P08.06 LACTIC ACID ISOMERS DIFFERENTIALLY REDUCE *CHLAMYDIA TRACHOMATIS* INFECTION IN A PH DEPENDENT MANNER

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Introduction Epidemiological studies indicate that the vaginal microbiota can significantly impact the risk of acquiring sexually transmitted infections, including chlamydia. *Lactobacillus* spp. are the most common commensal bacteria in the healthy human vagina; they produce lactic acid to create an acidic environment with pH ranging between 3.5 and 4, thought to reduce vaginal colonisation by STI agents. However, not all species of *Lactobacillus* are believed to perform this function equally, and we hypothesised that species that produce low amounts or no D-lactic acid, while achieving low pH do not fully protect women.
Methods A 3D model of cervical epithelial cells (A2EN) developed in our lab was exposed to D(-), L(+) or a D/L racemic mixture of lactic acid at various concentrations to produce pH 7, 5.5 and 4 or to several *Lactobacillus* spp. conditioned media (LCM). Cells were infected with *C. trachomatis* serovar L2 for 48 h, stained and imaged by confocal microscopy. Analysis of the resultant IFUs was used to determine the number of infected host cells.
Results We observed a reduction of *Chlamydia trachomatis* infectivity in a pH dependent manner. Further, at pH 4, D(-) lactic acid afforded maximal protection compared to L(+) lactic acid. Interestingly, 50% infectivity is still observed with HCL at pH 4, indicating that pH alone is not responsible for this protection. Exposure of cells to conditioned media from the various *Lactobacillus* spp. showed that high D(-) lactic acid producing bacteria (*Lactobacillus* crispatus and *Lactobacillus* jensenii) afforded significantly greater protection against *C. trachomatis* than did *Lactobacillus* iners, which produces predominantly L (+) lactic acid.
Conclusion These results suggest a differential role for specific species of *Lactobacillus* in driving resistance to *C. trachomatis* infections and potentially other STIs. Lactic acid isomers production should be considered when developing *Lactobacillus* vaginal probiotics.
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P08.07 *CHLAMYDIA TRACHOMATIS* CERVICAL INFECTION/ RECTAL DETECTION IN THE MACAQUE MODEL

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Introduction Experimentally induced cervical chlamydial infection in the macaque may naturally cross-infect rectal epithelial cells which are also prone to *Chlamydia trachomatis* (CT) infection. This would be a significant finding in the field of STI preventive strategies, particularly when products intended for vaginal use are assessed for efficacy. If cross-infection does occur, it will be important to specifically assess rectal secretions for evidence of infection in vaginal product efficacy studies.
Methods Twelve pigtailed macaques underwent direct cervical inoculation (1 mL *C. trachomatis* serovar E; 5E6IFU), followed by five weekly exams to detect infection in cervical and rectal secretions. Inoculant was delivered to the face of the cervix/vaginal fornix via 1 mL tuberculin syringe. Secretions were collected on dacron swabs. Chlamydial infection was detected at each site by culture and by nucleic acid amplification (NAAT: Aptima2) assays.
Results Ten of twelve macaques tested positive for cervical chlamydial infection by culture and NAAT assays. The other two were transiently positive (2 weeks, 1 week) by NAAT only. All but three animals had chlamydial rRNA amplified from rectal swabs on at least one occasion. Five animals remained NAAT positive in rectal secretions for three weeks or more. One of these macaques had replicating chlamydia cultured from a rectal swab (week 3 only), followed by a spike in culture positivity from her next cervical sample (week4).
Conclusion Experimental CT infection of the cervix indeed gave rise to chlamydia detection in rectal secretions in the majority of animals in this study. Culture positivity in cervical samples did not predict chlamydia detection in rectal samples. The paucity of culture positive results from rectal samples may be related to faecal contamination. Clearly it is advisable that rectal secretions be assessed for evidence of chlamydia in studies designed to assess prevention/treatment of cervical CT infections.
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P08.08 EXPANDING THE MACAQUE MODEL OF *TRICHOMONAS VAGINALIS* INFECTION

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Introduction The pigtailed macaque model for trichomonal infection was used to compare *T. vaginalis* (TV) detection technologies, to describe infection status in younger versus older populations, and to test whether TV reinfection after antibiotic clearance is possible in this model.
Methods Thirty-six macaques received a single vaginal TV inoculation (ATCC 50148; ~6E5), followed by five weekly visits to document infection. Eighteen animals were 4–7 years old; eighteen were over 13 years old. Infection status was documented by culture (InPouchTV) and by NAAT (AptimaTV). Colposcopy was performed to assess tissue reaction to infection. Animals underwent antibiotic treatment (metronidazole) and test-of-cure. Five macaques from the younger cohort were later re-inoculated with the same TV strain and followed for three weeks to document reinfection.
Results All but one (older) animal were successfully infected after the initial vaginal challenge. Among 295 matched samples (culture/NAAT), 22 did not share confirmatory results. In this experimental setting, with weekly vaginal swabs providing a timeline of trichomonal presence in each animal, we can infer

infectious status for some discrepant samples. It is likely that 10–12 instances can be attributed to false culture readings, and 3–5 to false NAAT results. Self-limited infections were noted more frequently among younger macaques. Friable tissue was noted more frequently among older animals. Four of the five animals that were re-challenged with TV developed infection.

