missing. We show that this bias can result in upward confounding. 2) As HSV2 is more infectious than HIV we expect HSV2 to be acquired from coinfected partners first followed by HIV. 3) As coinfection increases HIV viral load HSV2 infection may act as a proxy for a partner's elevated infectiousness with HIV. Both of these mechanisms result in upward bias, the magnitude of which depends on the prevalence of coinfection. 4) Between subject heterogeneity in the risk of disease has been shown to attenuate estimates for any risk factor. We show that this bias can result in significant attenuation of the HR and that it depends on the prevalence of HIV among subjects' partners and their sexual behaviour. We show that if HIV serodiscordant couples are enrolled all four biases can be removed see Abstract P1-S4.04 Table 1.

Conclusions The standard design is affected by at least four biases that preclude causal interpretations of all such HSV2-HIV studies performed to date. Use of a serodiscordant couple study design can remove these biases. It is impossible to correct previous results as the biases are not all in the same direction and their magnitudes depend on the unknown prevalence and transmissibility of both HSV2 and HIV among partners. These findings are expected to generalise to other STI-HIV risk factor studies and can help inform the decision to test HPV vaccination as an HIV prevention measure.

P1-S4.05 QUANTIFYING SOCIAL DESIRABILITY BIASES IN REPORTED CONDOM USE AMONG FEMALE SEX WORKERS IN SOUTHERN INDIA

doi:10.1136/sextrans-2011-050108.149

[1]M Pickles, [2]B M Ramesh, [3]R Adhikary, [2]S Rajaram, [2]S Isac, [4]R Washington, [1]M C Boily, [5]J Bradley, [6]S Moses, [7]M Alary. *[1]Imperial College, London, UK; [2]Karnataka Health Promotion Trust, Bangalore, India; [3]Family Health International, India; [4]St John's Research Institute, Bangalore, India; [5]CHARME-India Project, Bangalore, India; [6]University of Manitoba, Winnipeg, Canada; [7]Centre hospitalier affilié universitaire de Québec, Quebec, Canada*

Background As part of the Avahan HIV initiative in Southern India, surveys were carried out in female sex workers (FSWs) and their clients to quantify condom use. We examine reported condom use measured using different survey methodologies, and consistency of response between FSWs and clients to quantify the effect of social desirability bias.

Methods We use data from 15 districts with IBBA face-to-face interviews (FTFIs) for FSWs and clients. Three of these districts also had special behavioural survey (SBS) FTFIs, informal confidential voting interviews (ICVIs), and polling booth surveys (PBSs) for FSWs. ICVI/ PBS survey methodologies increase anonymity, reducing reporting bias of sensitive questions eg, condom use, and are analysed in more detail. The IBBA and SBS FTFIs differed as blood samples were taken in the IBBA to measure HIV prevalence. We use questions about condom use in last act with regular and occasional FSWs/clients. For the 15 IBBA districts the FSW: client ratio of reported condom use at last act was calculated.

Results In IBBAs, condom use in last act with occasional FSWs reported by clients in the 15 districts is 26% (range 13–40%) lower than FSW condom use with last occasional client, and 28% (3–46%) lower for last act with regular FSW/client. In the three districts with extra surveys, from Abstarct P1-S4.05 table 1, FSW reported condom use with occasional clients is broadly comparable, and the maximum difference with the more anonymous ICVI is 5% with regular clients in Belgaum. On average the IBBA FTFI was only 2% lower that other methods. Reported condom use with occasional clients was15–26% lower than that reported in the IBBA, but the difference between IBBA and PBS was smaller for use with regular clients.

Abstarct P1-S4.05 Table 1 Reported condom use in last act by type of act for FSW surveys in the three districts where all surveys were carried out

	Condom use at last act with occasional clients/FSWs			Condom use at last act with regular clients/FSWs		
	Belgaum (%)	Bangalore Urban (%)	Bellary (%)	Belgaum (%)	Bangalore Urban (%)	Bellary (%)
FSW IBBA R1 FTFI	96.43	93.31	82.82	86.91	75.12	77.57
FSW IBBA R2 FTFI	97.45	94.08	96.45	88.22	84.02	92.68
FSW SBS FTFI	91.40	85.98	90.70	82.43	91.18	94.41
FSW SBS ICVI	98.18	91.53	97.67	82.39	77.43	95.78
FSW PBS R3 (May 2007)	82.75	73.33	66.78	94.94	75.68	80.21
FSW PBS R4 (Oct 2008)	88.80	79.50	80.40	88.52	87.01	80.30

Discussion There is a substantial difference in reported condom use in last act with occasional and regular partner for FSWs and clients. However, the samples of FSW and clients may not be comparable because low-risk clients may be undersampled in hot spots. FSWs report lower condom use with occasional clients in the more anonymous PBS, suggesting this method may reduce social desirability bias more than FTFIs and ICVIs. Based on FSW data only and using a conservative estimate from the largest difference, the FSW IBBA may over-estimate condom use with occasional clients by up to 26% (mean 17%) and with regular clients by 13% (mean 2%).

