

Background Patient-initiated partner notification (PN) is a cornerstone of STD control in resource-limited public health systems. We conducted a randomised, controlled trial of two new tools to support PN among MSM: anonymous, internet-based notification systems and patient-delivered partner referral cards.

Methods We screened 1,625 MSM for syphilis in Lima, Peru between 2012–2014. Enrollment was limited to MSM with symptomatic primary or secondary syphilis ($n = 133$) and/or latent syphilis diagnosed by RPR/TPPA ($n = 406$; Seroprevalence: 25.0%). After enumerating all recent partners and providing details of their three most recent partners, 370 participants were randomly assigned to four intervention arms: 1) Standard PN Counselling (Control) [$n = 94$]; 2) Counselling and Referral to Internet PN (www.inspot.org) [$n = 95$]; 3) Counselling and Provision of 5 Partner Referral Cards [$n = 97$]; or 4) Counselling with both Internet PN and Partner Referral Cards [$n = 84$]. Self-reported notification of recent sexual partners was assessed by CASI among the 354 participants who returned for 14-day follow-up.

Results The median age of participants enrolled was 27 (IQR: 23–34), with a median of 3 partners (IQR: 1–5) in the past month and a baseline HIV seroprevalence of 64.1%. Participants referred to internet PN (Arms 3 and 4) or provided with printed partner referral cards (Arms 3 and 4) were more likely to have notified ≥ 1 partners at 14-day follow-up than participants who received only PN counselling (OR: 2.26 [95% CI: 1.33, 3.82] and 1.94 [95% CI: 1.15, 3.27], respectively). The fraction of all recent partners notified was significantly greater in the Internet PN (56.5%, $p < 0.001$) and Referral Card (50.8%, $p = 0.006$) arms than the Control arm (35.3%).

Conclusions Internet notification systems and printed partner referral cards provide inexpensive, effective tools to support patient-directed PN, significantly improving notification by Peruvian MSM with syphilis. Additional research is needed to optimise use of different PN technologies in specific partnership contexts.

007.2 CAN HUMAN PAPILLOMAVIRUS (HPV) BIOMARKERS HELP PREDICT PATTERNS OF ANAL HIGH-GRADE SQUAMOUS INTRAEPITHELIAL LESION (HSIL) DETECTION IN HOMOSEXUAL MEN?

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Background Homosexual men suffer a disproportionately high burden of anal cancer for which persistent anal HSIL is the precursor. A range of biomarkers that potentially will enhance the performance of cytology-based HSIL screening are being investigated. We evaluated the role of biomarkers in predicting the development and clearance of anal HSIL.

Methods The Study of the Prevention of Anal Cancer is a Sydney-based three-year prospective study of anal HPV infection in homosexual men aged ≥ 35 years. At each visit all men undergo liquid-based Pap test (ThinPrep®), followed by high-resolution anoscopy-guided biopsy. In this analysis, residual baseline PreservCyt samples underwent HPV E6/E7 mRNA testing

(NucliSENS EasyQ, BioMerieux) and p16/Ki67 dual staining (CINtec PLUS, Roche). Anal HSIL was defined as having either anal intraepithelial neoplasia grade 2/3 on histology and/or HSIL on cytology.

Results By February 2015, 302 men had completed one-year of follow-up, with a median age of 49.5 years and around a quarter (27.8%) were HIV-positive. The prevalence of anal HSIL at baseline was 37.4%. Among 179 men who did not have HSIL at baseline, 29 (16.2%) developed HSIL at one year. In those who tested positive to HPV16/18 E6/E7 mRNA or p16/Ki67, 43.3% and 38.5% developed incident HSIL respectively, compared with 11.8% and 8.7% in those who tested negative to that biomarker (Risk Ratio (RR): 3.68, 95% CI 1.99–6.82 and 4.42, 95% CI 1.54–12.70, respectively). Among men with prevalent HSIL, 44 (38.9%) had no HSIL detected after one year. Those negative for HPV16/18 E6/E7 mRNA were twice as likely to have no HSIL at one-year (53.5% vs 28.1%, RR: 1.90, 95% CI 1.18–3.08).

