vulnerabilities related to age, socioeconomic status, life course factors, and engagement in high risk behaviour such as sex trade. We present a risk factor analysis for those with single and multiple STIs, using the Enhanced Surveillance of Canadian Street Youth (E-SYS) data.

**Methods** E-SYS is a cross-sectional surveillance system of street-involved youth (15–24 years). Participants from seven urban centres completed an interviewer-administered questionnaire and were tested for multiple sexually transmitted and blood-borne infections. For this analysis, data were restricted to five infections (HIV, chlamydia, gonorrhoea, syphilis and HSV-2). Data from three cycles (2001–2006) were analysed to determine total number of infections per participant using an iterative tracker. Participants who indicated previous participation were excluded from the analysis to avoid double-representation.

**Results** Of those who provided biological specimens (n=3823), 17.0% tested positive for one infection and 3.4% tested positive for two or more infections (Abstract O1-S04.03 table 1). Over half (15 of 28) of HIV-positive individuals were multiply-infected. Risk factors for multiple infections included older age (p=0.0449), being Aboriginal (p=0.0061; particularly females), being HIV infected (p=<0.0001), having a previous history of an STI (p=0.0144), pregnancy (p=0.0079), and reporting prostitution as the primary source of income (p=0.0028).

Abstract O1-S04.03 Table 1 Single and multiple STI in the enhanced street youth surveillance population

| | Chlamydia | Gonorrhoea | Syphilis | HSV-2 | HIV |
|---|---|---|---|---|---|
| Chlamydia | 268(7.98%) | | | | |
| Gonorrhoea | 42(1.26%) | 17(2.35%) | | | |
| Syphilis | 2(0.07%) | 2(0.07%) | 3(0.09%) | | |
| HSV2 | 72(2.78%) | 19(0.74%) | 4(0.14%) | 348(12.20%) | |
| HIV | 4(0.15%) | 0(0.00%) | 1(0.03%) | 14(0.50%) | 13(0.44%) |
| Tested overall | 3357 | 3339 | 3190 | 2852 | 2951 |
| Total # of individuals infected | 375 | 69 | 10 | 442 | 28 |
| Prevalence overall | 11.17% | 2.07% | 0.56% | 15.50% | 0.95% |

*Same-infection crosses represent single infections.
%'s based on individuals tested for both infections.
An individual may be counted more than once if they have more than two infections.

**Conclusions** The prevalence of certain STI co-infections (eg, chlamydia and gonorrhoea) is high among street-involved youth and within this population, certain sub-groups may be more vulnerable to these co-infections. Continued efforts are required to promote comprehensive STI testing among street-involved youth and to raise awareness of the potential for multiple infections.

## O1-S04.04 PREDICTORS OF REPEAT *CHLAMYDIA TRACHOMATIS* AND/OR *NEISSERIA GONORRHOEAE* INFECTIONS AMONG AFRICAN-AMERICAN ADOLESCENT FEMALES

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**Background** Young African-American females have the highest rates of Chlamydia (CT) and gonorrhoea (GC) in the US. Few studies have explored predictors of repeat STDs among this population. The objective was to identify predictors of repeat CT and/or GC infections among African-American adolescent females positive for at least one of these STDs at baseline.

**Methods** Sociodemographic, psychosocial and sexual behaviour data were collected via ACASI at baseline and every 6 months for 2 years from 701 African-American females (15–19 years) enrolled in an HIV prevention trial. Vaginal swabs were self-collected at each visit and assayed for CT and GC using DNA amplification. Participants with a positive test result received directly observable single-dose antimicrobial treatment and risk-reduction counselling. Repeat infection was defined as a positive test result following a negative result or documented treatment. Among those who tested positive for CT and/or GC at baseline, bivariate and multivariable analyses compared study variables for those who did vs did not have a repeat infection during the 2-year follow-up.

**Results** Of 615 (88%) participants with ≥1 follow-up test result, 122 (20%) had a positive CT and/or GC test result at baseline; 49 (40% of baseline positives and 8% of total) had a repeat infection during the study period. Of those with a repeat infection, 30 (61%) were positive at only one follow-up visit, 18 (37%) at two and 1 (2%) at three follow-up visits. In bivariate analyses, relative to those positive at baseline only, participants with repeat infection were less likely to have a boyfriend (71 vs 83%, p=0.043) and see themselves marrying their current boyfriend (57.1 vs 76.2%, p=0.05) and more likely to have had sex with a man who had sex with other men (8.2 vs 0%, p=0.013). Participants with repeat infection had higher mean impulsivity scores (p=0.027). Controlling for age and treatment assignment, greater impulsivity (AOR: 1.1, p=0.018) was associated with increased likelihood of a repeat infection and having a boyfriend (AOR: 0.21, p=0.006) with decreased likelihood of a repeat infection.

