# Human Papillomavirus (HPV): Questions and Answers

## *Information about the disease and vaccines*

**What is HPV?**
Human papillomavirus (HPV) is the name of a group of viruses that includes more than 100 different types. More than 40 of these viruses infect the genital area, including the skin of the penis, vulva, or anus, and the lining of the vagina, cervix, or rectum.

Some of these viruses are called "high-risk" types; they may cause abnormal Pap tests and can also lead to cancer of the cervix, vulva, vagina, anus, or penis. Others are called "low-risk" types; they may cause mild Pap test abnormalities or genital warts.

**How common is HPV in the United States?**
HPV is the most common sexually-transmitted infection in the United States. Approximately 20 million people are currently infected with HPV. At least 50% of sexually active men and women acquire genital HPV infection at some point in their lives. By age 50, at least 80% of women will have acquired genital HPV infection. An estimated 22,000 HPV 16- and 18-associated cancers occur annually in the U.S., including an estimated 7,000 HPV 16- and 18-associated cancers in males. About 6.2 million Americans get a new genital HPV infection each year.

**How does HPV spread?**
HPV is spread through sexual contact. Most infected people have no symptoms and are unaware they are infected and can unintentionally transmit the virus to a sex partner. Rarely, a pregnant woman passes HPV to her baby during vaginal delivery.

**What are the symptoms of HPV?**
Most people who become infected with HPV have no symptoms. Some people get visible genital warts, or have pre-cancerous changes in the cervix, vulva, anus, or penis.

Genital warts usually appear as soft, moist, pink, or flesh-colored swellings, usually in the genital area. They can be raised or flat, single or multiple, small or large, and sometimes cauliflower shaped. They can appear on the vulva, in or around the vagina or anus, on the cervix, and on the penis, scrotum, groin, or thigh. After sexual contact with an infected person, warts may appear within weeks or months, or not at all.

**How serious is HPV?**
Most HPV infections don't cause any symptoms and eventually go away, as the body's own defense system clears the virus. Women with short-term HPV infections may develop mild Pap test abnormalities that go away with time.

About 10% of women infected with HPV develop persistent HPV infection. Women with persistent high-risk HPV infections are at greatest risk for developing cervical cancer precursor lesions (abnormal cells on the lining of the cervix) and cervical cancer. (See next question.)

**What are possible complications from HPV?**
Cervical cancer in women is the most serious possible complication from HPV infection. Persistent infection with high-risk types of HPV is associated with almost all cervical cancers. The American Cancer Society (ACS) estimates that in 2012, approximately 12,170 new cases of invasive cervical cancer will occur in the U.S. and 4,210 women will die from the disease. Worldwide, cervical cancer is the second most common cancer in women; it is estimated to cause over 470,000 new cases and 233,000 deaths each year.

Persistent infection with high-risk types of HPV is also associated with cancers of the vulva, vagina, penis, and anus. For example, ACS estimates that in 2012 there will be about 1,570 new cases of penile cancer in the U.S. and 310 men will die. Genital HPV infection with low-risk types of HPV is associated with genital warts in men and women. About 1% of sexually active adults in the U.S. have visible genital warts at any point in time. It is estimated that approximately 250,000 cases of genital warts occur each year in the U.S. among sexually active males.

Occasionally, low-risk HPV infections can be transmitted during birth, resulting in respiratory tract warts in infants and children.

**How is HPV infection diagnosed?**
Genital warts in men and women are diagnosed by visual inspection.

Most women are diagnosed with HPV infection on the basis of abnormal Pap tests. Also, a specific test is available to detect HPV DNA in women. The test



Technical content reviewed by the Centers for Disease Control and Prevention

www.immunize.org/catg.d/p4207.pdf • Item #P4207 (4/12)

Immunization Action Coalition • St. Paul, MN 55104 • (651) 647-9009 • www.vaccineinformation.org • www.immunize.org

may be used in women with mild Pap test abnormalities or in women more than age 30 years at the time of Pap testing. The results of HPV DNA testing can help healthcare providers decide if further tests or treatment are necessary.

No HPV tests are available for men.

**Can genital HPV infection be cured?**
There is no "cure" for HPV infection, although the infection usually goes away on its own. Approximately 90% of women with HPV infection become HPV-negative within two years. However, it is possible that the virus remains in a "sleeping" state and could be reactivated years later.

There are treatments for the health problems that HPV can cause, such as genital warts, cervical cell changes, and cancers of the cervix, vulva, vagina, and anus.

