



Maryland Chapter

**The HPV Series: Research Into the Cost Effectiveness of Vaccinating Against HPV
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Through financial support from The Department of Health and Mental Health (DHMH) it is our pleasure to share with you a series dedicated to the HPV vaccine in the pediatric setting. Each issue will present a literature review for the provider with questions and answers on key issues for parents and caretakers. The AAP and CDC have both recommended vaccination starting at eleven to twelve years of age for both boys and girls; however, the vaccine still remains poorly utilized.¹

At \$360 for the three shot series, the Gardasil HPV vaccine is the most expensive routine vaccination. The estimated total cost to cover the entire US adolescent population is staggering. The cost of the vaccine is attributed to several factors, including need for refrigeration, creation of virus like particles, and intellectual property rights to Merck. Despite the high cost, the vaccine is still considered to be cost effective. The cost savings derive from the high economic burden of HPV. The CDC estimates that 4 billion dollars are spent annually on the management of HPV. While the number of fatal cases of cervical cancer are low, abnormal Pap smears occur frequently; these require follow up screening and colposcopy. (1)

The probability of having an abnormal pap result correlates with HPV infection. For those without HPV 16, 18, or any other high risk strain, the probability is 7%. This dramatically increases to 45% for those individuals who have HPV 16 or 18 or another high risk strain. Studies involving scenarios with HPV coverage have predicted that absolute risk reduction may be as high as 7%, 21%, and 22% at 5, 15, and 25 years with high coverage rates. (2) Other work has also investigated the role of the HPV vaccine using the concept of numbers needed to treat. The adjusted numbers needed to vaccinate (three doses) to prevent one cervical abnormality at first screening were 125 for high grade and 22 for low grade (3) which results in savings in follow up testing. One recent review has addressed this topic and included 22 different previously published modeling scenarios. They found a consistent result that "a female-only vaccination program is cost effective compared with the current cytology-based Pap smear screening program" (4) Similar results have not yet been shown for the cost effectiveness of a male and female model.

Concerns remain as to the long term effects of HPV vaccination on the prevalence of other strains of HPV. While vaccination provides reliable protection against strains 16 and 18, there are over a hundred other strains, many of which are oncogenic. As has been seen with vaccines against other pathogens, removal of one strain may result in an increase in the prevalence of other competing strains. This issue is a hot topic for further HPV research. Interestingly, an early 2001 prospective study looking at HPV 16 supported an opposite effect. They found that HPV 16 worked synergistically with other strains and acquisition of 16 lead to increased likelihood of infections with other strains. If this were the case removal of HPV 16 may actually lead to a decrease in the prevalence of other strains. Surveillance studies have yet to see a rise in vaccine resistance or a rise in the prevalence of other strains since the introduction of the HPV vaccine in 2006. (5) Post-vaccination epidemiology studies and trials of vaccines containing an expanded number of HPV strains will continue to be important areas for research. (6)

¹ The Author: Theodore Wilson MD is working with the Maryland AAP chapter. He has no financial conflicts of interest or investments in any products discussed. Reproduction is permitted.

This can be printed as a hand-out for parents to answer their questions.

The HPV Series: Family questions about human papillomavirus (HPV)

How much will vaccination cost?

Vaccination should be covered by your health insurance due to recent changes in health care laws. However, some older policies may have temporary exceptions. Prior to receiving the vaccine, you may want to talk with the office staff and your insurance provider to make sure the HPV series is covered.

What should I do if my insurance does not cover the HPV vaccine or my child does not have insurance?

There is a “Vaccines for Children” (VFC) program that helps cover vaccines for patients who have medicaid, are Native American, or are uninsured or underinsured. Check with your doctor or a local health department for ways to receive the HPV vaccine at reduced or free prices.

Do people really faint after getting HPV vaccines?²

People faint for many reasons. Some preteens and teens may faint after any medical procedure, including receiving vaccines. It is possible for falls and injuries to occur after fainting. Sitting or lying down for about 15 minutes after a vaccination can help prevent fainting and related injuries.

Can HPV vaccines treat HPV infections, cancers, or warts?

HPV vaccines will not treat or cure existing HPV infections. Also, HPV vaccines do not treat or cure health problems such as cancer or warts which are caused by an HPV infection that occurred before vaccination. This is why vaccination is so important at a young age.

² <http://www.cdc.gov/vaccines/vpd-vac/hpv/vac-faqs.htm>

References

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