FEMALE SEX WORKERS IN BANGALORE, INDIA

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Objectives: An evaluation of a rapid, point-of-care (POC) treponemal-specific syphilis test (Qualpro Syphicheck WB) was undertaken to assess its diagnostic utility in a screening program among female sex workers (FSWs) attending 4 STI clinics supported by the India AIDS Initiative of the Bill & Melinda Gates

Foundation, in Bangalore, India.
Methods: From August 2008, FSWs without a history of syphilis underwent onsite POC testing using finger-prick whole blood. They provided sera for reference laboratory RPR and TPHA testing, and for testing with the same POC test on serum. Treatment coverage was compared with FSWs who participated in offsite RPR screening from August 2007 to July 2008 in the same clinics.
Results: Of the eligible 1079 clinic attendees, 976 (90.5%) participated in onsite POC testing. Syphilis infection (reference laboratory RPR and TPHA positive) was diagnosed in 7.9% (77) of women, of whom 37 had an RPR titer ≥1:8. Compared to the reference laboratory gold standard, the sensitivity and specificity of onsite POC testing (whole blood) was 72.7% (95%CI, 62.7-82.8%) and 97.4% (95% CI, 96.4-98.5%) whereas that of the laboratory POC testing (serum) was 97.4% (95% CI: 93.8-100%) and 93.2% (95% CI: 91.6-94.8%) respectively. 96.3% of women who tested positive by onsite POC were treated (at the same visit), compared to 49.5% tested by offsite RPR who returned for treatment in the prior period. The proportion of women with reference lab positive syphilis who received treatment increased from 47.2% with offsite RPR screening to 67.5% with onsite POC screening (p=0.001).
Conclusion: Despite its good performance using serum samples in the reference lab, the POC syphilis test on finger-prick whole blood had a low sensitivity in detecting RPR and TPHA positive infection. However, among hard to reach populations who may not return for follow-up after testing to receive their results, screening with this onsite POC test may offer an advantage with respect to treatment coverage.

P4.91

RECURRING PATTERNS IN SAFER SEX DISCUSSIONS IN FORUMS OF SEX WORKERS' CLIENTS
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Background and Objectives: In Germany, male clients of female sex workers have set up a number of internet forums to discuss their hobby and where and how to find which services. These forums are being used by several hundred men per diem. We wanted to find out whether these users were interested in learning more about STD, sexual health and safer sex.
Methods: Seven major forums have been visited regularly, at least once a month, between 2003 and 2008. With the approval and technical support from the forums' webmasters the forums have been screened for respective key words (like condom, syphilis, clap etc.). The relevant postings and discussions were analyzed for their cognitive and emotional content e.g. by the words used and by the intention declared.
Results: Although statistical data generated from internet forums should be handled with reasonable care, the outcomes show clearly: Users of forums for sex workers' clients are continuously discussing with their peers the risks of commercial sex without condoms or other protection. 80% of all discussions about sexual health issues include knowledge building information (e.g. presenting links to informative websites); 65% focus emotional needs (e.g. "don't worry") whereas 55% include practical advice (e.g. "go and see your doctor/a counsellor"). HIV/AIDS (78%) is the most frequently mentioned disease, followed by clap (72%), herpes and genital warts (both 40%).
Conclusions: While sexual health issues are common concerns within the clients' forums, expertise among their users is too rare. Peer-to-peer counselling does include errors and misconception. Prearranged interventions by sexual health experts should be considered.

P4.92

CORRELATES OF UNPROTECTED SEX WITH FEMALE SEX WORKERS AMONG MALE CLIENTS IN TIJUANA, MEXICO
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Background: Tijuana, situated adjacent to San Diego, CA on the US-Mexico border is experiencing an emerging HIV epidemic, with HIV prevalence rising from <1% to 6% in recent years among female sex workers (FSWs). In contrast, no systematic data has been collected from FSWs' male clients. We explored correlates of unprotected sex with a FSW among their clients in Tijuana.
Methods: In 2008, males from San Diego (N=189) and Tijuana (N=211) aged 18 or older who had paid/traded for sex with a FSW in Tijuana during the past 4 months were recruited in Tijuana's red light district, where prostitution is tolerated. Men underwent interviews and rapid testing for HIV, syphilis, gonorrhea, and Chlamydia.
Results: Of 394 men, 198 (50.2%) reported unprotected vaginal/anal sex with FSWs in Tijuana in the past 4 months. Compared to clients who did not report unprotected sex with FSWs in Tijuana in the past

