

Oral abstracts from the Australian Sexual Health Conference 2008 – 15 September 2008, Perth, Western Australia, Australia

1. THE POTENTIAL IMPACT OF A VACCINE ON CHLAMYDIA EPIDEMIOLOGY AND MORBIDITY

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Chlamydia trachomatis infections have serious consequences for the reproductive health of women, being a leading cause of pelvic inflammatory disease, ectopic pregnancy, and infertility. Worldwide several interventions (such as screening) have been introduced to control the incidence of Chlamydia. However the most effective intervention is likely to be Chlamydia vaccines which are currently in the early stages of development.

The potential impact of a vaccine on the prevalence and incidence of Chlamydia is investigated using a mathematical model that describes the sexual partnership dynamics and *C. trachomatis* transmission within a heterosexual population containing a highly active core group. By describing the chlamydial load within an infected individual and their resulting infectiousness this model links the within-host biology of infected individuals to population-level epidemiology. The impact of a vaccine on Chlamydia epidemiology is then determined by its effect on the chlamydial load in, and subsequent infectiousness of, infected individuals and the susceptibility of vaccinated individuals to infection.

For various vaccination roll-out strategies we determine the biological properties required of a vaccine in order to be effective in mitigating a Chlamydia epidemic.

We show that an imperfect vaccine can still result in significant reductions in overall Chlamydia transmission as long as it has a sufficiently long duration of action and the population coverage is relatively large.

Our model suggests that effective vaccines should ideally aim to reduce the peak chlamydial load post infection and the duration of an infection. Even relatively small decreases in infection duration can greatly reduce the incidence of Chlamydia sequelae within a population.

2. BEST PRACTICE PATHWAY: INCREASING CHLAMYDIA SCREENING IN THE GENERAL PRACTICE SETTING

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In response to rising chlamydia rates, the Australian Government has recently funded pilot chlamydia screening programs for young women aged 18–24 attending general practitioners. Issues of public health concern, such as screening, are often not well addressed in general practice, being an additional burden in an already time-poor setting. Yet the strong correlation between testing rates and chlamydia notification in both men and women suggest that increased testing would identify further infections.

As part of a randomised controlled trial examining the impact of a monetary incentive on chlamydia screening rates, we examined the international literature, and then, in detail, 12 general practices, to explore potential structural or procedural barriers that might inhibit chlamydia screening in young women in this setting.

The practices included a mixture of rural, urban, small, large, private, community and indigenous services. One researcher visited each practice and collected details about issues likely to impact on the ease of screening, such as presence of youth-friendly literature in the waiting room, clear instructions for urine collection in the toilet, and the current system of managing a positive test result. Potential positive and negative elements in each practice were identified and fed back to each practice. From these data, we have designed a screening pathway outlining currently known best practice for screening to be successful in the general practice setting. At the conclusion of the trial, we plan to assess whether aspects of this pathway were associated with increased chlamydia screening rates.

3. MAKE CONTACT: A PROJECT TO EVALUATE CONTACT TRACING STRATEGIES FOR CHLAMYDIA

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Aim: To evaluate contact tracing outcomes and current resources for contact tracing for chlamydia.

Method: Clients, >18 years, diagnosed with chlamydia at the Pacific Clinic were invited to participate. A questionnaire on contact tracing was administered by telephone, two weeks after the index was advised of the need for contact tracing. Information was collected on contact tracing outcomes, the methods used and considered useful for notification. Comparison was made to contact tracing outcomes from a pre study audit.

The study was the first phase of a project to develop and evaluate new resources for contact tracing for Chlamydia.

Results: From November 2007 to May 2008 there were 56 chlamydia diagnoses, 36 (64.3%) consented to study participation. Thirty interviews have been completed. The mean number of contacts for tracing was 2.3 (total 69, median 2, range 1–5). Seventy eight percent (54/69) contacts were known to be notified, giving a ratio of 1:1.8 for index cases to contacts known notified.

The majority of index cases notified a contact in person (50%) or by telephone (40%), although two (6.7%) notified a contact through a third party and one (3.3%) used provider notification. Approximately one third of subjects responded that they would have used each of the following had they been available; provider notification, a text message to forward on, a website to allow anonymous notification and a wallet sized card to give contacts. Seventeen index cases (56.7%) reported being given a letter or brochure but only seven (23.3%) passed this on to a contact.

There were 59 chlamydia diagnoses in the pre-study audit period (March–September 2007). The mean number of contacts for contact tracing was 1.6 (total 93, median 1, range 0–8). Sixty three percent (59/93) of these contacts were known to be notified, giving a ratio of 1:1 for index cases to contacts known notified.

Discussion: Participants in the study identified more contacts for tracing and were known to have notified a greater proportion of contacts compared to the audit period. Although the majority of people preferred to notify contacts themselves, many would consider other methods if they were offered including provider notification. Offering a variety of resources for contact tracing should be considered.

4. ROYAL PERTH HOSPITAL EMERGENCY DEPARTMENT SCREENING PROJECT FOR CHLAMYDIA TRACHOMATIS

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Western Australian (WA) rates of Chlamydia are consistently higher than the national average. Chlamydia screening programs often miss hard-to-reach populations, including young men, indigenous peoples, and the homeless.

Objectives: A pilot study to determine if screening patients for genital Chlamydia in the ED is:

- feasible in an Australian setting,
- able to access the hard-to-reach populations,
- practical, for the purpose of notifying and treating those found to have Chlamydia.

Methodology: Urinary screening for Chlamydia was offered to people aged 18–25 years who are attending the RPH, including visitors. Recruitment via a nurse-led strategy was compared to a patient self-initiated strategy. A resource package (including brochure and DVD) was designed to facilitate recruitment and screening, as well as to provide information on Chlamydia to those choosing not to participate. Options for notifying patients of their results have been evaluated (including text messaging and e-mail).

Results: 823 people (male 532, female 291, aboriginal 58) were recruited, revealing an asymptomatic population Chlamydia prevalence of 5.5%. Further analysis of the proportion of people in the hard-to-reach target groups, pre-existing knowledge of Chlamydia, risk-behaviours analysis, favoured means of notification and their relative success will be presented.

Conclusion: This pilot study did reach the hard-to-target population, and nurse-led recruitment was the more successful strategy. Most people preferred to get their results by mobile phone. Further conclusions will be presented on completion of the data analysis.

This project was funded by the Commonwealth, as part of a National Chlamydia Pilot program testing the effectiveness of several models for Chlamydia testing in Australia. This project will assist in developing recommendations for a National Chlamydia Program.

5. THE LAW AND SEXWORKER HEALTH (LASH) PROJECT

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Objective: Based on the hypothesis that restrictive or punitive laws could have adverse consequences, we explored the impact of various prostitution laws on the health and welfare of the sex workers working in three jurisdictions.

Methods: Key informants, searches of advertisements, agency lists, and site visits enabled us to map the female brothel-based sex industries in Perth (where all forms of sex work were criminalised), Melbourne (decriminalised, but regulated), and Sydney (decriminalised and deregulated). Representative samples of sex workers were invited to self-complete a questionnaire (available in 5 languages) and to provide a vaginal tampon for testing for chlamydia, gonorrhoea, *Mycoplasma genitalium*, and *Trichomonas vaginalis* by multiplex PCR.

Results: All 3 cities had thriving and diverse sex industries, though the unregistered premises in Melbourne proved to be the most difficult to access. Questionnaire participation rates were high (>80%) when access was gained: 175 women in Perth, 229 in Melbourne, and 201 in Sydney. The Melbourne women were a median of 4 years older and had been working 2–3 times longer. Only 27% of the Sydney women had been born in Australia (*cf* 51% in Perth and 67% in Melbourne, $P < 0.001$), while more Perth women had injected drugs (14%) in the last 12 m (*cf* 2% in Sydney and 10% in Melbourne, $P < 0.001$). There was no significant difference in mental health scores (K10) between the women in the 3 cities. Despite vastly more frequent screening of the Melbourne women as required by the law (72% monthly *cf* 12% in Sydney and 15% in Perth, $P < 0.001$) STI prevalences were similarly low in each city. However, the under-sampling of unregulated sex workers in Melbourne limited the interpretation of these findings.

Conclusions: The demographic differences between the sex industries in the 3 cities may be partially explained by their legal frameworks. The policy of compulsory monthly STI screening of sex workers in Victoria should be reviewed.

6. HEALTH PROMOTION FOR FEMALE SEX WORKERS UNDER THREE DIFFERENT LEGAL REGIMES

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As part of a study to determine the health and welfare of sex workers in three Australian capital cities with different prostitution laws, we compared the operation of health promotion programs (HPPs) targeting sex workers.

The three cities were: (1) Melbourne, with a brothel licensing system; (2) Sydney, with decriminalisation; and (3) Perth, with the criminalisation of all forms of sex work. We questioned key informants (including HPP employees, health service providers, police, planning officers, sex workers, and owners of brothels). We also examined sex worker HPP websites.

In spite of the different laws, each city had a thriving and diverse sex industry, including some street-based sex workers. We identified 85 licenced brothels plus 76 advertisements for suspected unlicensed brothels in Melbourne, though we could not access most of the unlicensed brothels. There were nearly 400 advertised brothels in Sydney and ~40 in Perth. Each city had a government-funded sex worker HPP with shopfront, phone, online and outreach facilities; and each city had at least one free sexual health clinic targeting sex workers. There were differences in the administration of funding for the HPPs and, although each offered outreach and drop-in services to street- and brothel-based sex workers, there were qualitative differences between the programs. Sydney had the best-resourced HPP and it was the only community-based agency, employing multi-lingual staff with rotational day and evening peer-conducted outreach. The Melbourne HPP was not resourced to provide education to the unregulated sector, while the Perth HPP was only able to provide outreach education services to brothels by invitation.

The legal context appeared to affect the conduct of HPPs targeting the sex industry.

7. STI AWARENESS – ONLINE EDUCATION MODULES FOR GENERAL PRACTITIONERS FOCUSED ON CHLAMYDIA TESTING

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As part of the national chlamydia strategy, a grant was obtained from the Department of Health and Ageing to develop an online education program for general practitioners (GPs) that would increase awareness of the importance of testing sexually active young adults for Chlamydia trachomatis and enhance skills in sexual history taking, appropriate testing for sexually transmissible infections (STIs) and contact tracing in the context of a primary care setting.

Use of an online format was seen as a way of increasing access for GPs to the educational intervention as it could be undertaken in their own time and worked on in a sequential fashion without the need to attend a formal meeting. The online format allows a large amount of support information to be embedded in the module so that each doctor could access as much or as little additional information as their personal learning needs demands.

Genesis Ed was chosen to produce the program as the principals are all general practitioners with extensive experience in registrar teaching and RACGP continuing professional development (CPD) policies. The website ThinkGP has over 8000 registered GPs who access the site for online CPD thus providing wide access to the target group for the intervention.

Three online modules were developed using a mix of video clips, voiceover segments, PowerPoint presentations and self-directed Q&A tasks.

To date 370 GPs have attended the site and 156 have claimed CPD points for completing active learning modules (ALMs). An evaluation of the GP responses to the learning format will be presented. The pitfalls encountered in producing a program with a short timeline and a fixed budget will also be discussed.

8. HOW THEY DID IT AND HOW THEY WANTED IT – YOUNG PEOPLE'S PERSPECTIVES ON THEIR EXPERIENCES OF SEXUAL HEALTH EDUCATION

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In order to inform the continued development of sexual health promotion programs, a statewide consultation about where and how young people *currently* receive their sexual health education and from where and how they would *like* to receive it was conducted.

Assembling genuine and honest voices of young people, and gaining insight into their experiences and perspectives, requires very interactive and engaging methodology. This study used a participatory research methodology which consisted of a series of workshops with young people using arts based enquiry, psychodynamic techniques and photovoice approaches. This consisted of 88 young people aged between 15 and 20 engaging in highly interactive workshops. Participants used photography, drama, role-play and discussion to express their experiences and ideas about developing sexual health knowledge and skills. Data from the workshops were collected using digital recording devices, cameras and transcriptions. This information was analysed identifying recurring themes, images, statements and suggestions.

