Committee Opinion

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Human Papillomavirus Vaccination

ABSTRACT: The U.S. Food and Drug Administration recently approved a quadrivalent human papillomavirus (HPV) vaccine for females aged 9–26 years. The American College of Obstetricians and Gynecologists recommends the vaccination of females in this age group. The Advisory Committee on Immunization Practices has recommended that the vaccination routinely be given to girls when they are 11 or 12 years old. Although obstetrician–gynecologists are not likely to care for many girls in this initial vaccination target group, they are critical to the widespread use of the vaccine for females aged 13–26 years. The quadrivalent HPV vaccine is most effective if given before any exposure to HPV infection, but sexually active women can receive and benefit from the vaccination. Vaccination with the quadrivalent HPV vaccine is not recommended for pregnant women. It can be provided to women who are breastfeeding. The need for booster vaccination after 5 years has not been established. Health care providers are encouraged to discuss with their patients the benefits and limitations of the quadrivalent HPV vaccine and the need for continued routine cervical cytology screening.

The relationship between infection with human papillomavirus (HPV) and both cervical cancer and genital warts has been recognized for many years (1). More than 100 genotypes of HPV have been discovered to date with approximately 30 found in the genital mucosa. However, only 15 have been shown to be associated with cervical cancer. Approximately 70% of cervical cancers result from infection with HPV genotypes 16 and 18, and 90% of cases of genital warts result from infection with HPV genotypes 6 and 11 (2).

The American Cancer Society estimates there will be 9,710 new cases of cervical cancer and 3,700 deaths from cervical cancer in the United States in 2006 (3). Cervical cancer is the second largest cause of female cancer mortality worldwide (4). Worldwide, an estimated 493,000 new cases occur each year and of these cases, 274,000 women die annually from cervical cancer (5). Eighty percent of these deaths occur where resources are the most limited (6). Although the implementation of cervical cytology screening programs and treatment of precancerous lesions has led to a decrease in cervical cancer deaths in the United States, there continues to be a significant population of women not receiving adequate screening. In 2003, only 67% of uninsured women aged 18–64 years obtained cervical cytology screening within the past 3 years compared with 86% of insured women in that age group (7).
The U.S. Food and Drug Administration (FDA) recently licensed the first vaccine shown to be effective at preventing infection with some genotypes of HPV. The prophylactic quadrivalent human papillomavirus L1 virus-like particle vaccine offers protection against cervical cancer, cervical dysplasias, vulvar or vaginal dysplasias, and genital warts associated with HPV genotypes 6, 11, 16, and 18. The FDA approval is for administration of this three-dose vaccine to females aged 9–26 years at intervals of 0, 2, and 6 months (see the box). The need for booster doses remains to be demonstrated (8). To date, protection has been shown to last at least 5 years (9).

A second, bivalent formulation of an HPV vaccine is in development. Results of initial studies of this vaccine indicate that it offers protection similar to the quadrivalent vaccine against HPV infections caused by genotypes 16 and 18 (10, 11).

Studies of the quadrivalent HPV vaccine have shown that in subjects naive to the vaccine genotypes who followed protocol, the vaccine was 100% effective in preventing cervical intraepithelial neoplasia (CIN) 2, CIN 3, and condylomatous vulvar disease related to the HPV genotypes covered by the vaccine (8). In contrast, for a woman with current or past HPV infection, there is no evidence of protection from disease caused by the HPV genotypes with which she was infected. There is, however, evidence of protection from disease caused by the remaining HPV vaccine genotypes (8, 12).

To be maximally effective against all HPV genotypes included in the quadrivalent vaccine, it should be given before any exposure to HPV infection. If the vaccine is given after the onset of sexual activity, patients may have already been infected with HPV and develop abnormal cervical cytology related to the HPV genotypes in the vaccine as well as to those genotypes not included in the vaccine.

