We defined people with AZM-RS gonorrhea as those with ≥ 1 gonococcal isolate demonstrating a minimum inhibitory concentration of AZM $\geq 2.0\mu\text{g/mL}$. We used inverse variance weighting to account for heterogeneity in sample size across jurisdictions to estimate pooled AZM-RS prevalences and 95% confidence intervals.

Results Across eight sites, 8,859 people (4,521 MSM, 758 women, and 3,580 MSW) provided at least one isolate for susceptibility testing; 1,052 people (10.4% [95% CI: 6.4%–14.4%]) had gonorrhea demonstrating AZM-RS. AZM-RS prevalence was markedly high among MSM (15.1% [95% CI: 10.2%–20.0%]), and lower yet elevated among women and MSW combined (5.3% [95% CI: 2.9%–7.7%]). Among MSM with AZM-RS gonorrhea, 16.2% (95% CI: 10.9%–21.4%) reported having 3+ sexual partners in the last 2–3 months and 16.7% (95% CI: 12.6%–20.9%) reported previous gonococcal infections. Among women/MSW with AZM-RS, 6.2% (95% CI: 3.7%–8.7%) reported 3+ recent sexual partners, and 4.8% (95% CI: 2.4%–7.3%) reported previous gonococcal infections.

Conclusions AZM-RS prevalence among women/MSW was lower than among MSM but still elevated, and a lower proportion of women/MSW reported multiple recent sexual partners and previous gonococcal infections. These data highlight differences in the epidemiology of reduced gonococcal susceptibility and the need to tailor resistant gonorrhea control approaches to affected populations.

009.6 TYPING OUTER MEMBRANE VESICLE PROTEINS OF NEISSERIA GONORRHOEAE PROVIDES INSIGHT INTO ANTIMICROBIAL RESISTANCE

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Background Outer membrane vesicles (OMVs) are known to be produced in significant quantities during gonococcal infection, however, their role remains mostly unknown. In this study, the diversity of gonococcal OMV proteins and their association with antimicrobial resistance (AMR) was investigated using computational methods.

Methods Omics-based approaches were employed through the PubMLST.org/neisseria database to analyse a selection of 26 proteins, including 23 identified in *N. gonorrhoeae* OMVs by Deo et al.(2018). These proteins were annotated across 4884 isolates from 58 countries and formed into an OMV peptide typing scheme. This facilitated the cataloguing of OMV protein diversity across the gonococcal population by the identification of OMV sequence types (OMV STs). The association of OMV STs with sequence typing schemes that categorise the core genome (Ng cg_400) and AMR (NG STAR) was then assessed, primarily using the Cramer's V statistic.

Results 2120 unique gonococcal OMV STs were identified. High levels of association were found between these OMV STs and both the core genome (OMV ST vs Ng cg_400: Cramer's V = 1.00) and AMR (OMV ST vs NG STAR ST: Cramer's V = 0.967). This is consistent the potential involvement of OMVs in the generation of AMR in *N. gonorrhoeae*.

Conclusion These results suggest that OMVs are more significantly involved in antimicrobial resistance in *N. gonorrhoeae* than previously thought, providing a new avenue for research

that could inform future efforts to limit AMR evolution and treat resistant infections. Additionally, the study demonstrates the role that population-level Omics-based approaches can play in improving our understanding of sexually transmitted infections. This applies not only to AMR, but also to other traits such as transmissibility or virulence.

Chlamydia epidemiology

010.1 INCIDENT UROGENITAL AND ANORECTAL CHLAMYDIA TRACHOMATIS IN WOMEN: THE ROLE OF SEXUAL EXPOSURE AND AUTO-INOCULATION; A MULTICENTRE OBSERVATIONAL STUDY (FEMCURE)

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Background Anorectal infections with Chlamydia trachomatis (CT) are prevalent in women visiting STI-clinics. In women, azithromycin treatment in anorectal chlamydia is unsuccessful in about 20%, with the potential of subsequent re-infection of the vagina through autoinoculation. We evaluated the risk for incident urogenital CT, by exposure from the own anorectal site and exposure by sex; and similarly evaluated risks for incident anorectal CT.

Methods Prospective multicenter cohort study, FemCure. At 4, 6, 8, 10, and 12 weeks after azithromycin or doxycycline CT treatment, women self-collected anorectal and urogenital swabs for CT-DNA testing. We calculated the proportion with incident CT, at week 6–12, by 2-week time-periods. Compared to no exposure (A), risk of incident urogenital CT was estimated for sexual exposure (B), anorectal CT exposure (C), and both exposures (D), adjusted for confounders by adjusted odds ratios (OR) and 95% confidence intervals (CI). We similarly assessed incident anorectal CT.

Results Data comprised 385 participants contributing 1540 two-week periods.

Urogenital incidence was 3.3% (47/1428) [95%CI: 2.4–4.4]; 0.7% (A), 1.9% (B), 13.9% (C), and 25.4 (D). ORs were: 2.7 [95%CI:0.9–8.6] (B), 21.8 [95%CI:6.7–70.7] (C), 49.7 [95%CI:15.4–160.4] (D).

