

structural factor associated with drug and sexual risk behaviours among individuals accessing antiretroviral treatment (ART). We hypothesised that unstable housing is significantly associated with sex exchange and recent injection drug use (IDU).

**Methods** The LISA cohort is a cross-sectional study of individuals on ART in British Columbia. Interviewer-administered surveys collect information regarding housing, drug use, utilisation of health services and other clinically relevant socio-demographic factors. Clinical variables, such as CD4 count and viral load, were obtained through longitudinal linkages with the Drug Treatment Program (DTP) at the BC Centre for Excellence in HIV/AIDS. In order to examine the effect of housing status on HIV risk behaviour, multivariate logistic regression was used with three outcomes: sex exchange, unprotected intercourse and recent IDU.

**Results** Between 2007 and 2010 approximately 1000 participants were interviewed. The survey was modified part way through the study to stratify sexual behaviour based on partner-type. This analysis is thus restricted to 477 interviews with full information on all outcomes. Median age was 45 (IQR=39–51) and 29.8% (142) were female. After adjusting for potential confounders, unstable housing was significantly associated with a history of exchanging sex for food, money or drugs (Adjusted OR [AOR]=1.92; 95% CI=1.11% to 3.33%) and recent IDU (AOR=2.39; 95% CI=1.41% to 4.03%). Unprotected sexual intercourse with regular partners, casual contacts and clients, was not significantly associated with housing status.

**Conclusion** Greater levels of sexual exchange and injection drug use among unstably housed populations are associated with aspects of transient living conditions, as well as the increased need and opportunity for sexual exchanges for food, shelter, drugs and money. Our findings suggest that secure and affordable housing is an important structural intervention that may reduce HIV risk behaviour.

## 02-S5.04 OUTLIER POPULATIONS: HEIGHTENED RISK FOR HIV, HCV AND HIV/HCV CO-INFECTION AMONG SOLVENT-USING INJECTION DRUG USERS

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**Introduction** Globally, substantial heterogeneity in the prevalence of HIV and other sexually transmitted infections (STIs) among most at-risk populations (MARPs) has been demonstrated. Examining factors related to heterogeneity can inform targeted programming. In Winnipeg, Canada, particularly high risk for HIV and hepatitis C (HCV) has been observed in injection drug users (IDUs) with a history of solvent use (S-IDUs). However, comparisons to other MARPs have been limited. Thus this study examined the association between HIV/STIs and S-IDUs in comparison to IDUs and other MARPs.

**Methods** Data were from a 2008 to 2009 cross-sectional study of Winnipeg MARPs (IDUs, sex work- and street-involved individuals); subjects were recruited through respondent-driven sampling (RDS) methods. Adjusted ORs (AORs) from multivariable logistic regression models were estimated, examining the risk of HIV, HCV and HIV/HCV co-infection, and corrected for RDS-chain clustering using generalised estimating equations.

**Results** Total sample was 499, of which 13% recently injected drugs (ie, last 6 months), 5% recently inhaled solvents, 6% were recent S-IDUs, and 76% did not inject drugs or inhale solvents. HIV and HCV prevalence among recent S-IDU was 21% and 79%, respectively;

HIV/HCV co-infection was 18%. In multivariable models, S-IDUs were at highest risk of HIV (AOR: 3.6, 95% CI: 1.6% to 7.9%;  $p<0.001$ ), HCV (AOR: 19.3, 95% CI: 6.8% to 58.3%;  $p<0.001$ ) and HIV/HCV co-infection (AOR: 6.0, 95% CI: 2.5% to 14.7%;  $p<0.001$ ). Comparatively, AORs for IDU-only were 3.3 (95% CI: 1.3% to 7.6%), 3.8 (95% CI: 2.3% to 7.5%) and 4.9 (95% CI: 2.1% to 14.7%). Among lifetime S-IDUs, elevated risk for HIV (AOR: 7.4, 95% CI: 2.3% to 26.2%) and HCV (AOR: 22.7, 95% CI: 11.0% to 47.0%) was observed, but not for HIV/HCV co-infection.

