ciprofloxacin resistance was first observed in the 1990s, rose sharply to more than 50% of isolates by 2008, and has stabilised at 30–40% highlighting the ability of imported strains to become established. With recent sporadic cases of ceftriaxone-resistant gonorrhoea reported in Australia and elsewhere, we sought to model the potential for imported NG strains to persist in the men who have sex with men (MSM) population in Australia.

Methods An individual-based model was developed to represent the transmission of NG in an urban MSM population in Australia. We assume a new NG strain is imported repetitively over the course of one year into a population where NG is already endemic and examined the likelihood that an imported strain will persist for a range of importation frequencies. In doing so, we assumed that all NG strains are of similar fitness.

Results The chance that an imported strain will persist for more than 20 years is predicted to be 4% if the importation frequency is once every six months, and increases to 24% if the importation frequency is once every month. If an anatomical site can only be infected by one NG strain at a time, the model predicts that there is a <3% chance that an imported strain will persist even if the importation frequency is once every month.

Conclusion Increasing the importation frequency increases the probability of an imported strain persisting in the population. If importation events are rare, then an imported strain is unlikely to persist unless it can coexist with local NG strains at the same anatomical site.

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P09.10 THE POTENTIAL IMPACT OF VACCINATION ON THE PREVALENCE OF GONORRHOEA

[1]KL Seib*, [2]AP Craig, [2]RT Gray, [3]JL Edwards, [4]MA Apicella, [1]MP Jennings, [2]DP Wilson. *[1]Institute for Glycomics, Griffith University; [2]The Kirby Institute, UNSW; [3]Center for Microbial Pathogenesis, The Research Institute at Nationwide Children's Hospital Ohio; [4]Department of Microbiology, University of Iowa*

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Introduction Gonorrhoea, one of the most common sexually transmitted infections worldwide, can lead to serious sequelae, including infertility and increased HIV transmission. Recently, untreatable, multidrug-resistant *Neisseria gonorrhoeae* strains have been reported. In the absence of new antibiotics, and given the speed with which resistance has emerged to all previously used antibiotics, development of a vaccine would be the ideal solution to this public health emergency. Understanding the desired characteristics, target population, and expected impact of an anti-gonococcal vaccine is essential to facilitate vaccine design, assessment, and implementation. The modelling presented herein aims to fill these conceptual gaps and inform future gonococcal vaccine development.

Methods Using an individual-based, epidemiological simulation model, gonococcal prevalence was simulated in a heterosexual population of 100, 000 individuals (with a ~1.7% prevalence rate) after the introduction of vaccines with varied efficacy (10–100%) and duration of protection (2.5–20 years).

Results Model simulations predicted that gonococcal prevalence could be reduced by; at least, 90% after 20 years, if all 13-year-olds were given a vaccine with 50% efficacy that does not wane. A comparable reduction in prevalence could be achieved by a vaccine with 100% efficacy that wanes after 7.5 years. A 40% reduction in prevalence would be achieved with a non-waning vaccine of just 20% efficacy.

Conclusion A vaccine of moderate efficacy and duration could have a substantive impact on gonococcal prevalence and disease sequelae, if coverage is high and protection lasts over the highest risk period (i.e. most sexual partner change) among youths.

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P09.11 SHOULD WE SCREEN FOR *MYCOPLASMA GENITALIUM*? EVIDENCE SYNTHESIS USING A TRANSMISSION-DYNAMIC MODEL

[1,2]R Birger, [3,4]J Saunders, [3]C Estcourt, [5]AJ Sutton, [6]CH Mercer, [4]T Roberts, [1,7,8]PJ White*. *[1]MRC Centre for Outbreak Analysis & Modelling, Department of Infectious Disease Epidemiology, School of Public Health, Imperial College London, UK; [2]Department of Ecology and Evolutionary Biology, Princeton University; [3]Barts and the London School of Medicine & Dentistry, Queen Mary University of London, Barts Sexual Health Centre, UK; [4]HIV & STI Department, Centre for Infectious Disease Surveillance and Control, Public Health England, London, UK; [5]University of Birmingham Health Economics Unit, UK; [6]Research Department of Infection and Population Health, University College London, UK; [7]NIHR Health Protection Research Unit in Modelling Methodology, Department of Infectious Disease Epidemiology, School of Public Health, Imperial College, London, UK; [8]Modelling & Economics Unit, Centre for Infectious Disease Surveillance and Control, Public Health England, London, UK*

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Introduction There is increasing concern about *Mycoplasma genitalium* as a cause of urethritis, cervicitis, PID, infertility and ectopic pregnancy. Currently there is no licensed test specific for *M. genitalium* in the UK, where urethral smear microscopy is recommended in GUM clinics, for symptomatic men only. NAATs testing has been advocated, particularly to detect asymptomatic infection. However, *M. genitalium*'s natural history is poorly-understood, making the impact and cost-effectiveness of screening unclear.

Methods We used a transmission-dynamic model to synthesise evidence from epidemiological and behavioural studies, and surveillance data for Non-Chlamydial, Non-Gonococcal Urethritis (NCNGU), to better-understand the natural history of *M. genitalium*. The model is stratified by sex, and incorporates heterogeneous sexual behaviour, symptomatic and asymptomatic infection; PID; care-seeking due to symptoms and routine screening; and treatment failure. We fitted to national surveillance data, (allowing for uncertainty in studies measuring the amount of NCNGU caused by *M. genitalium*). We examined the effects of implementing NAAT testing for both sexes in GUM and GP settings.

Results Introducing NAAT testing for all men (asymptomatic and symptomatic, in GPs and GUM) detects much more infection in men and treatment reduces transmission to women, whilst testing of women reduces prevalence in women and incidence in men. Introducing NAAT testing for both sexes reduces cumulative PID incidence over 20 years by 13.1%(IQR:9.6%–18.3%). However, there is important uncertainty in *M. genitalium*'s natural history parameters, leading to uncertainty in the absolute reduction in PID and other sequelae. Particularly