Conclusion Anal HSIL is a very dynamic condition, with high incidence and high rates of non-detection at subsequent visits. Biomarkers of HPV activity can help predict incidence and subsequent non-detection, and thus potentially allow more targeted therapies.

Disclosure of interest statement AEG has received honoraria and research funding from CSL Biotherapies, honoraria and travel funding from Merck, and sits on the Australian advisory board for the Gardasil HPV vaccine. CKF has received honoraria, travel funding and research funding from CSL and Merck, sits on the Australian advisory board for the Gardasil HPV vaccine, and owns shares in CSL Biotherapies. SMG has had grant support from CSL Bio and GlaxoSmithKline, and lecture fees from Merck, GlaxoSmithKline and Sanofi Pasteur; in addition, has received funding through her institution to conduct HPV vaccine studies for MSD and GlaxoSmithKline and is a member of the Merck Global Advisory Board as well as the Merck Scientific Advisory Committee for HPV. RJH has received support from CSL Biotherapies and MSD. All other authors declare that they have no conflicts of interest.

007.3 DETECTION OF HEPATITIS C VIRUS (HCV) IN SEMEN FROM HIV-INFECTED MEN WHO HAVE SEX WITH MEN (MSM) DURING ACUTE HCV INFECTION

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Introduction The mechanism (s) and bodily fluid (s) involved in the recently identified epidemic of sexually transmitted HCV in HIV-infected MSM are unclear. HCV is present only intermittently and at low levels in semen from men with chronic HCV-infection, however little is known of the dynamics of seminal HCV during acute HCV-infection.

Methods HIV-infected MSM with acute and chronic HCV-infection were prospectively enrolled into an IRB-approved study. Three paired semen and blood specimens were collected at 2-week intervals. HCV viral load (VL) was quantified using an automated RT-PCR assay platform (Abbott).

Results Paired semen and blood specimens were obtained from 33 HIV-infected MSM (21 with acute-HCV and 12 with chronic-HCV). Sixteen (27%) of 59 semen specimens had detectable HCV VL, with 11 (33%) men having at least one

positive specimen. Semen specimens with detectable HCV had a significantly higher median blood HCV VL ($P = 0.002$). There were no differences between men with acute or chronic HCV in either the proportion of semen specimens positive for HCV (8/38 [21%] and 8/21 [38%], respectively; $P = 0.159$), or in the median seminal HCV VL (1.32 log IU/ml and 1.77 log IU/ml, respectively; $P = 0.163$).

Conclusion This study, although identifying no differences in the magnitude or proportion of seminal HCV during acute HCV-infection, provides valuable insights into the dynamics of seminal HCV during this period. It is unknown whether the levels of seminal HCV identified in this study are sufficient for the sexual transmission of HCV in HIV-infected MSM. However, it is plausible that HCV in semen deposited in the rectum after the friction of receptive anal intercourse, could enter the blood stream and infect the liver. Future research should focus on establishing the infectivity of seminal HCV, and the analysis of seminal HCV levels during the 'ramp-up' period of early acute HCV-infection, where blood HCV levels are highest.

Disclosure of interest statement There are no competing or financial interests to disclose.

007.4 INCIDENT HIV ASSOCIATED WITH RECTAL GONORRHOEA (GC) AND CHLAMYDIA (CT) INDEPENDENT OF SEXUAL BEHAVIOUR IN MEN WHO HAVE SEX WITH MEN (MSM)

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Introduction Although STIs are associated with HIV-acquisition, because they share a causal pathway – sex – how much this risk is independent of sexual behaviour remains unknown.