Visible genital warts can be removed by medications the patient applies, or by treatments performed by a healthcare provider. No one treatment is best. Warts might return, especially in the first 3 months after treatment. It is not known whether treatment of genital warts will reduce the chance of passing the virus on to a sex partner. If left untreated, genital warts may go away, remain unchanged, or increase in size or number.

**How can people reduce their risk for acquiring genital HPV infection?**
The surest way to eliminate risk for genital HPV infection is to refrain from any genital contact with another individual.

For people who are sexually active, a long-term, mutually monogamous relationship with an uninfected partner is the strategy most likely to prevent future genital HPV infections. However, it is difficult to determine whether a partner who has been sexually active with another partner in the past is currently infected.

For those who are sexually active and who are not in long-term mutually monogamous relationships, reducing the number of sexual partners and choosing a partner less likely to be infected may reduce the risk of genital HPV infection. Partners less likely to be infected include those who have had no or few prior sex partners.

It is not known how much protection condoms provide against HPV, since areas that are not covered by a condom can be exposed to the virus. However, condoms may reduce the risk of genital warts and cervical cancer. People can also reduce their risk by getting vaccinated with HPV vaccine.

**When were the HPV vaccines licensed?**
On June 8, 2006, the Food and Drug Administration (FDA) licensed the first vaccine developed to prevent cervical cancer and other diseases in females caused by certain types of genital human papillomavirus (HPV). The vaccine, Gardasil (by Merck), protects against four HPV types—6, 11, 16, 18. In October of 2009, Gardasil was also licensed for use in males. On October 16, 2009, a second HPV vaccine was licensed (Cervarix by GlaxoSmithKline) for use in females. It protects against two types of HPV viruses—types 16 and 18. About 70% of cervical cancers are caused by HPV types 16 and 18; more than 90% of anogenital warts are associated with HPV types 6 and 11.

**What kind of vaccine is it?**
HPV vaccine is an inactivated (not live) vaccine.

**How is this vaccine given?**
This vaccine is given as a shot in the muscle.

**Who should get this vaccine?**
The CDC's Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination of boys and girls at age 11–12 years with catch-up vaccination for females through age 26 years, and for males through age 21 years; males age 22 through 26 years may be vaccinated. In addition, vaccination is recommended for men age 22 through 26 years who have sex with men or are immunocompromised as a result of infection (including HIV), disease, or medication. The vaccination series can also be started as young as age 9 years, at the clinician's discretion.

**How many doses are needed and on what schedule?**
The schedule for both Gardasil and Cervarix consists of three injections over a six-month period. The second dose should be given one to two months after the first dose and the third dose should be given six months after the first dose. The vaccine can be administered at the same visit as other needed vaccines.

It is best if the vaccine is given before onset of sexual activity. However, people who are sexually active also may benefit from vaccination. People who have not been infected with any vaccine HPV type would receive the full benefit of vaccination and those who already have been infected with one or more HPV types would still get protection from the vaccine types they have not acquired. HPV vaccine can be given to females who have had an abnormal Pap test or genital warts. However, the vaccine will not have any helpful effect on existing Pap test abnormalities, HPV infection, or genital warts.

**Why is HPV vaccine licensed for use in people as young as 9 years of age?**
This is because the vaccine is most effective in young people who have not yet acquired any of the HPV types covered by the vaccine so that they will receive the full benefits of the vaccine.

**Why are HPV vaccines not licensed for adults older than 26 years?**
HPV vaccines have been widely tested in people age 9 through 26 years. Research on the vaccine's safety and efficacy began later in older people. The FDA will consider licensing the vaccines for older people when there is research to show that it is safe and effective for them.

**Should individuals be screened before getting vaccinated?**
No. Girls/women do not need to get an HPV test or Pap test to find out if they should get the vaccine. An HPV test or a Pap test can tell that a woman may have HPV, but these tests cannot tell the specific HPV type(s) that a woman has. Even individuals with one HPV type could get protection from the other vaccine HPV types they have not yet acquired.

**How effective are the HPV vaccines?**
Gardasil and Cervarix are highly effective in preventing infection with types of HPV they target. Studies have shown that both Gardasil and Cervarix prevent nearly 100 percent of the precancerous cervical cell changes caused by the types of HPV targeted by the vaccine for up to 4 years after vaccination among women who were not infected at the time of vaccination. Among males, efficacy for prevention of the genital warts caused by the 4 HPV viruses contained in Gardasil was 89.3%; efficacy for HPV 6- and 11-related genital warts was similar.

**How long does vaccine protection last? Will a booster shot be needed?**
The length of immunity is usually not known when a vaccine is first introduced. So far, studies have shown people to still be protected after five years. More research is being done to find out how long protection will last, and if a booster dose will eventually be needed.