**Conclusions** Solvent use occurs among the most marginalised of MARPs, representing unique and complicated drug use trajectories. As the HIV epidemic in Canada becomes increasingly complex, examination of outlier populations such as S-IDU can inform public health by elucidating important pathways by which structural, environmental and individual factors interact to create the highest risk for HIV/STIs and other bloodborne pathogens.

## 02-S5.05 ARE MSM LOOKING FOR LESIONS? EXAMINING SELF AND PARTNERS FOR SYPHILIS

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**Background** Syphilis rates among men who have sex with men (MSM) in the US are rising. In 2009, 62% of reported primary and secondary syphilis cases in the U.S. were among MSM. Self- and partner-examination for primary syphilis (painless chancre) might increase early detection and treatment and reduce transmission. As the first step in a study to increase syphilis lesion awareness, we collected baseline data on rates of self- and partner-examination.

**Methods** Data were collected from five MSM STD or infectious disease clinics in the US before and after introduction of brochures with pictures and information about syphilis signs, transmission, and prevention. Surveys included questions about demographics, sexual behaviours, syphilis knowledge and self- and partner-examination. Data were analysed using SAS V.9.2.

**Results** From September 2009 to January 2011, 586 sexually active men completed a survey; 124 (21%) from Arizona, 128 (22%) from the District of Columbia, 202 (34%) from Florida and 132 (22%) from Georgia; 542 (92.5%) reported having sex with men only and 44 (7.5%) reported having sex with men and women. Most participants (334, 57%) were aged 18–39 years, 240 (41%) were 40–59 years and 12 (2%) were older than 60 years; 222 (38%) reported one partner, 180 (31%) 2–3 partners, 133 (23%) 4–10 partners, and 51 (9%) >10 partners in the last 3 months or since their last clinic visit. Most participants correctly identified oral (510, 87%), anal (529, 90%) and oral-anal sex (487, 83%) as ways to transmit syphilis. Few recognised frottage that is, rubbing against someone (112, 19%) and kissing (196, 34%) as other modes of transmission. Over 50% reported self-examination of mouth, penis and skin at least once a week, whereas less than half reported partner-examination of these areas (Abstract 02-S5.05 table 1). Less than 50% reported self- or partner-examination of anus at least once a week. Rates of self-examination did not vary by number of partners or age; whereas, examining partner's mouth, penis and skin was less frequent ( $p<0.05$ ) among MSM with >3 partners.

**Abstract O2-S5.05 Table 1** Proportion of MSM reporting self- and partner-examination of mouth, anus, penis and skin, n=586)

	Body parts	Frequency of examination		
		Never (%)	Once a month (%)	At least once a week (%)
Self	Mouth	17.1	14.5	68.4
	Anus	26.4	24.9	48.7
	Penis	6.2	7.6	86.3
	Skin	8.3	9.7	81.9
Partner	Mouth	76.6	7.7	15.6
	Anus	62.1	11.5	26.5
	Penis	47.1	11.6	41.4
	Skin	47.2	9.8	43.0

**Conclusions** The majority of MSM reported examining themselves at least once a week, but did not examine their partners as frequently. MSM with >3 partners were less likely to examine their partners' bodies than those with fewer partners. Analysis of surveys from men after brochure introduction will determine whether education materials increase rates of self- and partner-examination.

#### **O2-S5.06 HEALTH-SEEKING BEHAVIOURS AMONG FEMALE SEX WORKERS IN A COMMUNITY RANDOMISED TRIAL IN PERU (THE PERU-PREVEN STUDY)**

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**Background** This study aims to evaluate health-seeking and HIV/STD preventive behaviours among FSW in mid-sized cities in Peru associated with a community randomised trial intervention and with venue of sex work.

**Methods** Through the Peru PREVEN multi-component intervention, mobile team outreach to FSW was conducted in an effort to lower STD rates and increase condom use as well as care-seeking from local Ministry of Health clinics for screening and evaluation of STDs. Relative risks for behavioural outcomes were calculated using multivariate Poisson regression models with robust standard errors and accounting for clustering by city. Analyses were adjusted for city-specific baseline outcomes and by brothel venue, as there were a higher proportion of brothels in intervention cities. A sub-analysis of outcomes associated with brothel venue did not control for baseline but did adjust for age, marital/cohabitation status, alcohol use, geographical region, education and randomisation arm.