Methods We conducted a case-control study of MSM STD clinic patients in Seattle, WA, 2001–2014 to evaluate the role of concurrent and prior rectal STIs in HIV-acquisition. Cases were new HIV diagnoses who tested HIV-negative ≤ 12 months prior. Controls tested HIV-negative and were matched to cases on year. All included men tested for rectal STI and tested negative for syphilis. We used routinely collected condom-use data to create four sexual behaviour categories: no receptive anal intercourse (RAI) in ≤ 12 months, consistent condom-use for all RAI, condomless RAI only with HIV-negative partners (CRAIneg), and CRAI with HIV-positive/unknown-status partners (CRAIpos/unk). We used logistic regression to estimate odds ratios (OR) of the association between rectal GC/CT and HIV diagnosis.

Results Among 176 cases and 704 controls, concurrent rectal GC (OR3.5 95% CI 2.3–5.5) and rectal CT (OR3.2 95% CI 2.1–5.1) were associated with HIV diagnosis in univariate analysis. Controlling for age, race, number of sex partners, methamphetamine use year and other rectal STI, both rectal GC (aOR2.4 95% CI 1.4–4.0) and CT (aOR2.6 95% CI 1.5–4.4) continued to be associated with HIV diagnosis. Adding sexual behaviours to the model did not change the association between rectal infection and HIV diagnosis (GC aOR2.3, 95% CI 1.4–3.9; CT aOR 2.6 95% CI 1.5–4.3). CRAIneg (aOR3.5 95% CI 1.2–10.4) and CRAIpos/unk (aOR4.2 95% CI 1.4–12.5) were independently associated with new HIV diagnosis. Rectal

infection in ≤ 12 months was strongly associated with new HIV diagnosis (aOR3.4 95% CI 1.5–7.4).

Conclusions Concurrent and prior rectal GC/CT are associated with HIV-acquisition independent of sexual behaviour, suggesting a causal role for rectal STI in HIV-acquisition, and supporting STI control as an HIV-prevention strategy.

Disclosure of interest statement This work was funded by the US National Institutes of Health. No pharmaceutical grants were received in the development of this study.

007.5 SEXUAL RISK BEHAVIOUR AND SEXUALLY TRANSMITTED DISEASES AMONG MEN WHO HAVE SEX WITH MEN PARTICIPATING IN A PRE-EXPOSURE PROPHYLAXIS DEMONSTRATION PROJECT

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Background Pre-exposure prophylaxis (PrEP) is a highly efficacious HIV prevention tool. Whether changes in sexual risk behaviours and frequency of sexually transmitted diseases (STDs) occur among individuals using PrEP is unclear. We evaluated sexual behaviours and STDs among men who have sex with men (MSM) in the open-label US PrEP Demonstration (Demo) Project.

Methods The Demo Project enrolled 557 MSM at STD clinics in San Francisco and Miami, and a community health centre in Washington, DC. Participants were tested for STDs and reported their sexual risk behaviours in the prior 3-months at baseline and weeks 12, 24, 36 and 48. Prevalence of STDs and STD incidence were assessed, and changes in reported risk behaviours and STD incidence were assessed using chi-square tests.

Results The median number of anal sex partners in the prior 3-months decreased from 5 at baseline to 4 at week 48 ($p = 0.0003$). While the median number of condomless receptive anal sex episodes was unchanged, the median number of receptive anal sex episodes with condoms declined from 6.5 to 2.0 ($p < 0.0001$). One quarter (25.7%) had an STD at baseline and 42.2% were diagnosed with ≥ 1 STD during the study. Extra-genital STDs were prevalent: 9.8–15.3% positivity for rectal gonorrhoea (GC) or chlamydia (CT) and 5.2–12.9% positivity for pharyngeal GC or CT at follow-up visits. Overall STD incidence was high, but did not increase over time ($p = 0.96$); incidence/100 person-years was 47.8 (95% CI: 41.6–54.7), 42.9 (95% CI 37.0–49.4) and 12.6 (95% CI 9.5–16.3) for CT, GC and syphilis, respectively. There were two HIV seroconversions (incidence 0.43; 95% CI 0.05–1.54), both had undetectable drug levels at the time of seroconversion.

Conclusion HIV incidence was extremely low, despite a high incidence of STDs in a PrEP demonstration project. Quarterly STD screening, including testing at extra-genital sites, is recommended for MSM taking PrEP.

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