vaginal microbiota and immune markers were associated with higher concentrations of VLY in reproductive-age women.

Methods Forty women self-collected mid-vaginal swabs in a cross-sectional study. Microbial communities were characterised by 16S rRNA gene amplicon sequence analysis. VLY (ng/ml) was detected by ELISA and normalised by a cube root transformation. Absolute bacterial abundance of *G. vaginalis* (log_{10} transformed) was estimated by multiplying its relative abundance by the sample total bacterial burden estimated by qPCR. Pro-inflammatory immune markers were quantified by Luminex and categorised above and below the median. Multivariate linear regression models evaluated factors associated with VLY abundance and controlled for confounders, including smoking and history of vaginal douching.

Results Vaginal microbiota clustered into 3 community state types (CSTs); 2 dominated by *Lactobacillus* spp. (*Lactibacillus iners* (CST-III) or *L. crispatus* (CST-I)), and one lacking *Lactobacillus* spp. and characterised by BV-associated bacteria including *G. vaginalis* and *Atopobium vaginae* (CST-IV). In the multivariate analysis, CST-IV, *G. vaginalis* bacterial load, a high Nugent Gram stain score, and a more basic vaginal pH (all $p<0.03$) were positively associated with increasing concentrations of VLY. TNF-α, TGF-β and IL-8 were inversely associated with VLY but only TNF-α remained significant in multivariate analysis ($p=0.01$).

Conclusion This study confirms that vaginal microbiota lacking lactobacilli, as well as other clinical indicators of BV, were associated with higher concentrations of VLY *in vivo*. Inflammatory markers were inversely associated with VLY. Because VLY may alter the vaginal microbiota and local inflammation, the role of VLY in BV warrants further evaluation.

O06.5 DEVELOPMENT OF A HUMAN URETHRAL EQUIVALENT TO STUDY *CHLAMYDIA TRACHOMATIS* INVASION

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Introduction *Chlamydia trachomatis* (Ct) genovars D-K cause non-invasive urogenital infections, which often remain asymptomatic. Little is known about the invasion of the epithelial layer and the subsequent effects of Ct on the epithelium in humans. The objective of this study was to develop a human urethral 3D *in vitro* equivalent to gain a better insight into the invasiveness of Ct in host tissue.

Methods Human urethral equivalents were constructed by seeding primary urethral keratinocytes and fibroblasts on top of and into a collagen matrix. Urethral cells were isolated from urethral clinical specimens of transgender patients undergoing gender surgery at VUMC. Urethral equivalents were incubated with a Ct genovar D strain, by placing a Ct impregnated nylon gauze on top of each model. Standard Ct cell culture, existing of HeLa cells grown on coverslips, were used as a control to assess growth of Ct strains used for infections of the urethral equivalents. Ct invasion was assessed after 2, 4 and 6 days of incubation.

Results Urethral equivalents consisted of a fully differentiated urethral epithelium on a urethral fibroblast populated collagen hydrogel. The epithelium consisted of multiple differentiated cell layers resembling native urethral tissue. We successfully infected urethral equivalents with a Ct genovar D strain. Ct invasion and expansion was detected in the epithelial layer, but not in the underlying collagen matrix, at 2, 4 and 6 days post infection. Morphological changes of the urethral equivalent could be observed at 2, 4 and 6 days post infection compared to non-infected urethral equivalents, whereby it appeared that the epithelial layer grows around the invaded Ct bacteria.

Conclusion We were able to construct a urethral equivalent resembling native urethral tissue. Moreover, these urethral equivalents could successfully be infected by a Ct genovar D strain, making this a promising life model to investigate the human pathogenesis of urogenital Ct infections.

O06.6 THE URETHRAL MICROBIOTA IN NONGONOCOCCAL URETHRITIS

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Introduction There is no known aetiology for up to half of all nongonococcal urethritis (NGU) cases. We sought to characterise the bacterial communities in men with (NGU+) and without (NGU-) NGU among men who have sex with men (MSM) and men who have sex with women (MSW), to determine if the urethral microbiota is associated with NGU status.

Methods From December 2014 to December 2015, urine samples were collected from 49 MSM (23 NGU+; 26 NGU-) and 48 MSW (21 NGU+; 27 NGU-) attending the Seattle STD Clinic. NGU was defined as urethral symptoms and/or visible discharge, and >5 PMNs per high powered field. *Chlamydia trachomatis* (CT) and *Mycoplasma genitalium* (MG) were detected by transcription mediated amplification (TMA). The urethral microbiota was characterised using broad-range 16S rRNA gene PCR with deep sequencing. Bacterial diversity was calculated using the Shannon index.

Results Mean urethral bacterial diversity in NGU+ MSM (0.82) was lower than in NGU- MSM (1.48), *Streptococcus* (n=7), *Corynebacterium* (n=5), *Haemophilus* (n=3), *Mycoplasma* (n=3), and *Lactobacillus iners* (n=2). Urethral microbiotas with dominant taxa were more common in NGU+ MSM (95.7%), while NGU+ MSW (61.9%) had microbiotas characterised by the presence of several vaginal bacteria. Among NGU- men, 53.8% MSM and 48.1% MSW had microbiotas with dominant taxa, including *Streptococcus* (n=19), *L. iners* (n=5), and *Gardnerella vaginalis* (n=4).