**Who recommends HPV vaccine?**
The Centers for Disease Control and Prevention (CDC), the American Academy of Pediatrics (AAP), the American Academy of Family Physicians (AAFP), and the American College of Obstetricians and Gynecologists (ACOG) all recommend HPV vaccination.

**What side effects have been reported from HPV vaccine?**
Mild problems may occur with HPV vaccine, including pain at the injection site, redness or swelling at injection site, mild or moderate fever, and itching at the injection site. These problems do not last long and go away on their own. Fainting has been reported among adolescents who receive HPV vaccine (and other recommended vaccines as well). It's best for the patient to sit during vaccine administration and then wait at the clinic for 15–20 minutes after getting vaccinated.

Like all vaccines, HPV vaccine will be monitored for more serious or unusual side effects.

**Can HPV vaccine cause HPV?**
No. HPV vaccines are inactivated so they cannot cause disease-like symptoms or HPV disease.

**We've heard stories in the media lately about severe reactions to HPV vaccine. Is there any substance to these stories?**
No. While serious events, including death and Guillain-Barré syndrome, have been reported among women who had recently received HPV vaccine, CDC follow-up on these reports has not found that the events occurred more frequently among vaccinees than among the general population, and has detected no pattern that would indicate an association with the vaccine. You can find complete information on this and other vaccine safety issues at www.cdc.gov/vaccinesafety.

**Do women still need to get a Pap test if they've been vaccinated against HPV?**
Yes! Women should continue to receive regular cervical cancer screening for three reasons. First, the vaccine does not provide protection against all types of HPV that cause cervical cancer. Second, women may not receive the full benefits of the vaccine if they do not complete the vaccine series. Third, women may not receive the full benefits of the vaccine if they receive the vaccine after they have already acquired HPV infection from one of the four types for which the vaccine is preventive.

In addition, vaccinated women should continue to practice protective sexual behaviors since the vaccine will not prevent all cases of genital warts or other sexually transmitted infections.

**Does the vaccine protect against all types of HPV?**
No, although there are more than 100 types of human papillomaviruses, only four (HPV 6, 11, 16, and 18) are covered in the Gardasil vaccine and only two

(HPV 16 and 18) are covered in the Cervarix vaccine. HPV 16 and 18, however, are responsible for 70% of cervical cancers; HPV 6 and 11 cause approximately 90% of genital warts. Because there will be 30% of cervical cancers not prevented by the vaccine, it is important for women to continue getting regular Pap tests.

**What if a person doesn't get all of the recommended three doses?**

It is not yet known how much protection people would get from receiving only one or two doses of the vaccine. For this reason, it is very important that individuals get all three doses of the vaccine. If there is a gap in the schedule longer than the recommended time, the series should just be continued from where it left off—there is no need to start the series over. A woman (or a man who is immunosuppressed, HIV-positive, or a man who has sex with men) who starts the series before her 27th birthday can and should complete the series even if she is older than age 26 years. A man who starts the series before the 22nd birthday should complete the series even if he is older than age 21 years.

**Do women and men whose sexual orientation is same-sex need HPV vaccine?**

Yes. HPV vaccine is recommended for females and males regardless of their sexual orientation.

**Who should NOT receive HPV vaccine?**

Anyone who has ever had a life-threatening allergic reaction to any component of HPV vaccine, or to a previous dose of HPV vaccine, should not get the vaccine.

Pregnant women should not get the vaccine. Although the vaccine appears to be safe for both the mother and developing baby, this issue is still being studied. Inadvertently receiving HPV vaccine during pregnancy is not a reason to consider terminating the pregnancy. Any woman who learns she was pregnant when she got the HPV vaccine is encouraged to call the HPV Vaccine in Pregnancy Registry at either (800) 986-8999 for the Gardasil vaccine or (888) 452-9622 for the Cervarix vaccine. Information gathered from this registry will help experts learn how pregnant women respond to the vaccine.

Breast-feeding women can safely get the vaccine.

People who are moderately or severely ill should wait until their condition improves to be vaccinated.

**Is HPV vaccine covered by insurance plans?**

Many health insurance plans cover recommended vaccines for children and adults. The Vaccines for Children (VFC) program provides free vaccines to children and adolescents younger than 19 years of age, who are either Medicaid-eligible, American Indian, or Alaska Native, uninsured, or receiving care in a Federally Qualified Health Clinic or Rural Health Center. This includes boys as well as girls. For adults, if you're not certain about your healthcare coverage, contact your health insurance plan for further information. If you don't have health insurance or if your plan doesn't cover this vaccine, ask your doctor or your local health department how you can obtain this vaccine.