

Vaccinating boys against human papillomavirus not cost-effective

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Persistent infection with high-risk types of human papillomavirus (HPV), a sexually transmitted virus, is known to be a cause of cervical cancer. Current guidelines prioritize HPV vaccination of pre-adolescent girls, which has been shown to be cost-effective in previous studies, but the value of vaccinating boys in the United States has been unclear. In a new study, Harvard School of Public Health (HSPH) researchers found that if vaccine coverage and efficacy are high in girls, a universal recommendation to vaccinate young boys is unlikely to provide comparatively good value for resources, compared with vaccinating girls only.

The study appears online October 9, 2009, in The [British Medical Journal](#) and will appear in a later print edition.

The HPV [vaccine](#) for boys is already licensed in a number of countries and is currently being considered by the U.S Food and Drug Administration (FDA).

"With the near-term possibility of the HPV vaccine being available to boys in the U.S., policymakers will need to decide whether or not to recommend vaccinating boys," said Jane Kim, assistant professor of health decision science and lead author of the study. "To inform these deliberations, both the incremental health benefits that would accrue with vaccination of boys and [girls](#) and the economic costs of the program should be compared to those associated with vaccination of girls alone."

Motivated to inform current decision making, Kim and co-author Sue Goldie, professor of health decision science, evaluated the most current epidemiological, clinical and economic data on HPV infections and cervical disease. Because the most important health benefits (e.g., prevention of cervical cancer) from adolescent HPV vaccination will not be observed for years, and possibly decades, they used computer-based disease models to simulate the course of HPV-related diseases in the U.S. population over time. The analysis looked at the vaccine's potential benefits on a comprehensive set of HPV-related conditions among females and males, including cervical and non-cervical HPV-related cancers, genital warts and juvenile onset recurrent respiratory papillomatosis, a rare but severe respiratory condition usually diagnosed in infancy that may be related to a mother's infection with genital warts.

The results showed that, assuming 75% vaccination coverage and lifelong vaccine protection against cervical disease, routine HPV vaccination of 12-year-old girls was associated with a cost-effectiveness ratio of \$40,310 per quality-adjusted life year (QALY), a health metric used to reflect both the excess mortality and reduced quality of life associated with disease. In the U.S., interventions with cost-effectiveness ratios below \$50,000 or \$100,000 per QALY are informally considered good value for the money. Including boys in the vaccination program had a cost-effectiveness ratio of \$290,290 per QALY when compared to vaccinating girls only, exceeding the threshold for good value.

The results were robust across a range of alternative scenarios, such as changes in screening practice, decreased vaccine efficacy in boys, shorter duration of vaccine protection, and the inclusion of other HPV-related outcomes noted above. The authors acknowledge, however, that there are many uncertain factors that can influence the findings. For example, if efficacy against long-term HPV-related diseases in both girls and boys remains high, coverage in girls is low, or the vaccine price is substantially lowered, vaccinating boys looks more attractive.

Since the FDA may consider vaccinating boys in the near future, the findings provide important insight about guidelines regarding what groups to include in routine HPV vaccination recommendations. The authors emphasize, "this analysis does not address decision-making at the individual level; indeed, families who are considering HPV vaccination for an individual boy may consider the vaccine benefits worthwhile in terms of reducing the future risk of genital warts and possibly other health conditions."

While the authors conclude that routine vaccination of boys is unlikely to provide comparative value to other [public health](#) interventions vying for resources, they emphasize that the study was conducted from a public health perspective and with the objective of informing general policy recommendations at the population-level. "Based on currently available information, efforts for cervical cancer prevention in the U.S. should focus on HPV vaccination of pre-adolescent girls and continued [cervical cancer](#) screening in adulthood," said Kim.

More information: "Cost-effectiveness analysis of including [boys](#) in a [human papillomavirus](#) (HPV) vaccination programme in the United States," Jane J. Kim, Sue J. Goldie, *British Medical Journal*, online October 9, 2009

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