Anorectal incidence was 2.9% (39/1343) [95%CI:1.8–3.6]; 1.3% (A), 1.3% (B), 27.8% (C), and 36.7% (D). ORs were:

0.91 [95%CI:0.32–2.60] (B), 26.0 [95%CI:7.16–94.34] (C), 44.3 [95%CI:14.4–136.2] (D).

Of incident CT, 55% urogenital and 70% anorectal infections persisted (>two weeks).

Conclusion Between 6–12 weeks after initial treatment, the risk for incident urogenital CT in women increased when women had a recent anorectal CT, especially when also sex was reported. Likewise, the risk for incident anorectal CT increased with urogenital CT and sex exposure. Findings may suggest a key role for auto-inoculation in the re-establishment or persistence of urogenital and anorectal chlamydia infections in treated women, especially in case of suboptimal initial treatment or lack of anorectal testing.

010.2 THE NETHERLANDS CHLAMYDIA COHORT STUDY: ADVERSE PREGNANCY OUTCOMES IN WOMEN WITH AND WITHOUT A PREVIOUS CHLAMYDIA INFECTION

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Background Chlamydia trachomatis infections can cause reproductive tract problems, but it remains unclear to what extent past infections are associated with reproductive outcomes such as miscarriages, preterm birth and stillbirth. We assessed these outcomes in women with and without a previous chlamydia infection in women participating in the Netherlands Chlamydia Cohort Study (NECCST).

Methods NECCST is a cohort of 5,704 women of reproductive age all tested for chlamydia by PCR in a chlamydia screening study between 2008–11. Women were re-invited for NECCST in 2015–16. Chlamydia-status (positive/negative) was defined using results from the screening, CT IgG presence in serum and/or self-reported past chlamydia infections. Data on miscarriages (spontaneous abortion <16 weeks), preterm birth (life birth <37 weeks of pregnancy) and stillbirth (fetal death >15 weeks of pregnancy), was collected via questionnaires in 2019–20. Pregnancy outcomes were compared between chlamydia positive and chlamydia negative women using multivariable logistic regression analyses.

Results Of 3,517 (61.7%) women enrolled in the third NECCST round, 1,011 (28.8%) were chlamydia positive and 2,052 (58.3%) had been pregnant at least once. In preliminary results of those 2,052 women, 585 (28.5%) had a miscarriage once, 153 (7.5%) had a preterm birth and 18 (0.9%) a stillbirth. Miscarriages and stillbirths were similar among chlamydia positive and negative women, 30.7% versus 28.3% $p=0.280$ and 1.1% versus 0.8% $p=0.590$. Preterm births were more common among chlamydia positive women compared to chlamydia negatives, 9.7% versus 6.6%, $p=0.017$. However, in multivariable analysis corrected for age, education level, migration background, body mass index and smoking, the odds of a preterm birth were not significantly higher for chlamydia positive versus chlamydia negative women, OR 1.37 (95%CI 0.95–1.96).

Conclusion In the NECCST study we found no indication that past Chlamydia trachomatis infections are associated with an increased risk for miscarriages, preterm births or stillbirths.

010.3 COMMUNITY CONTEXT AND INDIVIDUAL BEHAVIOR PATHWAYS TO CHLAMYDIA INFECTION AMONG YOUNG BLACK MEN

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Background Social-ecological models posit complex interactions between individuals and their environment. We examine associations between social and environmental factors, risk behaviors, and chlamydia positivity.

Methods Black men aged 15–24 who have sex with women were enrolled in a community-venue based screening program for Chlamydia trachomatis in New Orleans, LA. Men completed surveys on past experiences, recent behaviors, and perception of neighborhood safety and everyday discrimination.

Results Of 1872 men, 203 (10.8%) were chlamydia positive. Average age was 20.0 years (S.D. 2.5), 24.5% reported multiple recent sex partners, 32.1% substance use (binge drinking or drugs other than marijuana), 55.9% condomless vaginal sex, and 19.2% had spent time in a detention facility. There were positive direct and indirect effects between having spent time in a detention facility and chlamydia positivity. This relationship was positively mediated by increasing substance use, and condomless sex. Having spent time in a detention facility also increased everyday discrimination and perception of unsafe neighborhood. While there was no significant direct effect of higher everyday discrimination on chlamydia, there was a positive indirect effect mediated through increased substance use, condomless sex, and having multiple recent partners. Neighborhood safety had a significant negative direct effect on chlamydia, and while it did not significantly affect any risk behaviors, it was positively associated with increased everyday discrimination. The path model fit was good (SRMR<0.001; RMSEA<0.0001).

Conclusion The relationships between past experiences and perception of discrimination and safety with chlamydia are complex and partly function through effects on risk behaviors. Interventions and policies that address incarceration, discrimination, and neighborhood safety as well as those focused on decreasing risk behaviors could maximize the benefits of efforts to decrease chlamydia in this population.

010.4 INCIDENCE AND DURATION OF PHARYNGEAL CHLAMYDIA TRACHOMATIS (CT) AMONG A COHORT OF MEN WHO HAVE SEX WITH MEN (MSM)

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