Recommendations

Vaccination of Girls, Adolescents, and Young Women

The American College of Obstetricians and Gynecologists (ACOG) Committee on Adolescent Health Care and the ACOG Working Group on Immunization recommend the vaccination of females aged 9–26 years against HPV. The Advisory Committee on Immunization Practices has recommended the initial vaccination target of females aged 11 or 12 years (13). Although obstetrician–gynecol-
ogists are not likely to care for many girls in this ini-
tial vaccination target group, they are critical to the 
widespread use of the vaccine for females aged 
13–26 years. The American College of Obstetricians 
and Gynecologists has recommended that the first 
adolescent reproductive health care visit take place 
between ages 13 years and 15 years (14). Adoles-
cents and young women aged 16–26 years who are 
in the vaccination age groups visit obstetrician–
gynecologists for primary care, contraceptive or 
other gynecologic needs, or pregnancy-related serv-
ices. These visits are a strategic time to discuss HPV 
and the potential benefit of the HPV vaccine and to 
offer vaccination to those who have not already 
received it. During a health care visit with a girl or 
woman in the age range for vaccination, an assess-
ment of the patient’s HPV vaccine status should be 
conducted and documented in the patient record.

**Cervical Cytology Screening**

Current cervical cytology screening recommenda-
tions remain unchanged and should be followed 
regardless of vaccination status (1, 14–17). Cervical 
cancer screening should begin approximately 3 
years after the onset of vaginal intercourse or no 
later than age 21 years (16). After the first screening, 
annual cervical cytology screening should be con-
ducted for women younger than 30 years (17). It 
must be emphasized that the currently approved 
quadrivalent vaccine protects against acquisition 
of HPV genotypes that account for only 70% of 
HPV-related cervical cancer and only 90% of geni-
tal warts cases (2). The vaccine is a preventive tool 
and is not a substitute for cancer screening.

**Human Papillomavirus Testing**

Testing for HPV is currently not recommended 
before vaccination. Testing for HPV DNA would not 
identify past HPV infections, only current HPV 
fishions. Serologic assays for HPV are unreliable 
and currently not commercially available. Requiring 
any type of screening test would raise the cost of 
vaccination programs dramatically and reduce the 
cost-effectiveness of vaccination.

**Vaccination of Sexually Active Women**

Sexually active women can receive the quadrivalent 
HPV vaccine. Women with previous abnormal cer-
vical cytology or genital warts also can receive the 
quadrivalent HPV vaccine. These patients should be 
counseled that the vaccine may be less effective in 
women who have been exposed to HPV before vac-
cination than in women who were HPV naive at the 
time of vaccination (8, 12). Women with previous 
HPV infection will benefit from protection against 
disease caused by the HPV vaccine genotypes with 
which they have not been infected. The need for annu-
al cervical cytology screening should be emphasized.

**Vaccination of Women With Previous Cervical 
Intraepithelial Neoplasia**

There is concern that provision of the vaccination to 
women with previous CIN may create a false sense 
of protection, potentially deterring patients from 
continuing their regular screening and management. 
The quadrivalent vaccine can be given to patients 
with previous CIN, but practitioners need to empha-
size that the benefits may be limited, and cervical 
cytology screening and corresponding management 
based on ACOG recommendations must continue.

**Vaccination Is Not Treatment**

The quadrivalent HPV vaccine is not intended to 
treat patients with cervical cytologic abnormalities 
or genital warts. Patients with these conditions 
should undergo the appropriate evaluation and treat-
ment. It is important to note that many early cyto-
logic abnormalities can be detected and managed 
conservatively given the significant rate of regres-
sion. This is especially true in adolescents and 
young women (15, 18).