The experiences, perceptions and opinions of the young people who participated in this research demonstrated again that sexuality and relationships do not occur in isolation to the rest of young people's lives.

There were five key themes that were derived from the workshops about how young people reported they had received, and how they wanted to receive, their sexual health education. These could be summarised as follows:

- peer networks, friends and locations;
- youth friendly and relevant sexual health education with credible educators;
- family learning and influence;
- media and the Internet; and
- rites of passage events, parties, and alcohol.

Educators are continually challenged to create learning environments where young people can safely and openly learn about the complexity of sexual health in relation to their physical bodies and the social reality they live in. This paper provides some insight, from the perspective of young people, about solutions to these challenges.

9. THE SEX INDUSTRY IN PERTH BEFORE DECRIMINALISATION

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Objective: As part of the Law and Sex Worker Health (LASH) Study, we investigated the brothel-based sex industry in Perth in 2007, just before law reform.

Methods: With the assistance of key informants in the community and health sectors, plus sex industry advertisements, we mapped the brothel-based industry in Perth. We then approached all brothels in central Perth to questionnaire female sex workers on the premises at that time. Participants were also invited to provide a self-collected tampon for screening for chlamydia, gonorrhoea, *Mycoplasma genitalium*, and trichomoniasis.

Results: Despite their criminal status around 35 brothels were openly tolerated in central Perth. We surveyed 175 women, with an overall participation rate of 87%. Only 31% were aware that sex work was illegal in WA, and a further 32% were unsure of the legal status. While the women reported regular visits from the police they generally described them as friendly, though 50% reported that they would feel uncomfortable about going to the police with a complaint about a sexual assault or another offence. Threats against the women (15% of respondents), assaults (10%), and sexual pressure (29%) were commonly perpetrated by clients. Among the women surveyed, 68% used tobacco and 14% reported having injected a drug (mostly amphetamines) in the previous 12 months. Drug use at worksites was observed more frequently in Perth than in the other cities. While 89% of the women reported regular sexual health checks, only 22% used public sexual health services. There was an absence of health promotion resources in brothels, and health promotion programs provided limited outreach. Only 12% of sex workers reported that condoms were provided free at their workplace. Nevertheless, STI prevalences were low: chlamydia 2.7%, gonorrhoea 0%, *M. genitalium* 3.6%, trichomoniasis 0.9%, and HIV 0% (by self-report).

Conclusion: It will be interesting to see what effect law reform has on the sex industry in Perth.

10. PROVIDING ON-LINE SUPPORT FOR TEACHERS IN DELIVERING SEXUALITY EDUCATION IN WESTERN AUSTRALIA

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Sexual health education is a subject that teachers are frequently required to teach often without any prior training. Some teachers view the subject as a priority while others may feel uncomfortable or insufficiently prepared to teach it.

A priority of the Department of Health's (DOH) policy and programming in public health is to work with the school education sector to promote and support the conduct of quality sexual health education. In addition to parents, the DOH regards teachers and schools to be a fundamental partner in providing sexual health education to student.

Since 2002, The DOH has funded the development and implementation of set of resources for teachers called the 'Growing and Developing Healthy Relationships' (GDHR) Curriculum Support Materials, and corresponding in-person professional development courses for teachers.

In 2005, an audit of the uptake of the GDHR materials found that the materials are having a positive impact on school sexual health education.

An impact evaluation is currently underway to examine the influence on teacher and school nurse practise from participation in the professional development and training. The results will be available by mid-2008.

The DOH, in partnership with the Department of Education and Training are moving towards providing on-line support for teachers in order to increase their access to up-to-date curriculum resources, training and support.

The Project involves two components:

1. Development of an interactive website based on updated GDHR content. This will incorporate a range of age-appropriate learning activities, links to resources, statistics, background information, and an on-line question box for teachers.
2. Development of a corresponding on-line training course. This course is designed to increase teachers' confidence, comfort, knowledge and skills using on-line learning techniques such as asynchronous learning, podcasts, video clips, discussion forums, interactive games, and professional facilitation.

11. SELF-ASSESSMENT OF COMPETENCIES IN SEXUAL HEALTH AND HIV BY GRADUATING MEDICAL STUDENTS

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Aims: To assess the efficacy of teaching in sexual health and HIV medicine at a newly established medical school by determining graduating medical student views on their competencies in sexual health and HIV medicine.

Methods: All graduating Australian National University Medical School (ANUMS) students in 2008 were invited to participate in an online anonymous survey to self-assess their skills and competencies in sexual health and HIV medicine and evaluate a range of teaching methods. The survey was adapted from a questionnaire developed by the British Association of Sexual Health and HIV to survey junior doctors in the UK.

Results: 75% (53/71) of graduating students completed the survey. Students identified strengths in epidemiology and sexual health promotion and rated themselves as generally comfortable taking a sexual history in a range of circumstances. Students identified weaknesses in skills in male genital examinations and HIV medicine. Clinical experience in a sexual health centre was rated highly.

Conclusions: Self-assessment via online instrument is an efficient and effective way of contributing to the evaluation of undergraduate medical education. Information may be used to refine both teaching content and methodology.

12. DIAGNOSIS OF SEXUALLY TRANSMITTED INFECTIONS

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The past decade has seen major changes in the way we approach the diagnosis of sexually transmitted infections. This has been largely due to the introduction of nucleic acid detection testing for a range of sexually transmitted infections. Since then they have become the standard methods for virus detection in many laboratories, and increasingly for the detection of bacterial and other pathogens. In addition to their ability to detect a wider range of infections, the tests are robust, tolerant of adverse collection and storage conditions, highly sensitive and specific, some can be performed on less invasive specimens, and they can be used for more detailed organism identification and characterisation, and for monitoring of disease progression and

response to therapy. These have found applications for several sexually transmitted infections. *Chlamydia trachomatis* serotyping was rarely performed in the past due to the technical difficulties. Sequencing of PCR products now allows us to differentiate between genital and trachoma strains, and for the identification of LGV. Similarly we have been able to track gonococcal strains, and are also now building up a more complete picture of HPV genotypes and their circulation and association with cytological changes. It also provides a powerful tool for the monitoring of HPV genotype changes following the introduction of the vaccine.

These tests are not without their challenges and the proper performance of nucleic acid detection tests require rigorous adherence to good laboratory practice and protocols. Laboratories need to be continually alert to mutations that affect test performance. Gonorrhoea poses special challenges due to the continually changing nature of the organism and its ability to exchange genetic information. Also, monitoring of antimicrobial resistance cannot yet be achieved by molecular methods.

Despite the problems, the clear advantages of molecular tests have seen them adopted widely for their convenience and reliability. The future holds promise of further advances in the range and applications of these tests, as well as moving into the newer approaches such as DNA arrays, and the use of new platforms for NAT will allow these tests to be performed reliably in smaller laboratories.

13. THE NATURAL HISTORY OF HPV INFECTION IN WOMEN

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Anogenital HPV infections are transmitted mainly by skin-to-skin or mucosa-to-mucosa contact. Although the probability of HPV infection per exposure is not known, these infections are extremely prevalent. High risk HPV types have been linked to cervical and other anogenital cancers. Low risk HPV types have been linked to genital warts. Infections caused by multiple HPV types are common. Persistent infection by high risk HPV type or types is a necessary cause of cervical cancer. Cervical cancer is the second most common cancer in women worldwide. Other anogenital cancers caused by HPV are much more rare. Most HPV infections are transient and ~90% are cleared within 1 to 2 years. High risk HPV types tend to persist longer, and longer HPV persistence increases the risk for cellular transformation and neoplasia. The lag time between infection and appearance of high grade precancer can be surprisingly short. The risk factors for persistent infection are not well known. However, infectious co-factors, host cell-mediated immune response, HPV type, infection by multiple HPV types, and viral load play a role. Although the molecular virology underlying HPV persistence, progression, and invasion is not well understood, cervical cancer arises through a series of steps including HPV transmission, HPV persistence, progression of persistently infected cells to high grade precancer, and finally invasion. With longer HPV persistent the probability of the development of precancer increases. Of multiple high risk HPV types, types 16/18 are more carcinogenic than other high risk HPV types. These 2 types cause ~70% of cervical squamous cell carcinomas and adenocarcinomas. The attributable proportion for other high risk HPV types is low. In longitudinal studies of cytologically normal adult women who are HPV DNA positive at enrolment, the cumulative risk of incident cytological abnormalities rises to 25–50% 1–2 years after enrolment. The cumulative risk of precancer and cancer continues to rise for as long as 10 years, suggesting that many women remain persistently infected. The average age of diagnosis of precancer varies from 25 to 35 years and depends both on the average age at first intercourse, which is a proxy for first exposure to HPV, and on the intensity of screening. Screening by HPV testing can promptly detect precancers that would otherwise grow slowly detected by less sensitive methods like cytology and colposcopy. However, more sensitive screening will also detect more lesions and infections that would clear without treatment. The development of HPV16/18 VLP vaccines has been a major breakthrough in cancer prevention. Primary prevention by vaccines will decrease the global disease burden caused by HPVs. Cervical cancer prevention including cytologic screening, colposcopy biopsy and deciding whether to treat or not, surgical treatment by loop conisation, and finally post treatment follow-up is extremely problematic and costly. Furthermore, screening programs vary widely by country. Also, cervical cancer incidence has been increasing among young women in many countries. Therefore, new technologies such as HPV vaccination and primary screening by HPV DNA testing will be the future. There is a pressing need to educate health professionals and the public regarding the natural history of HPV as we move towards HPV-based prevention strategies. Many important research topics need to be addressed; the average clearance v. persistence of each type of HPV; the risk of precancer given persistence of each of the types; the effect of age on the rates of clearance, persistence, and progression; the risk of re-appearance of an HPV type via reinfection or latency following initial clearance; the significance of differences by region; and the unique carcinogenicity of HPV16, including molecular mechanism and natural history.

14. IS YOUR CLITORIS IN YOUR VAGINA OR THE VULVA! WHAT IS A VULVA!

A Woman's Personal Perspective and Experience of what is missing in sexual health and society, The Vulva

Kath Mazzella

This presentation aims to bring life to the vulva, bringing it out from the unknown or un-mentionable and giving it the recognition and the status it deserves.

It will highlight the stigmas, misconceptions and taboos that surround the vulva and ask how women, educator's, health professionals and society can break down these barriers and move to a healthy and accurate knowledge of this vital part of female genitalia. These questions will be posed and related to you through the perspective of one woman.

A woman who's experience of gynaecological cancer has taken her on an inspiring journey. A woman who went from knowing nothing about down there, to one who is now an empowered, assertive, understanding individual.

The presenter will relate how her own experience altered her to how women in the community suffer in silence and of the need to give these women a voice.

She will take you through her quest to raise the profile of this issue within Australia,

Her successes – which include the establishment of the Gynaecological Awareness Information Network (GAIN), National Gynaecological Awareness Day – the lessons learned and the work that is yet to be done. She was also involved with the Australian Senate Gynaecological Cancer Enquiry. Key themes of the presentation include:

- i. Giving women better knowledge of, and responsibility for their sexual health.
- ii. Educators seeing it from a health consumers point of view. Working together.
- iii. Calling a spade a spade, a vagina a vagina, and a vulva a vulva. How by not speaking about or acknowledging this part of the body can suppress emotions, dis-empower women and cause significant psychological and physical health problems.
- iv. Encouraging women to be proud of their vulva instead of calling it something it is not: a vagina. Come and get inVULed!

15. SHOULD WE BE VACCINATING BOYS AS WELL AS GIRLS WITH THE HPV VACCINE?

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HPV vaccination has been shown to be effective in preventing cervical cancer in females. While immunogenicity has been shown in males, trials are underway to demonstrate HPV vaccination is clinically effective.

Mathematical modelling of HPV transmission in Australia suggested that for a vaccine with 100% effectiveness and conferring lifelong immunity, then with coverage over 80%, vaccinating 12-year old males in addition to 12-year old females had only a modest impact on HPV incidence among females. Vaccinating 12-year olds only was estimated to take long periods to take effect, with an estimated 7 years to achieving 50% of the effect on HPV incidence. A catch-up campaign, vaccinating 13–25 year old females, was estimated to decrease this time to under 2 years. The models suggested that vaccination of males and females would not eradicate HPV with realistic vaccine coverage rates.