Conclusion The urethral microbiota in NGU is heterogeneous. NGU- MSM had more diverse urethral bacterial communities than NGU+ MSM, and presence of vaginal bacteria in MSW suggests sharing or acquisition from female partners. Future longitudinal studies may help inform if key bacteria predict incident NGU.

Oral Presentation Session 7

STI/HIV Risk Reduction

O07.1 NOVEL USE OF VENUE-SPECIFIC CODES TO TRACK IMPACT OF A CAMPAIGN TO INCREASE AWARENESS AND USE OF AN ONLINE HIV/STI TESTING SERVICE (GETCHECKEDONLINE) AMONG GAY AND BISEXUAL MEN IN VANCOUVER, CANADA

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Introduction GetCheckedOnline (GCO) is an online HIV/STI testing service where clients create an account, complete a risk assessment, print a lab form, submit specimens at a lab and get results online or by phone. From April-Sept 2015 the JustMakesSense (JMS) campaign aimed to increase awareness and use of GCO among gay and bisexual men (GBMSM) in Vancouver. JMS promoted GCO's convenience and used multiple physical and online venues (social media, sex-seeking websites/apps, gay bars, events), with venue-specific codes to create accounts which we used to measure campaign impact.
Methods Individuals were tracked from JMS website visits to GCO account creation and testing using venue-specific GCO access codes. Awareness of JMS and GCO was measured using a Pride survey (Aug 2015) and post-campaign perceptions of JMS and GCO gathered through key informant interviews and focus groups.
Results Over 6 months, 18 273 views of the JMS campaign page led to 659 (4%) visits of the GCO website. 177 visitors created GCO accounts and by Dec 2015, 43 (24%) tested at least once (none positive). 58% of GCO accounts/52% of tests were from ads on sex-seeking websites/apps (vs. 1%/0% from social media, 12%/9% from physical venues, and 29%/39% source unknown). 25% of 114 GBMSM surveyed were aware of JMS and GCO. Interviews/focus groups with 7 participants suggested GCO may not have been perceived as convenient given existing accessible, culturally appropriate HIV/STI testing services for GBMSM in Vancouver, and that GCO may better suit men living outside urban Vancouver or with privacy concerns that make visiting gay-branded testing services less likely.
Conclusion Our novel use of unique tracking codes permitted detailed per-venue evaluation of the JMS campaign; greatest uptake was from sex-seeking website/app ads vs. other venues. While JMS views were high and 1 in 4 men were aware of GCO, GCO use was low possibly owing to the availability of relatively convenient in-clinic testing services in the city. Promotion outside Vancouver and of the privacy of GCO may increase uptake among GBMSM.

O07.2 PHYSICIANS' WILLINGNESS TO PRESCRIBE PREP: RESULTS OF AN ONLINE SURVEY IN BELGIUM

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Introduction Physicians will have a pivotal role in ensuring appropriate delivery of Pre-Exposure Prophylaxis (PrEP). The study's objective was to explore Belgian physicians' self-perceived knowledge of and attitudes towards providing PrEP and to examine factors associated with their willingness to prescribe PrEP.
Methods We conducted an online survey (available in Dutch, French and English) among Belgian healthcare providers from March to June 2016. It was disseminated by spreading a weblink through physician organisations, e-mail lists and professional associations' websites. Bivariate analyses were used to examine differences between HIV clinicians and family physicians (FPs) regarding sociodemographic characteristics, experience with HIV and PrEP, and PrEP knowledge and attitudes. Multivariate logistic regression was conducted to explore factors associated with physicians' willingness to prescribe PrEP in the future.
Results On a total of 381 completed questionnaires, 269 (71%) were from FPs, 39 (10%) from HIV clinicians and 73 (19%) from other healthcare providers. About 56% of all respondents agreed that PrEP is an effective preventive measure to reduce HIV infections in Belgium. Twelve physicians had already prescribed PrEP. Compared with FPs, HIV clinicians were more likely to report higher self-perceived knowledge of PrEP (OR: 15.9; 95% CI: 4.8–52.7) to perceive the application of PrEP as cost-effective (OR: 3.3; 95% CI: 1.6–6.8). HIV clinicians were also more willing to prescribe PrEP in the future (OR: 2.49; 95% CI: 1.14–5.45) than FPs. Self-perceived knowledge of and attitudes towards PrEP remained independently associated with the willingness to prescribe when controlling for potential confounders (such as age, gender or experience with HIV).
Conclusion HIV clinicians were better prepared and more willing to prescribe PrEP than FPs. With the likely forthcoming approval of PrEP in Belgium, awareness and knowledge of PrEP among FPs should be improved to ensure appropriate delivery outside of HIV specialised settings.

O07.3 HEADS IN THE SAND? STI RISK PERCEPTION IN THE BRITISH POPULATION POORLY RELATES TO SEXUAL BEHAVIOUR: FINDINGS FROM THE THIRD NATIONAL SURVEY OF SEXUAL ATTITUDES AND LIFESTYLES (NATSAL-3)

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Introduction Risk perception is a key component of behaviour change and underpins effective public health messaging, which for sexual health includes promoting safer sex and STI testing. We examined associations between reported perceived risk of STIs and sexual behaviour in the British general population.