

## Impact of HPV Immunization on Infection Prevalence

### Modeled reductions in HPV prevalence under various immunization strategies

The Human Papillomavirus (HPV) is a family of over 100 virus strains. Strains are known to cause genital warts, 70 per cent of cervical cancers, and are linked to anal, penile, vulvar and head and neck cancers. Safe and effective HPV vaccines have been developed and are given as a part of Alberta's routine immunization schedule to grade 5 students in the province. The HPV immunization program was introduced for females in 2008, and for males in 2014. Prior to introducing the vaccine to males, Alberta Health conducted an HPV immunization economic evaluation to assess various immunization strategies for both health outcomes and cost effectiveness. As part of this analysis, mathematical models were used to project the prevalence of the oncogenic (cancer causing) HPV types 16 and 18 under various immunization strategies.

### Male immunization produces similar reductions in prevalence as increasing female immunization

The chart compares several options for the HPV vaccine program.

- No immunization program (red) will result in a constant prevalence rate of HPV over time.
- The female only immunization program (blue) with the 2011/2012 coverage rate of 62.1 per cent would induce a dramatic reduction in both male and female prevalence.
- Increasing female immunization coverage to 75 per cent (brown) would achieve the largest long term reduction of prevalence for both males and females.
- Introducing a male immunization program (yellow) would achieve a similar long term reduction in prevalence to increasing female coverage, with increased short term reductions for males.

While increasing female coverage was the best option, a survey of Albertans conducted in 2008 showed that only 50 per cent of parents would immunize their daughter for HPV, 25 per cent might immunize for HPV, and 25 per cent would not immunize. Therefore a high female-only immunization coverage rate may not be achievable.

Model info: Merck has not reviewed use of model as of Feb 25, 2014. Findings and conclusions presented from the HPV Health and Economic Model using the WebModel Tool provided by Merck are those of the author(s) and the scientific integrity of the data inputs and conclusions reached are not attributable to Merck.

Estimated HPV 16 and 18 Infection Over 100 Years  
Females (Above), Males (Below)

