

*Chlamydia trachomatis* is an important human pathogen, responsible for diseases ranging from trachoma to sexually transmitted infections that cause substantial morbidity in developed as well as developing countries. In the UK alone Chlamydia is estimated to cost the National Health System up to 100 million pounds every year ([www.chlamydia-screening.nhs.uk](http://www.chlamydia-screening.nhs.uk)). OmpA genotyping is the most widely used typing scheme for Chlamydia with the ocular genotypes represented by A to C, urogenital genotypes D to K and for LGV its L1-L3. Studies from all over the world show that the most common urogenital genotypes are E, F and D. This has led to the pervasive view that during the last few decades, the overall distributions urogenital of *C. trachomatis* genovars throughout the world has been relatively stable. Moreover, there are a large number of epidemiological studies that have used ompA-type as a marker to infer relatedness between isolates and compare disease presentations between genotypes. Looking across them all there is almost an equal number of epidemiological studies that have shown an association between genotype and the hosts: age, gender, number of sexual partners, or clinical symptoms, compared to the number of studies that have not.

However, recently whole genome sequence has challenged much of our evidence, hypothesis, views and preconceptions about many bacterial pathogens, but especially Chlamydia. We now have accurate phylogenies that reveal how the different 'types' of *C. trachomatis* actually relate to each other showing us the typing protocols based on a single region or small number of genomic loci that we have been using should be treated with caution. Why? Because *C. trachomatis* has been shown to be a highly dynamic bacterium exchanging huge portions of its DNA with members of its own species regardless of what body site we think those isolates are restricted to or have a tropism for. This may not only explain why there is such a disparity in studies looking for correlations between ompA-genotype and disease presentation but also shows us that there are in fact still real opportunities to discover features of the basic biology of this fascinating bacterium. But perhaps more than this, through a combination of the ever-increasing burden of disease, recent advances in technology and molecular tools for chlamydial research, it shows us that there has never been a better time to be a Chlamydiologist.

## Plenary Session PL02

Monday 14 September 2015

3.45pm – 5.15pm

### PL02.1 FALLING BETWEEN THE GAPS: AN OVERVIEW OF ISSUES FOR ABORIGINAL AND TORRES STRAIT ISLANDER WOMEN WHO WANT TO BE SEXUALLY HEALTHY

Kery Arabena. *Indigenous Health Equity Unit, Centre for Health Equity, Melbourne School of Population and Global Health, University of Melbourne, Melbourne, Australia*

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The family life of Aboriginal and Torres Strait Islander people is predominantly structured around complex kinship systems, which locate each person within a clan structure, with clear lines of rights and obligations to others within the family, the clan

and ultimately the linguistic group. Children are highly valued by their families and clans. Until the recent past the education and socialisation of young children took place within the rhythms of family life with an emphasis on observation, imitation and interaction with extended family and their country. These ideals of family life have been radically disrupted for some families, particularly those that have suffered separation of children from their families, the destruction of extended family networks and the decades' worth of living in oppressive circumstances, evidenced by poor health, early deaths, poor housing, poor educational outcomes, high unemployment and high numbers of Aboriginal people in custody. Despite these hardships, the Aboriginal and Torres Strait Islander family remains the primary and preferred site for developing and protecting culture and identity. In this context, sexual and reproductive health should be highly valued by Aboriginal and Torres Strait Islander women and health service settings that set priorities, specify outcomes, design appropriate services, allocate resources and evaluate the effectiveness and efficiency of the services delivered. In the absence of a coordinated national sexual health or Aboriginal and Torres Strait Islander women's health strategy; the most vulnerable and marginalised community in Australian society is falling through the gaps in sexual and reproductive health, rather than closing the gap. This presentation will present issues for First Nations women in Australia and reflect on what we need to do to improve sexual health and wellbeing.

### PL02.2 REPRODUCTIVE TRACT INFECTIONS IN WOMEN

Scott McClelland. *Professor of Allergy and Infectious Diseases, School of Medicine, University of Washington, Seattle, USA*

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Numerous prospective studies have demonstrated that bacterial vaginosis (BV) is associated with increased risk for acquiring sexually transmitted infections (STIs) including *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Trichomonas vaginalis*, HSV-2, HPV, and HIV. Because unprotected sex is a risk factor for both BV and other genital tract infections, it has been difficult to determine whether BV mediates susceptibility to STIs. This presentation will examine the strength of the evidence, emphasising recent clinical trials and epidemiological studies. Additionally, we will explore advances in our understanding of mechanisms through which BV-associated bacteria could influence women's susceptibility to other genital tract infections. Possible approaches for testing the hypothesis that BV increases the risk of STIs will be considered.

### PL02.3 SYPHILIS ELIMINATION IN CHINA

Yang Bin. *Dean of Guangdong Provincial Dermatology Hospital/Director of Guangdong Provincial Centers for Skin Diseases and STI Control, and Professor, Jinan University, Guangdong Medical College, and Anhui Medical University, China*

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This presentation is mainly about the history, present situation and challenges of syphilis prevention and control in China. With the trend of syphilis prevalence in Guangdong province and the challenges, we discuss the important role and the impact of the control of syphilis in Guangdong province to the whole country,

as well as a series of work of exploring the best practices for prevention and treatment of syphilis at the present stage, including improving syphilis surveillance system, diagnosis and treatment, developing the demonstration sites for syphilis control policies implementation, spurring innovation practices for expanding HIV/syphilis screen test among high risk groups.

