

Vaccinating Boys Against HPV Could Prevent OPC

Fran Lowry | April 13, 2015

Vaccinating boys against the human papillomavirus (HPV) might be a cost-effective way to prevent HPV-related oropharyngeal squamous cell cancer, according to Canadian researchers.

In their study, [published online](#) on April 13 in *Cancer*, the team used a statistical model to show that a considerable amount of money could be saved by vaccinating adolescent boys.

"To our knowledge, this is the first study of its kind to use a simplified model that includes assumptions about the pathogenesis and treatment course of HPV-OPC [oropharyngeal cancer]," say the authors, led by Lillian L. Siu, MD, from the Princess Margaret Cancer Center in Toronto.

"HPV vaccination for boys aged 12 years may be a cost-effective strategy in relation to the prevention of OPC alone, strengthening the cost-effectiveness of a male vaccination program," they conclude. "The argument for funding male HPV vaccination in North America is becoming more compelling given the additional benefits of reductions in genital warts and anal cancer and the potential benefits for the female population because of increased herd immunity," they add.

What's Good for the Goose...

Many Western countries have already established HPV vaccination programs for girls to prevent cervical cancer, the researchers note.

In women, the quadrivalent HPV vaccine (HPV4; *Gardasil*, Merck & Co.) prevents preinvasive lesions of the cervix, vulva, and vagina and benign HPV-associated lesions.

In sexually active men, HPV4 has been shown to reduce up to 92% of external genital lesions and anal intraepithelial neoplasia. The vaccine has also been shown to be effective in warding off other HPV-related diseases in men.



Dr Lillian Siu

However, the cost-effectiveness of male HPV vaccination remains unclear, Dr. Siu told *Medscape Medical News*.

She and her team created a statistical model to analyze the potential costs and effectiveness of HPV vaccination for the prevention of HPV-related oropharyngeal cancer in teenaged boys.

The model involved 192,940 boys who were 12 years old, which is the average age of girls receiving the HPV vaccination.

In their Markov state-transition model, HPV4 vaccine was compared with no vaccine (the current standard of care).

The model was populated with data from patients with HPV-related oropharyngeal cancer who were treated at the Princess Margaret Cancer Center from 2000 to 2010. Cost data were derived from direct medical costs for patients diagnosed with oropharyngeal cancer in Ontario from 1997 to 2007.

Secondary data from the literature were used to estimate values and ranges for vaccine efficacy, the rate of oral HPV infection, the rate HPV-oropharyngeal cancer, disease-specific survival in patients with HPV-oropharyngeal cancer, and all-cause mortality.

For their model, Dr Siu and colleagues assumed a vaccine efficacy of 83.8% and an uptake rate of 50.0%, and calculated that the HPV4 vaccine would save CAD\$94.49 (US\$75.09) per individual, compared with no vaccine.

With an uptake of 70%, CAD\$144.97 (US\$115.21) per individual would be saved.

When all the boys in the sample were considered, the model showed that male vaccination could save CAD\$8 million to CAD\$28 million (US\$6.36 million to US\$22.25 million) over the lifetime of the cohort.

Study Has Untested Assumptions

Because of the assumptions involved in statistical modeling, this study does have limitations, Dr. Siu acknowledged.

"For instance, we could not easily address the impact of herd immunity, which refers to the indirect protective effect offered by HPV vaccination in women," she told *Medscape Medical News*.

Although this is a theoretical model, not a randomized study, the findings "are relevant" and indicate that a considerable amount of money could be saved with HPV4 vaccination, she noted.

This is especially important because "HPV-related oropharyngeal cancer is increasing in incidence," she reported. In fact, "HPV is surpassing smoking as a risk factor for this cancer in many developed countries."

"Currently, the National Advisory Committee on Immunization of the Public Health Agency of Canada recommends HPV vaccination of females 9 through 26 years of age to prevent cervical, vulvar, vaginal, and anal cancers, and for anogenital warts; and of males 9 through 26 years of age to prevent anal canal cancers and their precursors, and for anogenital warts," she explained.

However, funding is provided for the vaccination of girls but not boys, she pointed out.

"We hope this project will increase awareness so that policy makers re-evaluate funding support for HPV vaccination in adolescent boys in Canada. It is unlikely that a randomized clinical trial in this population will be ever done because of the challenges and feasibility of completing such a study, so indirect evidence, such as that provided by statistical models, may represent the main source of information for such decisions," she said.

To Vaccinate or Not to Vaccinate

Clinicians might consider raising the issue of vaccinating boys with parents, Dr. Siu suggested.

"As with all vaccinations that prevent diseases, the decision to vaccinate or not to vaccinate should involve an informed discussion between physicians and patients, and parents or families of young patients in the case of pediatrics, regarding benefits and risks," she said.

"Pediatricians are already familiar with this vaccination, given its application in young girls. The data on HPV vaccination in adolescent boys to prevent HPV-related oropharyngeal cancers (a type of cancer that starts at the back of the throat) are mainly indirect, as randomized clinical trials have not been done. Pediatricians will need to make recommendation decisions based on their understanding of the available evidence on the value of HPV vaccination in adolescent boys," she added.

Dr. Siu has disclosed no relevant financial relationships.

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