These models suggest that for a HPV vaccine of 100% effectiveness and conferring lifelong immunity, there is at most modest effect on cervical cancer risk in vaccinating males in addition to females. Vaccinating 12-year old males with such a vaccine would only be cost-effective if this resulted in appreciable reductions in HPV-associated disease in men, such as anal or penile warts, and anal or head/neck cancer. Vaccinating 12-year old males may be cost-effective in preventing cervical cancer among females if herd-immunity effects become important in the case that vaccination coverage rates are low, or that the vaccines prove to be only partially effective or confer limited duration of immunity. To answer these questions, it is important that the current HPV vaccination schedule in Australia is monitored, both in terms of coverage rates and conferred immunity.

16. NATURAL HISTORY OF HPV IN THE ANAL CANAL: EVERYONE'S GETTING INTO THE ACT

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A high proportion of anal cancers are associated with human papillomavirus (HPV), most commonly HPV16. The incidence of anal cancer is increasing annually in the general population among both men and women but has increased most dramatically among HIV-positive men and women.

Among HIV-negative men who have sex with men (MSM), the epidemiology of anal HPV infection resembles that of penile infection more than that of cervical infection with ~60% having anal HPV infection throughout a wide age range. In contrast nearly all HIV-positive MSM have anal HPV infection. Other high-risk groups include HIV-positive women and high-risk HIV-negative women, in whom anal HPV infection is more common than cervical infection. Anal HPV infection may also be as common or more common than cervical HPV infection in sexually active but healthy, lower risk women. Finally, more than 20% of heterosexual men have anal HPV infection.

The key consequence of anal HPV infection is anal cancer- some but not all individuals with anal HPV infection will develop anal intraepithelial neoplasia (AIN) and fewer still will develop anal cancer. The main risk factors for progression to high-grade AIN (HGAIN) are HIV-positivity with lower CD4+ level and oncogenic anal infection but risk factors for progression from HGAIN to anal cancer are not understood. ART has not reduced the incidence of HGAIN nor of anal cancer implying that the immune response plays a less prominent role in progression to anal cancer than in development of HGAIN. The data suggest that the incidence of anal cancer will continue to grow in the future, raising questions about whether at-risk individuals should be screened for HGAIN and/or anal HPV infection. Additional questions relate to the effect of anal HPV in women on the biology and natural history of cervical cancer and its precursors.

17. 'IT'S ONLY A COLD SORE, LOVE...'

B. Donovan

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Over recent generations oral sexual practices have grown in incidence while re-positioning themselves in our society, with variations within different sub-populations. For many teenagers, oral sex is the new abstinence (in the Clintonesque sense), and its contraceptive effect is a bonus. For men who have sex with men (MSM), the near-universal practice of fellatio is a pretty effective HIV prevention strategy. Indeed, sexual safety codes within

MSM relationships are often seen as being honoured if oral sex is the only sex that takes place with third parties. Oro-anal sex ('rimming') with casual partners has gone from being a minority practice among MSM in Australia in the 1980s to a majority practice by the 2000s.

Oral sex brings with it advantages and dangers. Certainly, among MSM only anal sex and oral sex rate as 'highly valued' as a source of pleasure, with the widespread use of oral sex probably reducing the individual- and population-level risk of HIV transmission. And oral sex is one of the most efficacious and use-effective contraceptives.

On the public health down-side, oral sex is logistically easier to organise than anal or vaginal sex so it enables rapid and furtive sexual encounters. Only in commercial contexts is oral sex protected with a condom. Promoted since the 1980s, everyone talks about dental dams for cunnilingus and rimming, but hardly anybody has ever used one. Some of the diseases that have been linked to oral sex include ano-genital HSV-1 infection, gonorrhoea, syphilis, hepatitis A, shigellosis, giardiasis, amoebiasis, and ocular and oro-pharyngeal cancers. While unusual, there are occasional traumatic consequences to oral sex, though these are rarely fatal.

18. MOODITJ: A SEXUAL HEALTH AND LIFESKILLS PROGRAM FOR INDIGENOUS YOUNG PEOPLE

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Mooditj (Noongar for solid/deadly) is a sexual health and life skills program for Aboriginal youth aged 11–14. Mooditj was written in consultation with communities throughout Western Australia in response to the need for a culturally specific sexual health program.

The Mooditj program uses an integrated approach to sexual health, building links between sexual, physical, emotional, environmental and social well being. The ten sessions cover issues including: identity, puberty, emotions, relationships, sexual issues/health, parenting and goal-setting. These sessions can be delivered weekly or over a two to three day camp.

Local service providers and key community people are given the opportunity to attend Mooditj Leader Training programs that focus on building comfort and confidence in delivering the program to their young people. The program is supported by a comprehensive and easy to follow manual.

Mooditj has been received with a great deal of enthusiasm through out Western Australia and the Northern Territory, and is also being taken up in other states. Mooditj won the 2006 Healthway Excellence in Health Promotion Award.

Feedback and evaluation data is being gathered and results will be available at the completion of the current funded round of training workshops in 2008.

For this presentation we invite participants to experience the program by taking part in 'The Relationship Tree', a very popular Mooditj activity. This activity uses creative visual representation to get young people thinking about relationships.

The workshop will conclude with an opportunity for participants to reflect on their experiences of participation, ask questions, and consider how Mooditj may be adapted for use in their communities.

19. UPSTAIRS AND DOWNSTAIRS: SOCIO-ECONOMIC AND GENDER INTERACTIONS IN HERPES SIMPLEX VIRUS TYPE 2 (HSV-2) SEROPREVALENCE IN AUSTRALIA

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Objectives: To investigate socio-economic differentials in herpes simplex virus type 2 (HSV-2) seroprevalence in Australian men and women using both individual and geographic measures of socio-economic status.

Methods: HSV-2 seropositivity among men and women aged over 25 years was investigated by levels of individual and area-based measures of socio-economic status (SES) in a series of Poisson regression models, variously adjusting for age, country of birth, marital status, indigenous status and urban/rural residence as potential confounders. Serum and socio-demographics were collected during 1999 and 2000 in a population-based Australia-wide prevalence survey.

Results: HSV-2 seroprevalence was significantly lower in areas of low SES than in high SES areas among both men (p for trend <0.001) and women (p for trend $=0.005$) for all ages. A similar pattern was evident for individual education level for men with lower rates of HSV-2 in respondents with lower educational achievement (RR = 0.77, 95%CI 0.61–0.97, $p=0.024$). In contrast, HSV-2 prevalence was higher for women with lower individual levels of education for all ages (RR = 1.23, 95%CI 1.04–1.45, $p=0.015$). Analyses stratifying HSV-2 prevalence for individual education level by area-based SES showed the highest prevalence of HSV-2 in women with the lowest education level residing in the highest SES areas. This pattern was not evident in men, with a greater concordance between individual and area-based SES.

Conclusion: HSV-2 seroprevalence is not consistently distributed across individual and area measures of SES, suggesting that upward and downward mixing between social strata in men and women is an important mode of HSV-2 transmission.

20. RECENT TRENDS IN INFECTIOUS SYPHILIS IN MEN WHO HAVE SEX WITH MEN

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Since 2000, there have been increasing reports of syphilis infections among men who have sex with men (MSM) in Australia. We provide an overview of infectious syphilis epidemiology in MSM between 2000 and 2007.

The following surveillance data were sourced; infectious syphilis case reports in males from the National Notifiable Disease Surveillance system; infectious syphilis enhanced surveillance data in MSM from select jurisdictions and area health services; syphilis testing outcomes among MSM from a network of sentinel surveillance sites in Melbourne and incidence estimates from cohorts of HIV negative and HIV positive MSM in Sydney.

In New South Wales, the rate of infectious syphilis diagnoses among men increased from 1.4 to 8.2 per 100,000 population (2000–2004), decreased to 5.6 in 2006 and increased to 12.1 in 2007. In Victoria there was a steady annual increase from 0.2 to 8.2 per 100,000 population (2000–2006). The rate increased from 2.6 to 6.8 in Queensland (2002–2006) and from 2.4 to 3.3 in WA (2004–2006). Published reports from Victoria and NSW found the majority of diagnoses occurred in MSM aged 30–39 years, and of MSM 40–54% of cases were co-infected with HIV. The prevalence of infectious syphilis among clinic attendees in Melbourne increased from 0.5% to 2.5% in HIV negative men and 0.0% to 6.1% in HIV positive men (2000–2004). The Sydney cohorts showed rates of syphilis in HIV positive men were 5–10 times higher than in negative men in 2006–7 and the incidence doubled in those reporting more than 6 casual partners in the last 6 months.

This review has demonstrated a resurgence of infectious syphilis in MSM in Australia since 2000 which has been sustained until 2007. HIV infected men have been disproportionately affected. Syphilis in MSM is of particular public health importance because of its potential to increase the risk of HIV transmission. New, innovative approaches to syphilis control are desperately needed.

21. PREVALENCE, INCIDENCE AND RISK FACTORS FOR HEPATITIS C IN HIV NEGATIVE AND HIV POSITIVE HOMOSEXUAL MEN

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Objectives: To determine the prevalence, incidence and risk factors for hepatitis C virus (HCV) infection in homosexual men, and to examine whether HCV is frequently sexually transmitted in this population.

Methods: Participants were HIV negative and HIV positive homosexual men recruited in two community-based cohorts in Sydney, the Health in Men (HIM, HIV negative) and Positive Health (pH, HIV positive) cohorts. HCV sero-status was determined by an enzyme immunoassay (EIA, Abbott Architect) and a supplementary EIA testing (Abbott Murex). Indeterminate (i.e. weak positive and equivocal) results were resolved by a qualitative HCV RNA PCR. PCR was also performed on all HIV positive participants with CD4 counts of less than 200.

Results: At baseline, the prevalence in HIV negative and positive men was 1.07% ($n=15$, 95% CI 0.60–1.76) and 9.39% ($n=23$, 95% CI 6.04–13.75) respectively, and during follow up the incidence was 0.11 cases/100 PY ($n=5$, 95% CI 0.03–0.26) and 0 cases/100 PY (95% CI 0–0.02 one-sided). At baseline, a history of injecting drug use (IDU) was reported in 87% of cases in HIV negative men (OR = 56.27, 95% CI 12.56–252.0) and 89% of cases in HIV positive men (OR = 24.46, 95% CI 5.44–109.95). The two HCV positive HIV negative men who reported no history of IDU both reported body tattooing or piercing. During follow up, there were 5 HCV seroconversions in HIM, and only 1 reported recent IDU.

Conclusion: HCV prevalence in HIV positive homosexual men is ~10 times higher than their HIV negative counterparts, in which the rate is similar to the general population. HCV positivity is strongly associated with injection drug use in both cohorts, but 4 of 5 HCV seroconversions were in men who reported no IDU. Sexual transmission of HCV was very uncommon in this setting, but 4 cases which did not appear to be IDU related did occur.

22. PERIODIC PRESUMPTIVE TREATMENT (PPT) OF COMMON CURABLE SEXUALLY TRANSMITTED INFECTIONS (STIs) AMONG FEMALE SEX WORKERS IN PORT MORESBY, PAPUA NEW GUINEA: MEASURING STI INCIDENCE AND PPT EFFECTS

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Background: Sexually transmitted infections (STIs) are among the world's most common diseases. Both ulcerative and non-ulcerative STIs have been implicated as major co-factors in the human immunodeficiency virus (HIV) transmission. Female sex workers are at increased with high risk due to high partner exchange rates coupled with unprotected sex. Worldwide, high STI prevalence has been reported among sex workers. In Port Moresby

Papua New Guinea, the prevalence of chlamydia, syphilis, gonorrhoea, and HIV are estimated to be as high as 31%, 32%, 36% and 17% respectively among sex workers. Adequate STI treatment and management have shown to decelerate and prevent further spread by reducing infection 'window' periods when potential transmission to other susceptible individuals is likely. This is known to achieve reduction in STI prevalence, thus rendering HIV transmission less efficient. In the quest for alternative STI treatment protocol to the syndromic management approach for PNG, a pilot of periodic presumptive treatment (PPT) of common curable sexually transmitted infections (STIs) among female sex workers was commenced November 2003 – September 2004 in Port Moresby.

