Gardasil vaccination for high risk men: Early policy and research responses

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MSM now bear greatest prevalence of HPV-related disease, but are excluded from govt funded vaccine coverage.

Only direct vaccination will be effective in controlling HPV related disease among MSM.

Follow Australia by extending vaccination beyond girls to “virtually eliminate” HPV-related disease.

Consultation with gay communities about HPV can identify practical ways to promote, deliver and monitor vaccine uptake, without delay.
Human papillomavirus (HPV)

- Around 40 HPV types affect mucosal sites

- High risk oncogenic types:
  - 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59
  - 26, 53, 66, 67, 68, 69, 70, 73, 82?

- Low risk types:
  - 6, 11, 40, 42, 43, 44, 54, 61, 72, 81, CP6108
  - 55, 62, 64, 71, 83, 84, IS39?

- Indeterminate:
  - 34, 57, 83

Anatomical sites

- Cervix
- Vulva
- Vagina
- Penis
- Anus
- Oropharynx

Cervix, vulva, vagina
Progression model

Relationship between HPV and anogenital warts

• Most common STD globally

• ~90% of anogenital warts caused by HPV 6, 11
# Relationship between HPV and cancers

## Incident HPV-related cancers in Australia in 2005

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>Men</th>
<th>% of cases due to HPV</th>
<th>% of HPV associated cases due to HPV16/18</th>
<th>Cases due to HPV 16/18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cervical cancer</strong></td>
<td>734</td>
<td>-</td>
<td>100%</td>
<td>76%</td>
<td>558</td>
</tr>
<tr>
<td><strong>Vulval cancer</strong></td>
<td>264</td>
<td>-</td>
<td>40%</td>
<td>86%</td>
<td>91</td>
</tr>
<tr>
<td><strong>Vaginal cancer</strong></td>
<td>76</td>
<td>-</td>
<td>70%</td>
<td>88%</td>
<td>47</td>
</tr>
<tr>
<td><strong>Anal Cancer</strong></td>
<td>176</td>
<td>149</td>
<td>85%</td>
<td>93%</td>
<td>140</td>
</tr>
<tr>
<td><strong>Cancer of the base of tongue and oropharynx</strong></td>
<td>114</td>
<td>395</td>
<td>35%</td>
<td>95%</td>
<td>38</td>
</tr>
<tr>
<td><strong>Penile cancer</strong></td>
<td>-</td>
<td>69</td>
<td>50%</td>
<td>87%</td>
<td>-</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>1364</td>
<td>613</td>
<td></td>
<td></td>
<td>874</td>
</tr>
</tbody>
</table>

Trends in cancer incidence by sex

Age standardised incidence of cancers in Australia 1982-2005

Disproportionate HPV-related cancer burden among MSM and PLWHIV

- Anal cancer:
  - MSM ~20-30x higher rate vs other men
  - 5-20 per 100,000 among HIV- MSM
  - 78 per 100,000 among HIV+ MSM in the US¹ (131 since…)

- HSIL among MSM aged 35 and over in Sydney²
  - Baseline HSIL prevalence: 34.8% (HIV-) & 44.6% (HIV+)
  - Regression: 44.1 (HIV-) & 37.0 (HIV+) per 100 py
  - Progression: 20.0 (HIV-) & 30.0 (HIV+) per 100 py
  - HPV 16 ↑ develop HSIL & ↓ clear prevalent HSIL

HPV prevalence among MSM (anal)

Meta-analysis of HPV among MSM\(^1\)

<table>
<thead>
<tr>
<th></th>
<th>HIV-</th>
<th>HIV+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any HPV</td>
<td>63.9%</td>
<td>92.6%</td>
</tr>
<tr>
<td>High risk HPV</td>
<td>37.2%</td>
<td>73.5%</td>
</tr>
<tr>
<td>HPV 16</td>
<td>12.5%</td>
<td>35.4%</td>
</tr>
</tbody>
</table>

Mean anal HPV among HIV-populations compared\(^2\)


\(\text{\textsuperscript{2}}\) Giuliano et al. EUROGIN 2014 roadmap: Differences in HPV infection natural history, transmission, and HPV related cancer incidence by gender and anatomic site of infection. *Int J Cancer*, 2014.

\(\text{\textsuperscript{3}}\) Zou et al. Early acquisition of anogenital HPV among teenage MSM. *Journal of Infectious Diseases*, 2014.

\(\text{\textsuperscript{4}}\) Lawton et al. HPV vaccination to prevent anal cancer in MSM. *Sexually Transmitted infections*, 2013.

\(\text{\textsuperscript{5}}\) Glick et al. High rates of incident and prevalent HPV infection among young MSM. *Journal of Infectious Diseases*, 2013.

- **But:**
  - 22% of MSM aged 16-20 HR anal HPV (i.e. 78% did not)\(^3\)
  - <5% MSM aged under 25, <10% aged 25-44 HR HPV\(^4\)
  - **No** young MSM had **all 4 types** covered by qvaccine\(^5\)
Prevention and Treatment

• Condoms offer some but incomplete protection
• Screening for anal cancer in MSM problematic:
  – High rates of progression/regression to/from HSIL
  – Invasive and painful
  – No demonstrated effective HSIL treatment

“More Valium!!”

