Evolution in Sexual Health Medicine

Basil Donovan
Kirby Institute
UNSW Australia
ASHA Partner Organisations

- Ashm
  Supporting the HIV, Viral Hepatitis and Sexual Health Workforce

- ASHHNA
  Australasian Sexual Health & HIV Nurses Association Inc.

- HSV
  Society of Victoria

- Australian Research Centre in Sex, Health & Society

- CSRH
  Centre for Social Research in Health

- Society of Australian Sexologists

- Family Planning Alliance Australia

- FAMSACA
  Faculty and Medical Sexual Health Alliance of Australia

- Sexual Health Society of Queensland

- NZSHS
  New Zealand Sexual Health Society, Inc.

- The Royal Australasian College of Physicians
  Adult Medicine Division
  Australasian Chapter of Sexual Health Medicine

- NSWsti
  Programs Unit
Today

1. The impact of the National Immunisation Program against human papillomavirus (HPV)

2. The changing paradigm of HIV management and control
   - Treatment as prevention
   - Pre- and post-exposure prophylaxis
   - Male circumcision

3. The role of point-of-care testing for STIs

4. Current syphilis epidemics in Australia
National qHPV vaccination program

• From April 2007:

• From July 2007:

• From 2013: schoolboys added
Anti-HPV16 antibody over 5 years (quadrivalent vaccine)

Geometric Mean Antibody Titer (Log Scale)

Months since vaccination

Vaccine

Natural infection

© ASHM 2015
### Per protocol* efficacy of quadrivalent HPV vaccine

<table>
<thead>
<tr>
<th>Clinical endpoint</th>
<th>Vaccine</th>
<th>Placebo</th>
<th>Vaccine Efficacy (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPV 16/18-related CIN 2/3 or AIS</td>
<td>8487</td>
<td>8460</td>
<td>100% (92.9–100)</td>
</tr>
<tr>
<td>HPV 16/18 related VIN 2+</td>
<td>7897</td>
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</tr>
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<td>7897</td>
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<td>100% (&lt;0–100)</td>
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<tr>
<td>HPV 6/11/16/18-related genital warts (condyloma)</td>
<td>7897</td>
<td>7899</td>
<td>98.9% (93.7–100)</td>
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*No evidence of past or current infection with vaccine targets at baseline

**FDA summary slide 2006**
## Incident HPV-related cancers in Australia, 2005

<table>
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<tr>
<th>Cancer Type</th>
<th>Women</th>
<th>Men</th>
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Grulich AE, et al. Sexual Health 2010
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Anal cancers in Australia by sex, 1982-2005

Oropharyngeal cancers in Australia, by sex and HPV association, 1982-2005

HPV prevalence in women before and after vaccination program, by vaccination status

* p<0.05 compared to pre-vaccine group

Tabrizi SN et al. Lancet Infect Dis 2014; 10: 958
Proportion of Australian born women diagnosed with genital warts at first visit, by age group, 2004-2013

Ali H et al. BMJ 2013 (extended data)
Proportion of Australian born heterosexual men diagnosed with genital warts at first visit, by age group, 2004-2013

Ali H et al. BMJ 2013 (extended data)
Proportion of Australian born homosexual and bisexual men diagnosed with genital warts at first visit, 2004-2013

Ali H et al. BMJ 2013 (extended data)
High-grade cervical abnormalities in young Victorian women, by age group, 2003–2010

Brotherton JM et al. Lancet 2011; 377: 2085

Red lines = Lowess smoothing
Prevention of HIV-1 Infection with Early Antiretroviral Therapy

HIV treatment as prevention (TasP)

Prevention of HIV-1 Infection with Early Antiretroviral Therapy

Only 1 of 28 linked transmissions occurred in the early therapy group
Initiation of Antiretroviral Therapy in Early Asymptomatic HIV Infection

The INSIGHT START Study Group

ABSTRACT

BACKGROUND
Data from randomized trials are lacking on the benefits and risks of initiating antiretroviral therapy in patients with asymptomatic human immunodeficiency virus (HIV) infection who have a CD4+ count of more than 350 cells per cubic millimeter.