Methods: One hundred and twenty nine 129 female sex workers and forty nine 49 clients were enrolled in the study. Informed consent obtained, voluntary counselling offered, a rapid STI/HIV risk assessment questionnaires administered. Cross-sectional pre and post serum measurements of common curable STIs were obtained using polymerase chain reaction (PCR) and syphilis via VDRL and TPHA and stratified by type of groups. All participants were tested for HIV. Three monthly rounds of PPT were administered. All study participants were provided with HIV/STI information and resources.

Results: The prevalence of chlamydia, gonorrhea, syphilis, trichomonas and HIV was 24%, 27%, 28%, 43%, and 14% respectively at pre-PTT ($N=178$) and 16%, 21%, 19%, 26% and 18% (of which 5% were new infections) respectively at post-PTT follow up ($N=100$). The overall HIV prevalence for the total study population ($N=178$) was 17.0%, male clients 10.2% and 19.4% for sex workers.

Conclusions: The overall study was significant $P < 0.05$ and successful. PPT was effective in decreasing STIs among the study population. PPT approach could be implemented as an alternate tool in rapid STI reduction strategy among sex workers in the short-term.

23. AUDIT OF ANTENATAL TESTING OF SEXUALLY TRANSMISSIBLE INFECTIONS AND BLOOD BORNE VIRUSES AT WESTERN AUSTRALIAN HOSPITALS

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In August 2007, the Western Australian Department of Health (DOH) released updated recommendations for testing of sexually transmissible infections (STI) and blood-borne viruses (BBV) in antenates. Prior to this, the Royal Australian & New Zealand College of Obstetricians & Gynaecologists (RANZCOG) antenatal testing recommendations had been accepted practice in most antenatal settings. The RANZCOG recommends that testing for HIV, syphilis, hepatitis B and C be offered at the first antenatal visit. The DOH recommends that in addition, chlamydia testing be offered. We conducted a baseline audit of antenatal STI/BBV testing in women who delivered at selected public hospitals before the DOH recommendations.

We examined the medical records of 200 women who had delivered before 1st July 2007 from each of the seven WA hospitals included in the audit. STI and BBV testing information and demographic data were collected.

Of the 1,409 women included, 1,205 (86%) were non-Aboriginal and 200 (14%) were Aboriginal. High proportions of women had been tested for HIV (76%), syphilis (86%), hepatitis C (87%) and hepatitis B (88%). Overall, 72% of women had undergone STI/BBV testing in accordance with RANZCOG recommendations. However, chlamydia testing was evident in only 18% of records. STI/BBV prevalence ranged from 3.9% (CI 1.5–6.3%) for chlamydia, to 1.7% (CI 1–2.4%) for hepatitis C, 0.7% (CI 0.3–1.2) for hepatitis B and 0.6% (CI 0.2–1) for syphilis.

Prior to the DOH recommendations, nearly three-quarters of antenates had undergone STI/BBV testing in accordance with RANZCOG recommendations, but less than one fifth had been tested for chlamydia. The DOH recommendations will be further promoted with the assistance of hospitals and other stakeholders. A future audit will be conducted to determine the proportion of women tested according to the DOH recommendations.

24. TRENDS IN FIRST EPISODE ANOGENITAL HERPES DUE TO HSV-1, 1992–2007

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Background: HSV-1 is causing an increasing proportion of genital herpes however it is unknown if this is true for men who have sex with men (MSM). Few studies have collected data on sexuality or site, and none reported trends over time. Currently HSV-2 serology is used as a surrogate for anogenital herpes, so any rise in the proportion of anogenital herpes due to HSV-1 would be missed. We investigated trends and characterised first episodes of anogenital herpes due to HSV-1.

Method: All cases of first episode genital herpes ($n=1845$) were identified from the Sydney Sexual Health Centre database for the period 1992–2006. Cases were culture confirmed to 2004 and PCR thereafter, with no previous diagnosis of genital herpes.

Results: The proportion of anogenital herpes due to HSV-1 increased from 30% to 40% ($P < 0.01$) overall. Among MSM this trend was only apparent for younger men: in MSM less than 30 years old the proportion due to HSV-1 increased from 22% to 73% ($P=0.012$). HSV-1 caused a greater proportion of anogenital herpes in MSM than in women or heterosexual men ($P < 0.05$). Overall HSV-1 caused 48% of anal herpes and only 35% of genital herpes ($P < 0.01$).

Conclusion: We have confirmed HSV-1 is causing an increasing proportion of first episode anogenital herpes, particularly in young MSM. In older MSM HSV-2 remained the most common type. HSV-2 serology in young MSM will not detect the majority of cases of anogenital herpes.

25. THE PREVALENCE OF CHLAMYDIA AND MYCOPLASMA GENITALIUM IN A COHORT OF AUSTRALIAN YOUNG WOMEN

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Background: This longitudinal study aims to determine the optimal screening frequency for *Chlamydia trachomatis* in Australia by estimating the incidence and re-infection rates of chlamydia among women aged 16 to 25 years. As a secondary aim, we are also measuring the incidence of *Mycoplasma genitalium*. We present the interim results for baseline chlamydia and *M. genitalium* prevalence.

Methodology: Sexually active women aged 16 to 25 years are recruited from general practices, sexual health centres and family planning clinics in Victoria, New South Wales and the ACT. All participants provide 2 vaginal swabs, one for chlamydia and one for *M. genitalium* testing at the time of recruitment. Women are followed up over a 12 month period and regularly tested for chlamydia and *M. genitalium* using self-collected vaginal swabs mailed to women. Women complete questionnaires at baseline and at each stage of the study. 1200 women will be recruited in total.

Results: A total of 800 women have been recruited thus far and have been tested for both chlamydia and *M. genitalium* at baseline. Approximately 50% of the sample is aged 16 to 21 years, with an average and median age of 21.6 years. The prevalence of chlamydia and *M. genitalium* at baseline was 4.8% (95%CI: 3.4%, 6.5%) and 2.2% (95%CI: 1.3%, 3.4%) respectively. Chlamydia and *M. genitalium* prevalence estimates were higher among the younger age group (5.8% v. 3.6% for chlamydia; and 2.3% v. 1.9% for *M. genitalium*).

Conclusion: This study has found a high baseline prevalence of chlamydia among young Australian women and will generate chlamydia incidence estimates, valuable for determining Australia's optimal chlamydia testing interval. In addition, this study has determined the first prevalence estimates for *M. genitalium* among young Australian women and shows that the prevalence of *M. genitalium* is about half that of chlamydia.

26. COMMUNITY TESTING – IT'S A PIECE OF PISS

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Background: *Chlamydia trachomatis* is the most commonly diagnosed sexually transmitted infection (STI) in New Zealand. In sexual health clinics, under-25-year-olds account for 72% of chlamydia infections. Chlamydia infection is asymptomatic in ~70% of female and up to 73% of male cases. A joint clinical and health promotion team attended various community events, to demonstrate the ease of chlamydia testing, to offer information about sexual health services and to assess the rates of asymptomatic chlamydia.

Method: The project used the Health Belief Model and on-the-spot testing. People who agreed to be tested were given a tick-box history form to complete. Those who were symptomatic were triaged by a clinician and if necessary referred for an appointment at an appropriate service. Specimens were collected by self-swabbing (vaginal or rectal) or first-void urine. Those who chose not to test on the day were provided with contact details for Auckland Sexual Health Service (ASHS) as well as free condoms and information on STI prevention. Specimens were tested at LabPlus Auckland City Hospital. Text messaging, calls to mobile phones and email were used to contact people with their test results and to arrange follow-up if required. The testing method was reviewed and modified after each community event to improve ease of assessment and the quality of the information collected.

Results: A total of 517 people agreed to be tested, of which 75% were under 25 years. The rate of *Chlamydia trachomatis* infection was 4.06% overall, with some differences in prevalence rates between the various community events ranging from 3.5% to 11.3%. All those who tested positive were followed up and treated. The method of testing was seen as acceptable, particularly for men. Overall feedback from those who agreed to be tested was very positive.

Conclusion: The testing and health promotion model developed from the project could be used to target other specific sectors of the community. Information collected about the rates of chlamydia infection in those community sectors could be used to inform targeted health promotion and testing.

27. A SEXUALLY TRANSMISSIBLE INFECTIONS PROGRAMS UNIT FOR NEW SOUTH WALES TO GUIDE STRATEGY IMPLEMENTATION

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The New South Wales (NSW) Sexually Transmissible Infections (STI) Strategy 2006–2009 provides a state-wide framework for sexual health programs and identifies key areas and actions required to reduce STI and associated morbidity and mortality. The Strategy aims to work with priority populations and the public and private health sectors to build capacity for prevention, treatment and management of STIs. Working in partnership with health and community sector agencies and across Area Health Service (AHS) boundaries are key to implementation. Accordingly, the *NSW STI Programs Unit* (STIPU) was established in 2007 by NSW Health to assist implementation of the Strategy by: coordinating some state-wide activities, providing leadership to the sexual health clinical and health promotion workforce; and establishing some dedicated sexual health projects. An advisory group provides expert advice and guidance to STIPU while multidisciplinary working groups guide specific projects.

The current focus of STIPU is to assist publicly funded sexual health services to orientate service delivery towards priority populations; strengthen the capacity of general practitioners to manage STIs within the primary care setting; promote community awareness through state-wide STI social marketing and information campaigns. A STIPU strategic plan incorporates each project work plan.

The STIPU plan will be presented highlighting some achievements and challenges, including engaging the sexual health sector at a state level for the first time with a non-HIV focus; conducting the first state wide snap shot of NSW sexual health services; developing a state wide manual for sexual health services; convening a NSW general practice STI working group of general practitioners, practice nurses and sexual health specialists; incorporating general community STI and HIV social marketing activities; coordinating review and development of community and workforce support tools like the NSW sexual health website and telephone information line.

28. THE ACCEPTIBILITY OF SELF-COLLECTED SPECIMENS FOR ASYMPTOMATIC SEXUAL HEALTH SCREENS

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Kirketon Road Centre (KRC) is a primary health care service, providing a range of services including sexual health screening to target populations including sex workers, injecting drug users (IDU) and at risk young people.

In 2007 KRC developed a survey to investigate the acceptability of self-collection of vaginal and anal specimens among existing clients presenting for asymptomatic sexual health screening. In addition, KRC set out to determine the rate of practitioner-identified signs from genital examination of asymptomatic first attendees.

Between September and December 2007, 253 clients had asymptomatic sexual health screens comprising of 59% female, 38% male, 3% transgender, 30% < 25 years, 47% sex workers, 27% IDUs and 4% Aboriginal. Eighty-five surveys were administered, indicating that ~50% of clients preferred to collect their own specimens, 30% preferred practitioner collection and 20% stated no preference. Results were similar when considering vaginal and anal specimens separately, by gender and by sex work status.

Clients preferring practitioner-collected specimens responded in 3 categories: 15 were concerned about the quality and reliability of self-collected specimens; 5 reported not being comfortable/confident to self-collect; and 1 wanted a practitioner genital examination.

In order to estimate the number of genital infections that would potentially be missed by introducing self-collection, medical files of all asymptomatic sexual health screens of existing clients during November 2007 were audited. Of 76 consultations, only 1 client presenting as asymptomatic was found to have genital warts on practitioner examination.

In view of these results, KRC is now offering self-collection to existing clients presenting for asymptomatic sexual health screening. Data is being collected on clients choosing self-collection, the rate of practitioner-identified signs from genital examination and client acceptability. This data will be analysed to evaluate the project and determine future directions.

29. CIRCUMCISION IN AUSTRALIA: FURTHER EVIDENCE ON ITS EFFECTS ON SEXUAL HEALTH AND WELLBEING FROM THE AUSTRALIAN LONGITUDINAL STUDY OF HEALTH AND RELATIONSHIPS

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Objective: To report on the prevalence of circumcision across various social categories in Australia and examine sexual health outcomes.