**Conclusions** Repeat CT and/or GC infections are common among African-American adolescent females. Among young African-American females who test positive for CT and/or GC, tailored interventions for more impulsive adolescents and those without a boyfriend may help prevent repeat infections.

## O1-S04.05 INCIDENCE AND PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS AMONG SCHOOL STUDENTS IN THE EASTERN CAPE, SOUTH AFRICA

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**Background** Although STIs are an important co-factor for HIV acquisition, few community-based STI prevalence/incidence data exist for youth in South Africa.

**Methods** School students (n=1057), enrolled in a cluster-randomised intervention trial in the Eastern Cape, were tested for STIs at the 42 (42M) and 54 (54M) month follow-up visits. Students filled in questionnaires, provided blood for herpes simplex type 2 (HSV-2) serology (HerpeSelect IgG, Focus Diagnostics) and urine to test for *Neisseria gonorrhoeae* (NG), *Chlamydia trachomatis* (CT) and *Trichomonas vaginalis* (TV) (Aptima Combo 2 and Aptima TV, GenProbe). Positive NG/CT/TV results were confirmed by other assays (Aptima NG, Aptima CT, Gen-Probe; *T vaginalis* Real-TM, Sacace Biotechnologies). Students with NG/CT/TV received treatment and partner follow-up; those with HSV-2 infection were counselled. STI prevalence was determined by gender at each visit; overall incidence was estimated using results for all students attending both visits and also for a subgroup who reported ever having had vaginal intercourse. Descriptive statistical analysis was performed and associations investigated with the $\chi^2$ test.

**Results** 959 (91%) and 977 (92%) students tested for STIs at 42M and 54M, respectively. The students' mean age (SD) was 15.8 (1.25) years at 42M and 16.8 (1.25) years at 54M. At 42M, 149 (15.5%) had curable STIs and 67 (7.0%) had HSV-2 infection. At 54M, 154 (15.8%) had curable STIs and 104 (10.7%) had HSV-2 infection. All

Abstract O1-S04.05 Table 1 Prevalence and incidence data for East London students. (Note: Blood testing was declined by 2 students at 42 months and 4 youth and 54 months. Data were missing on vaginal intercourse for a further 3 students at 54 months)

| Gender | No. of evaluable youth | Mean age in years (SD) | Statistic Prevalence | *Neisseria gonorrhoeae* % (95% CI) | *Chlamydia trachomatis* % (95% CI) | *Trichomonas vaginalis* % (95% CI) | No. of evaluable youth | Herpes simplex type 2 % (95% CI) |
|---|---|---|---|---|---|---|---|---|
| Male | 446 | 16.1 (1.25) | 42 month prevalence | 0.90 (0.26 to 2.37) | 3.14 (1.83 to 5.25) | 0.90 (0.26 to 2.37) | 444 | 3.15 (1.84 to 5.27) |
| Female | 513 | 15.5 (1.17) | 42 month prevalence | 8.77 (6.60 to 11.56) | 17.93 (14.85 to 21.50) | 7.21 (5.26 to 9.81) | 513 | 10.33 (7.97 to 13.28) |
| Male | 457 | 17.1 (1.27) | 54 month prevalence | 1.75 (0.83 to 3.48) | 7.22 (5.16 to 9.99) | 0.00 (0.00 to 1.00) | 455 | 5.05 (3.36 to 7.50) |
| Female | 520 | 16.5 (1.14) | 54 month prevalence | 7.69 (5.68 to 10.33) | 18.27 (15.18 to 21.83) | 4.04 (2.62 to 6.13) | 518 | 15.64 (12.75 to 19.03) |
| | | | Incidence | new case per 1000 (95% CI) | new case per 1000 (95% CI) | new case per 1000 (95% CI) | | new case per 1000 (95% CI) |
| Male | 434 | 17.1 (1.24) | Overall incidence at 54 months | 18.4 (8.7 to 36.6) | 73.7 (52.4 to 102.5) | 0.0 (0.0 to 10.6) | 419 | 28.6 (15.9 to 49.9) |
| Female | 500 | 16.5 (1.13) | Overall incidence at 54 months | 76.0 (55.6 to 102.8) | 184.0 (152.4 to 220.4) | 40.0 (25.7 to 61.3) | 450 | 64.4 (44.9 to 91.3) |
| Male | 334 | 17.2 (1.22) | Incidence at 54 months among those reporting previous vaginal intercourse | 18.0 (7.3 to 39.6) | 77.8 (53.3 to 112.0) | 0.0 (0.0 to 13.7) | 322 | 18.6 (7.6 to 41.0) |
| Female | 331 | 16.6 (1.06) | Incidence at 54 months among those reporting previous vaginal intercourse | 108.8 (79.3 to 147.2) | 244.7 (201.4 to 293.9) | 54.4 (34.2 to 84.8) | 296 | 87.8 (60.2 to 126.0) |