4 months, men who reported unprotected sex with FSWs were significantly more likely to report a longer mean history of sex with FSWs (12.3 vs. 9 years), more FSW partners in the past year (32 vs 20), and a current steady FSW/ex-FSW sex partner (36 vs. 12%); they were also significantly more likely to report recent sex with a male partner (21.2 vs. 7.1%) and injection drug use (32.8 vs. 17.3%). Factors independently associated with recent unprotected vaginal/anal sex with a FSW in Tijuana were recently being under the influence of drugs during sex (OR: 3.1, p<0.0001), visiting the same FSW (OR: 2.3, p=0.0003), being married (OR: 1.5, p=0.0507), and being unemployed (OR: 1.6, p=0.0482).
Conclusions: FSWs' clients represent a transmission 'bridge' for STIs/HIV through unprotected sex with FSWs, wives and other partners. Urgent action is required to include them in risk reduction interventions, including promotion of consistent condom use, particularly within the context of drug use, as well as spousal and 'regular' sexual relationships with FSWs.

P4.93

A QUALITATIVE EXPLORATION OF SEX PURCHASING EXPERIENCES AND SEXUAL BEHAVIORS OF MALE CLIENTS OF FEMALE SEX WORKERS IN TIJUANA, MEXICO

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Background: Tijuana – located along the US-Mexico border – contains a regulated Zona Roja (red light district), attracting sex tourists from the US, Mexico, and internationally. While increasing rates of STIs/HIV have been reported among female sex workers (FSWs), little data is available regarding their male clients. We explored sexual behaviors and sex purchasing experiences among male clients of FSWs in Tijuana, Mexico.
Methods: Clients (n=30) were purposively selected from a larger quantitative study in Tijuana to reflect diverse experiences with sex purchasing and sexual behavior. All participants were male, at least 18 years old and had sex with a FSW in Tijuana during the past 4 months.
Results: Social, structural, and individual factors were perceived by male clients of FSWs as related to their sex purchasing experiences and sexual behaviors with FSWs, girlfriends, wives, and casual partners. Ongoing sexual relationships with FSWs that clients visit on a regular basis (often regarded as 'friends'/'girlfriends'), as well as with spouses and other concurrent partners, were commonly described as unprotected. Inconsistent condom use with FSWs was recounted as largely occurring under the influence of drugs/alcohol. Clients also explained how concerns regarding sexual pleasure, negative experiences with condoms (e.g., breakage, discomfort), and a desire for intimacy posed barriers to consistent condom use with FSWs and other partners. Structural factors perceived as related to frequent and sometimes unprotected sex with FSWs included employment in occupations that put men in close contact with FSWs and/or far from regular partners (e.g., bartending, military), as well as social and economic dislocation associated with deportation from the US.
Conclusions: To reduce STI/HIV risk among male clients of FSWs, interventions that respond to these individual behaviors as well as the wider social and structural circumstances described are urgently needed.

P4.94

HOW MANY FEMALE SEX WORKERS ARE THERE IN SYDNEY, AUSTRALIA?

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Objective: Despite their potential importance in sexually transmitted infection control, sex workers are difficult to count directly. The objective of the study was to use mathematical techniques to estimate the number of sex working women in Sydney.
Methods: Sex workers were interviewed in brothels as part of the Law and Sexworker Health (LASH) study. Questions were posed on the length of time in the sex industry, number of hours worked per week, and attendance at the Sydney Sexual Health Centre (SSHC) in the previous 12 months. These data were compared to clinic attendances by individual sex workers in the preceding 12 months. We used the ratio-estimator method to ascertain the local daily total. We used information on the number of hours worked per week to estimate the weekly total. Data on the length of time in the industry was entered into von Foester's equation to provide an estimate of the median time in the sex industry, and therefore how many women enter and leave each year. These data were combined to provide the 12-month estimate.
Results: A representative sample of 201 sex workers were interviewed in their workplaces within a 20km radius of SSHC, and their median reported time in the sex industry was 35.58 months. Of these women, 40% reported attending the clinic within the previous 12 months. The clinic saw 631 female sex

workers over the same period. Our results suggest there are 1578 daily, 2138 weekly and 2859 (95% CI: 2356-23893) brothel-based female sex workers in a 12 month period.
Conclusion: This is the first time that mathematical techniques have been used to enumerate sex workers in Sydney. These data are useful for service-planning, and the methods described may enable others to establish local figures. Although brothel-based female sex workers represent the majority of the Sydney sex industry, these figures should be regarded as a minimum estimate.