Methods: A representative household sample of 4,009 Australian men aged 16–64 years completed a computer-assisted telephone interview.

Main Outcome Measure(s): Circumcision status, demographic variables, reported lifetime experience of selected sexually transmissible infections (STIs), experience of sexual difficulties in the previous 12 months, and sexual practices at last heterosexual encounter.

Results: More than half the men (57%) were circumcised. Circumcision was less common among men under 30 and more common among those born in Australia.

After correction for age and number of partners, circumcision was unrelated to STI history except for non-specific urethritis (more common among the circumcised) and penile candidiasis (less common among the circumcised).

Circumcision was unrelated to any of the sexual difficulties we asked about. An association between lack of circumcision and erection difficulties in older men found in two earlier studies was not detected.

There were no significant differences by circumcision status in practices at last sexual encounter with a female partner.

Conclusions: Circumcision appears to have minimal protective effects on sexual health in the Australian context. This study provides no evidence about HIV risks or effects on sexual sensitivity.

30. AN EVALUATION OF TIWI SEXUAL HEALTH PROGRAM, 2002–2005

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Objectives: To assess the effectiveness of a comprehensive sexual health program implemented between 2002–2005 in the remote Indigenous communities on the Tiwi Islands.

Methods: Quantitative evaluation included using notification data and laboratory testing data to assess the change in the prevalence of bacterial sexually transmitted infections (STIs) in relation to the program implementation with rate comparisons with nearby regions. Semi-structured interviews with staff were conducted to explore the reasons for the effectiveness of the program as well as its strengths and weaknesses.

Results: Over the four years' period of program implementation, the rate of chlamydia, gonorrhoea and syphilis decreased by 95%, 60% and 89%, respectively; testing positivity rates showed similar decreasing trends. This had occurred despite a high level of testing being maintained throughout the period. No similar trends were observed in nearby regions. Two reasons for the success of the program emerged from the staff interviews. The first was community ownership of and engagement with the program. Community concern about the high infertility rate caused by STIs was identified as an important factor in motivating community support. Second, the presence of a dedicated coordinator to drive the program within the primary health care sector was essential for the sustained effectiveness of the program in the communities.

Conclusion and implications: The Tiwi Sexual Health Program achieved a significant reduction in STI rates between 2002–2005. This model of a comprehensive sexual health program with a dedicated coordinator located within a primary health care service can be recommended as an effective approach to address high rates of STIs in remote Indigenous community settings.

31. A SYSTEMATIC, PRIMARY HEALTH CARE APPROACH TO STI SCREENING AND RECORDING IN KIMBERLEY ABORIGINAL COMMUNITY CONTROLLED HEALTH SERVICES 2001–2007

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There is a weight of evidence indicating that the excess of STIs in Aboriginal populations relates to a lack of access to effective screening and treatment. This has been reflected in the approach taken by the Kimberley Aboriginal Medical Services Council (KAMSC) and its affiliated member services, recognising the need for long-term prevention strategies to include at their core a commitment to improve access to primary health care services, with appropriate sexual and reproductive health care services embedded in routine service delivery. After six years of systematic recording of STI testing activity and test results throughout Kimberley ACCHS, we have been able to demonstrate a region-wide, overall increase in STI testing activity across the ACCHS sites, which is coupled with an overall decline in STI rates. Key elements of this successful regional approach to STI control are explored in detail. We also highlight the adverse impact of a short-term decline in regional ACCHS workforce on STI testing and test-positive rates as demonstration of the vulnerability of STI control effort to fluctuations in health service capacity.

32. AN EPIDEMIC OF VULVAR PATHOLOGY IN YOUNG AUSTRALIAN INDIGENOUS WOMEN

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Objective: To confirm and document the epidemiological features of a possible cluster of cases of vulvar cancer and pre-cancers in Indigenous women in the Northern Territory (NT).

Methods: All NT resident women with a confirmed histological diagnosis of vulvar cancer or vulvar intraepithelial neoplasia (VIN) grade 2 or 3 (high-grade VIN) between 01/01/1996 and 31/12/05 were included.

Results: Between 1996 and 2005, 71 women were identified; 32 had a confirmed diagnosis of invasive vulvar cancer and 39 had a confirmed diagnosis of high-grade VIN. The majority of women diagnosed were Indigenous, aged less than 50 years and living in remote communities in the East Arnhem (EA) district, on the north-east coast of the NT. The age-adjusted incidence rate of vulvar cancer in EA Indigenous women aged less than 50 years was over 50 times higher than the national Australian rate for the same age group. The age-adjusted incidence rate of high-grade VIN for EA Indigenous women aged less than 50 years was over 5 times higher than for Indigenous women living elsewhere in the Top End of the NT (national data about VIN incidence are not available). Just under half of all Indigenous women diagnosed with either vulvar cancer or VIN had other anogenital neoplastic or pre-neoplastic lesions.

Conclusion: We have confirmed an epidemic of vulvar cancer and VIN in younger Indigenous women in the East Arnhem district of the NT. The cause of this epidemic is unknown, however the epidemiologic features suggest there may be a higher prevalence of oncogenic human papillomavirus infection in this population.

33. THE FIRST SURVEY OF SEXUAL HEALTH AND BLOOD BORNE VIRUS KNOWLEDGE, RISK BEHAVIOURS AND HEALTH SERVICE UTILISATION OF YOUNG ABORIGINAL PEOPLE IN NSW AGED 16–30 – PRELIMINARY FINDINGS AND INNOVATIONS IN DATA COLLECTION

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Despite young Aboriginal people being identified as a priority population in almost every strategy relating to STIs and BBVs in Australia, very little behavioural data exists to shape and influence policy and program decisions for this group. In 2006 the Aboriginal and Health and Medical Research Council of NSW and the National Centre in HIV Social Research collaborated on a research project to address this deficient evidence base, by conducting a cross sectional survey of Aboriginal people aged 16–30 at NSW Aboriginal cultural events. Participants were surveyed regarding levels of knowledge, risk behaviours and the types of health services utilised by them for sexual health, and blood borne viruses.

To date almost 300 surveys have been completed. This research involved the use of new technology to Australia- personal digital assistants, rather than paper based surveys.

Results to date include 42% of participants being male, median age of 20 years, 90% identified as heterosexual and almost two-thirds (64.2%) described their relationship status as single. Almost 20% of the participants did not know you could have an STI without symptoms. 90% of participants knew you could get hepatitis C or HIV from used injecting equipment however 20% and 26% thought HIV could be acquired through kissing and sharing a bong respectively. 44% of participants had used at least one illicit drug in the previous 12 months, with marijuana most used (40%), ecstasy (13%) and amphetamines (10%). 16% of participants reported no alcohol use in the previous 12 months, however, 5% reported drinking alcohol daily. Over a third (35%) reported that they had never had an STI test, with a further 25% reporting not having a test in the last 12 months. For testing and advice for STIs, people reported attending private general practice clinics and Aboriginal Medical Services almost equally.

The results of this survey are important as this project is the first survey of its kind in Australia to address this issue. Further behavioural research that can assist in the shaping of policy is needed if we are to comprehensively address this priority population.

34. EFFECTS OF HAVING A SEXUALLY TRANSMITTED INFECTION ON WOMEN'S SEXUALITY AND SELF-CONCEPT

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Objective: The aim of this study was to explore the experiential aspect of having a sexually transmitted infection (STI) from young women's perspectives.

Methodology: This study utilised a qualitative design and was informed by a feminist methodology. All data was collected via computer mediated communication and was subjected to thematic analysis.

Results: Preliminary findings from this study have revealed that contracting a STI had an immense impact on the women's psychological and sexual wellbeing. The women suffered from significant disturbances in their sexuality and self-concept. The women feared revealing their infections to potential partners, which caused the women to refrain from relationships. They felt that they lacked sexual spontaneity resultant of their infections and perceived themselves as less than adequate sexual beings.

Conclusions: Contracting a STI caused these women significant emotional distress through disrupting their intimate lives. The women felt that they were inadequate and feared engaging in romantic and intimate relationships with men. From this research greater insight and understanding into the experiential aspects of women with STIs is provided. Through this knowledge healthcare professionals working with women that have experienced a STI can be equipped with better understanding of the psychological and sexual health needs of these women.

35. WHAT'S THE FUSS ABOUT? CORRELATIONS OF BACTERIAL VAGINOSIS (BV) IN UNIVERSITY STUDENTS

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Bacterial vaginosis (BV) is one of the commonest genital infections in women of reproductive age yet its precise aetiology is unknown. BV is associated with serious sequelae, including facilitation of transmission of HIV and STIs and adverse pregnancy outcomes. There is evidence from observational studies that BV has many of the epidemiological characteristics of a sexually transmitted infection in that it is associated with multiple/new male sexual partners, co-infection with STIs, and condoms confer some protection against acquisition and reinfection. Unlike other STIs however, BV is noted to be higher amongst women who have sex with women (WSW) than exclusively heterosexually active women. The Female University Student Study (FUSS) is a 12 month cohort study to explore the demographic, sexual and other behavioural associations of BV in 17–21 year old university students.

FUSS is a cross-sectional, prevalence survey and 12 month cohort study of 500 17–21 years old female university students. Participants were posted a kit containing a questionnaire, vaginal swab, participant information and consent form and a reply paid envelope. An option of an online questionnaire was also available. Detailed behavioural and contraceptive data was collected. BV was diagnosed by the Nugent method from self-collected vaginal swabs.

Non penetrative sexual practices are known to transmit STIs, especially viral STIs such as HPV and HSV. The high rates of BV in WSW suggest sexual risks may not be limited to vaginal intercourse. FUSS is the first research of its kind to explore in depth sexual and other behavioural correlates with BV prevalence and incidence in a cohort of relatively sexually inexperienced women. The cross sectional baseline data from 500 women who have participated in FUSS will be presented.

36. NON-GONOCOCCAL URETHRITIS IN SYDNEY MEN

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Questions about the aetiology and diagnostic criteria for non-gonococcal urethritis (NGU) remain unanswered. We determined the prevalence of a range of microorganisms in Sydney men with (cases) and without (controls) urethral symptoms (urethral discharge, dysuria and/or urethral discomfort), recruited from two sexual health clinics in Sydney between April 2006 and November 2007. Our main aims were to investigate the role of *Ureaplasma urealyticum* in NGU, the prevalence of *Mycoplasma genitalium* in our population, and the usefulness of urethral smear Gram stain microscopy. Multiplex polymerase chain reaction (PCR)-based and reverse line blot assay and/or bacterial culture was performed for *Chlamydia trachomatis*, *Mycoplasma genitalium*, *Mycoplasma hominis*, *Trichomonas vaginalis*, *Streptococcus pneumoniae*, group B streptococcus (GBS) *Haemophilus influenzae*, *Neisseria gonorrhoeae*, *Neisseria meningitidis*, *Gardnerella vaginalis*, adenovirus, herpes simplex virus types 1 & 2 and two species of human ureaplasmas, *U. urealyticum* and *U. parvum*. 516 subjects were eligible for analysis. *C. trachomatis* was significantly more likely to be detected among cases than controls (OR 8.036, $P < 0.001$). The presence of any symptom was not significantly associated with detection of *U. urealyticum* (OR 1.3, $P = 0.4$) or *M. genitalium* (OR 3.5, $P = 0.06$). However, for both these organisms, each symptom was more likely among cases than controls, and when specifically examining dysuria alone, there was a significant association (*U. urealyticum* OR 2.0, $P = 0.02$; *M. genitalium* OR 5.5, $P = 0.004$). The presence of GBS was significantly protective (OR 0.52, $P = 0.02$). Prevalence of *M. genitalium* was relatively low (4.2% cases, 1.2% controls). Although 59% of men with any urethral symptom did not have ≥ 5 polymorphonuclear leucocytes per high power field on Gram stain, there was a significant association between being a case and this finding (OR 4.5, $P < 0.001$). *C. trachomatis* was the only microorganism significantly associated with any urethral symptom/s, but both *M. genitalium* and *U. urealyticum* were significantly associated with dysuria.

