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# Cervical Cancer & HPV Vaccination

Human papillomavirus (HPV) is a virus that is spread through skin-to-skin contact, including sexual contact. This includes sexual intercourse (vaginal sex), oral sex, anal sex, or any other contact involving the genital area (eg, hand to genital contact). While condoms are an important way to prevent most sexually transmitted infections, they do not provide complete protection from HPV infection, because they do not cover all exposed genital skin.

The risk of HPV exposure increases with the number of sexual partners you have. Having sex with a partner who has had many other partners in the past also increases your risk. It has been estimated that 75 to 80 percent of sexually active adults will acquire at least one genital HPV infection before the age of 50. A majority of individuals become infected for the first time with one or more HPV types in the anogenital region between ages 15 and 25 years.

Approximately 70%-80% of infected individual does not develop signs & symptoms and most cases never develop any problems caused by HPV. In 20%-30% females, however, HPV infection poses a greater chance of developing pre-cancerous condition of cervix and subsequently the cancer of cervix. On an average, it takes 20 to 25 years for a new HPV infection to cause cervical cancer.

Over 100 different strains of HPV have been identified; more than 40 of these are known to infect the cervix, and approximately 15 are known to cause cervical cancer. Researchers have labeled the HPV types as being high or low risk for causing cervical cancer.

- HPV types 6 and 11 cause about 90 percent of genital warts. These types are considered low risk because they do not cause cervical cancer.
- Types 16 and 18 are the high-risk types that cause most (about 70 percent) cases of cervical cancer. HPV types 31, 33, 45, 52, and 58 are also high-risk types, causing about 20 percent of cervical cancers. Other high-risk types (35, 39, 51, 56, and 59) can also cause cervical cancers but are less common.

**Three HPV vaccines are available globally. The three vaccines protect against different types of HPV:**

- Gardasil-9 helps to prevent infection with nine HPV types (6, 11, 16, 18, 31, 33, 45, 52, and 58).
- Gardasil helps to prevent infection with four HPV types (6, 11, 16, and 18).
- Cervarix helps to prevent infection with HPV types 16 and 18.

## **HPV VACCINE TIMING AND DOSE**

All of the HPV vaccines are given by injection. Dosing depends on your age and how healthy your immune system is:

- If you are younger than 15 years old with normal immune function, you should get two injections at least six months apart.
- If you are 15 years of age or older with normal immune function, you should get three injections. The second dose is given one to two months after the first, and the third dose is given six months after the first.
- If you have infection with HIV or are immunocompromised (eg, have another health condition that weakens your immune system), you should get three injections regardless of the age at which you start the vaccination series.
- It is best to try to get all the recommended doses. If you miss a dose, talk to your health care provider about how many more doses you need.

## **Who should be vaccinated?**

In the United States, routine HPV vaccination is recommended for all children ages 11 to 12 years and can be given as early as 9 years of age. "Catch-up" vaccination is recommended for all people up to 26 years of age who have not yet received it. The HPV vaccine is also approved by the US Food and Drug Administration (FDA) for individuals aged 27 to 45 years; the decision to vaccinate adults in this age group should be individualized, typically in conversation with a health care provider, as some people in this age group may still benefit from it.

With any HPV vaccine, you will have the greatest protection from HPV if you are vaccinated before becoming sexually active. The vaccine does not help to get rid of HPV infection or any cervical abnormality after it has occurred. However, if you are under 26 years old and you have been sexually active, had genital warts,

a positive HPV test, or an abnormal Pap test, you may still obtain some (although smaller) benefit from the HPV vaccine.

It is important to keep in mind that the vaccine works best if given before sexual activity begins (even many years before). Sometimes, parents are hesitant to get their children vaccinated. Some people worry that it will lead to children becoming sexually active earlier than they otherwise would. However, there is no evidence that this happens.

Some also worry that the vaccine may have serious side effects, but studies have clearly shown that the available HPV vaccines are very safe.

### **How long am I protected?**

While experts do not know exactly how long the vaccine protects against HPV infection, there has been no evidence to suggest that the HPV vaccine loses any ability to provide protection over time.

### **Do I still need cervical cancer screening?**

You do not need to have a pelvic exam or test for cervical cancer (eg, Pap and/or HPV test) before you have the HPV vaccine. In the United States, regular cervical cancer screening is generally recommended beginning at age 21.

However, getting the HPV vaccine does not mean that you can skip cervical cancer screening in the future, since the vaccine does not eliminate infections acquired prior to vaccination. In addition, other types of high-risk HPV, which are not prevented by the vaccine, can also cause cervical cancer. (See "Patient education: Cervical cancer screening (Beyond the Basics)".)

Anal cancer screening tests may be available for individuals known to be at increased risk of anal cancer, but these are not yet done everywhere and are not yet considered to be standard of care. There are also no approved screening tests for oropharyngeal (mouth and throat) cancer, but a thorough dental examination may reveal signs of oropharyngeal cancer or pre-cancer.

## HOW EFFECTIVE IS THE VACCINE?

Studies have shown that:

- HPV vaccination in females is very effective in preventing HPV infections and cervical pre-cancers caused by HPV types targeted by the vaccine.
- HPV vaccination in females reduces the risk of genital warts in their male sexual partners.
- HPV vaccination in males reduces the risk of developing genital warts and penile HPV infection, which may decrease the spread of HPV to sexual partners.
- HPV vaccination also reduces the risk of anal cancer in both males and females.
- HPV vaccination prevents oral HPV infection, which is associated with oropharyngeal (mouth and throat) cancer. It is expected that the vaccine can reduce the risk of this cancer as well, and the vaccine is US Food and Drug Administration approved for this indication.