P4.95

COMMUNITY BASED STUDY OF HIV, STI AND SEXUAL BEHAVIOR AMONG FEMALE SEX WORKERS IN KISUMU, NYANZA PROVINCE, KENYA

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Background: In 1997, a survey was conducted among female sex workers (FSW) in Kisumu (Kenya). Prevalence of HIV infection was 75% and only 50% of women reported condom use with the last client. In 2006, a dedicated clinic for FSW was set up in Kisumu. The effects of this intervention will be evaluated by repeated population-based, cross-sectional studies among FSW. We report results of the baseline survey which was conducted between October and December 2008.
Methods: We aimed for a sample size of 476 FSW. Women were recruited by respondent-driven sampling. FSW who participated in the study received referral coupons to recruit a maximum of 3 peers who were invited to visit the clinic for study participation. After providing written informed consent, each woman completed a behavioral questionnaire, and a physical exam. A blood sample and vaginal samples were collected and tested for HIV, HSV-2 and other sexually transmitted infections. Here we present unweighted data.
Results: In total, 956 coupons were issued; 44 women were excluded and 481 FSW participated in the study (participation rate: 55%). Of these, 6% were less than 20 years old, 64% between 20 and 29 years, and 30% were 30 years or above. Forty-three percent of women had never married, 1% was currently married, 25% were widowed, and 30% were divorced. The majority of women (78%) reported at least one boyfriend. Most women were doing sex work less than 10 years (44% less than 5 years; 32% between 5 and 9 years). Condom use with last client was reported by 75 %. HIV-prevalence was 58% and HSV-2 prevalence was 84%.
Conclusions: Reasons for low study participation need to be further explored and addressed in the next survey. Compared to the 1997 survey, HIV prevalence among FSW in Kisumu has decreased and reported condom use has increased. However, HIV prevalence levels in this population are of major concern. Coverage of tailored HIV and STI prevention and care services for FSW urgently need to increase.

P4.96

SEXUAL HEALTH AND RISK BEHAVIOUR AMONGST MEN WORKING IN THE ADULT FILM INDUSTRY.

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Background: HIV transmission has taken place in both the heterosexual and homosexual adult film industries. Our hospital provides a sexual health service for men working in the sex industry, including the adult film industry (AFI). The clinic promotes safer sex and highlights the risks of unprotected sex to men working in the AFI. We aimed to make an assessment of risk in the AFI in light of previous well publicized transmissions.
Method: Men working in the AFI attending our service were identified from the clinic databases. Retrospective case notes review was then undertaken collating data including demographics, sexuality, sexual practices in the AFI and privately and STIs.
Results: 23 men were identified as working in AFI during a 12 month period. 13 identified as heterosexual, 4 as bisexual and 6 as homosexual. Age range was 21-55 years. 2 heterosexuals, 1 bisexual and 4 homosexuals reported always using condoms when filming. 8 reported no history of previous STIs. 39% (9/23) were diagnosed with a sexually transmittable infection at the initial screening visit or at a visit shortly thereafter. All tested HIV negative. Outside of the AFI 5 worked additionally as escorts. 10/18 patient records contained information reporting no condoms or inconsistent condom use with other partners.
Conclusions: Men working in the AFI are a diverse and heterogeneous population. High levels of previous/ current STIs are of concern. Well publicized HIV transmissions seem to have had relatively

little impact in terms of gaining high level condom use is the AFI. Without a change in filming practices future disease outbreaks remain highly probable in the AFI. Screening prior to production of films may give some actors a false sense of security hence the need for clear information about risks within the AFI.

P4.97

INHIBITORY EFFECT OF LUBRICANTS AND A VAGINAL CONTRACEPTIVE GEL ON DETECTION OF BIOMARKERS OF SEMEN EXPOSURE

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Background: Biomarkers of semen exposure can be used to validate self-reports and protocol compliance in STD prevention and microbicide trials. Lubricants are commercially available, and several microbicides are under development. However, little is known about the possible inhibitory effects of these agents on detection of biomarkers of semen exposure. In this study, we investigated the in vitro effect of Gynol®, KY Jelly® and Replens® on detection of PSA and Y chromosomal (Yc) DNA.
Methods: Serially diluted semen samples were prepared and each of the gels individually added to these samples to achieve a final gel concentration of 10% v/v. Additionally, serial dilutions of each of the lubricants were added to three different semen dilutions (high, medium, low). The main polymer ingredient in Replens® was also investigated against a panel of serially diluted semen samples. The resulting samples were tested for PSA on the ARCHITECT System and for Yc DNA by Real-Time PCR (RT-PCR). PSA and Yc DNA levels from experimental samples were compared to control samples with no gels added.
Results: PSA levels in semen samples spiked with Replens® were significantly lower than those of control samples. All Replens®-spiked samples were PCR-negative for Yc DNA (Table 1). The main ingredient in Replens® (Carbopol) showed the same inhibitory effect as the lubricant gel. Gynol® showed some inhibitory effect for both PSA and Yc, while KY® showed no interference with the assays. The level of inhibition was directly related to the concentration of lubricant gel in the sample.

