

P07.28 **SYPHILIS TESTING IN ANTENATAL CARE: POLICIES AND PRACTICES AMONG LABORATORIES IN THE AMERICAS**

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Introduction The World Health Organization (WHO) recommends universal syphilis testing in pregnancy as part of basic maternal and child health services. Coupled with HIV testing, antenatal syphilis testing is fundamental for the regional initiative on elimination of mother-to-child transmission of HIV and congenital syphilis (EMTCT) in the Americas and globally. We conducted this survey of laboratory practices around syphilis testing to characterise syphilis testing in the Pan American Health Organisation (PAHO) member countries.

Methods A structured survey assessing syphilis laboratory testing practices in the 35 PAHO member states was administered electronically between March and August 2014. Leaders of national reference labs, large regional laboratories and a sample of local (e.g., large maternal hospitals, district hospitals) and private laboratories that conducted syphilis testing were recruited to participate. The survey collected data on laboratories tests used, testing algorithms applied in different clinical settings, testing volume and turnaround time, quality assurance strategies, and results reporting to national surveillance.

Results Data were obtained from 30 (86%) PAHO member states, including 36 national or regional reference laboratories and 33 lower level laboratories, primarily (94%) publicly funded. Of 69 laboratories reporting results, 41% used rapid syphilis tests (RSTs), of which 36% were lower level laboratories. Sixty-eight percent of reporting laboratories (83% of national/regional) participated in external quality control, and 36% reported surveillance data. Of the 69 laboratories, 49 (71%) reported using a national algorithm for syphilis testing in pregnancy, of which 5 involved RSTs. Of 54 (78%) laboratories that reported processing samples from antenatal clinics, approximately half experienced stock outs of at least one essential commodity during the previous 12 months.

Conclusions Updating laboratory algorithms along with improving testing standards and quality assurance, supply distribution, and surveillance reporting could better advance EMTCT of syphilis and improve syphilis testing in various clinical settings in the Americas Region.

Disclosure of interest No grants or outside funding were received in the development of this study.

P07.29 **POINT OF CARE TESTING (POCT) FOR HIV; CAN VENIPUNCTURE BE AVOIDED FOR SYPHILIS?**

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Introduction Point of Care Testing (POCT) for HIV potentially removes the need for venipuncture; however it is currently still required for syphilis and hepatitis B testing. Syphilis POCTs exist but most cannot be used for clients with a past history of

syphilis. Newcastle Sexual Health Service explored whether venipuncture could be avoided at the Hunter ACON outreach clinic.

Methods A list of MSM seen at Hunter ACON during 2014 was obtained from the clinic database. Data for the following parameters were obtained from laboratory and clinic records: numbers of individual clients, occasions of service, if they were first time presenters to the service, past history of syphilis and HBV status.

Results 105 MSM clients were tested for syphilis on 150 occasions during 2014 at Hunter ACON with 2 clients testing positive on the syphilis screening EIA. Both clients were known to have been previously diagnosed with syphilis. 71 clients attended as a first visit, 40 of these were of unknown hepatitis A or B status and hence may have required HBV testing. Further analysis of reported HBV status may reduce this number as NSW has been vaccinating MSM and school aged males for many years. Overall 108 of 150 (72%) HIV testing occasions could have avoided venipuncture through use of HIV and syphilis rapid testing.

Conclusion This data demonstrates that a syphilis POCT could be used for the overwhelming majority of MSM seen at the Hunter ACON outreach clinic. In at least 72% of occasion's venipuncture could be avoided when performing HIV/STI testing at the Hunter ACON clinic.

Disclosure of interest statement N/A.

P07.30 **IMPACT OF EXPANDED SCREENING ON THE DETECTION OF HIV AND SYPHILIS IN WUXI, CHINA**

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Introduction HIV and syphilis shares same mode of transmission. In 2010 the Chinese government adopted expanded HIV and syphilis screening strategy (EHSS) across the country in order to timely detect people with these two infections. The impact of this strategy has not been well documented.

Methods HIV and syphilis surveillance data 2004–2014 in Wuxi, China were retrieved. Sources of surveillance data included general hospitals (GHs), sexual health clinics (SHCs), blood donation centres (BDCs), voluntary counselling and testing clinics (VCTs) and others in Wuxi. We used Poisson distribution events test to compare number of HIV and syphilis testing, Chi-squared test to compare HIV and syphilis positive rates and proportions of source of HIV and syphilis notification, between the period before EHSS (Period I, 2004–2009) and the period after EHSS (Period II, 2010–2014).

Results Comparing Periods I and II, 586,000 vs 1,423,000 person-times were screened for both HIV and syphilis ($P < 0.001$); HIV positive rates were 0.08% (476) vs 0.13% (1,854) (<0.001); syphilis positive rates were 0.37% (2,172) vs 0.63% (8,955) ($P < 0.001$). In Period I, 18.8%, 10.9%, 7.1%, 14.2% and 49.0% of all HIV positive cases were from GHs, SHCs, BDCs, VCTs and other sources, respectively. This compared to 25.8%, 7.4%, 9.0%, 16.5% and 41.3% in Period II ($P < 0.001$). In Period I, 42.0%, 13.7%, 7.8%, 1.5% and 35.0% of all syphilis positive cases were from GHs, SHCs, BDCs, VCTs and other sources, respectively. This compared to 26.7%, 28.0%, 17.7%, 1.7% and 25.9% in Period II ($P < 0.001$).

Conclusion Both the number of HIV and syphilis testing and positive rate increased as a result of EHSS. More HIV infections were detected from GHs compared to syphilis from SHCs in

Period II. So HIV-related service capacity building should be enhanced in GHs while that related to syphilis in SHCs in Wuxi, China.

