



Human Papillomavirus (HPV) Vaccination

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What is human papillomavirus (HPV)?

Human papillomavirus (HPV) is a **virus**. Like all viruses, HPV causes infection by entering **cells**. Once inside a cell, HPV takes control of the cell's internal machinery and uses it to make copies of itself. These copies then infect other nearby cells.

How many types of HPV are there?

There are more than 100 types of HPV. About 40 types infect the genital area of men and women and are spread by skin-to-skin contact during vaginal, anal, or oral sex. Genital HPV infection can occur even if you do not have **sexual intercourse**.

How common is HPV infection?

HPV infection is the most common **sexually transmitted infection (STI)** in the United States. Almost everyone who is sexually active will get an HPV infection at some point during their life.

What are the signs and symptoms of HPV infection?

Like many other STIs, genital HPV infection often has no signs or symptoms. The infected person usually is not aware that he or she has been infected and can unknowingly pass the infection to others.

What diseases are caused by HPV?

HPV can cause the following diseases:

- **Genital warts**—About a dozen types of HPV cause genital warts. These types are called “low-risk types.” Most cases of genital warts are caused by just two low-risk types of HPV: 1) type 6 and 2) type 11. Genital warts are growths that can appear on the outside or inside of the **vagina** or on the **penis** and can spread to nearby skin. Genital warts also can grow around the **anus**, on the **vulva**, or on the **cervix**. Genital warts are not cancer and do not turn into cancer. Warts can be

removed with medication or surgery.

- Cancer—At least 13 types of HPV are linked to cancer of the cervix, anus, vagina, penis, mouth, and throat. Types of HPV that cause cancer are known as “high-risk types.” Most cases of HPV-related cancer are caused by just two high-risk types of HPV: 1) type 16 and 2) type 18.

Does being infected with HPV mean I am going to get genital warts or cancer?

No. In most people, the **immune system** fights most high-risk and low-risk HPV infections and clears them from the body.

What happens if my immune system does not fight off my HPV infection?

Infections that are not cleared from the body are called persistent infections. A persistent infection with a high-risk HPV type can cause cells to become abnormal and can lead to a condition called precancer. It usually takes years for this to happen. Cervical cancer screening can detect signs of abnormal cell changes of the cervix and allows early treatment so they do not become cancer.

What is the best way to protect against HPV infection?

The best way to protect against HPV infection is to get the HPV vaccine. Three vaccines are available that protect against HPV infections. All three vaccines protect against the two HPV types (16 and 18) that are the most common cause of cancer and precancer. The vaccines differ in the other HPV types they protect against:

- Cervarix: This vaccine protects against type 16 and type 18.
- Gardasil: In addition to type 16 and type 18, Gardasil protects against type 6 and type 11, which cause the most cases of genital warts.
- Gardasil 9: This vaccine protects against all four types of HPV in the four-type vaccine (Gardasil), plus five other high-risk HPV types.

Who should get the HPV vaccine and when?

Girls can get any of the HPV vaccines. Boys can get Gardasil or Gardasil 9. The vaccines are given as a shot in the upper arm. To get the most protection, you need to have three doses of the vaccine over a 6-month period.

Vaccination works best when it is done before a person is sexually active and exposed to HPV, but it still can reduce the risk of getting HPV if given after a person has become sexually active. The ideal age for HPV vaccination is 11 years or 12 years, but it can be given starting at 9 years and up to 26 years.

What if I do not get all three doses of the HPV vaccine on time?

If you do not get all three doses in a 6-month period, you do not have to “start over.” You can get the next dose that you are due for even if the time between doses is longer than recommended. If you started your vaccine series with Cervarix or Gardasil, you can complete the recommended doses with Gardasil 9.

How effective is the HPV vaccine?

Studies show that getting all three doses of the HPV vaccine before you are sexually active can reduce your risk of getting certain types of HPV-related cancer by up to 99%. If you have had sex, you may already be infected with one or more types of HPV, but you can still get the vaccine if you are younger than 26 years. The vaccine may help protect you against the other types of HPV included in the vaccine that you are not infected with.

Does the HPV vaccine cause any side effects?

Millions of people have been vaccinated against HPV since the vaccine came out. There have been no reports of severe side effects or bad reactions to the vaccine. The most common side effect of the HPV vaccine is soreness and redness where the shot is given. Gardasil 9 may cause more soreness than the other HPV vaccines.

Do I still need regular cervical cancer screening if I have gotten the HPV vaccine?

Yes. HPV vaccination helps prevent HPV infection. It is not a cure for an HPV infection that has already occurred. Women who have been vaccinated still need to have regular cervical cancer screening as recommended for their age group and health history (see FAQ085 “Cervical Cancer Screening”).

In addition to the HPV vaccine, how can I protect myself against HPV infection?

Even if you get the HPV vaccine, it still is important to take other steps to protect yourself against HPV and other STIs:

- Limit your number of sexual partners. The more partners you have over the course of your life, the greater your risk of infection.
- Use a male or female condom to reduce your risk of infection when you have vaginal, anal, or oral sex. But be aware that condoms cover only a small percentage of skin and do not completely protect against HPV infection. HPV can be passed from person to person by touching infected areas not covered by a condom. These areas may include skin in the genital or anal areas.

Glossary

Anus: The opening of the digestive tract through which bowel movements leave the body.

Cells: The smallest units of a structure in the body; the building blocks for all parts of the body.

Cervix: The lower, narrow end of the uterus at the top of the vagina.

Human Papillomavirus (HPV): The name for a group of related viruses, some of which cause genital warts and some of which are linked to cancer of the cervix, vulva, vagina, penis, anus, mouth, and throat.

Immune System: The body's natural defense system against foreign substances and invading organisms, such as bacteria that cause disease.

Penis: An external male sex organ.

Sexual Intercourse: The act of the penis of the male entering the vagina of the female (also called "having sex" or "making love").

Sexually Transmitted Infection (STI): An infection that is spread by sexual contact, including chlamydia, gonorrhea, genital warts, herpes, syphilis, and infection with human immunodeficiency virus (HIV, the cause of acquired immunodeficiency syndrome [AIDS]).

Vagina: A tube-like structure surrounded by muscles leading from the uterus to the outside of the body.

Virus: An agent that causes certain types of infections.

Vulva: The external female genital area.

If you have further questions, contact your obstetrician–gynecologist.

FAQ191: Designed as an aid to patients, this document sets forth current information and opinions related to women's health. The information does not dictate an exclusive course of treatment or procedure to be followed and should not be construed as excluding other acceptable methods of practice. Variations, taking into account the needs of the individual patient, resources, and limitations unique to the institution or type of practice, may be appropriate.

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