	PSA (ng/mL)	PSA (ng/mL)	Yc (ng/mL)	Yc (ng/mL)
Semen dilution	Control (No lubricant)	Replens	Control (No lubricant)	Replens
1:100	>100.000	1.393	30.9	Negative
1:200	>100.000	0.549	12.2	Negative
1:400	>100.000	0.797	10.2	Negative
1:800	>100.000	1.618	8.4	Negative
1:1600	>100.000	1.918	3.8	Negative
1:3200	98.959	2.274	2.5	Negative
1:6400	47.318	2.408	1.6	Negative
1:12800	25.193	1.837	N/A	N/A
1:25600	12.544	0.795	N/A	N/A
1:51200	6.460	0.563	N/A	N/A

Conclusions: The lubricant Replens® interferes with detection of PSA on the ARCHITECT System and Yc DNA by RT-PCR, and the inhibition is dose dependent. Caution is warranted when using these assays for detection of PSA and Yc DNA as biomarkers of semen exposure in trials where Replens® might also be used. Additional studies evaluating other detection platforms/assays as well as lubricants and microbicides are necessary.

P4.98

DETECTING CHLAMYDIAL AND GONOCOCCAL INFECTION USING RESPONDENT DRIVEN SAMPLING: AN OVERVIEW AND PILOT STUDY

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Objective: To develop and evaluate a programmatic approach to modifying Respondent Driven Sampling (RDS) as a method to prospectively screen for Chlamydia trachomatis (Ct) and Neisseria

gonorrhoeae (GC) infections in socio-sexual networks of infected persons.
Methods: Using two components of RDS methodology, the systematic referral scheme and the dual incentive structure, we developed a programmatic approach to refer social and sexual contacts for Ct and GC screening. Initial seed participants are identified and asked to recruit their peers for screening, who in turn recruit their peers, and so on. Persons receive an incentive for their own participation ($10) in addition to receiving an incentive for the participation of those they refer ($5). We will identify 20 initial seeds from patients attending an urban STI clinic to begin the referral chains with the intent of screening up to 500 adolescents and young adults between the ages of 15 and 24. Seed participants are instructed to recruit and refer five people from their network of social and sexual contacts. Participants provide a urine specimen for Ct and GC screening and complete a brief survey questionnaire.
Results: Seed identification and recruitment began in January 2009. To date, we have identified and recruited six seeds. All six seeds are infected with GC. At this early stage in the project, we have not yet recruited any referrals.
Conclusions: Initial pilot data indicates that STI clinic patients are willing to recruit and refer their socio-sexual contacts for Ct and GC screening.

P4.99

PUBLIC-HEALTH IMPACT OF VAGINAL MICROBICIDES AND ORAL PREP INTERVENTIONS: WHAT SHOULD BE THE MINIMUM EFFICACY TO BE OBSERVED IN INDIVIDUAL-RCTs?
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Background: There are several on-going and planned phase III trials for vaginal microbicides (VMB) and oral PrEP products for evaluating their effectiveness in preventing transmission of HIV. Traditionally, HIV prevention trials have been powered to rule out lower efficacy of 0%. However, some math modeling exercises have shown that products might need to have greater than 30% (even 50% for oral PrEP) individual efficacy in order to offset the possible increase in HIV risk behaviors. As a result, most of the current trials are powered to rule out minimum individual efficacy (MIE) from 10% to 30%. The magnitude of the MIE affects substantially the trial's sample size (see table).

Impact of MIE on the sample size for the VOICE trial:

MIE	0%	5%	10%	15%	20%	25%	30%	35%	40%
Smaple Size	1550	1950	2250	2700	3300	4200	5600	8200	13500

Despite its impact on the cost of trials, the literature supporting the use of any specific MIE is quite scarce such that a formal investigation is warranted.
Objective: To analyze how the magnitude of MIE influence the public-health impact of wide-scale use of prevention products (VMB or oral PrEP) and to identify MIE levels to ensure positive population-level effects under a wide array of settings.
Methods: We developed a deterministic model of HIV transmission to study the impact of a wide-scale population usage of VMB/oral PrEP. The influence of MIE and other factors (e.g. sexual disinhibition) on population-level benefits is studied under different scenarios using parameters sampled from ranges representative for the developing countries. The importance of each factor to the public-health outcome is analyzed.
Results: Our analysis shows that population benefits from a wide-scale VMB or oral PrEP intervention are dynamic in time. We evaluate the expected public-health impact of the interventions over extended periods of time (up to 20 years) and recommend levels of MIE for future VMB and oral PrEP trials.