**Vaccination of Pregnant and Lactating Women**

The quadrivalent HPV vaccine has been classified 
by the FDA as pregnancy category B. Although its 
use in pregnancy is not recommended, no terato-
genic effects have been reported in animal studies. 
In clinical studies, the proportion of pregnancies 
with an adverse outcome were comparable in 
women who received the quadrivalent HPV vac-
cine and in women who received a placebo (8). 
The manufacturer’s pregnancy registry should be 
contacted if pregnancy is detected during the vac-
cination schedule. Completion of the series should 
be delayed until pregnancy is completed. It is not 
known whether vaccine antigens or antibodies 
found in the quadrivalent vaccine are excreted in 
human milk (8). Lactating women can receive the 
quadrivalent HPV vaccine because inactivated vac-
cines such as this vaccine do not affect the safety of 
breastfeeding for mothers or infants (19).
Vaccination of Immunocompromised Patients

The presence of immunosuppression, like that experienced in patients with HIV infection, is not a contraindication to the quadrivalent HPV vaccine. However, the immune response may be smaller in the immunocompromised patient than in immunocompetent patients (8).

Vaccination of Women Older Than 26 Years and Males

Research regarding vaccination of women older than 26 years and males is currently under way. Data available are insufficient to make recommendations for these populations.

Other Methods for Prevention of HPV Infection

Abstinence from sexual activity is the most effective way to avoid sexually transmitted diseases (STDs), including HPV infection. Limiting the number of sexual partners also may decrease one’s risk for STDs, including HPV. Use of latex condoms is the only method currently available for sexually active individuals to reduce the likelihood of HPV acquisition and HPV-related cervical dysplasia (20, 21).

Research Needs

ACOG supports additional research to evaluate the need for booster vaccination, the effectiveness of vaccination in women older than 26 years, and the effectiveness of vaccination of males.

Educational Efforts

The quadrivalent HPV vaccine is a major breakthrough in efforts to prevent cervical cancer; obstetrician–gynecologists can play a critical role in its widespread use. It is important for clinicians to provide patient education about HPV-related disease and be prepared to respond to questions from patients regarding the HPV vaccine. Studies have shown that physician recommendation plays an important role in the acceptance of the vaccine by patients (22). Limitations of the currently approved quadrivalent vaccine also should be discussed, including that it provides coverage for only two of the 15 HPV genotypes associated with cancer and only two of the genotypes that cause genital warts. In addition, the health care provider can discuss with patients that despite the high prevalence of HPV infection, few infections result in cervical cancer.

As the HPV vaccines have been developed, market research has addressed the acceptability of HPV vaccination by parents, guardians, and patients. A study of 880 females aged 15–45 years demonstrated that more than 80% of mothers would support vaccinating their daughters. In most additional studies, a higher level of acceptability was associated with educating mothers and patients about the consequences of HPV disease and the potential for decreased rates of cervical cancer (23–25). Professional recommendations for HPV vaccination are essential in ensuring widespread acceptance and use of the vaccine. Requiring vaccination for child care, school, or college attendance and multicomponent interventions that include community education have been effective in improving the use of vaccination (26, 27).

Consent for HPV Vaccination

As for all immunizations, consent for HPV vaccination must be obtained from someone who is legally authorized to provide it. Generally, for children and adolescents who are minors, typically those younger than 18 years, the consent of a parent is required for medical care, including vaccinations. There are, however, numerous exceptions to this requirement (28). For example, individuals other than a parent are sometimes authorized to consent for a child or adolescent’s care. These may include a legal guardian, a judge, or an individual who has been authorized either by a parent or by a court to consent for a minor’s care. In addition, in certain situations, adolescents who are minors are legally allowed to consent to their own care. This is usually determined by state law and varies by state. Depending on the state, certain minors are allowed to consent for care because of their status; these may include minors who have reached a certain age or are pregnant, married, parents, living apart from their parents, or emancipated (28). In all states, minors are allowed to consent for diagnosis and treatment for STDs; however, many of the laws that authorize them to do so do not mention vaccinations (28).