METHODS

The members of the writing group (Jens D. Lundgren, M.D. [cochair], Abdel G. Babiker, Ph.D. [cochair], Fred Gordin, M.D. [cochair], Sean Emery, Ph.D., Birgit Grund, Ph.D., Shweta Sharma, M.S., Anchalee Avihingsanon, M.D., David A. Cooper, M.D., Gerd Fätkenheuer, M.D.,
HIV treatment as prevention (TasP)

The NEW ENGLAND JOURNAL of MEDICINE

Initiation of Antiretroviral Therapy in Early Asymptomatic HIV Infection

Hazard ratio for initiation of ART >500 v <350 cells:
Serious AIDS-related events 0.28 (p<0.001)
Serious non-AIDS-related events 0.61 (p=0.04)

68% occurred in patients with CD4>500 cells/cmm
HIV pre-exposure prophylaxis (PrEP)

Antiretroviral Prophylaxis for HIV Prevention in Heterosexual Men and Women


HIV pre-exposure prophylaxis (PrEP)

Antiretroviral Prophylaxis for HIV Prevention in Heterosexual Men and Women

4758 serodiscordant couples, daily oral PrEP:

Efficacy of tenofovir alone 67%
Efficacy of tenofovir-emtricitabine 75%
Efficacy if tenofovir-emtricitabine detectable 90%

HIV intervention strategies

- Abstinence
- Condoms
- Serosorting
- Strategic positioning
HIV intervention strategies

- Abstinence
- Condoms
- Serosorting
- Strategic positioning
- TasP
- PrEP
- Post-exposure prophylaxis (PEP)  
  - Complicated by TasP and PrEP
- Male circumcision
WE CAN END HIV BY 2020
HIV diagnosis and care cascade

Kirby Annual Surveillance Report 2015
The impact of combination prevention on the annual number of new HIV infections

Cremin I et al. AIDS 2013; 27: 447
Incidence of chlamydia gonorrhoea and trichomonas in 65 remote communities, by sex and age group, 2009-2011

Difficulties managing STIs in remote communities

- Relies on Aboriginal health workers and nurses
- Most people are asymptomatic
- Laboratory 100s of kilometres away
- Average time to treatment 21 days
- ~20% remain untreated
Test-treat-and-go (TTANGO) sites
GenXpert point-of care test for chlamydia and gonorrhoea

- Urine specimen
- Swab specimen
- Single use test cartridge
- Laptop
- Xpert machine
- Xpert cartridge
## GenXpert CT/NG performance

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>95% CI</th>
</tr>
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<td><strong>Chlamydia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>98.4</td>
<td>94.9 – 99.6</td>
</tr>
<tr>
<td>Specificity</td>
<td>99.5</td>
<td>99.0 – 99.8</td>
</tr>
<tr>
<td><strong>Gonorrhoea</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>100.0</td>
<td>96.3 – 100.0</td>
</tr>
<tr>
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Staff ‘likes’ about GenXpert testing

- It was easy to transfer POCT results to PMS
- The machine is sturdy
- I trust the POCT results
- POCT has greatly reduced recall efforts
- Helps with clinical decision making
- I prefer giving results on the same day
- Results on the computer are easy to interpret
- It is easy to load the test cartridge

Number of responses:

- Agree
- Neutral
- Disagree
- Missing
Patient ‘likes’ about the GenXpert test

- I can get my result today: 88.2%
- I can get medicine today if needed: 73.5%
- I don’t have to come back to the clinic on another day for medicine: 55.9%
- I feel reassured I am OK: 47.1%
- I don’t need to worry while waiting for the lab result: 38.2%
- Partners can be notified sooner: 32.4%
Infectious syphilis notifications by place of residence, 2005-2009

Infectious syphilis notifications by place of residence, 2005-2009

Azithromycin resistance

Evolving syphilis outbreak, 2011-2015

Bright A & Dups J. Commun Dis Intell 2016
Queensland 2013
Evolving syphilis outbreak, 2011-2015

Bright A & Dups J. *Commun Dis Intell* 2016
Evolving syphilis outbreak, 2011-2015

Bright A & Dups J. Commun Dis Intell 2016
Evolving syphilis outbreak, 2011-2015

790 cases (644 confirmed)
55% female
37% 15-19 years old
38% 20-29 years old
7 congenital infections
(2 stillbirths, 1 neonatal death)

Bright A & Dups J. Commun Dis Intell 2016
Response to ongoing syphilis outbreak

- Interim guidelines (2012)
- Opportunistic testing and community screening
  - Including point-of-care testing
  - Immediate treatment of symptomatic people, seropositive, or known contact
  - Public health alerts
  - Education programs/community consultation
  - Active follow-up of cases


Summary

• The only certainty is change

• All STIs (except HSV) are controllable
Summary

• The only certainty is change

• All STIs (except HSV) are controllable

• STI control is vulnerable to:
  – Political will
  – Community and professional advocacy
  – Access to clinical services (acceptable and competent)
  – Gaps in surveillance, including antimicrobial resistance

• New clinical and public health strategies offer hope