Symp

CHLAMYDIA INFECTION, PELVIC INFLAMMATORY DISEASE, ECTOPIC PREGNANCY, AND INFERTILITY: INTERNATIONAL ECOLOGICAL STUDY
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Objectives: To investigate the hypothesis that, in countries with similar economic and social status, rates of pelvic inflammatory disease, ectopic pregnancy and infertility would be highest in countries with the least intensive chlamydia control activities.
Methods: Ecological study. Comparison of routine and published data about chlamydia diagnosis, testing, and prevalence, ICD-10 coded diagnoses of pelvic inflammatory disease, ectopic pregnancy and infertility,

and sexual behaviour in 2004. National data from Australia, Denmark, Sweden and Switzerland, and from two representative regions in Germany.
Results: Reported rates of diagnosed chlamydia were lowest in Switzerland (56.2 per 100,000 population), intermediate in Australia (180.1), and highest in Sweden (358.2) and Denmark (400.4). The rate could not be calculated for Germany, which has a sentinel surveillance system. In Australia, Denmark, Sweden and Switzerland national rates of ectopic pregnancy (12-14 per 1,000 live births) were similar and consistent with those from the German regional sample (19 per 1,000 live births, 95% confidence intervals 10-31). Rates of hospitalised pelvic inflammatory disease slightly lower in Sweden and Switzerland (48 and 71 per 100,000 women aged 15 to 39 years) than in Australia and Denmark (95 and 106 per 100,000 women aged 15 to 39 year). Sexual behaviour and chlamydia prevalence data were difficult to compare across countries.
Conclusions: Differences in the intensity of existing chlamydia control policies and practices in the five study countries did not seem to have affected the incidence of major reproductive tract complications of the infection. Our study suggests that the benefits to women's reproductive health of expanding opportunistic chlamydia screening are not clear.

Symp

USE STILLBIRTH RATES FROM DHS TO ASCERTAIN COUNTRY-SPECIFIC IMPACT OF CONGENITAL SYPHILIS ELIMINATION: WHICH COUNTRIES LIKELY HAVE GREATEST IMPACT?
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Objectives: We assessed the utility of existing Demographic and Health Surveys (DHS) to 1) estimate and compare stillbirth rates among nations; 2) estimate the extent to which stillbirth could be prevented with routine maternal syphilis screening and treatment, given a range of maternal syphilis prevalence rates, coverage and timing of antenatal care; 3) identify country scenarios in which elimination efforts would have greatest impact.
Methods: DHS provide reliable, nationally representative data on reproductive health outcomes. Using country-specific WHO estimates of syphilis prevalence among antenatal attendees and the most recent national DHS data on coverage and timing of antenatal care, we calculated the potential reduction in stillbirth rates in selected countries in Africa, South America and Asia should maternal syphilis screening and same-day treatment for positives be consistently provided at the first antenatal visit.
Results: Using the DHS "stillbirth" definition (pregnancy loss at >7 months of gestation), the rate of stillbirth ranged from 8 (Zimbabwe) to 20 (Mozambique) per 1000 pregnancies reaching the 7th months gestation. Countries with high perinatal mortality generally experienced higher stillbirth rates. The estimated rates of stillbirths attributable to syphilis varied. Were syphilis screening and treatment to be routinely done at the first antenatal visit, the estimated reduction in stillbirth rates/1000 pregnancies ranged from 0.5 (Ethiopia) to 10.9 (Mozambique), representing 5% to 55% of all stillbirths in these countries.
Conclusions: DHS data have potential utility in monitoring the impact of congenital syphilis elimination efforts. The reduction in stillbirth rates through routine syphilis screening/treatment at the first antenatal visit depends on maternal syphilis prevalence and coverage of antenatal care: With higher syphilis prevalence and widespread and early antenatal care, greater reductions in stillbirths are expected.