P1-S4.06 WHAT IMPACT DOES MISSING QUEBEC DATA HAVE ON NATIONAL HIV SURVEILLANCE DATA?

doi:10.1136/sextrans-2011-050108.150

[1]K L Tomas, [2]R Bitera, [2]M Alary, [2]M Fauvel, [2]R Parent, [2]D Sylvain, [2]M Hastie, [2]C Claessens, [1]J Halverson, [1]C Archibald. *[1]Public Health Agency of Canada, Ottawa, Canada; [2]Institut national de sante publique du Quebec, Canada*

Objective To quantify the difference in the exposure category breakdowns of national HIV surveillance figures if exposure data from the Institut nationale de Santé Publique du Québec (INSPQ) were included in national datasets.

Background National HIV/AIDS surveillance is coordinated by the Public Health Agency of Canada's (PHAC) Surveillance and Risk Assessment Division's (SRAD). HIV is reportable in all provinces and territories, although the degree of epidemiologic information collected and submitted varies. Quebec's case reports to PHAC come from their laboratory-based surveillance system, which contains positive test reports, by age and sex. All Quebec cases are classified in SRAD's dataset as Not Reported, which contributes to the large proportion of cases at the national level with no known exposure category.

Methods Quebec's provincial HIV surveillance system "Programme de surveillance de l'infection par le VIH au Québec" collects further epidemiological information, including exposure category and risk factor information, although recorded separately from the HIV laboratory test results file. This provincial system's exposure category data was added to existing national surveillance data, and the exposure category breakdowns recalculated, in order to assess change in the proportion of unknown/not reported cases and to quantify the resulting difference in exposure category breakdowns at the national level.

Results With inclusion of Quebec data for 2009, there is a 50% decrease (from 45.5% to 23.1%) in the proportion of national HIV cases with unknown exposure category. There are also differences in the overall national exposure category breakdowns. For 2009, proportional increases were observed in the men who have sex with men (MSM) and heterosexual-endemic categories (5.4% and 2.8% respectively), while proportional decreases were observed in the exposure categories of injection drug use (−4.1%), heterosexual-risk (−2.0%), and no-identified-risk heterosexual (−2.2%).

Conclusions Inclusion of Quebec's risk exposure data in the national HIV dataset is significant; the national dataset becomes more complete and the proportion of cases with unknown exposure category is reduced. This analysis demonstrates that inclusion of exposure category data, from the provincial HIV surveillance system of Quebec's INSPQ can alter the exposure category breakdowns at the national level, thereby offering a more accurate picture of HIV diagnoses in Canada.

P1-S4.07 THE USE OF THE ARIZONA DEPARTMENT OF HEALTH SERVICES SURVEILLANCE DATABASE TO IDENTIFY DISCORDANT SYPHILIS TREPONEMAL LABORATORY RESULTS, ARIZONA

doi:10.1136/sextrans-2011-050108.151

M Winscott, A Betancourt, R Ereth. *Arizona Department of Health Services, Phoenix, USA*

Background In March of 2010 a large commercial lab performing STD testing in Arizona implemented the reverse algorithm for syphilis testing with the use of the syphilis treponemal enzyme immunoassay (EIA).
Methods Per the Arizona Department of Health Services (ADHS) Sexually Transmitted Disease Control Program protocol, manual review of positive syphilis lab results is performed by one epidemiologist. During May through October 2010, this epidemiologist recorded negative syphilis EIA results identified among reported syphilis cases with a prior history of positive treponemal tests (TP-PA, FTA-ABS).
Results From 6 May 2010 to 29 October 2010 78 syphilis EIA tests were reported as negative in individuals with a previously positive treponemal test. Fifty of these tests were completed among males and 28 among females. This discrepancy was brought to the attention of the reporting lab in May and again in October 2010. In November, a coordinated investigation between the reporting laboratory, the ADHS public health lab, and the ADHS Sexually Transmitted Disease Control Program (ADHS STDCP) was undertaken. This investigation resulted in the identification and correction in a specimen transfer procedure at the local laboratory level. All providers of patients with possible incorrect lab results completed during this time period were notified of the problem and advised to retest their patients, if indicated. The ADHS STDCP continues to monitor syphilis lab results for this particular error and has not identified any further discordant results since the corrections were implemented in November 2010.
Conclusions Discrepancies in syphilis EIA results have been reported from other regions. The detailed manual review of all reported syphilis lab results by an epidemiologist at the ADHS STDCP aided in the detection of this particular issue. Upon implementation of electronic lab reporting, this program and others, should continue routine, manual quality assurance checks of syphilis laboratory results. Such practices are imperative to ensure that these errors do not go undetected and that syphilis patients do not go undiagnosed.