37. IS IT NECESSARY TO EXAMINE A WOMAN DIAGNOSED WITH ASYMPTOMATIC CHLAMYDIA INFECTION?

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Background: Urines and self-collected specimens are often used for testing asymptomatic women for chlamydia. Some are concerned that by not performing a pelvic examination, important findings such as pelvic inflammatory disease (PID) may be missed. This study aimed to determine the pelvic examination findings of asymptomatic women diagnosed with chlamydia.

Methods: A case control study comparing the pelvic examination findings in asymptomatic women with and without chlamydia was conducted. Cases were women aged under 30 years who presented to Melbourne Sexual Health Centre between January 2006 and June 2007 with asymptomatic chlamydia and who had a pelvic examination (speculum and/or bimanual) at the time of diagnosis. Controls were asymptomatic women who tested negative for chlamydia and who had a pelvic examination. Two controls for each case were selected, matched by age, test date and practitioner. A standardised data extraction form was developed to audit the medical records.

Results: 98 cases and 167 controls were included. After adjusting for number of partners, history of sex work and contact with infection, cases were more likely to have easily induced bleeding (OR = 2.7; 95%CI: 0.9, 7.9) or cervical discharge (OR = 2.4; 95%CI: 1.1, 5.5) on speculum examination. However, these findings did not lead to any change in the standard treatment for chlamydia. Only one case (1%; 95%CI: 0.5%, 6.4%) and no controls were found to have any signs suggestive of PID on bimanual examination.

Conclusions: These results suggest that while asymptomatic women diagnosed with chlamydia are more likely to have evidence of inflammation at the cervix, this does not lead to any change in their standard treatment for chlamydia. Further, they are unlikely to have signs of PID, providing evidence that it is not necessary to perform a pelvic examination when testing young asymptomatic women.

38. CORRELATION OF ANAL CYTOLOGY AND HISTOPATHOLOGY IN CASES OF ANAL WARTS, AND HIGH RISK DIGENE HC2 TESTING

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Objective: The objective of this study is to describe the frequency of HPV positivity to high-risk strains of HPV in the anal canal and possible correlation between anal cytology, histopathology and disease in patients undergoing surgery for perianal/anal warts and mapping biopsies.

Methodology: In this case series 90 patients (69 male, 21 female) with anal condylomata acuminata underwent scissor excision of the lesions under general anaesthesia and 10 patients (9 males) underwent mapping biopsies for investigation of intraepithelial neoplasia (IN). Prior to removal of tissue, anal cytology and Digene hybrid capture-2 testing for high-risk strains of HPV was performed through a proctoscope.

Summary: The demographic characteristics of the patients will be described as well as the correlation between anal cytology and histopathology. The prevalence of HPV positivity amongst the cases was 67.7% (male 75%, female 40.9%). Among HIV positive cases the prevalence of HPV positivity was 96.8% compared to HIV negative cases 55.6%. Cytology reported 35.3% of high-grade IN, and histology reported 44.1% of high-grade IN. A high, significant correlation was found between cytology and histology (% agreement = 75%, kappa = 0.49, $P < 0.0001$). Further analysis of the correlation between the cytological and histological findings, rates of IN and Digene positivity will be reported.

Cytology	Histology		Total
	Positive	Negative	
Positive	28	8	36
Negative	17	49	66
Total	45	57	102

Conclusion: High rates of IN are reported in HIV positive patients. Most male patients with anal warts are positive for high risk HPV in the anal canal. Recognising Histology as the gold standard, cytology under-recognises the true extent of high-grade IN. Cytology detects an additional 8% of cases of high-grade IN that would be otherwise missed. Cytology is a complementary test to histology.

39. ANOGENITAL LYMPHOGRANULOMA VENEREUM REPORTED IN WESTERN AUSTRALIA

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This is the first reported case of anogenital lymphogranuloma venereum (LGV) due to the L2 serovar of *Chlamydia trachomatis* in Western Australia. LGV outbreaks in men who have sex with men (MSM) have been reported overseas, and some cases have been reported in the Eastern States.

The patient is a 45 year old HIV infected male on anti-retroviral therapy with good virological control and CD4 count 532. He presented to the sexual health clinic at RPH in May 2008 because of recent rectal bleeding. He had a mucopurulent rectal discharge and active peri-anal herpes. Anoscopy revealed a marked proctitis with a 2 cm ulcer at the dentate line. *Chlamydia trachomatis* DNA was detected from a rectal swab using Roche Amplicor, and subsequent typing using an in-house tandem PCR. Sequencing from the MOMP gene found the strain to be genoseroovar L2. Other investigations demonstrated reinfection with syphilis. He reported engaging in frequent episodes of fisting, and casual anal intercourse with anonymous partners at local sex-on-premises venues. He had not travelled in the previous 15 months and an STI screen on return was negative for rectal *C. trachomatis* by PCR. A more complete description of the clinical case will be presented. Contact tracing is underway.

It has been the policy of the RPH Sexual Health clinic to do LGV testing of PCR-positive rectal *C. trachomatis* specimens in those presenting with proctitis or in those whose infections fail to clear at trial of cure testing. Until this case no LGV serovars have been reported. It is planned to retrospectively test the PCR-positive rectal *C. trachomatis* samples from the clinic over the past 12 months to establish if this is an incidental case or whether there is ongoing local transmission within the Perth MSM community.

40. CHLAMYDIA TESTING IN GENERAL PRACTICE IN AUSTRALIA

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Objectives: To ascertain how frequently Australian general practitioners (GPs) test patients for chlamydia and to determine the GP and patient characteristics of those who were tested.

Methods: A secondary analysis of data from the BEACH programme. BEACH is a cross sectional national survey of GP activity: ~1000 GPs per year, each records details of 100 consecutive patient encounters. We identified all GPs who ordered at least one chlamydia test from April 2000 to March 2007 and compared their characteristics with other GPs in the BEACH database. We also looked at characteristics of the patients who had a chlamydia test. Multiple regression was used to measure the independent effect of each patient and GP characteristic on testing for chlamydia.

Results: Data were available for 689,000 encounters from 6,890 GPs, of which 2,236 were chlamydia test encounters. Seventy-five percent of the encounters were from females and 25% from males. Over 50% of tests were taken from individuals aged 25–44 and 38% in those aged 15–24. Testing rates increased from 2000–2007 in males and females in all age groups. On regression analysis, GPs characteristics independently associated with chlamydia testing were female sex, younger age, and practice in a metropolitan area. Patient characteristics associated with more testing included male sex, being new to a practice, younger age and selected morbidities. To test the effect of ‘opportunity to test’, we removed the selected morbidity variable from the model and this showed that females received more chlamydia tests than males.

Conclusion: Chlamydia testing rates have increased in general practice in Australia, but initiatives to overcome GP and patient barriers will need to be established and evaluated.

41. PARTNER NOTIFICATION OF CHLAMYDIA IN GENERAL PRACTICE: EXAMINING CURRENT PRACTICES AND POSSIBLE SUPPORTS TO ASSIST GPs IN PARTNER NOTIFICATION

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Objective: To examine GPs current partner notification practices and identify what supports GPs would find most useful to assist them with partner notification. There are limited data on how Australian general practitioners (GP) undertake partner notification for chlamydia, their views on it, and what supports GPs would find most useful to assist them with it.

Method: A cross sectional survey was conducted between July and December 2007 with GPs from Victoria, the ACT and Queensland. Self administered questionnaires were mailed to a random sample of 550 GPs.

Results: Of the 550 GPs, 234 (43%) returned a completed questionnaire. Considerable variation was evident in GPs advice to patients on how far back they should trace partners. Overwhelmingly, 95% (223/234) of GPs considered it their role to discuss partner notification with their patients and 97% (226/234) felt comfortable doing so. However, only 51% (120/234) reported being sure of how to best assist patients with this process. Of the GPs, 84% (196/234) agreed that they would find information and resources useful in assisting with partner notification. Possible supports and resources rated most highly were a website GPs could refer patients to which would assist people in telling their sexual partners, 90% (210/234), and patient information sheets built into practice software, 90% (210/234). A considerable number of GPs, 43% (100/234), sometimes prescribed an additional dose of antibiotics for patients to give to their sexual partner and 46% (107/234) reported that they would support changes to laws and regulations to allow them to provide patient delivered chlamydia therapy for their patients.

Conclusions: While partner notification for chlamydia is being undertaken by Australian GPs to some degree, there is considerable room for improvement. GPs see it as their role to discuss partner notification with their patients but want and need greater information, guidance and resources in order to do it more effectively.

42. CONFIDENTIALITY AND ACCESS TO SEXUAL HEALTH SERVICES

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Confidentiality is often described as a barrier to sexual health clinic attendance, particularly for members of some higher risk groups. There has been little research describing the relative importance of confidentiality and other factors to clients of sexual health clinics, and whether members of high-risk groups have greater concerns. The aim of this study was to assess the importance of confidentiality and anonymity to clients accessing care at a sexual health clinic, and to describe associations with gender and sexuality. A self-administered questionnaire was offered to 350 consecutive new English speaking clients in October and November 2007. Participants were asked to describe the reasons for presenting, likelihood of disclosing specific identifying information and concern about specific people and bodies becoming aware of their attendance. Of 350 eligible clients, 270 (77%)

participated in the survey. Expert care was included in the top 3 reasons for choosing a sexual health clinic rather than a GP by over half of participants, confidentiality and cost were included by one third each. Given a list of personal identifiers, over 90% of clients stated they were likely to give accurate information to the clinic. Participants were comfortable with disclosure of information to other health care workers but became increasingly unwilling for information to be shared with services not directly involved in their care. Overall there were few associations with gender or sexuality. Clients chose to attend our clinic for a variety of reasons, with confidentiality and anonymity being of lesser importance than competence and cost. Confidentiality is important to the majority of clients whereas few desire anonymity. Most clients would accept information being shared with other health services, suggesting confidentiality may not be a barrier to the use of electronic health records in sexual health clinics. Clients of sexual health clinic are willing to provide identifying information in the expectation that this information will be treated in a confidential manner.

43. CHLAMYDIA TESTING RATES IN GENERAL PRACTICES ACROSS AUSTRALIA: THE AUSTRALIAN COLLABORATION FOR CHLAMYDIA ENHANCED SENTINEL SURVEILLANCE (ACCESS)

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Chlamydia is the most common bacterial sexually transmitted infection (STI) in Australia. Notifications have more than doubled between 2002 and 2007, with the majority being among 15 to 24 year olds, but there is so far limited information on the time trends and predictors of chlamydia prevalence in the Australian population. In 2007, the Australian Government funded the 'Australian Collaboration for Chlamydia Enhanced Sentinel Surveillance (ACCESS)', to provide better national information on chlamydia testing and outcomes in a range of clinical contexts. One key setting is general practices (GPs).

ACCESS is making use of three data sources related to testing at GPs: (i) Health Insurance Commission (HIC), which provides data from GPs making Medicare-rebatable claims for chlamydia testing in Australia, (ii) a national sentinel network of GPs, which provides chlamydia testing data electronically through clinical data management systems and (iii) the Bettering the Evaluation and Care of Health (BEACH); which provides chlamydia testing and diagnosis data from a continuous national study of general practice activity. For the purpose of this paper, we analysed Medicare data for the period October 2007 to March 2008. We used population denominators to calculate age and sex specific rates of chlamydia testing in general practice.

During the study period, 6.3% of 15–24 year old females and 1.6% of 15–24 year old males were recorded by HIC as having been tested for chlamydia. In this age group, chlamydia testing rates varied by jurisdiction; the highest observed in Northern Territory (21.9% females, 6.8% males), Western Australia (8.7% females, 2.4% males) and Queensland (7.9% females, 2.1% males) and lowest in Tasmania (1.7% females, 0.4% males). Rates in other jurisdictions were in the range 5.0–5.8% for females and 1.2–1.5% for males.

Despite chlamydia testing being recommended for sexually active youth, Medicare data highlights that GP testing rates in this group are low; the highest observed in jurisdictions with the greatest numbers of Aboriginal people, suggesting that community screening programs in these jurisdictions are playing an important role in the uptake of testing. These findings will support the evaluation of testing initiatives designed to control chlamydia infection in Australia.