Symp

ELIMINATING CONGENITAL SYPHILIS: MAKING WHAT WORKS ACCESSIBLETO ALL
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Background: Eliminating congenital syphilis (CS) would bring about a substantial reduction in the global burden of disease; moreover, it is a highly cost-effective investment, even in the lowest income settings. The cornerstones to achieve this universally are in place, the recent development of new diagnostic tools offers the possibility of testing every pregnant woman, and programmes for the elimination of CS can be integrated with other programmes to enhance efficiency. However, the elimination of CS has failed to attract international attention.
Goals: 1) To review the global importance of CS; 2) To identify effective interventions to reduce levels of congenital syphilis, and to ensure that these interventions are incorporated into national plans and programmes.
Methods: 1) Literature review and modelling, 2) Systematic review of peer reviewed literature,; and 3) consultative process for design of global elimination plan.
Results: 1) We conservatively estimated the annual numbers of cases of CS occurring globally (728,547-1,527,560, depending upon assumptions), and we discuss the medical, economic and social implications of these cases; 2) We will present evidence from a systematic review which has focussed on

the published evidence that syphilis screening programmes have a noticeable impact on neonatal health outcomes and also result in a reduction of adverse pregnancy outcomes; and 3) We will then present the global plan based on four pillars to increase coverage of syphilis screening, making this intervention available to all women as a global public good.
Conclusion: The elimination of CS can be achieved through the implementation of a series of proven measures but require technical support, funding and a commitment among political forces, health officials and the public to prevent and treat all CS cases and help countries reach their Millennium Development Goals.

Symp

THE GLOBAL DISEASE BURDEN OF CONGENITAL SYPHILIS: ESTIMATED ANNUAL DISABILITY-ADJUSTED LIFE YEARS

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Background: There are more than 2 million annual syphilis-infected pregnancies worldwide, according to the World Health Organization. However, the disability-adjusted life year (DALY) burden of congenital syphilis is poorly understood, due to heterogeneous clinical consequences and nonstandardized DALY burdens for in utero and perinatal events. We estimated DALYs using recent estimates of clinical consequences and a method to assign DALYs for pregnancy and neonatal events.
Methods: A WHO summary of evidence estimated the number of congenital syphilis infections at 2.1 million, and the probability of clinical consequences as follows: stillbirth or spontaneous abortion 20%, perinatal death 15%, infected infant 20%, prematurity or low birth weight 20%, and no consequences 25%. We used estimates of the DALY burden of these events from the Global Burden of Disease and other sources (4.95, 9.4, 5, and 2, respectively).
Results: The annual global DALY burden of congenital syphilis is estimated at 7.98 million (stillbirth or spontaneous abortion 2.08 million, perinatal death 2.96 million, infected infant 2.10 million, prematurity or low birth weight 0.84 million). Given widely disparate estimates of prevalence of clinical outcomes and DALY burdens, varying input values and DALY methods leads to a likely range in DALY burden of 5 to 20 million.
Conclusions: The global DALY burden of congenital syphilis is comparable to or greater than the pregnancy-associated DALY burden of HIV (4.4 million) and malaria (1.5 – 4 million). This highlights the imperative to include syphilis screening in all antenatal care programs.

Symp

WHERE WE STAND ON CONGENITAL SYPHILIS ELIMINATION EFFORTS: PROGRESS TOWARD EFFECTIVE PROGRAM IMPLEMENTATION IN COUNTRY SETTINGS

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Objectives: In October 2007 WHO launched a new global initiative for the global elimination of CS as a public health problem. We sought to identify program steps needed to achieve congenital syphilis (CS) elimination using data reported by representatives from moderate to highly affected countries.
Methods: For a WHO consultation preceding launch of the global initiative, national health ministry staff were provided structured questions relevant to CS elimination asking about national policies for maternal syphilis screening, indicators of service access and delivery, and monitoring and evaluation plans.
Results: Of 23 nations in Africa, the Americas and Asia invited to comment, 16 (70%) responded. Of these, most (94%) had universal syphilis screening policies and 50% had national CS elimination policies. All reported antenatal care (ANC) coverage (medium coverage, 66%). Reporting on other program effectiveness indicators was limited: 11 (69%) gave data on proportion of women accessing ANC by 24 weeks of gestation; 4 (25%) on proportion screened for syphilis at first ANC visit; and 3 (19%) on same day treatment. Two (13%) had existing evaluation plans. All reported needing additional resources and technical support. Case studies in which country staff gave in-depth accounts of local or national scale up were perceived as useful in summarizing key activities and providing insights into likely problems and potential solutions.
Conclusions: The challenges reported by countries suggested a way forward in scaling up universal syphilis screening and same-day treatment as part of integrated ANC: (1) National ownership of the program including key stakeholders; (2) Prioritize ANC coverage; (3) Establish standardized program with process and impact indicators with clear lines of accountability; (4) Strengthen national and local

capacity in understanding program goals, data collection and management; (5) Document and disseminate local processes, challenges and achievements.