curable STIs were treated. Females had a higher prevalence of all pathogens at both visits ($p<0.001$ for all, Abstract O1-S04.05 table 1). Overall annual incidence rates (per 1,000, 95% CI), based on results of the 934 (96%) students who attended the 42M/54M visits (934 urine, 931 serology tests), were substantially higher in females compared to males [males: GC 18.4 (8.7–36.6), CT 73.7 (52.4–102.5), TV 0.0 (0.0–10.6), HSV-2 28.6 (15.9–59.9); females: GC 76.0 (55.6–102.8), CT 184.0 (152.7–220.4), TV 40.0 (25.7–61.3), HSV-2 64.4 (44.9–91.3)]. Incidence rates were also calculated for students (311 females, 66%; 334 males, 77%) who reported ever having had vaginal intercourse (Abstract O1-S04.05 table 1). Compared to overall rates, females had significantly higher rates for each STI (GC/CT, $p<0.001$; TV, $p=0.027$; HSV-2, $p=0.015$); this was not the case for males.

**Conclusions** This community-based screening study demonstrates an extremely high STI burden among youth in the Eastern Cape Province of South Africa.

### O1-S04.06 PELVIC INFLAMMATORY DISEASE OCCURRING BETWEEN THE TIME OF TESTING AND TREATMENT FOR GONORRHOEA AND CHLAMYDIA

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**Background** We conducted a prospective study to confirm our impression that incarcerated adolescents sometimes developed pelvic inflammatory disease (PID) during the brief interval between testing and treatment for gonorrhoeal and chlamydial cervicitis.

**Methods** We performed the study at the Harris County Juvenile Detention Center, Texas, where PID in females is relatively common and where the prevalence of gonorrhoea and chlamydia infections is high. At the time of their mandated medical assessment, all incarcerated adolescents submitted first-catch urine samples for chlamydia and gonorrhoea testing. We used Gen-Probe NAAT assays. If at the time of testing a patient had symptoms suggestive of PID, we performed a bimanual pelvic examination and treated those who met the criteria for PID. For the diagnosis of PID, we used the criteria of the US Centers for Disease Control and Prevention: the presence of adnexal or cervical motion or uterine tenderness. The pelvic examinations were performed by one of three experienced physicians. For the patients who did not have PID at the time of testing, we re-assessed them when we learnt that their urine test was positive. The tests were run in batches by the city health department, so that a variable length of time elapsed between the day of testing and the day that we received test results. At re-assessment, patients received a PID diagnosis if they had lower abdominal pain and met the PID diagnostic criteria on bimanual pelvic examination.

**Results** We evaluated 99 subjects between 29 March 2010 and 27 December 2010. Their mean age was 15.8 (SD 1.1) years. Their race/ethnicity was 43% black, 32% Hispanic, and 25% white; 74% had chlamydia, 14% gonorrhoea, and 12% both. The interval between testing and treatment ranged from 2 to 17 days; the mean (SD) was 7.5 (2.9) days. During this interval, 13 of 99 (13%) developed lower abdominal pain and had bimanual pelvic examination findings that supported the diagnosis of PID. Of these 13, 10 (77%) had chlamydia, 2 (15%) had gonorrhoea, and 1 (8%) had both infections. Time from initial urine testing to treatment for PID ranged from 7 to 15 days.

**Conclusion** In incarcerated adolescents infected with gonorrhoea and/or chlamydia, a surprisingly large proportion (13%) developed PID during the brief period between testing and treatment.

## Epidemiology oral session 5: Vaginal infections

### O1-S05.01 THE EPIDEMIOLOGICAL ASSOCIATIONS OF BV CANDIDATE BACTERIA IN SEXUALLY EXPERIENCED AND INEXPERIENCED WOMEN WITH BV AND NORMAL VAGINAL FLORA

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**Background** Several bacterial candidate organisms (COs) have recently been shown to be highly specific for BV. The epidemiological profiles for these COs are unknown and no studies have examined COs in young sexually-inexperienced women, whether these COs are sexually-transmitted, or how they relate to specific sexual activities.

**Methods** This study incorporates two study populations: The Female University Student Study which recruited women aged 17–21 years attending the University of Melbourne, and a sexually-experienced clinic population from Melbourne Sexual Health Centre. Participants completed a questionnaire addressing demographics and detailed sexual practices. Gram-stained vaginal smears