

**Introduction** The presence of antibodies against *Chlamydia trachomatis* (Ct) is indicative of previous genital or ocular infection. Serology was introduced in the 1970s to support the diagnosis of pelvic inflammatory disease (PID), but fell out of favour due to its cross-reactivity with *Chlamydophila* (*Chlamydia*) *pneumoniae* bacteria. With the recent development of sensitive and specific assays, as well as the identification of immunogenic Ct antigens developed as recombinant proteins, serology holds the potential to be a useful tool in public health. To date, there has been no summary of the techniques used, their development and their potential usefulness in public and tropical medicine.

**Methods** We searched PubMed, Cochrane, Lilacs, Scielo, Scopus and Web of Science for articles published on serological techniques and their use in a public health context. Studies were categorised by technique employed, antigen used and antibody detected.

**Results** A total of 16 studies were included- 5 related to ocular Ct infection and 11 related to genital Ct infection. The trachoma studies were predominantly based on Tanzanian samples, while the genital studies were based on samples from an array of countries. The studies were heterogeneous in design, assay and antigen used, and immunoglobulin detected. The estimated prevalence of antibodies against Ct in trachoma studies ranged from 0%–62%; from 0%–88.9% in genital studies. For genital Ct infections, serology is commonly used to explore disease sequelae. For ocular Ct infections, serology is explored as a means to monitor elimination efforts.

**Conclusion** Techniques used to measure the prevalence of antibodies against Ct have reported increased sensitivity and specificity. There is wide diversity in antigens and assays used and antibodies detected. The practicality of an assay depends on resources available, purpose of the study, and population being studied. There is wide scope for the development and refinement of techniques to increase the value of serology as it relates to development of new techniques, research and public health.

### P3.215 CHARACTERISE THE TEMPORAL EVOLUTION OF HIV INCIDENCE AMONG STABLE COUPLES IN SUB-SAHARAN AFRICA

Susanne Awad, Hiam Chemaitelly, Laith J Abu-Raddad. *Weill Cornell Medicine-Qatar, Doha, Qatar*

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**Introduction** We quantified and characterised the temporal evolution of the contribution of several types of sexual-partnership HIV statuses to total HIV incidence in representative countries at different HIV epidemic scales in sub-Saharan Africa.

**Methods** A pair-based mathematical model was constructed to accommodate for movement of individuals between different forms of sexual partnerships and HIV infection statuses. Stable couples (SCs) were divided into sero-concordant negative (SCNCs), sero-discordant (SDCs), and sero-concordant positive couples. Throughout epidemic phases, historical and future trends (1980–2030) of sources of HIV incidence by partnership status were projected based on nationally-representative epidemiologic and demographic data.

**Results** As the epidemics emerged and peaked, HIV incidence resulting among SDCs increased from 6%–32% to 19%–44%

of total HIV incidence, mostly due to transmissions within the SDCs. As the epidemics started their natural and further decline with antiretroviral therapy (ART) scale-up, this proportion declined in intermediate and high HIV-prevalence countries, but increased in low HIV-prevalence countries. As the epidemics emerged and peaked, HIV incidence resulting among SCNCs from extramarital sex declined from 54%–80% to 35%–73% of total HIV incidence. As the epidemics started their decline, this proportion increased in intermediate and high HIV-prevalence countries, but declined in low HIV-prevalence countries. HIV incidence resulting among individuals not in SCs was 9%–29% of total HIV incidence and was stable throughout the epidemics, but larger with higher HIV prevalence.

**Conclusion** The contribution of different forms of sexual-partnership HIV statuses to total HIV incidence was dependent on HIV epidemic phase and scale. Throughout the epidemics, more than two thirds of HIV incidence occurred among individuals engaged in SCs. The majority of incidence among SCs was due to extramarital sex. To achieve reductions in HIV incidence, prevention approaches should target both SCs and individuals not in SCs.

### P3.216 ASSESSING HPV GENOTYPE PREVALENCE IN INFECTION AND DISEASE IN YOUNG AUSTRALIAN WOMEN FOLLOWING THE INTRODUCTION OF A NATIONAL VACCINATION PROGRAM

<sup>1</sup>Suzanne Garland, <sup>2</sup>AM Cornall, <sup>3</sup>JML Brotherton, <sup>4</sup>SL Osborne, <sup>5</sup>CD Wrede, <sup>6</sup>JD Wark, <sup>3</sup>M Saville, <sup>7</sup>J Pyman, <sup>8</sup>J Tan, <sup>9</sup>ET Callegari, <sup>3</sup>DM Gertig, <sup>10</sup>Y Jayasinghe, <sup>11</sup>M Malloy, <sup>12</sup>M Pitts, <sup>1</sup>SN Tabrizi. <sup>1</sup>Royal Women's Hospital, Department of Microbiology and Infectious Diseases, Parkville, Australia; <sup>2</sup>Royal Women's Hospital, Department of Microbiology and Infectious Diseases, and Murdoch, Parkville, Australia; <sup>3</sup>National HPV Vaccination Program Register, VCS, East Melbourne, Australia; <sup>4</sup>Royal Women's Hospital, Department of Microbiology and Infectious Diseases, Parkville, and Murdoch, Parkville, Australia; <sup>5</sup>Royal Women's Hospital, Parkville, Australia; <sup>6</sup>The University of Melbourne, Parkville, Australia; <sup>7</sup>Department of Anatomical Pathology, The Royal Women's Hospital, Parkville, Australia; <sup>8</sup>Department of Obstetrics and Gynaecology, University of Melbourne and Oncology and Dysplasia Unit, R, Parkville, Australia; <sup>9</sup>The University of Melbourne, Department of Medicine, Royal Melbourne Hospital, Parkville, Australia; <sup>10</sup>Department of Obstetrics and Gynaecology, University of Melbourne, Department of Gynaecology, Royal, Parkville, Australia; <sup>11</sup>National Hpv Vaccination Program Register, VCS, Parkville, Australia; <sup>12</sup>Australian Research Centre in Sexual Health and Society, La Trobe University, Melbourne, Australia

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**Introduction** The National HPV Vaccination Program, utilising the quadrivalent HPV vaccine, was implemented in Australia in 2007. As the first country to introduce this scheme, Australia is ideally placed to identify changes in HPV genoprevalence in a vaccinated population, as well as in cervical intraepithelial neoplasia grade 3 (CIN3) lesions.

**Methods** The VACCINE (Vaccine Against Cervical Cancer Impact and Effectiveness) study was designed to assess prevalence of vaccine-targeted HPV genotype infections. In sub-study A, sexually active Victorian women aged 18–25 years, recruited through targeted social media advertising on Facebook, were asked to complete an online questionnaire and provide a self-collected vaginal swab for HPV DNA genotyping. The National HPV Vaccination Program Register (NHVPR) was utilised to verify self-reported vaccination status. In sub-study B, causal HPV genotypes in 529 CIN3 cases among vaccine-eligible young women were determined using