Symp

"SHAZ!" PHASE II: POTENTIAL EFFICACY OF AN ECONOMIC AND LIFE SKILLS INTERVENTION TO MITIGATE STRUCTURAL RISK AMONG FEMALE ORPHANS IN ZIMBABWE

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Background: Structural factors (such as poverty and gender-based violence) have been linked to HIV/STI risk and infection. We evaluated the potential efficacy of a combined economic and life skills intervention (SHAZ!-Phase II) to mitigate such factors among adolescent female orphans in Zimbabwe.
Methods: A sample of 315 16-19 year old females, who were orphaned, out of school, HIV/HSV-2 uninfected and not pregnant, were randomized to an intervention arm combining life skills education with vocational training and a micro-grant, or a control arm receiving life skills only. Participants were followed every 6 months for 2 years. We examined changes over 24 months in structural factors found to be associated with HIV risk at baseline using tests for trend and generalized estimating equations.
Results: From baseline to follow up at 24 months, food insecurity (as a measure of poverty) in the past week decreased: 33% had not eaten at least one day last week at baseline to 13% at follow-up ($p<0.01$); 11% had gone to bed hungry vs. 8% ($p=0.57$); and 20% could not eat at least two meals per day vs. 13% ($p=0.04$). At baseline 12% had ever experienced physical or sexual violence (5% physical only; 9% sexual only and 8% forced sex only). At 6 months, 7% reported experiencing violence in the previous 6 months decreasing over time to 1% at 24 months ($p<0.001$). In GEE analyses, experience of violence was lower in the intervention compared to control arm (OR 0.39, 95% CI: 0.17, 0.92); no other factors examined differed significantly by study arm.
Conclusion: Participation in this Phase II study seems to have improved structural factors regardless of study arm, while being in the intervention arm reduced by more than half the odds of experiencing violence by study completion. These findings revealed trends that merit moving on to a Phase III trial powered to examine sustained structural effects over time and effects on biological outcomes.

Symp

"SHAZ!" PHASE II: POTENTIAL EFFICACY OF A COMBINED ECONOMIC AND LIFE SKILLS INTERVENTION TO PREVENT HIV/STI INFECTION AMONG FEMALE ORPHANS IN ZIMBABWE

Dunbar, M[1]; Kang, M[2]; Assefa, H[3]; Laver, S[4]; Mudekunye, I[5]; Nhamo, D[5]; Padian, N[6]
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Background: We evaluated the feasibility and potential efficacy of a combined economic and life skills intervention (SHAZ!-Phase II) to reduce HIV/STI and unintended pregnancy among adolescent female orphans in Zimbabwe.
Methods: A convenience sample of 315 16-19 year old females, who were orphaned, out of school, and HIV/HSV-2 uninfected and non-pregnant, were randomized into intervention (life skills plus vocational training and a micro-grant) and control (life skills only) arms. Every 6 months for 2 years, we measured behavioral data and tested for HIV, HSV-2 and pregnancy. We analyzed effects of the intervention on biological outcomes using intent-to-treat (ITT) Cox survival analysis.
Results: At baseline, the mean age of participants was 17.5. The majority (94%) was not living with a partner; however 25% had engaged in sex. There were no statistically significant differences by study arm for any baseline factors, or in retention rates at final study visit (79%). Incidence for HIV, HSV-2 and pregnancy was 2.4/100 person years (py); 4.8/100 py; and 1.4/100 py respectively. There was no effect of the intervention on biological outcomes: HIV (HR=0.95, 95% CI: 0.33, 2.71); HSV-2 (HR=1.48, 95% CI: 0.69, 3.15); and PG (HR=0.69, 95% CI: 0.43, 1.08).
Conclusion: This Phase II trial of the SHAZ! intervention among this vulnerable population was feasible, in spite of important contextual challenges in Zimbabwe. Although not powered for biological outcomes, this study revealed trends that merit moving on to a Phase III trial. Ongoing research is underway to analyze the effect of SHAZ! on structural factors hypothesized to be on the causal pathway to HIV/STI infection and/or unintended pregnancy.

Symp

DETERMINANTS OF INTERVENTION TRAINING COMPLETION AMONG ADOLESCENT FEMALE ORPHANS ENROLLED IN AN ECONOMIC AND LIFE SKILLS INTERVENTION IN ZIMBABWE