Disclosure of interest statement All authors declare no competing interests.

P08 - Chlamydia infections

P08.01 CHARACTERISING CD4⁺ AND CD8⁺ T-CELL RESPONSES BY INTRACELLULAR CYTOKINE STAINING IN WOMEN WITH AND WITHOUT *CHLAMYDIA TRACHOMATIS* REINFECTION

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Background *Chlamydia trachomatis* (CT) infection is the most prevalent bacterial sexually transmitted infection worldwide and, untreated, can lead to significant reproductive morbidity. Unfortunately, the prevalence remains high in the United States and no effective CT vaccine exists, in part because of an inadequate knowledge of immunological responses to CT infection in humans and, specifically, no correlates of protective immunity to guide vaccine studies. In animal studies, IFN- γ and/or TNF- α producing CD4 cells are known to mediate protection against *C. trachomatis*. The objective of this study was to characterise the T-cell mediated immune responses to *C. trachomatis* in humans with and without CT reinfection at a follow up clinic visit.

Methods In an ongoing study, peripheral blood mononuclear cells (PBMCs) are collected from CT-infected women at the time of treatment and stimulated *in vitro* with *C. trachomatis* antigens MOMP or PGP3, then fixed and permeabilized. The percentage of CD4⁺ and CD8⁺ T-cells expressing either IFN- γ or TNF- α is then assessed using intracellular cytokine staining (ICCS) and flow cytometry. Women return at 3- and 6-months for repeat genital chlamydia screening. Cytokine-specific ICCS responses are then compared in women with versus without subsequent CT reinfection at follow-up to assess for possible correlates of protection.

Results To date, we have performed ICCS on 44 women who have completed the study. Compared with women who had CT reinfection at a follow-up visit (n = 14), women without CT reinfection (n = 30) had higher baseline positive CD8⁺ TNF- α responses (p = 0.042). There was no significant association of IFN- γ and/or TNF- α CD4 responses with CT reinfection risk.

Conclusions Our preliminary findings reveal that a TNF- α -producing CD8⁺ T-cell response appears to correlate with a decreased risk for CT reinfection, suggesting a possible role in protective immunity. CD4 T-cell responses have not significantly differed in women with versus without CT reinfection.

Disclosure of interest statement Nothing to declare.

P08.02 *CHLAMYDIA TRACHOMATIS* CAUSES MITOCHONDRIAL DAMAGE IN KERATINOCYTES

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Introduction *Chlamydia trachomatis* causes two different sexually transmitted diseases: genital discharge (GD) and *lymphogranuloma venereum* (LGV). Apart from differences in tissue tropisms, little is known about differences in pathogenicity to the cells they infect, especially keratinocytes, the primary target of infection for LGV chlamydia.

Methods Human keratinocytes (HaCaT cells), one LGV (serovar L2) and one GD (serovar E) isolate were used for all experiments with uninfected cells as the negative control. Experiments were performed at 37 and 33°C. For transmission electron microscopy (TEM) cells grown on Thermanox coverslips within 24-well plates were infected (MOI = 0.25) and incubated for various time-points over 48 h. The diameter of 15 mitochondria were measured in uninfected and infected cells at 1, 36 and 48 h post-infection using image analysis software. For the MTT assay cells grown in 96-well plates were infected (MOI = 0.25) and incubated for various time-points over 48 h. Median mitochondrial diameter was compared using Kruskal-Wallis nonparametric ANOVA with Dunn's post-test. Percentage mitochondrial activity was compared using two-tailed paired T test. P \leq 0.05 was considered significant.

Results The GD isolate alone caused mitochondrial swelling, cristae rearrangement and a pale mitochondrial matrix at 1, 36 and 48 h post-infection at 37°C but not 33°C. Median mitochondrial diameter was 430 nm in uninfected cells; 477 nm, 470 nm and 1221 nm after 1, 36 and 48 h post-infection respectively for serovar E; and 343 nm, 420 nm and 392 nm after 1, 36 and 48 h respectively for L2. Mitochondrial diameter was significantly larger in serovar E-infected cells 48 h post-infection compared to uninfected cells (P < 0.001) or L2-infected cells (P < 0.01). The MTT assay indicated a significant (P = 0.0373) reduction in mitochondrial activity upon infection with serovar E, but not serovar L2 at 37°C.

Conclusion *C. trachomatis* of the GD biovar but not the LGV biovar causes transient mitochondrial swelling and a decrease in mitochondrial activity in infected keratinocytes at 37°C.

Disclosure of interest statement This study is supported by the National Research Foundation of South Africa. The authors have no conflict of interest to declare.

P08.03 MINING GENOME OF *CHLAMYDIA TRACHOMATIS* TO IDENTIFY VACCINE CANDIDATES

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Introduction *Chlamydia trachomatis*, an obligate intracellular parasite, is a major cause of genital infections in human. The pathogen is sexually transmitted and responsible for serious reproductive and other health problems. Despite the availability of antibiotic therapy, infection rates are increasing worldwide. This is mainly due to the asymptomatic nature of most infections and the lack of effective screening programs. Vaccination is therefore considered to provide the best means of controlling chlamydial infection. Attempts to vaccinate with whole-cell vaccine or with purified chlamydial proteins eliciting CD4⁺ T cells and/or antibodies have failed as they provide only partial protection in animal models. Thus, identification of protective antigens that could be used either as an alternative to those already characterised or in combination with them is a high priority in chlamydial vaccine development.