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Human papillomavirus and cancer

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Key facts

- Human papillomavirus (HPV) is the name of a group of 200 known viruses. They do not cause concerns in most people, but infection with some high-risk types is common and can cause genital warts or cancer.
- In 90% of people the body controls the infection by itself. Persistent HPV infection with high-risk HPV types is the cause of cervical cancer and is associated with cancers of the vulva, vagina, mouth/throat, penis and anus (1).
- In 2019, HPV caused an estimated 620 000 cancer cases in women and 70 000 cancer cases in men (1).
- Prophylactic vaccination against HPV can prevent these cancers. In addition, HPV-screening and treatment of pre-cancer lesions is an effective way to prevent cervical cancer.

Overview

Human papillomavirus (HPV) is a common sexually transmitted infection. Almost all sexually active people will be infected at some point in their lives, usually without symptoms.

HPV can affect the skin, genital area and throat.

Condoms help prevent HPV but do not offer total protection because they do not cover all the genital skin.

HPV usually goes away on its own without treatment. Some HPV infections cause genital warts. Others can cause abnormal cells to develop, which go on to become cancer.

Cancers from HPV can be prevented with vaccines.

The vaccine does not contain any live virus or DNA from the virus so it cannot cause cancer or other HPV-related illnesses. The HPV vaccine is not used to treat HPV infections or diseases caused by HPV, but instead to prevent the development of cancers.

Currently, cervical cancer is the only HPV-caused cancer for which screening tests are available. Screening tests are used to check for disease when there are no symptoms. The goal of screening for cervical cancer is to find precancerous cell changes before they become cancer and when treatment can prevent cancer from developing. Screening for cervical cancer is an important part of routine health care for people who have a cervix. This includes women and transgender men who still have a cervix.

Cervical cancer is the most common type of cancer caused by HPV, other less common cancers affecting men and women, including anal, vulvar, vaginal, mouth/throat and penile cancers.

Scope of the problem

The highest prevalence of cervical HPV among women is in sub-Saharan Africa (24%), followed by Latin America and the Caribbean (16%), eastern Europe (14%), and South-East Asia (14%) (2). Prevalence in men is highly variable based on sexual trends.

Evidence showed that prevalence of the virus is higher among women living with HIV, men who have sex with men, immunocompromised individuals, people with co-infection with other sexually transmitted infections (STI), people who receive immunosuppressive medications and children who have been through sexual abuse.

Globally, it is estimated that 620 000 new cancer cases in women and 70 000 new cancer cases in men were caused by HPV in 2019 (1). Cervical cancer was the fourth leading cause of cancer and cancer deaths in women in 2022, with some 660 000 new cases and around 350 000 deaths worldwide (3). Cervical cancers account for over 90% of HPV-related cancers in women (1).

The highest rates of cervical cancer incidence and mortality are in low- and middle-income countries. This reflects major inequities driven by lack of access to national HPV vaccination, cervical screening and treatment services, and social and economic determinants.

Symptoms

Most people will not have any symptoms from an HPV infection. The immune system usually clears HPV from the body within a year or two with no lasting effects.

Some HPV infections cause small rough lumps (genital warts) that can appear on the vagina, penis or anus and rarely the throat. They may be painful, itchy or bleed or cause swollen glands.

HPV infection that does not go away on its own can cause changes to cervical cells, which lead to precancers that may become cervical cancer if left untreated. It usually takes 15–20 years for cervical cancer to develop after HPV infection.

The early changes in cervical cells and precancers mostly do not cause symptoms. Symptoms of cervical cancer may include bleeding between periods or after sexual intercourse or a foul-smelling vaginal discharge. These symptoms may be due to other diseases. People with these symptoms should speak to their healthcare provider.

Prevention

Being vaccinated is the best way to prevent HPV infection, cervical cancer and other HPV-related cancers. Screening can detect cervical precancers that can be treated before they develop into cancer.

HPV vaccines should be given to all girls aged 9–14 years, before they become sexually active.

The vaccine may be given as 1 or 2 doses. People with reduced immune systems should receive 2 or 3 doses. Check with your healthcare provider to determine what is best for you.

Using condoms during sex is an important way to prevent HPV infection. Voluntary male circumcision also reduces the risk of infection. Being a non-smoker or stopping smoking reduces the chances of developing persistent HPV infection.

Testing cells from a woman's cervix for HPV is used to screen women for cervical cancer. Women should be screened every 5–10 years starting at age 30. Women living with HIV should be screened every 3 years starting at age 25.

After a positive HPV test (or other screening method), a healthcare provider can look for changes on the cervix or precancers that could develop into cervical cancer if left untreated. Treatment of precancers prevents cervical cancer. Precancers rarely cause symptoms, which is why regular screening to check cervical health is important.

Learn more about vaccination of boys and older age groups: [WHO position paper](#)

Treatment

There is currently no treatment for HPV infection. Treatments exist for genital warts, cervical precancers and cervical cancer.

Non-cancerous genital warts and precancerous lesions in the cervix, vagina, vulva, anus or penis can be removed or treated by ablation (freezing or heating) or with surgery.

Currently, cancer of the cervix (cervical cancer) is the only HPV-caused cancer for which screening tests are available.

Treatments for cancers caused by HPV (including cervical cancer) are more effective if diagnosed early. Treatment should begin quickly after diagnosis.

Learn more about cervical precancer treatment here: [WHO fact sheet on cervical cancer](#)

Management pathways for invasive cancer care are important tools to ensure that a patient is referred promptly and supported as they navigate the steps to diagnosis and treatment decisions. A multidisciplinary team should ensure diagnosis and staging (histological testing, pathology, imaging) takes place prior to treatment decisions which could include surgery, radiotherapy and systemic therapy such as chemotherapy. Treatment decisions should be in line with national guidelines and interventions should be supported by holistic psychological, spiritual, physical and palliative care.

As low- and middle-income countries scale-up cervical screening, more cases of invasive cervical cancer will be detected, especially in previously unscreened populations. Therefore, referral and treatment strategies need to be implemented and expanded alongside prevention services.

WHO response

Giving the global public health burden of cervical cancer caused by HPV, the World Health Assembly (WHA. 73.2) adopted the [Global strategy to accelerate the elimination of cervical cancer as a public health problem](#) with the following targets:

- 90% of girls fully vaccinated with HPV vaccine by age 15;
- 70% of women are screened with a high-performance test by 35, and again by 45 years of age; and
- 90% of women identified with cervical disease receive treatment (90% of women with pre-cancer treated; 90% of women with invasive cancer managed).

Prevention of HPV-associated precancer and cancer is also a key element of WHO's Global health sector strategy on, respectively, HIV, hepatitis and sexually transmitted infections, 2022–2030 and the resolution WHA74.5 (2021) on oral health includes actions on mouth/throat cancers.

The joint work of the WHO at global, regional and national level, alongside UN sister agencies delivers to:

1. increase political commitment to formulate policy and support implementation
2. offer contextualized technical assistance, lessons learned and best practices
3. develop norms and standards based on latest evidence
4. lead the global health ecosystem to achieve the targets and improve quality of care.

References

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