

Ladies first

Should boys be vaccinated against HPV?

Roberto Leon MD FRCS FRCOG FCOG(SA)

About 30 years ago, Harald zur Hausen and colleagues discovered that cervical cancer was caused by human papillomavirus (HPV) and started a chase to eradicate this terrible disease by vaccination.¹ The HPV vaccine is now available, but many questions remain unanswered, including whether or not men as well as women should be immunized.

Despite recent media attention questioning the safety and efficacy of the vaccine and groups claiming that we should not introduce a vaccine against a sexually transmitted infection, the Society of Obstetricians and Gynaecologists of Canada and other organizations have wholly backed the introduction of the vaccine in our country. The HPV vaccine is the first vaccine explicitly designed to prevent cancer,² mainly one of the most common types: cervical cancer.

Women's "C"

Cervical cancer is the second most common cancer among women worldwide, with an estimated half a million new cases and a quarter of a million deaths each year.³ In Canada, it is the second most common cancer in women aged 20 to 44, and ninth overall, with 1400 new cases and 400 deaths occurring every year.⁴ However, the incidence of cervical cancer has actually been steadily decreasing in Canada, mainly because of screening for precancerous conditions (ie, cervical intraepithelial neoplasia [CIN] grades 1, 2, and 3) with Papanicolaou tests. Human papillomavirus has been found in 99% of cases of cervical cancer and its immediate precursors, CIN grades 2 and 3. It appears that the young metaplastic cells in the squamocolumnar junction of the cervix are very susceptible to the virus, which can trigger the oncogenic process.

On the other hand, an astounding 177 000 new cases of CIN grade 1 and 52 000 new cases of CIN grades 2 or 3 are also diagnosed in Canada,⁴ leading to countless colposcopies, biopsies, cone biopsies, cryotherapy procedures, and other assorted treatments often aimed at removing parts of the cervix, followed almost certainly by an increased incidence of preterm labour and delivery, with all its economic and emotional burdens.

Boy meets girl

Human papillomavirus affects men almost as often as women, mostly imperceptibly and without symptoms,

occasionally causing genital warts; however, it seldom causes penile cancer, which accounts for less than 0.5% of cancer in men worldwide. We are dealing with a virus that discriminates against women. Only about half to three-quarters of penile cancer cases have positive HPV DNA test results.⁵

Vaccinating men against the HPV virus is primarily aimed at further decreasing the incidence of cervical cancer and its precursors. The theoretical case is based on the establishment of herd immunity, thus reducing the chances of an infected man transmitting the virus to a susceptible woman.¹ However, if all women were immune to the virus, there would be no advantage in vaccinating men.

Where it counts

Another factor to consider is cost. It does not make financial sense to vaccinate boys. In a previous era, medicine was an art and a science. Decisions were made according to what was best for the patient, based on available scientific evidence, the opinions of experts in the field, and our judgment. But now the government monopolizes the health services offered to our population, and we are confined by limited financial resources, having to prove the cost-effectiveness of new treatments and technology.

The HPV vaccine is expensive: approximately \$450 for the 3 doses. Mathematical models have been developed to ascertain the cost-benefit of vaccinating boys. The question is, How much health improvement can be gained, dollar for dollar, compared with alternative use of resources? Using quality-adjusted life-years (QALYs) to measure the health gain associated with a clinic or public intervention—calculated as the number of years of life saved adjusted for the quality of life during those years—the cost-effectiveness of vaccinating all 12-year-old girls was calculated to be \$14 583 per QALY, with a reduction of cervical cancer by 95% (cancers caused by HPV types 16 and 18). Including the boys in the vaccination program reduced the total number of cervical cancer cases by a further 5%, but at \$442 039 per QALY. Internationally, it is well recognized that a cost of approximately \$50 000 or less per life-year saved is indicative of a cost-effective program.⁵

Vaccinating boys against HPV to save girls from developing cervical cancer is certainly a courteous notion. But in order for the HPV vaccine to be most beneficial and cost-effective, we should concentrate our time,

Cet article se trouve aussi en français à la page 972.

effort, and limited financial resources to reach *all* young women, in our country and worldwide. ❁

Dr Leon is an Associate Clinical Professor at the University of British Columbia.

Competing interests

None declared

Correspondence to: Dr Roberto Leon, 201—3001 Tutu St, Kelowna, BC V1Y 2H4; telephone 250 763-0640; fax 250 763-0646; e-mail bertoleon@shaw.ca

The opinions expressed in commentaries are those of the authors. Publication does not imply endorsement by the College of Family Physicians of Canada.

References

1. Who should be vaccinated against human papillomavirus? *Lancet Infect Dis* 2006;6(1):1.
2. Baden LR, Curfman GD, Morrissey S, Drazen JM. Human papillomavirus vaccine—opportunity and challenge. *N Engl J Med* 2007;356(19):1990-1.
3. Parkin DM, Bray F. Chapter 2: the burden of HPV-related cancers. *Vaccine* 2006;24(Suppl 3):S11-25.
4. Lalonde A. Chapter 7: cost-benefit analysis of HPV vaccination. *JOGC* 2007;29(Suppl 3):S43-9. Available from: www.sogc.org/home/pdf/hpv-guideline-full.pdf. Accessed 2008 May 9.
5. Partridge JM, Koutsky LA. Genital human papillomavirus infection in men. *Lancet Infect Dis* 2006;6(1):21-31.