**Results** 4156 FSW were enrolled in 20 cities; 2063 from control and 2093 from intervention cities. The median age at first paid sex was 21 years and the median duration of sex work was 20 months. Sex work was relatively frequent, with a median of 6 days worked in the last week, 4 weeks in the last month and 8 months in the last year. Frequency of sex work increased with age ( $p<0.001$ ). Twenty-one per cent of FSW were brothel based, 23% street based and 56% were bar or nightclub based. Although proportions of care-seeking behaviours were higher in intervention cities, differences were not statistically significant. In evaluating relationships of venue and health-seeking behaviours, brothel-based FSW reported significantly lower rates of non-condom use with clients (RR=0.18; 95% CI 0.07% to 0.44%), and higher rates of recent health screening exams (RR=1.97; 95%CI 1.58% to 2.45%) and of HIV testing in the last year (RR=1.74; 95% CI 1.45% to 2.09%), compared with FSW who were street or bar-based. Brothel-based FSW also more frequently reported knowledge of STDs (RR=1.07; 95% CI 1.04% to 1.09%) and recognition of STD symptoms in women (RR=1.39; 95%CI 1.22% to 1.59%) and in men (RR=1.32; 95% CI 1.12% to 1.57%).

**Conclusions** Sex work venue is significantly associated with the health care-seeking and STD preventive behaviours of sex workers. Interventions to promote STD detection and prevention among FSW should consider structural or regulatory factors related to sex work venue.

#### **Social and behavioural aspects of prevention oral session 6—STI and HIV risk: geographic, demographic and behavioural heterogeneity**

##### **O2-S6.01 NON-CONSENSUAL SEX AND ASSOCIATION WITH HIV INFECTION AMONG WOMEN: A COHORT STUDY IN RURAL UGANDA, 1990–2008**

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**Background** Non-consensual sex is associated with HIV infection in Africa, but there is little longitudinal data on this association. We describe reported non-consensual sex among women over two decades in rural southwest Uganda, including associations with incident HIV infection.

**Methods** Between 1990 and 2008 in rural southwestern Uganda, consenting individuals in a population cohort who recently sero-converted to HIV were enrolled into a clinical cohort, along with randomly selected HIV-negative controls. Participants were invited to the study clinic every 3 months, and females asked about recent experiences of sex against their will (since their last visit). At enrolment, associations of non-consensual sex with HIV status were analysed using conditional logistic regression. With data from all visits, this association was analysed using logistic regression, with OR adjusted for age and year of interview, allowing for within-woman correlation.

**Results** 476 women aged 14–81 enrolled and attended 10 475 visits over 19 years. At the time of enrolment, 24% (41/188) of incident HIV and 16% (23/166) of HIV-negative participants reported non-consensual sex in the past year (adjusted OR=0.93, 95% CI 0.47% to 1.82%). Among those who reported recent non-consensual sex (since their last visit) at any visit, most (80/119) did so more than once, including 48% in over half their visits. Using data from all visits, reports of recent non-consensual sex were higher among HIV-positive than HIV-negative participants (22% vs 9%; aOR=2.29, 95% CI=1.03% to 5.09%), with the strongest associations among women aged 14–22, those over 50 years, and married participants.

**Conclusions** The study shows high levels of repeated sex against one's will, with many women in this Ugandan population reporting new episodes of non-consensual sex in most or all of their visits. Non-consensual sex was most often reported by the youngest and oldest HIV positive women. Gender-sensitive HIV programmes should address repeated sexual coercion before and subsequent to HIV infection.

##### **O2-S6.02 OCCUPATIONAL AND INTIMATE PARTNER VIOLENCE AND INCONSISTENT CONDOM USE WITH CLIENTS AMONG FEMALE SEX WORKERS IN SOUTHERN INDIA**

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**Background** Global reports suggest that interpersonal violence experienced by female sex workers (FSWs), including occupational violence (eg, by clients, CLViol) and intimate partner violence