The rapid and near elimination of human papillomavirus (HPV) type 6, 11, 16 and 18 among young high-risk women within three years of the national HPV vaccination programme in Australia: findings from a 10-year cross-sectional study

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Disclosure of interests
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ViV HealthCare
Sanofi Pasteur

Background
HPV is one of the most common STIs among women worldwide (10%), women aged <25 are at high risk.

Three HPV vaccines are available worldwide
- Bivalent [Cervarix] – 16/18
- Quadrivalent [Gardasil] – 6/11/16/18

Effectiveness of HPV vaccination program
- Reduced HPV 16/18 by 68%
- Reduced anogenital warts by 61%

HPV vaccination program in Australia
Cervarix & Gardasil vaccines are licensed in Australia
HPV vaccination program
- Free Gardasil
- School girls (aged 12-13) since mid-2007
- Catch-up programme for female aged 13-26 from 2007 to 2009
- Including boys aged 12-13 since Feb 2013
- Catch-up program for boys aged 14-15 up to Dec 2014

Previous research
Previous studies on HPV vaccination program in general population
- A better validity and generalizability
- Providing overly optimistic data on HPV decline in population where a decline of HPV would be easier to achieve
- Enrolling low-risk women (including no sexual experience women)
- Important to monitor high-risk individuals for infection elimination

Aim
To examine the annual trends and changes of HPV types in 4vHPV and 9vHPV vaccines in types young women with chlamydia from 2007 to 2014
Method
- Melbourne Sexual Health Centre (MSHC), Victoria
- Women aged ≤25 with a positive cervical or high vaginal swab sample for chlamydia
- 1 July 2004 to 30 June 2014

Subgroup analyses
- Years by Australian financial years (July to June)
- Australian-born vs overseas-born
  - Only Australian citizen or permanent residents are eligible for the free vaccine
- Women aged ≤21
  - Had been eligible (aged 12-13) to receive the free vaccine at school from 2007

Results
- 1202 women aged ≤25 tested positive for chlamydia
- Country of birth
  - 36% Australian-born
  - 55% overseas-born
  - 9% no information
- Median age = 22 [IQR 20-24]
- Marital status
  - 87% never married
  - 5% divorced, de-facto relationship
  - 8% no information

Result 1: Australian-born women ≤25
- Median number of male partner: 2 [04/05] to 4 [13/14]; p=0.001
- 100% condom in P12M: ~10%; \( P_{\text{trend}} = 0.793 \)
**Result 2: Australian-born women ≤21**

Pre-vaccination vs Post-vaccination: Any HPV (-) vs HPV 6/11 (-) vs HPV 16/18 (-)

**Result 3: Oversea-born women**

Pre-vaccination vs Post-vaccination: Any HPV (-) vs HPV 6/11 (-) vs HPV 16/18 (-) vs HPV 31/33/45 (→) vs HPV 52/58 (→)

**Result 4: Unvaccinated Australian women**

Pre-vaccination period (N=160) vs Post-vaccination period (N=27)

**Take home messages**

- The 4vHPV types almost disappeared in Australian-born women aged ≤21 three years after the vaccination programme.
- Strong herd protection in unvaccinated Australian women.
- The HPV vaccination programme in Australia has been successful at protecting women against 4vHPV types, particularly sexual active women.
Citation

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