consultation were included. Age, education level, ethnicity, HIV infection, having symptoms related to syphilis/HIV, being notified for STI, prior STI, condom use and number of partners at first infectious syphilis diagnosis were included in the analysis.

Results There were 184,621 consultations registered among 41,210 MSM who tested repeatedly. Among 3,504 MSM, 4,282 syphilis infections were diagnosed. At first syphilis diagnosis median age was 39 (IQR: 29–49), 32.4% was known HIV positive and 41.4% had 10 or more partners in the past 6 months. Repeat infection occurred in 647 MSM (18.5%; median time to repeat infection: 468 days (IQR: 287–808)). Being HIV positive (aOR: 2.02 [95% CI: 1.69–2.42]) and being notified for STI (aOR: 1.21 [95% CI: 1.01–1.46]) were statistically significant predictors of repeat infection.

Conclusion This study showed that repeat infection was common and that HIV infection and being notified for STI at first syphilis diagnosis were predictors of repeat infection among MSM who tested repeatedly. Preventive strategies, including adequate partner management, for repeat syphilis are needed, especially for HIV-positive MSM.

007.6

ESTABLISHING A GLOBAL CONSORTIUM FOR SYPHILIS VACCINE DEVELOPMENT: PATIENT ENROLLMENT AND SAMPLE PROCUREMENT FOR *TREPONEMA PALLIDUM* GENOME AND OMPEOME SEQUENCING

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Background The public health impact of syphilis worldwide underscores the need to develop an effective vaccine. We established a global consortium for syphilis vaccine development, and collected *Treponema pallidum* (Tp) DNA from well-characterized syphilis patients for whole genome and outer membrane protein (OMP) sequencing.

Methods Patients with primary, secondary or early latent syphilis were enrolled from four sites located in Chapel Hill (United States), Cali (Colombia), Lilongwe (Malawi) and Guangzhou (China) beginning November 2019. Inclusion criteria included age ≥ 18 ; early syphilis based on symptoms/signs, sexual history; positive darkfield microscopy, nontreponemal and treponemal antibodies. Patient demographics, clinical presentation, syphilis staging, HIV co-infection, and nontreponemal antibody titers were recorded. Ulcer swabs and skin biopsies were collected for DNA extraction, and blood was obtained for rabbit infectivity testing (Guangzhou site). Tp burdens in specimens were quantitated by qPCR for *polA* (tp01021).

Results To date, 833 patients have been screened and 94 enrolled across all sites (median age of 27, range: 18–59). Among enrolled participants, 31% are female, 22% are men who have sex with men, and 20% are HIV-coinfected. Primary syphilis was confirmed in 43 persons by darkfield microscopy, and all syphilis cases were confirmed by serology. Nontreponemal titers ranged from 1:1–1:256. Twenty-one Tp

strains have been isolated from rabbits, building upon recently published genomes. Tp qPCR assays have been performed on 79 specimens so far, providing a range of copy numbers based on specimen type and stage. Twenty specimens have been sequenced to-date, and analysis for structural variability in OMP targets is underway.

Conclusion We established a global clinical research consortium and have begun to characterize Tp genomic sequences and catalog Tp's global repertoire of OMPs based on strains circulating in affected populations across sites. Our findings will enable us to identify vaccinogens with broad protective capacity against circulating Tp strains.

Gonorrhoea epidemiology

008.1

OROPHARYNGEAL GONORRHOEA INFECTIONS AMONG FEMALES AND HETEROSEXUAL MALES WITH GENITAL GONORRHOEA ATTENDING A SEXUAL HEALTH CLINIC IN MELBOURNE, AUSTRALIA

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Background There is limited evidence about the transmission and prevalence of oropharyngeal gonorrhoea in heterosexuals. From August 2017, Melbourne Sexual Health Centre (MSHC) began testing for oropharyngeal gonorrhoea among heterosexuals with untreated genital gonorrhoea. This study aims to determine the positivity of oropharyngeal gonorrhoea among heterosexuals diagnosed with genital gonorrhoea at the MSHC between August 2017 and May 2020.

Methods We conducted a retrospective analysis including individuals who had oropharyngeal gonorrhoea testing within 30 days of initial genital gonorrhoea testing. We report oropharyngeal gonorrhoea positivity, stratified by gender and reported contact with gonorrhoea. Chi-square test was performed to compare oropharyngeal gonorrhoea positivity between groups.

Results Of 617 individuals with untreated genital gonorrhoea, 424 (68.7%) were tested for oropharyngeal gonorrhoea. Oropharyngeal gonorrhoea positivity was 38.9% (95% CI 34.2% to 43.7% [165/424]), and was higher in females than males (45.6% [115/252] vs 29.1% [50/172], $p=0.001$). Furthermore, oropharyngeal gonorrhoea positivity was higher among individuals reporting contact with gonorrhoea compared to those who did not (65.9% [29/44] vs 35.8% [136/380], $p<0.001$). There was no significant difference between females who were sex workers and those who were not (38.5% [30/78] vs 48.9% [85/174], $p=0.126$).

Conclusions Our data suggests oropharyngeal gonorrhoea infection was common among females and heterosexual males with untreated genital gonorrhoea. The high proportion of unrecognised oropharyngeal gonorrhoea suggests routine oropharyngeal testing will identify a significant proportion with previously undetected oropharyngeal infections. These findings bear important public health implications for preventing the transmission of gonorrhoea by elucidating the necessity for routine screening and treatment among such individuals.