44. CHLAMYDIA TRACHOMATIS AND PID AS IT IS SEEN TODAY

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Chlamydia trachomatis is the ultimate intracellular pathogen. *C. trachomatis* infections cause substantial morbidity including PID, tubal infertility, chronic pelvic pain, and ectopic pregnancy. *C. trachomatis* has also been linked to cervical cancer. *C. trachomatis* infection increases susceptibility to and transmission of HIV. Most women and men with chlamydial infection are asymptomatic. Recent major breakthroughs in the diagnosis and management of *C. trachomatis* infection include the development of accurate amplification tests, first void urine testing, vaginal or vulvar sampling, self-sampling, single dose therapy, and patient delivered partner therapy, just to name a few. The disease burden is still enormous and increasing. There is major frustration with opportunistic screening programs, implementation of management guidelines, contact tracing efforts, and school health education programs. This suggests that recommendations for screening may be inadequate, inefficient, and poorly implemented. Also, there is lack of connection between young adults and health care systems in general. Young adults do not acknowledge that chlamydial infection remains asymptomatic.

PID comprises a spectrum of upper genital tract inflammatory disorders in women which includes any combination of endometritis, salpingitis, tubo-ovarian abscess, pelvic peritonitis, and perihepatitis. Salpingitis is the most important feature of PID because salpingitis increases the risk for

permanent tubal damage resulting in ectopic pregnancy or subfertility. Most PID in developed countries is sexually transmitted often caused by *C. trachomatis*. Infections following delivery or induced abortion are categorised separately as puerperal or postabortion infections. Clinical spectrum of PID manifestations varies from subclinical to severe. Recently, severe inpatient PID has been decreasing in many European countries. Most PID today is managed in outpatient clinics. Although Chlamydia rates in young adults have been increasing PID rates have been declining. At the same time tubal pregnancy rates and the proportion of tubal factor infertility of all infertility have been decreasing. Recent population based studies suggest that the risk for PID associated with chlamydial infection has been over-estimated. This is not surprising since historical studies have been focusing on selected high risk populations which easily leads to overestimation of the risks and rates of complications. Thus, old studies have included several biases including selection bias, performance bias, ascertainment bias, detection bias, and perhaps also exclusion bias. Truly population based data may differ from data reported in case-control studies. This also means that the cost-effectiveness and health economical analyses of screening programs should be revised. Implementation of PID management guidelines has improved treatment of PID which may decrease risk for long-term complications. In conclusion, it appears that good news regarding PID are emerging. Inpatient PID has become a rare disease, ectopic pregnancy rates are decreasing and the proportion of tubal factor infertility of all infertility is decreasing suggesting that the primary objective of prevention of PID, i.e. to improve reproductive health in women can be reached. However, this is only true for developed countries and only countries with organised health care systems.

45. HPV (HUMAN PAPILLOMAVIRUS) GENOTYPE PREVALENCE IN AUSTRALIAN WOMEN PRE-HPV VACCINE ROLLOUT

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Aim: To estimate prevalence of type-specific genital HPV infection in the Australian female population, with stratification by age group, Indigenous status, cervical Pap status and region of residence.

Methods: Women living in remote and urban areas presenting for Pap screening were consented for collection of a dedicated PreservCyt sample for HPV DNA testing using consensus PCR with PGMY09/11 primers, with genotyping of positive samples by Roche Linear Array.

Results: At March 2008, 2729 women had been recruited. An interim analysis at 2461 women identified 680 as Indigenous. Of the 1776 non-Indigenous women, 74% had a documented normal Pap smear result from a satisfactory sample (7% LSIL, 0.7% HSIL or higher). The overall rate of high risk HPV positivity was 23.6%, with highest rates in the youngest women (44% age 15–19, 42% age 20–24, 34% age 25–29) with rates < 10% after 40 years. Overall rates of HPV16 and 18 positivity were 5.9% and 2.4% respectively (peaking at 13% and 6% in the youngest age group).

Multivariate analyses of the results will be presented.

Conclusion: This data forms an important baseline against which the impact and effectiveness of vaccine rollout can be measured for Australian women.

46. STI RATES IN YOUNG ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLE: 2002–2006

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Much negative attention has been focused on Aboriginal and Torres Strait Islander (TSI) communities regarding the population rate of diagnosis of sexually transmissible infections (STIs) in young people. A by product of this has been to erroneously link the occurrence of all STIs in young people to child sexual assault (CSA). We describe the extent and age breakdown of STIs in young Aboriginal and non-Indigenous people in Australia.

Systematic collection of information on new diagnoses of specific STIs occurs through the National Notifiable Diseases Surveillance System (NNDSS). We analysed chlamydia and gonorrhoea notifications from NNDSS with a focus on cases aged less than 16 years and compared notifications in Aboriginal and Torres Strait Islander and non-Indigenous people. Only jurisdictions where Aboriginal and Torres Strait Islander status was reported for at least 50% of cases were included in the analysis; Northern Territory, Western Australia, Victoria, Queensland (gonorrhoea only) and South Australia.

During the period 2002–2006 there were a total of 1234 chlamydia and 1553 gonorrhoea notifications reported among Aboriginal and Torres Strait Islander people aged less than 16 years of age; 96% of chlamydia and 94% of these gonorrhoea notifications were among people aged 12–15 years. During the same time period, among non-Indigenous people, 1198 chlamydia and 253 gonorrhoea notifications were reported in people aged less than 16 years. Similar to the Aboriginal and Torres Strait Islander population, the majority of these chlamydia (93%) and gonorrhoea (88%) notifications occurred among 12–15 years olds. Moreover, in both populations over 80% of chlamydia and gonorrhoea reports were in 14–15 year olds.

This analysis showed that most STI notifications in young people in Australia occurred among 14–15 year olds, irrespective of Aboriginal and Torres Strait Islander status and very few cases occurred in those aged less than 12 years. It is likely that the rates of STI notifications among people aged 12–15 occur as a result of early sexual debut and activity among similar aged peers rather than as a result of child sexual assault. The majority of STI infections in young Aboriginal and Torres Strait Islander people occurred in areas of known high endemicity of bacterial STIs and where regular programs for STI testing occur.

47. UREAPLASMA AND ITS ROLE IN CLINICAL DISEASE

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Ureaplasmas have been thought to play a role in non-gonococcal urethritis (NGU) for over 30 years but research has yielded conflicting results. One of the most compelling experiments to implicate ureaplasmas in NGU was reported in 1977 by Bowie *et al.*, and involved the intra-urethral inoculation of two investigators with a pure culture of *Ureaplasma urealyticum* obtained from patients with NGU. However, the association was not consistently found in larger studies of men with and without NGU, and interest in ureaplasmas waned.

In 2002, two species of ureaplasma, *Ureaplasma parvum* and *Ureaplasma urealyticum*, were distinguished using phylogenetic analysis. The naming of these two species is potentially confusing, as previously all organisms in the genus were referred to as *Ureaplasma urealyticum*. This discovery enables the role of each species in human disease to be separately examined using PCR-based assays. It has now been demonstrated that *U. parvum* is a commensal organism in the male urethra. At least two recent studies have found an association between *U. urealyticum* and NGU, whereas another did not. It may be that only certain subtypes of *U. urealyticum* are involved in NGU, or that other risk factors are important.

The role of ureaplasmas in other genitourinary syndromes is unclear. Although ureaplasmas have been implicated in preterm birth and chronic lung disease among premature neonates, most studies have not separately reported the role of the two ureaplasma species.

Further study of the role of ureaplasmas in human disease is needed. Meanwhile, an understanding of the history of research to date will assist sexual health clinicians in interpreting results and managing men with NGU.

48. EVALUATION OF THE VICTORIAN 'YOU'LL NEVER KNOW WHO YOU'LL MEET' YOUTH STI AWARENESS CAMPAIGN

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Notifications of chlamydia, the most commonly notified sexually transmitted infection (STI) in Victoria, more than doubled between 2002 and 2007 with the majority among young men and women aged below 25 years. A youth STI awareness media campaign was conducted in mid 2007 to increase condom use and STI testing among 18 to 25 year olds with a total cost of \$517,798.

To evaluate the initiative we assessed whether chlamydia testing increased through analysis of available data from (i) chlamydia sentinel surveillance in Victoria before (Apr 2006-Jun 2007) and during (Jul-Sep 2007) the campaign and (ii) chlamydia testing claims through Medicare during (Jul-Sep 2007) and after (Oct-Dec 2007) the campaign. We also assessed campaign recognition and changes in sexual behaviour and STI testing through an on-line cross-sectional survey of 600 young people conducted before (June 2007, *n* = 300) and during (September 2007, *n* = 300) the campaign.

There was no significant increase in the median number of tests conducted per month among 18 to 25 year olds at sentinel sites from before the campaign compared to during the campaign (487 v. 437 tests, *P* = 0.05). Medicare claims for chlamydia tests in Victoria for 15 to 24 year olds did not significantly change during the campaign compared to after the campaign (median of 4,097 v. 3,927 tests per month, *P* = 0.8). The online survey found that 37% of participants recalled the campaign when shown campaign advertisements; however history of STI testing, STI knowledge and condom use did not differ between those who recalled the campaign and those that didn't, or between those surveyed before and during the campaign. Further sentinel surveillance and behavioural survey data will be presented.

Based on available data, it appears the campaign did not result in an increase of condom use or STI testing among the target group.

49. AVENUES OF SUPPORT: PERCEPTIONS AND EXPERIENCES OF FEMALE ADOLESCENTS WITH DIFFERENT PREGNANCY OUTCOMES

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Objective: To explore if adolescent females with a history of pregnancy have differing experiences with support systems: parents, schools and health services; than their sexually active peers who have never been pregnant.

Methods: As part of a broader study exploring factors associated with unplanned adolescent pregnancy, 69 sexually active females (aged 14–20 years) living in Perth, Western Australia each participated in a semi-structured in-depth interview. Participants were recruited from antenatal clinics, termination clinics, sexual health clinics, postnatal groups and secondary schools to contrast various pregnancy experiences. Through thematic analysis, common experiences emerged and were compared across groups to elucidate differences. Themes were constantly verified through subsequent inquiry.

Results: In general, participants with no history of pregnancy shared positive experiences of youth-oriented health services and considered them 'effective' and 'supportive'. In contrast, many participants with a history of pregnancy labelled their experience with health services 'judgemental' and 'ineffective'. Both groups expressed difficulty discussing sensitive issues with primary caregivers, commonly stating 'I can't go there with them' or 'they won't go there with me'. Universally, there was a tendency for adolescents to be negative towards school-based sexual health education, expressing 'schools don't go there' and when they did 'it meant nothing'. Recommendations were similar across groups, with adolescents commonly suggesting 'a graduated and ongoing approach' provided by 'youth-friendly and credible educators'.

Conclusions: These findings suggest the needs of sexually active adolescents with and without an experience of pregnancy are not being addressed by home and/or school-based systems. In many instances, health services also failed to provide the support required. Safe sexual practices were more apparent in young females who accessed youth-oriented health services. Further development of the capabilities of all sectors to support sexually active minors is called for.

50. UNDERSTANDING AND INFLUENCING SEXUAL RISK BEHAVIOUR: THE CURRENT STATUS OF EVIDENCE BASED MODELS OF SEXUAL RISK BEHAVIOUR

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We are all familiar with the impressive data summarising changes in sexual risk taking and associated rises in STI and unwanted pregnancy rates across many contexts, within both resource rich and resource poor settings. However, robust epidemiological data alone is limited in its ability to further our understanding of the complex determinants of sexual behaviour underlying these changes and the implications of these determinants for effective interventions.

This paper reviews the empirically based health behaviour models developed over the past 20 years which have aimed to model and predict the interactions between sexual behaviour and sexual health outcomes. It explores the question as to why they have been so essential in our attempts to better understand individual level and group level changes in sexual behaviour, but also as to why they have historically been limited in their ability to do so.

This paper argues for the necessity to include individual level and group level attitudinal, motivational and systemic data, in addition to the behavioural and biomedical outcome data already collected within on-going key epidemiological surveillance of sexual health. Only then can we better understand the patterns of change in sexual risk taking, and only then can we better develop effective evidence-based primary and secondary sexual health interventions.

