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HPV Vaccine and the College Student

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Introduction

Human Papillomavirus (HPV) is the most common sexually-transmitted infection (STI) in the United States, with the highest rates of infection found in sexually-active young adults under the age of 25. A study conducted in 2007 found the prevalence of HPV to be 28.6% in a sample of US females aged 14 to 59 with the highest prevalence (44.8%) among women aged 20-24.¹ Additionally, genital HPV infection is so prevalent that the majority of partners of persons found to have HPV infection are infected already; therefore, no prevention or treatment strategies had been recommended for partners. Given the risk factors for HPV infection, including sexual behavior (number of sex partners in the past year and number of lifetime partners), age younger than 25 and marital status, HPV presents a very real health concern for college students and a challenge for college healthcare providers.¹

Most HPV infections are asymptomatic and self-limited, but approximately 10% of women who contract high-risk HPV types (16 and 18) develop persistent infections that can cause cervical and other cancers. Low-risk types (6 and 11) can cause mild Pap test abnormalities, anogenital and respiratory tract warts.² Despite data indicating that the vast majority of these HPV infections that result in abnormal Pap test results are transient, as college health care providers we know the conversations that we routinely have with young women regarding abnormal Pap test results are extremely anxiety-provoking for these women. Thus, we should always explore avenues of conversation with these women that address their concerns and answer their questions.

HPV Vaccine

In June 2006, the quadrivalent HPV vaccine types 6,11,16,18 (GARDASIL®, manufactured by Merck & Co., Inc.) was approved by the FDA for use among females aged 9 to 26 years for prevention of vaccine HPV-type-related cervical cancer, cervical cancer precursors, vaginal and vulvar cancer precursors, and anogenital warts.³ The FUTURE I study demonstrated that a prophylactic quadrivalent HPV vaccine is highly effective in preventing clinical disease, including anogenital warts and intraepithelial neoplasia of the cervix, vagina, and

vulva, associated with HPV-6, HPV-11, HPV-16, and HPV-18.⁴ The Advisory Committee on Immunization Practices (ACIP) voted unanimously to recommend that girls 11 and 12 years of age receive the vaccine with catch-up vaccination recommendations for females aged 13-26, and the CDC added GARDASIL® to its Vaccines for Children Program, which provides free immunizations to impoverished or underserved children.³ The HPV vaccine is now viewed as a component of the middle school vaccine series with Tdap and MCV4 and, further, immunization guidelines have been updated to include this vaccine. The CDC's 2007 National Immunization Survey of adolescents found that 25.1% of adolescent females (age 13-17) had received at least one dose of the HPV vaccine.⁵

Parental Views on HPV Vaccination

Despite the ACIP recommendation, study results demonstrating vaccine efficacy, and strong primary care advocacy of the HPV vaccine, there are still barriers associated with beliefs held by parents regarding the HPV vaccination. There are concerns that the vaccine is too new or experimental. Parents also exhibit worry that administering this vaccine could be viewed as promoting early sexual activity and/or unsafe sexual practices.⁶ Due in part to some of these parental beliefs, there is a large proportion of women on college campuses who have not received the HPV vaccine. Therefore we, as the health care providers for this population, have an opportunity to educate these women about their risks of HPV infection and the benefits associated with vaccination.

College Students' Views on HPV Infection and Vaccination

College-aged women are, at a minimum, active participants and potentially even the primary decision makers in opting to receive the HPV vaccine. This represents a significant opportunity for the college health-care provider, as it marks a shift in preferences of sources for information and decision-making about their own health. While high school girls rate their parents and doctors as the most important sources of vaccine information and peers, advertising and significant others as least important; it is vital to use every opportunity to educate college women about HPV vaccination when they come into our college health centers.⁷ Although there are data indicating that advertising associated with the HPV vaccine and disease state awareness have had an impact, college health providers must ensure that women are getting accurate information to make informed decisions about individual risks of HPV infection and the facts about safety and efficacy of the vaccine.⁸

Promoting Education and Awareness: The Role of the College Health Provider

The role of the college health provider becomes even more important in light of recent news reports alleging that GARDASIL® caused a teen's degenerative muscular disease⁹ and reports released by the conservative watchdog group Judicial Watch reporting ten deaths and 140 serious events supposedly linked to the HPV vaccine. In this Internet-savvy population, college students routinely research health-related issues. The above-cited reports, coupled with numerous blogs claiming the ill effects of the HPV vaccine, may undermine some students' intent to be vaccinated. College health providers should be aware of these concerns and the variety of information and outlets available to students, and be able to engage patients in helpful dialogue regarding HPV and the available vaccine in order to filter the relevant and clinically-accurate information. The college health provider is also challenged with promoting education about HPV itself, in addition to providing information about the vaccine and ways to reduce risk factors. It is also vital for college health professionals to understand the views and level of awareness present in their college communities regarding HPV and the students' own perceptions of relative risk in order to better tailor education.

Assessing Students' Perceptions of Risk

In a study done after the introduction of the HPV vaccine with students recruited from two universities, it was found that though awareness of HPV is improving, many misconceptions persist. While 78% of the participants had heard of HPV; not surprisingly a larger proportion of women (94%) than men (62%) demonstrated awareness of HPV. These students had a low perceived risk of HPV infection, with 56% disagreeing with the statement that they were at risk for HPV infection. A higher perception of risk was associated with being sexually active and having a greater number of sexual partners. 92% of the study participants were able to identify the causal link between HPV and cervical cancer and 69% the link between HPV and genital warts. A lesser proportion understood the self-limited nature of most HPV infections.