P1-S4.08 POPULATION SIZE ESTIMATES FOR MEN WHO HAVE SEX WITH MEN IN GUATEMALA CITY USING TIME LOCATION SAMPLING AND RESPONDENT DRIVEN SAMPLING

doi:10.1136/sextrans-2011-050108.152

[1]G Paz-Bailey, [2]B Alvarez, [2]W Miller, [3]B Sabrina, [4]C Barrington, [5]A Kim, [2]S Morales, [5]S Chen. *[1]Tephinet Inc, Guatemala, Guatemala; [2]Del Valle University of Guatemala, Guatemala, Guatemala; [3]Tephinet Inc, Guatemala; [4]University of North Carolina, USA; [5]Centers for Disease Control and Prevention, USA*

Background 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. Knowing the size of populations at high risk for HIV and sexually transmitted infections (STI) is critical for informing prevention, care, and treatment programs. Simple approaches are needed to provide baseline estimates of the population size of MSM in Guatemala to advocate for appropriate resource allocation and programming. We compared population size estimates of MSM and transgender persons using capture-recapture linked to two differentsurveys that were developed concurrently using different sampling methodologies.
Methods Capture recapture methods for estimating population size were integrated into two probability-based surveys using respondent driven sampling (RDS) and time-location sampling (TLS); conducted simultaneously among MSM in Guatemala City from October to December 2010. Key chains were used as uUnique objects in the form ofand study key chains were distributed approximately 1-month prior to the surveys in venues known to be frequented by MSM. Duplicate participation was avoided by using the same team to distribute the key chains and administering a set of questions before handing the object. Participants in the RDS and TLS surveys were asked, as part of the study interview, whether they had received the key chain. We assigned the number of key chains distributed in venues as the first capture and the proportion of participants that reported receiving the key chain in the RDS or TLS survey as the second capture. By applying standardised formulas for estimating population size using capture-recapture methods, we estimated the number of MSM in Guatemala City and 95% CIs around this estimate, adjusted for RDS and TLS sampling design.
Results A total of 2128 key chains were distributed in the first capture. Of the 501 MSM interviewed in the RDS survey, 200 (RDS adjusted, 23.4%) had received the key chain. Thus the RDS adjusted estimated population size of MSM in Guatemala City was 9,190 (95% CI 7765 to 10 616). Of the 504 MSM interviewed in the TLS survey, 193 (TLS adjusted, 32.1%) had received the key chain. The TLS adjusted estimated number of MSM was 6620 (95% CI 5813 to 7427).
Conclusions Estimates of MSM population size using the TLS survey resulted in a significantly lower estimate than that obtained through RDS survey, probably due to the fact that TLS targets MSM who attend venues. The estimate obtained through RDS may better reflect the size of the larger MSM population in Guatemala City, since this itRDS reaches MSM attending and not attending publicmeeting venues. Integrating capture-recapture methods in probability-based surveys among MSM is a simple and fast approach for providing the population sizes needed to inform and evaluate programs for MSM in Guatemala.

P1-S4.09 VALIDATION OF THE HEDIS MEASURE OF SEXUAL ACTIVITY IN ADOLESCENTS

doi:10.1136/sextrans-2011-050108.153

S Wiehe, J D Fortenberry, M Rosenman, W Tu. *School of Medicine, Indiana University, Indianapolis, USA*

Background The proportion of sexually active young women who are screened annually for chlamydia is a Health Plan Employer Data and Information Set (HEDIS) performance measure. The accuracy of this measure, however, depends critically on how the denominator is calculated (ie, how many sexually active young women for whom screening is indicated). Few studies have assessed whether the measure is valid. Validating is difficult because sexual activity may not be routinely captured in the chart or other administrative data sources. Our objective was to determine the sensitivity and specificity of the HEDIS measure of sexual activity, by comparing it to a self-reported measure, and assess whether these vary by age, age of first sex, and prior sexually transmitted infection (STI) or pregnancy.