51. PREVALENCE, INCIDENCE AND PERSISTENCE OF A COMMON SEXUAL DIFFICULTY: INSIGHTS FROM THE AUSTRALIAN LONGITUDINAL STUDY OF HEALTH AND RELATIONSHIPS

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Objective: To document the prevalence, incidence and resolution of the most common sexual difficulties: lacking interest in having sex.

Methods: A representative household sample of 8,656 Australians aged 16–64 years completed a computer assisted telephone interview. Data relate to those who answered questions about sexual difficulties at annual interview in Waves 1 and 2 of the study.

Main Outcome Measure(s): Reporting having lacked interest in sex for one month or more in the previous year.

Results: At Wave 1, 496 of 2654 (18.7%) of men and 1359 of 2680 (50.7%) of women reported lacking interest in sex for one month or more in the previous 12 months. Of the men who did not report a lack of interest in sex at Wave 1, 13.0% did so at Wave 2 as did 28.5% of women. Of those reporting a lack of interest in sex at Wave 1, 50.8% of men again reported a lack of interest in sex at Wave 2; of the women reporting a lack of interest in sex at Wave 1 65.6% also did so at Wave 2.

Being unemployed was associated with a higher likelihood of reporting a lack of interest at either Wave 1, Wave 2 or both Waves. And there was similar variation with respect of education and reporting a lack of interest in sex. While there was no apparent association smoking and reporting a lack of interest in sex, there appeared to be a relationship being a current drinker and reporting a lack of interest in sex.

Conclusions: Reporting a lack of interest in sex is the most common sexual difficulty and demonstrates substantial temporal variation and some complex associations with demographic and behavioural variables.

52. YOUNG ADULTS, SEXUAL BEHAVIOUR AND MULTIPLE RELATIONSHIP PARTNERS: DATA FROM THE AUSTRALIAN LONGITUDINAL STUDY OF HEALTH AND RELATIONSHIPS

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Objective: To highlight the formation of relationships among young Australian adults and identify sexual behaviours and contraceptive use that may place them at risk of sexually transmitted infections (STIs) or unwanted pregnancies.

Methods: Analysis of data from a representative household sample of Australian men and women 16–64 years who completed a computer-assisted telephone interview.

Main outcome measure(s): Relationship status (i.e. types of relationships) and sexual history, last sexual practice, contraceptive practices and STI history.

Results: Among 1565 young adults (aged 16–25) 21% had never had sexual contact; 5% had not had sex in the last 12 months; 25% were not currently in a relationship but had recently had casual sex and the remaining 48% were in a regular relationship. Of those currently in a regular relationship ($n = 757$), 7% had sex a person outside the relationship in the past year. Much of this sexual activity was protected, but 11% did not use a condom at most recent sex with either the regular or the outside partner.

Of those who had multiple partners (i.e. more than one regular partner or regular + casual partners) 70% were men; 79% identified as heterosexual; 12% lived with one of their partners; and 13% reported having had an STI in the last 12 months. Age at first sex for young adults reporting multiple partners was typically younger (15.3 years; 95%CI 14.5–16.1) compared to those currently in a single regular relationship (16.8 years; 95%CI 16.7–17.0).

Conclusions: Rich and informative data identifying multiple-relationships in Australia are rare. This national representative study effectively illustrates the complexities of personal histories and risk for people in multiple relationships. The implications of these findings highlight the need for health professionals to promote condom use among young adults unless they are in guaranteed sexually exclusive relationships.

53. IMPORTANCE OF EARLY RECOGNITION AND TREATMENT OF SYMPOMATIC SYPHILIS IN MEN WHO HAVE SEX WITH MEN (MSM)

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Objective: There is currently an epidemic of syphilis among MSM in Victoria. The early detection and treatment of syphilis would reduce the period of infectiousness and improve control. The objective of this study was to determine the duration between onset of symptoms of primary and secondary Syphilis and diagnosis and treatment.

Methods: A retrospective case record review was conducted of MSM diagnosed at the Melbourne Sexual Health Centre (MSHC) with primary and secondary syphilis between 1st January 2003 and August 2007. Diagnosis was confirmed by serology and/or polymerase chain reaction (PCR) and included referrals from General Practitioners (GPs).

Results: The mean age of the 123 MSM included in the study was 37.4 years. Fifty two percent ($n = 64$) had primary syphilis and 48% ($n = 59$) had secondary syphilis. Twenty five percent were HIV positive, with 29% having lesions that were PCR positive for *Treponema pallidum*. The median RPR titre among the 123 men was 1:32. Referring GPs did not consider the diagnosis of syphilis in 10 cases of primary syphilis and 20 cases of secondary syphilis. For primary and secondary cases combined, the median duration between onset of symptoms and diagnosis, and symptom onset and treatment, was 15 and 20 days respectively. The respective durations for secondary syphilis (17 and 23 days) was significantly longer than for primary syphilis (13 and 15 days) ($P < 0.05$). The mean number of sexual contacts reported for the prior 3 months was 8.8 (range: 1–15).

Conclusions: There was a considerable delay between the onset of symptoms of early syphilis and its diagnosis, a period during which further transmission probably occurred. Greater awareness of the symptoms and signs of syphilis need to be promoted among both GPs as well as MSM together with the need for early testing and treatment.

54. PREVALENCE OF MYCOPLASMA GENITALIUM (M. GENITALIUM) IN MEN WITH NON-GONOCOCCAL URETHRITIS (NGU) AT AUCKLAND SEXUAL HEALTH SERVICE (ASHS)

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Objective: Previous studies have identified *M. genitalium* as a cause of urethritis in men. As there is no New Zealand data regarding male prevalence of *M. genitalium*, a case-control study was conducted to determine whether this organism is a significant cause of urethritis in men presenting to ASHS.

Method: Enrolment occurred between March 2006 and February 2008. Inclusion criteria for cases included recent onset of symptoms of urethritis, confirmed by gram stain ≥ 10 PMNLs per high powered field. Controls included men presenting during the same time period for asymptomatic sexual health screening. All participants provided a first void urine for testing for *M. genitalium* and *Chlamydia trachomatis* (*C. trachomatis*). The presence of gonococcal infection was excluded either by culture or strand displacement amplification (SDA). Information regarding symptoms and sexual practices was collected using a standard questionnaire.

Results: We recruited 210 cases and 199 controls. The participation rate was 96%. The prevalence of *C. trachomatis* and *M. genitalium* in the cases was 33.8% and 10% respectively. The presence of both of these infections in the cases was uncommon (1.9%). *C. trachomatis* was diagnosed in 4% and *M. genitalium* was diagnosed in 2% of controls. Other results are pending.

Conclusion: This is the first study to investigate the prevalence of *M. genitalium* in New Zealand men. Compared with the findings of other studies conducted overseas the prevalence of this organism is relatively low in our population.

55. REASONS FOR TERMINATION OF PREGNANCY IN TWO AGE-GROUPS

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Women over 35 represented almost 17% of termination of pregnancy (TOP) in 2005, in contrast to 28% in the highest risk-group of women aged 20–24. Why older women have unintended pregnancies and TOP is poorly understood, yet determining underlying factors is important to tailor appropriate and effective interventions. This audit compared contraceptive practices and reasons for TOP between women over 35 and those below 25. Medical records of fifty women above 35 and fifty women under 25 who underwent TOP at a private pregnancy termination service, Women's Clinic on Richmond Hill (WCRH), from the 1st of February 2007 were examined for contraceptive practices and reasons for TOP. Most women in both age-groups stated they had a regular partner. 44% of older women and 28% of younger women had at least one previous TOP. Women relied on less effective contraceptive methods or did not use contraception pre-pregnancy. Those over 35 were mostly not using contraception or relied on condoms. Younger women mainly used condoms. Post-TOP contraceptive choices of both groups tended towards more effective methods. For most, reasons for TOP were consistent with their life plans. Younger women most frequently cited 'emotional unreadiness for children' and 'financial concerns', while older women most frequently cited 'already have dependent children' and 'focus on career/studies'. Contraceptive methods and specific factors leading to TOP appeared to be age-related. However, highly effective long-term contraception was poorly used by women in both groups. Further research is required to determine the influencing factors of unintended pregnancies, TOP and contraceptive use, and to examine the effectiveness of current interventions for each age-group.

56. PREVALENCE AND INCIDENCE OF HSV-1 AND HSV-2 IN AN HIV SEROPOSITIVE COHORT IN THE GOLD COAST

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Background: Genital herpes is associated with increased rates of acquisition and transmission of Human Immunodeficiency virus (HIV).

Objective: Determine the prevalence and incidence of Herpes Simplex virus type 1 and 2 (HSV-1,-2) infections in an HIV positive cohort.

Methods: Baseline HSV type-specific IgG serology was carried out on 256 HIV positive patients attending a Sexual Health Clinic. Follow-up testing was available for 106 subjects between 1997–2003.

Results: *Prevalence study:* Of the 256 subjects (232 males, mean age 39 y, range 19–71y and 24 females, mean age 32 y, range 18–47 y) 56% (56% of men and 58% of females) were HSV-2 seropositive and 83% (84% of men and 71% of females) were HSV-1 seropositive.

Longitudinal study: 106 subjects (96 males, 10 females) had testing performed on more than one occasion.

Seven (70%) females were HSV-1 seropositive and 3 (30%) were HSV-2 seropositive. There were no seroconversions in this group.

Among the males baseline seropositivity for HSV-2 and HSV-1 were 20.8% ($n=20$) and 67.8% ($n=65$) respectively. Among the 76 HSV-2-Neg males at baseline there were 11 HSV-2 seroconversions (52.71/10³ P-Y). Among the 31 HSV-1-Neg males there were 3 HSV-1 seroconversions (30.9/10³ P-Y).

Among the 65 HSV-2-Neg/HSV-1-Pos males there were 9 HSV-2 seroconversions (52.79/10³ P-Y). Among the 11 HSV-2-Neg/HSV-1-Neg males, there were 2 HSV-2 seroconversions (52.38/10³ P-Y). There were 3 seroconversions among the 31 HSV-1-Neg subjects (30.9/10³ P-Y).

The Relative Risk of seroconversion to HSV-2-Pos status in HSV-1-Pos v. HSV-1-Neg subjects was 0.76 (95% CI 0.19–3.07); the Risk Ratio based on incidence rates with person-years of follow-up was 1.01 (95%CI 0.97–1.03).

Conclusions: There was a high prevalence of HSV infection and evidence of ongoing HSV-2 acquisition in this group of HIV seropositive subjects. As genital herpes increases HIV transmission, and HIV infection is associated with increased risk of genital herpes acquisition, measures to control both infections are important.

57. SYPHILIS AT ROYAL PERTH HOSPITAL THE EYE OF THE WA STORM

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Objectives: To describe a series of patients diagnosed with infectious syphilis at the Sexual Health Clinic at RPH since the commencement of the syphilis epidemic in Perth.

Methods: Cases were extracted using the SHIP database. The demographic characteristics of the patients presenting to the RPH SHC will be described.

Results: From 2000–2005 there were 14 cases of infectious syphilis. In late 2006 increased numbers of infectious syphilis cases started being seen in the clinic. Initially the epidemic appeared in a serosorting cohort of HIV positive MSM, with a second wave involving more HIV negative MSM in 2007. In 2008 a third wave is occurring with a significant number of new cases being seen in all risk groups of MSM, with more cases being seen in BSM.

From 2006 to present there have been 100 cases (94 males, 6 females). Of the males 96.8% were MSM, 50.0% were HIV positive. There have been 9 repeat infections. New HIV diagnoses were made in 6 patients at the time of their diagnosis of syphilis. Nine percent had their diagnosis made whilst a hospital in-patient. Further discussion of the epidemiology will be presented.

Serious complications including eye involvement have occurred and these will be further described. A pictorial review of some of the cases will be given.

Conclusion: There is an ongoing syphilis epidemic in Perth that appears to be sustained. New ways of tackling the epidemic are required. Cross over into the heterosexual population may occur and antenatal screening for syphilis is imperative.