Conclusions The NAAT gave fewer false results, when we had the luxury of a timeline of serial samples to refer to for determining test accuracy. Similar infection rates were observed in both age cohorts. Older animals had a greater incidence of cervicovaginal irritation evidenced primarily by friability in this study, and younger animals tended to self-clear *T. vaginalis* infection faster than older animals. Finally, TV re-infection is possible in the macaque model.

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P08.09 TRENDS IN CHLAMYDIA AND GONORRHOEA TESTING AND POSITIVITY IN WESTERN AUSTRALIAN WOMEN, 1998–2013

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Introduction Annual genital chlamydia and gonorrhoea notifications have been rising in Australia. This study investigated changes in the patterns of chlamydia and gonorrhoea testing and positivity among women of reproductive age.

Methods A cohort of women born between 1970 and 1995 residing in Western Australia (WA) was determined from birth registrations and the current electoral roll and probabilistically linked with pathology records from one large laboratory providing services in Perth and parts of regional WA. All chlamydia and gonorrhoea tests conducted from 1998–2013 that linked to the cohort were examined.

Results There were 380,242 women included, with 99,134 (26%) having at least one chlamydia test and 82,064 (22%) at least one gonorrhoea test. Annually, the proportion of chlamydia tests in women aged 15–24 increased from 1.5% in 1998 to 8.7% in 2013 and among women aged ≥25 from 1.1% to 4.4%. Concurrent gonorrhoea testing also increased over this period from 52.7% to 81.7% of all chlamydia tests; a trend observed across all age groups. The percentage of positive chlamydia tests increased in those aged 15–24 (5.9% in 1998 to 8.2% in 2013) but not in those aged ≥25 (3.9% and 2.5% respectively). The proportion of positive gonorrhoea tests decreased from 1.4% to 0.4%, this decrease was observed across all age groups.

Conclusion The proportion of chlamydia tests among women of reproductive age in WA increased over time and chlamydia positivity increased among women aged 15–24. Gonorrhoea positivity decreased however, this coincided with an increase in concurrent gonorrhoea testing.

Disclosure of interest statement The authors have no conflicts of interest to declare

P08.10 *CHLAMYDIA TRACHOMATIS* INFECTION IN SAMOAN WOMEN: PREVALENCE AND RISK FACTORS

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Introduction Knowledge about genital *Chlamydia trachomatis* (CT) infection in the Pacific is limited to studies of antenatal women. We approached studying CT infection in Samoan women by using a maternal and family health focus, investigating both CT and infertility amongst women exposed to pregnancy risk.

Methods Women having unprotected intercourse aged 18–29 years were recruited from 41 Samoan villages. They were answered a behavioural questionnaire and provided a urine sample for CT testing by nucleic acid amplification. Associations between CT infection and possible risk factors were explored using logistic regression.

Results 239 women were recruited; 86 (36.0%; weighted estimate: 41.9%; 95% CI: 33.4–50.5%) were positive for CT infection. Being single (OR 1.92; 95% CI, 1.02–3.63) and having two or more lifetime sexual partners (OR 3.02; 95% CI, 1.19–7.67) were both associated with CT infection. However, a very high prevalence was still seen in those reporting only one lifetime partner (27.6%). Participants who had a previous pregnancy were less likely to be positive (OR 0.49; 95% CI, 0.27–0.87). Although a slightly higher proportion of women aged 18–24 were positive than those aged 25–29, age was not significantly associated with infection.

Conclusion Whilst this sample may be considered high risk, use of barrier protection in Samoa has previously been found to be extremely uncommon and women had reported relatively few partners within the current study. Therefore, this study confirms findings from World Health Organization antenatal surveys: the prevalence of CT infection in Samoan women is likely to be very high. Studies with further assessment of the impact of CT on pelvic inflammatory disease and infertility, studies including men and strategies for sustainable control are needed.

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P08.11 *CHLAMYDIA TRACHOMATIS* INCIDENCE FROM SELF-REPORTS AND SEROLOGY BY AGE-PERIOD, SEX AND PARTNER NUMBERS IN A BIRTH COHORT

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Background Better understanding of the epidemiology of *Chlamydia trachomatis* (CT) would assist in prevention and control,