## Plenary Session PL03

Tuesday 15 September 2015

9.15am – 10.45am

### PL03.1 ADVANCES IN CHLAMYDIA GENETICS – FROM UNDERSTANDING BASIC BIOLOGY TO VACCINE DESIGN

Raphael Valdivia. *Duke University Medical Center, Durham, USA*

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*Chlamydia trachomatis* is the most widely disseminated bacterial sexually transmitted infection and a leading cause of pelvic inflammatory disease and infertility. The last five years have witnessed a technological revolution in the analysis and characterisation of the function of chlamydia virulence factors and how they modulate host cellular functions. As a result, we are gaining unprecedented insights into the mechanisms underlying chlamydia-mediated inflammation and tissue damage as well as learning how chlamydia adapts to the human host environment. Prominent among these new technologies are methods to perform genetic and molecular genetic analysis in these bacteria, which until very recently were considered to be “genetically intractable”. I will review some of the key developments in the emerging field of chlamydia genetics and provide examples of how these approaches are leading to the discovery of new virulence factors and strategies used by this pathogen to modulate innate immune responses. Finally, I will discuss recent progress in how these molecular genetic approaches are being used for the design of new vaccines and to better understand adaptive and innate immune responses to chlamydia infections.

### PL03.2 SCREENING FOR CHLAMYDIA: DOES IT WORK, RESULTS FROM ACCEPt

Jane Hocking. *Professor of Epidemiology, Centre for Women's Health, Gender and Society, University of Melbourne, Melbourne, Australia*

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*Chlamydia trachomatis* is the most commonly reported bacterial sexually transmitted infection and its greatest burden is among young adults with community-based studies reporting prevalence estimates of 3 to 5% among 16 to 29 year olds in Australia. As over 80% of infections are asymptomatic, screening is the main way to detect cases. However, there is considerable debate about the effectiveness of chlamydia screening. In response to this concern, the Australian Government funded the Australian Chlamydia Control Effectiveness Pilot (ACCEPt) to assess the feasibility, acceptability, efficacy and cost-effectiveness of annual chlamydia testing for sexually active 16 to 29 year old men and women attending general practice.

ACCEPt is being evaluated using a cluster randomised controlled trial design. A total of 143 general practice clinics in 52 geographical areas (clusters) are participating. An intervention to support increased chlamydia testing, including incentive payments for each test done, quarterly feedback on testing performance and computer prompts, has been allocated at the cluster level and all general practice clinics within each cluster are participating. The primary outcome of ACCEPt is change in chlamydia prevalence among 16 to 29-year-old men and women attending general practice. This will be assessed as the difference in chlamydia prevalence between a baseline prevalence survey conducted among a consecutive sample of 16- to 29-year-old men and women attending all participating clinics prior to randomisation and a follow-up survey conducted at the conclusion of the trial. The fundamental premise of this trial is that increased levels of testing can be achieved by providing support to clinics, and that once levels of chlamydia testing are sufficiently increased, the prevalence of chlamydia will fall. Preliminary results from ACCEPt will be presented.

## Plenary Session PL04

Tuesday 15 September 2015

4.00pm – 5.30pm

### PL04.1 MALE CIRCUMCISION FOR STI PREVENTION: HOW WELL DOES IT WORK AND HOW IS IT DONE?

Kawango Agot. *University of Nairobi and CEO, Impact Research & Development Organization, Kenya*

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Interest in the possible association between male circumcision (MC) and sexually transmitted infections (STIs), including HIV, began in earnest in 1980s with studies exploring the tripartite relationship of circumcision, genital ulcer disease and HIV. The interest gathered momentum in the 1990s with more studies exploring these associations beyond within and Africa. In 2002, the first randomised controlled trial (RCT) was initiated in Kisumu, Kenya, with two others following shortly after in Orange Farm, South Africa and Rakai, Uganda. Although the RCTs focused primarily on MC and HIV, they also explored associations of MC and different STIs. This presentation focuses on the association between MC and human papillomavirus (HPV), herpes simplex virus type 2 (HSV-2), syphilis, *Neisseria gonorrhoeae*, *Chlamydia trachomatis* and *Trichomonas vaginalis* reported by the three RCTs as well as in systematic reviews, meta-analyses and other studies that followed.

The protective effect of MC against HPV was consistent across the three trials; in addition, the Uganda trial found that female partners of circumcised men had lower rates of HPV infection. While results from the RCTs were somewhat inconsistent on the association between MC and gonorrhoeae, HSV-2, syphilis, chlamydia and trichomoniasis, several meta-analyses and post-RCT studies have reported that MC protects against most of these conditions. As a result of these benefits, several MC devices have been developed to fast-track the provision of MC services, notably PrePex and ShangRing that have been pre-approved by the World Health Organization.