SPANC study\(^1\) participant feedback:

• MSM gain no protection from vaccination of girls

Vaccination best (only) option

Relative reduction in AIN 2/3 and anal HPV types in young MSM from Gardasil™

<table>
<thead>
<tr>
<th></th>
<th>Placebo</th>
<th>ITT</th>
<th>PP</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIN 2/3</td>
<td>REF</td>
<td>↓54.2%</td>
<td>↓74.9%</td>
</tr>
<tr>
<td>Persistent anal HPV (6,11,16,18)</td>
<td>REF</td>
<td>↓59.4%</td>
<td>↓94.9%</td>
</tr>
</tbody>
</table>

• Vaccine safe and reduced rates of AIN among MSM aged 16-26

Results among women and men (AUS)

Proportion of Australian born women, men and MSM diagnosed with genital warts on first visit by age group

- 83% first dose vaccine coverage,
- ↓93% in genital warts after 5 years

Where are we at in NZ?

- PTAC immunisation sub-committee and full committee highly recommended extension to MSM aged <26\(^1\)

- Pharmac declined\(^2\)

- Extended to all HIV+ aged <26 as of 1 July 2014

\(^1\) Pharmaceutical and Therapeutic Advisory Committee (PTAC). PTAC meeting held on 1 & 2 August 2013 (minutes for web publishing). Report dated 2 August 2013

Cost effectiveness of vaccinating all boys

- Probably not cost-effective at current price\(^1\)

- Overseas studies suggest cost-effective if targeted at MSM\(^2\)

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\(^1\) Pearson et al. Is expanding HPV vaccination programs to include school-aged boys likely to be value-for-money: a cost-utility analysis in a country with an existing school-girl program. *BMC Infect Dis*, 2014

Equity

- “The only sensible answer to these dilemmas is a gender neutral vaccination strategy in schools that gives two doses of the vaccine to all 12-13 year old boys and girls. Anything else is discriminatory, inequitable, less effective, and difficult to explain.”

- “Can the UK afford to do it? If the price is right, we can’t afford not to.”

Stanley et al. HPV vaccination. BMJ, 2014
Delivery

- Use existing social marketing expertise and reach to promote vaccine uptake among MSM

- Multiple community and clinic based delivery options

- Consultation with MSM essential
Baseline prevalence data on HPV among men in NZ

- Almost none. And none among MSM.

- Dunedin birth cohort (21% antibodies HPV 16/18)\(^1\)
- ESR and sexual health clinic data on genital warts

- Anogenital warts
  - Male Call 1996: 11.7% lifetime history (40% in HIV+)\(^2\)
  - GAPSS/GOSS 2011: 2% in previous 12 months\(^3\)

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\(^2\)Saxton et al. Sexually transmitted diseases and hepatitis in a national sample of MSM. *NZMJ*, 2002.
\(^3\)Dickson et al. Self-reported STIs and sexual health checks in a cross-sectional study of gay and bisexual men in New Zealand, *Sex Transm Infect*, 2014.
## Monitoring and surveillance

<table>
<thead>
<tr>
<th>Indicator and time to measurable indicator</th>
<th>Vaccine uptake</th>
<th>Prevalence of HR HPV (oral)</th>
<th>Prevalence of HR HPV (anal)</th>
<th>Anogenital wart diagnoses</th>
<th>HSIL</th>
<th>Anal cancer</th>
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<tr>
<td>Immediate</td>
<td>Immediate</td>
<td>Immediate</td>
<td>Short</td>
<td>Short-med</td>
<td>Med-long</td>
<td></td>
</tr>
<tr>
<td>National Immunisation Register</td>
<td>Annual</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Cancer Registry</td>
<td>Annual</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ESR</td>
<td>Quarterly</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: HIMS = proposed HPV in Men Study. GAPSS=Gay Auckland Periodic Sex Survey.

1 Rates potentially calculable for males but not by sexual orientation (no numerator or denominator data).
2 No screening programme for males.
3 National Cancer Registry has anal cancer data on males but not by sexual orientation.
4 Anogenital warts not a notifiable disease. ESR collects data from sexual health clinics and Family Planning clinics for males but not by sexual orientation.
**Current project**

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<tr>
<td>HIMS</td>
<td>Baseline &amp; repeat</td>
<td></td>
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<td></td>
<td>5</td>
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<tr>
<td>GAPSS / GOSS</td>
<td>Every 3 years</td>
<td>6</td>
<td></td>
<td></td>
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4 Anogenital warts not a notifiable disease. ESR collects data from sexual health clinics and Family Planning clinics for males but not by sexual orientation.
5 Self-reported history of anogenital warts only.
6 HPV vaccine uptake is proposed for inclusion in the 2014 GAPSS survey and repeat rounds every three years.
Our research ...

• HRC Feasibility study (n=150)
  – HPV prevalence (anal, oral) among men in primary healthcare and outpatient settings in Auckland (funded)

• GAPSS/GOSS study (n=3214)
  – Awareness of HPV and related cancers, HPV vaccine acceptability (unfunded)
  – Disclosure of sexuality to GPs (funded - PBRF)
  – Age of anal intercourse debut (unfunded)
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