

urethritis (NGU) cases with no identified aetiology. Cultivation-independent methods have identified novel bacteria associated with female reproductive tract disease, particularly bacterial vaginosis (BV). We evaluated the association of NGU and 5 newly described BV-associated bacteria (BVAB).

Methods English-speaking, heterosexual men aged 16 years attending the STD clinic in Seattle, WA between May 2007 and July 2011 were eligible if PCR tests for *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Trichomonas vaginalis*, *Mycoplasma genitalium*, and *Ureaplasma urealyticum*-biovar2 were negative. Cases were men with visible urethral discharge or 5 PMNs/HPF in urethral exudates. Controls were men with no visible urethral discharge and < 5 PMNs/HPF. Urine was tested for *Atopobium*, BVAB-2, BVAB-3, *Megasphaera spp.*, and *Leptotrichia/Sneathia spp.* using quantitative taxon-directed PCR.

Results Cases (n = 157) and controls (n = 191) were similar with respect to age, education, and income. Mean age was 34.7 (SD \pm 9.9) and most were white. *Leptotrichia/Sneathia* was significantly associated with NGU (25/157 (15.3%) vs. 6/102 (5.9%), p = 0.03) and BVAB-2 was detected more often in cases than controls (7/157 (4.5%) vs. 1/102 (1.0%), p = 0.15). BVAB-3 (n = 2) and *Megasphaera* (n = 1) were uncommon, but only detected in men with NGU. In contrast, *Atopobium* was not associated with NGU (8.3% vs. 7.8%, p = 1.0). Quantity of bacteria did not differ between cases and controls for any of the 5 candidate pathogens. Among treated cases, doxycycline was somewhat more effective than azithromycin for clinical cure of men with *Leptotrichia/Sneathia* (9/10 (90%) vs. 7/12 (58%), p = 0.16), and BVAB-2 (3/3 (100%) vs. 0/3 (0%), p = 0.10).

Conclusion *Leptotrichia/Sneathia* was significantly associated with NGU. BVAB-2, BVAB-3, and *Megasphaera* were less commonly detected, but most often identified in men with NGU and rarely or never in men without NGU. Doxycycline may be more effective against these newly identified bacteria than azithromycin.

014.2 PREDICTORS AND PATHOGENS AMONG 4,326 CASES OF ACUTE NON-GONOCOCCAL URETHRITIS

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Background This large series examines the behavioural, demographic and laboratory characteristics and pathogens among males with first presentation of acute NGU.

Methods Retrospective review using the electronic-medical record database of Melbourne Sexual Health Centre, Australia, from January 2006 to December 2011. Cases were men with their first presentation with symptoms of acute NGU, in this period. First-stream urine was routinely tested for *C. trachomatis* and *M. genitalium* by PCR, and selectively tested, for trichomoniasis by culture, and HSV-1/2, and adenoviruses by PCR. We examined characteristics of cases, stratifying by pathogen, pathogen-clusters and sexual preference.

Results Of 5452 cases of acute NGU during the study period, 4326 (79%) first presentations were included. 799 (18.5%) had *C. trachomatis*, and 264 (6.0%) *M. genitalium* detected. Of cases tested selectively on clinical grounds: 28/70 had adenovirus, 31/85 HSV-1/2 and 2/50 trichomoniasis. The majority (74.5%) had no pathogen-detected. Cases with bacterial-STIs were more likely than cases with viruses to have \geq 5 PMNL/HPF on urethral Gram-stain (62.6% vs 31.5%), p < 0.001. Cases with viruses or no pathogen detected, were more likely to report unprotected oro-genital sex as their only exposure (10.3% & 10%, respectively) compared to cases with bacterial-STIs (5.2%), p < 0.001. Compared to heterosexuals, men who have sex with men (MSM) were less likely to have a bacterial-STI (OR = 0.5; 95% CI: 0.4–0.6, p < 0.001), more likely to have no

pathogen-detected (OR = 1.9; 95% CI: 0.16–2.3, p < 0.001), and to report 100% condom-use (OR = 4.1; 95% CI: 3.5–4.9, p < 0.001).

Conclusion Compared to heterosexual men, MSM were less likely to have *C. trachomatis* and *M. genitalium* and more likely to have no pathogen detected in acute NGU. Cases with viral agents and pathogen-negative cases were significantly more likely to report unprotected oral sex as the only exposure, raising the possibility that other oropharyngeal pathogens may have an aetiological role in acute NGU. The urethral Gram stain cut off \geq 5 PMNL/HPF fails to detect a significant proportion of cases with bacterial and viral pathogens.

014.3 LONG-TERM EFFICACY OF HUMAN PAPILLOMAVIRUS VACCINATION AGAINST CERVICAL CANCER

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Human papillomavirus (HPV) vaccination trials have shown high efficacy (VE) against high grade cervical intraepithelial neoplasia (CIN2/3). CIN2/3 is a surrogate marker of invasive cervical cancer (ICC). These lesions may spontaneously regress. Therefore, long-term follow-up is needed to determine the overall VE against ICC. Between September 2002 and March 2003, 1,749 16- to 17-year old women from Finland were enrolled in the randomised FUTURE trial of the quadrivalent HPV vaccine (Gardasil) with active follow-up for 4 years. Passive follow-up using the population-based Cancer Registry started 6 months after the active follow-up ended in 2007. A cluster randomised, population-based reference cohort of 15,744 unvaccinated, 18–19 year old women was established. We linked these cohorts to compare the incidence rates of CIN3 and ICC. Passive follow-up after 4 years resulted in 3,464, 3,444 and 62,876 person years of follow-up for the HPV vaccinated cohort, the placebo vaccinated cohort and the reference cohort, respectively. The number of endpoints with CIN3 or ICC identified were 0 and 0, 3 and 0, and 59 and 3 for the three cohorts, respectively. The corresponding incidence rates were 0 (95% confidence interval 0.0–106.5), 87.1 (95% CI 17.9–254.5) and 93.8 (95% CI 71.4–121), respectively. Our study shows that evaluation of the long-term efficacy post vaccination for the most stringent endpoints is feasible using cancer registries.

014.4 MICROBIOLOGIC AETIOLOGY OF PROCTITIS DIAGNOSED IN AN URBAN STD CLINIC

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Background Sexually transmitted proctitis occurs among persons who participate in receptive anal intercourse and is a risk factor for HIV acquisition. *N. gonorrhoeae*, *C. trachomatis* (including LGV), *T. pallidum*, and Herpes Simplex Virus (HSV) are the most common pathogens identified. The distribution of microbiologic aetiology of proctitis has implications for empiric treatment guidelines. **Methods:** We describe the microbiologic aetiology of clinical proctitis among men who have sex with men seen at the municipal STD clinic in San Francisco. *N. gonorrhoeae* and *C. trachomatis* were tested using a nucleic acid amplification assay, HSV was tested using polymerase chain reaction, and *T. pallidum* was tested using a non-treponemal antibody test, with *T. pallidum* particle agglutination confirmation. **Results:** Between January 1, 2004 and December 31, 2012, there were 1271 men diagnosed with clinical proctitis at the clinic. The number of cases of proctitis diagnosed annually did not increase over this interval, despite