

# HUMAN PAPILLOMAVIRUS (HPV)

## INTRODUCTION

Human papillomavirus (HPV) refers to a group of over 100 related viruses that infect the squamous epithelial cells – thin, flat cells that line the surface of the skin, cervix, vagina, anus, vulva, head of the penis, mouth, and throat. The different HPV viruses are known as types and noted with a number. About 60 types of HPVs cause warts on non-genital skin, such as hands or feet, and the other 40 types primarily affect the genitals.

With approximately 440 million people infected each year, at least 50% of sexually active people will have a genital HPV infection at some point in their lives, making HPVs the most common sexually transmitted infection. While genital HPV infections are pervasive, most cases are symptom-free and easily cleared by the body. In the cases that are not cleared, there is a risk the genital HPV infection could develop into cancer.

Some types of genital HPV infections develop into genital warts in both men and women. In women, HPV-6 and HPV-11 can cause warts on the cervix and vagina, but these warts rarely develop into cancer. However, other types of genital HPV infections cause changes to squamous cells and pre-cancers, putting both men and women at risk for genital or anal cancers including cervical, vaginal, and vulvar cancers for females and penile cancers for males. A handful of different types of HPVs cause genital and anal cancers, but two types, HPV-16 and HPV-18, are responsible for 70% of all cervical cancer cases.

Women over the age of 30 are at the greatest risk of cervical cancer, but genital HPV infection is most common in late teens and 20s. Each year over half a million women are diagnosed with cervical cancer and another quarter million die from the disease, making it the second leading cause of cancer death in women. A disproportionate 80% of cervical cancer deaths are in developing countries despite it being the easiest female cancer to prevent.

Early detection is the key to preventing cervical cancer. Sexually active women in their 20s or women in their teens who have been sexually active for three years should have an annual Pap test – a test performed by a doctor that examines cells collected from the cervix and surrounding area looking for abnormal squamous cells that might be precancers or become cancerous if left un-

treated. In addition to Pap tests, it is recommended that women between the ages of 9 and 26 years old receive a vaccine against HPV. While the vaccine available in the US is safe and effective against HPV-16, HPV-18 the two most common cancer-causing types, as well as HPV-6 and HPV-11, the two most common types that cause genital warts, it is important for sexually active women to continue to have regular Pap tests and cervical cancer screenings.

## DISEASE OVERVIEW

### Risks

- Early onset of sexual activity
- Multiple sex partners
- Immunodeficiency
- Infection with a high-risk genital HPV type
- Persistence of high-risk HPV infection
- Limited or no access to regular Pap tests or other HPV screenings
- Cigarette smoking
- Low socioeconomic status

### Symptoms

- Genital HPVs are generally symptom-free
- It takes an average of 13 years for a precancer to develop into cervical cancer
- Cervical cancers typically do not have symptoms until they are advanced, usually after the cancer has started affecting other areas of the reproductive tract
- Advanced cervical cancers can cause bleeding or other abnormal vaginal discharges, such as bleeding after sex
- Other HPV-related cancers are also generally asymptomatic
- Genital warts usually appear as small bumps or groups of bumps in the genital area and vary in size and shape

### Transmission

Genital HPVs are transmitted through direct genital contact and not through blood or other body fluids. While genital HPVs are most often transmitted during vaginal or anal sex, penetration is not required to contract the infection. Additionally, it is unknown how effective condoms are at preventing HPV transmission since male and female genital areas covered as well as areas not covered by a condom can become infected. However, condom use is associated with a lower rate of cervical cancer.

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## Treatment

- HPVs are usually cleared by the body on its own
- A vaccine exists for females 9 to 26 years old that is safe and effective against the 2 most common types of HPV that cause cervical cancer (HPV-16 and HPV-18) and the 2 most common types that cause genital warts (HPV-6 and HPV-11)
- The vaccine is a prophylactic vaccine for four types of HPV and cannot prevent cervical cancer or genital warts if an infection is already present at time of vaccination
- Early detection through regular screenings, such as Pap tests, is vital to preventing cervical cancer
- Treatment for cervical cancer depends on the stage of the cancer and may involve surgery, radiation therapy, chemotherapy, or a combination of the three
- Genital warts can be treated by patient-applied medications, removed by a health care provider, or can sometimes disappear on their own

## DISEASE BURDEN

### Prevalence

- 440 million people worldwide have a genital HPV infection, the most common sexually transmitted infection
- Most genital HPV infections occur in young adults and teens
- At least 50% of all sexually active people will have a genital HPV infection at some point in their lives
- Over half a million women are diagnosed with cervical cancer each year
- Cervical cancer is the second leading cause of cancer-related death in women in the world
- Over a quarter million women die of cervical cancer each year, about 80% are in developing countries

### Disease Impact

- Most cases of HPV are symptom-free and cleared by the body
- Cervical cancer is a preventable but deadly disease
- A disproportionate burden of disease is placed on developing countries by cervical cancer
- Cervical cancer robs families of mothers, sisters, and daughters
- Cervical cancer also takes its toll on current and future economic productivity, educational success, and family health
- Genital warts can be painful and lead to social stigma

## EFFORTS AT CONTROL

Public health officials and medical professionals agree that the best strategy for reducing the burden of HPVs is through vaccination, continued screening, and education. The Sabin Vaccine Institute is involved in raising awareness of HPVs and educating policy-makers about the diseases they cause to help overcome cultural and educational barriers. While affordability remains the primary barrier to introducing HPV vaccines, the Sabin Vaccine Institute is also working with governments, vaccine manufacturers, and major funding organizations to make the vaccines more affordable and to ensure access to those who are most at risk. In May 2008, the Pan-American Health Organization (PAHO) committed to making newly available HPV vaccines affordable “so that all countries in the region can introduce the vaccine in their national immunization programs as soon as possible.”

## FACTS AT A GLANCE

- Genital HPVs are the most common sexually transmitted infections
- Most genital HPV infections are symptom-free and cleared by the body
- HPV causes genital warts as well as cervical, penile, anal and other genital cancers
- Cervical cancer is the second leading cause of cancer-related death in women
- Over 500,000 women are diagnosed with cervical cancer each year
- Over 250,000 women die from cervical cancer each year, 80% are in developing countries
- Cervical cancer is preventable

## SOURCES

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