Of particular significance to college health professionals is that 64% of the participants indicated an interest in learning more about HPV and, of the women who were unvaccinated study participants, 65% were interested in receiving the HPV vaccine. Greater interest in the vaccine was seen in women who felt vulnerable to infection (women who were already sexually active, women with multiple sex partners). Unfortunately, however, this indicates that the women who have not yet become sexually active and would therefore benefit most from the vaccine, tend to be the least interested in getting vaccinated.⁸ These data demonstrate a need for effective communication of education and awareness regarding HPV on our college campuses and in our campus health centers.

Acceptance and Access to the Vaccine

Further bolstering the need for HPV education, another study done at a New England university in 2007 found that roughly half of the participants were planning to be vaccinated, 13% had never heard of the vaccine, 12% had been vaccinated, 15% were undecided and 7% had decided against vaccination. Women who had already been vaccinated scored significantly higher on the HPV knowledge questions in comparison with the women who had decided against vaccination. Women who were undecided about the vaccine or those not planning on vaccination in the near future had the lowest rating of HPV infection severity. Additionally, women who had been vaccinated had lower ratings of perceived barriers to the vaccine than those who decided against the vaccine and women who had been vaccinated, and those who were planning to be vaccinated, were more likely to report that their significant others supported vaccination. These women in the latter group also perceived that their peers had already been or were planning on being vaccinated. This indicates that not only is it important for college health providers to provide women information about HPV infection and vaccination but that it also a viable educational strategy to enlist peer health educators to undertake programming and outreach on our campuses.¹⁰

Having established the need for education and promotion of HPV risk awareness, another challenge facing college health professionals is access and acceptance of the vaccine. One study including both men and women on college campuses found that factors associated with vaccine acceptance included ever having an STD, having a close friend or relative that have HPV, ever having had sex, and having more than 5 sex partners. Greater perceived risk was associated with an increased likelihood of intention to receive the vaccine. Other factors that made participants 'much more likely to accept the vaccine were availability of free vaccine and recommendation for the vaccine by a doctor (42.4%), a spouse (29.7%), a parent (24.1%) and a friend(18.5%).¹¹

Given these data regarding acceptance of the vaccine, it becomes important to problem-solve with our patients about how and where they will be vaccinated. On campuses which do not participate in 3rd party billing at their health centers, our patients have to pay out-of-pocket and then attempt to get reimbursed via their insurance plan. Students can be encouraged to fit in the vaccinations while they are at home over semester breaks, but this generally means that parents become involved in the decision-making process thus potentially adding another barrier if the parents maintain views opposing the vaccine. The manufacturers of GARDASIL® provide a

patient assistance program for HPV vaccine, and patients are eligible if they reside in the US, are age 19 or older, and meet income eligibility requirements. It becomes the responsibility of the college health provider to work with our patients in order to ensure that they are informed of their options regarding the availability of the vaccine should they determine that they wish to pursue this avenue.

On the Horizon

In addition to the current availability of GARDASIL®, there may be another vaccine on the horizon. GlaxoSmithKline (GSK) submitted a Biologics License to the U.S. FDA in March 2007 for the vaccine Cervarix®, which targets HPV-16 and HPV-18. This vaccine has already been approved for use in over 67 countries including 27 member countries of the EU. As of June 2008 Cervarix® was chosen by the UK Department of Health as the vaccine of choice for its national human papillomavirus (HPV) immunization program. The program, which aims to protect against the two types of HPV that are responsible for approximately 70% of cervical cancers, started in September 2008 and calls for the vaccination of girls aged 12 to 13 each year. There will also be a catch-up program for girls aged 14 to 18 years, which will be implemented over the next 2-3 years. Most recently, on March 30, 2009, GSK submitted to the U.S. FDA final data from its Phase III pivotal efficacy study and it is anticipated that review of this final data may take up to six months to complete. It is worth noting that this vaccine would strictly target cervical cancer and not provide any protection from genital warts.

Men and HPV

We also anticipate the release of recommendations regarding HPV vaccination in males. In the United States, it is estimated that the incidence of genital warts in men is about 250/100,000. The incidence is highest among men 25–29 years of age, and these numbers have shown an increase over the last few decades in the US.¹² A recently-published study demonstrated that the vaccine targeting HPV-16 and HPV-18 is safe and well tolerated, and induces excellent immunogenicity in boys aged 10 to 18 years. However, the public health value of vaccination of boys against oncogenic HPV types has yet to be determined. The burden of HPV-associated diseases such as anal, penile, and oropharyngeal cancers in men is much less than that of cervical cancer in women, and the potential public health benefits of male vaccination on this basis alone would be expected to be limited. However, HPV infection is common in men and is readily transmitted.¹³ In an earlier-cited study, men were much more likely to accept the vaccine should it prevent against both genital warts and cervical cancer rather than cervical cancer alone.¹¹ As college health professionals involved in the health concerns of all students, we should be mindful to take this information into account when educating males in the event that vaccine recommendations are expanded to include them.

Conclusion

HPV is the most common STI with the highest rate of infection found in college-age students. Although awareness of HPV infection and the HPV vaccine are improving, students will rely on college health providers to provide factual and unbiased information. We must use our unique access to this population to continuously partner with our students to help them achieve and maintain optimal health. Appropriate education and awareness regarding potential barriers to information about HPV, effective communication about the risks and benefits of the available HPV vaccine, and addressing the perceptions of risk among college-age students on our campuses all represent calls to action for the college health provider. We should ensure that we are doing all we can to promote the dissemination of accurate and factual information to our students and, should they decide to get vaccinated, we should work with our female patients to understand HPV, any risks and benefits associated with vaccination, and partner with them on obtaining access.

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