Clinicians should be familiar with state and local statutes regarding the rights of minors to health care services and the federal and state laws that affect confidentiality. When necessary, they should seek appropriate legal advice. Careful analysis would be required to determine the circumstances in which an adolescent minor might be able to consent for her own HPV vaccination in a particular state. Often, state medical societies can be helpful in this capacity. A list of state medical society web sites is

Advocacy Efforts

In the United States, cervical cancer rates are highest for low income and uninsured women. Third party payers and government agencies are encouraged to assist in covering the costs of HPV vaccination to patients, even if they are underinsured or uninsured. Pharmaceutical company-sponsored patient assistance programs for vaccines should be implemented as well as the provision of the vaccine at significantly discounted rates to the Vaccines for Children (VFC) program. The VFC program provides free vaccines to children who are Medicaid-eligible, uninsured, Native American, or underinsured children who visit federally qualified or rural health centers. Health care providers are encouraged to become VFC providers. (For more information, go to http://www.cdc.gov/nip/vfc/.)

References


Resources

ACOG Resources


Other Resources
The following lists are for information purposes only. Referral to these sources and web sites does not imply the endorsement of ACOG. These lists are not meant to be comprehensive. The exclusion of a source or web site does not reflect the quality of that source or web site. Please note that web sites are subject to change without notice. Furthermore, ACOG does not endorse any commercial products that may be advertised or available from these organizations or on these web sites.

American Cancer Society
1599 Clifton Rd. NE
Atlanta, GA 30329
1-800-ACS-2345 (or 1-866-228-4327 for TTY)
http://www.cancer.org

The American Social Health Association
PO Box 13827
Research Triangle Park, NC 27709
(919) 361-8400
(919) 361-8488: National Herpes Hotline
http://www.ashastd.org
http://www.iwannaknow.org
http://www.ashastd.org/hpvccrc

American Society for Colposcopy and Cervical Pathology
20 West Washington St., Suite 1
Hagerstown, MD 21740
(301) 733-3640
1-800-787-7227
http://www.asccp.org

Center for Young Women’s Health
Children’s Hospital Boston
333 Longwood Ave., 5th Floor
Boston, MA 02115
(617) 355-2994
http://www.youngwomenshealth.org

Centers for Disease Control and Prevention
1600 Clifton Rd.
Atlanta, GA 30333
(404) 639-3311
1-800-311-3435
http://www.cdc.gov
http://www.cdc.gov/std/hpv/STDFact-HPV-vaccine.htm

Go Ask Alice!
Columbia University
7th Floor, Lerner Hall
2920 Broadway, Mail Code 2608
New York, NY 10027
(212) 854-5453
http://www.goaskalice.columbia.edu

Merck Inc.
Make the Connection
1-888-447-8266
http://www.maketheconnection.org
National Cervical Cancer Public Education Campaign
1-866-280-6605
http://www.cervicalcancercampaign.org

National Women’s Health Resource Center
157 Broad St., Suite 315
Red Bank, NJ 07701
(732) 530-3425
1-877-986-9472
http://www.healthywomen.org

Planned Parenthood Federation of America
434 West 33rd St.
New York, NY 10001
1-800-230-7526
http://www.plannedparenthood.org
http://www.teenwire.org

Society for Adolescent Medicine
1916 Copper Oaks Circle
Blue Springs, MO 64015
(816) 224-8010
http://www.adolescenthealth.org
http://www.adolescenthealth.org/cme/program_hpV

Society of Obstetricians and Gynaecologists of Canada
780 Echo Drive
Ottawa, ON K1S 5R7
Canada
(613) 730-4192
1-800-561-2416
http://www.sogc.org
http://www.sexuatyandu.ca

U.S. Food and Drug Administration
5600 Fishers Lane
Rockville, MD 20857-0001
1-888-INFO-FDA (1-888-463-6332)
http://www.fda.gov/cber/products/hpvmer060806.htm
http://www.fda.gov/womens/getthefacts/hpv.html