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Background: Variation in completion of intervention activities can complicate findings from intervention trials. We examined baseline determinants of completion of intervention training activities in an HIV prevention trial among adolescent female orphans in Zimbabwe.
Methods: A sample of 315 HIV/HSV-2 negative and non-pregnant 16 to 19 year old female orphans was recruited through community events. Participants were randomized to intervention and control arms. All participants underwent life skills education, and a 4-week Red Cross home-based care course. The intervention arm also included a 6-month vocational training course. Using logistic regression, we examined baseline characteristics (demographics, economic markers and experience of violence) associated with completion of trainings.
Results: Overall, 94% completed life skills (96% intervention, 92% control, p= 0.14), 61% completed Red Cross training (65% intervention, 57% control, p= 0.19), and 54% completed vocational training. Controlling for age, characteristics associated with completing training included inability to pay for a clinic visit (OR 2.6, 95% CI, 1.5, 4.2) someone in the household seriously ill (OR 0.5, 95% CI 0.3, 0.9) and secondary education (OR 3.9, 95% CI 2.3,6.7). Baseline food security, personal experience of violence, orphan type, marital status and household composition were not associated with completion of training. Completion of trainings was not significantly different by study arm.
Conclusion: Completion of training as a measure of intervention adherence differed by education status, living with an ill household member, and inability to pay for a needed clinic visit, a variable which may be related to motivation in participation.

Symp

"SHAZ!" PHASE II: STRUCTURAL RISK FACTORS AND HIV/STI RISK AMONG ADOLESCENT FEMALE ORPHANS IN ZIMBABWE

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Background: Structural factors (such as poverty, gender inequities and violence) have been linked to risk for HIV/STI, particularly among women and girls in sub-Saharan Africa. We evaluated the association of such factors with HIV/STI risk among participants who underwent screening for a combined economic and life skills intervention (SHAZ!-Phase II).
Methods: A convenience sample of 409 16-19 year old females underwent a baseline survey and testing for HIV, HSV-2 and pregnancy. Using logistic regression analysis adjusted for age, we assessed the association of economic markers (education, food insecurity, and orphan status), gender equity (based on a gender norm scale ranging from 1-4, "most to least equitable"), and experience of physical/sexual violence with unprotected sex, HIV/HSV-2 infection, and pregnancy.
Results: The mean age of study participants was 18, with 73% having completed secondary school. All participants were orphaned: 11% had lost both parents; 55% their father only, and 35% their mother only. The average gender norm score was 2.8, and 12% had ever experienced at least one form of violence (5% physical only, 9% sexual only and 8% forced sex only). Completing secondary school was highly protective for all outcomes at P<0.001. In addition, unprotected sex was associated with food insecurity (OR 2.35, 95% CI: 1.34, 4.12) and experience of violence (OR 6.39, 95% CI: 2.83, 14.43). HIV/HSV-2 infection was associated with consistent condom use (OR 2.16, 95% CI 1.02, 4.52), and pregnancy was associated with violence (OR 3.14, 95% CI 1.30, 8.78) and consistent condom use (OR 6.50, 95% CI 2.50, 17.23).
Conclusion: Structural risk factors were prevalent, and associated with biological and behavioral outcomes in this population. Unexpectedly, consistent condom use was associated with HIV/STI infection and pregnancy, indicating that it may be a marker for risk, rather than a protective behavior.

Symp

PREVEN: URBAN COMMUNITY RANDOMIZED TRIAL OF STI PREVENTION

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Objective: To evaluate the impact of a three year multicomponent intervention on the prevalence of STIs in ten intervention and ten control cities in Peru.
Methods: Interventions included (1) training of pharmacy workers in syndromic management of urethral and vaginal discharge and referral of clients with pelvic inflammatory disease and genital ulcer to a

network of trained clinicians; (2) outreach of sex workers (FSW) by a mobile team every two months for screening and treatment of STIs, presumptive treatment for tricomoniasis and bacterial vaginosis, provision of free condoms; and (3) initial social marketing of condoms and STI treatment packets. Impact was assessed by baseline and two and three year surveys of prevalences of STI in comprehensive samples of FSW and random household-sample of young adults (GP) 18-29 years of age in each of the 20 cities. We used computer-assisted self-interviews of young adults for risk behaviors and health care seeking and state of the art testing for STIs.
Results: Overall prevalences of STI at the end of the third year for the 20 cities combined by type of test were as follows:

	18-29 yo general population females	18-29 yo general population males	FSW
	(N=6648)	(N=6399)	(N= 4154)
GC (TMA)	0.2%	0.1%	0.8%
CT (TMA)	6.5%	4.4%	12.2%
TV (TMA)	3.5%	-	6.6%
RPR > 1:8	0.2%	0.3%	1.3%
HIV (Elisa, WB+)	0.2%	0.5%	0.4%

Conclusions: Final statistical comparisons of STI prevalence in intervention vs. control cities, adjusted for baseline prevalence, will be presented. Implications of these results are important for STI control in countries with concentrated urban epidemics, as most Latin American countries.