

Podcast: Human Papilloma Virus (HPV)

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My name is Chloe. I am a member of the health team of the German Institute for Medical Mission, in short Difäm. Today we will talk about a vaccination that can prevent cancer.

Worldwide, cervical cancer is the fourth most common cancer in women: In 2020, there were 640 000 new cases and 342 000 deaths. There is a vaccination, which is used as a tool of primary prevention.

With me is my colleague Ute. Ute, can you please tell us more about the vaccine that can protect against cancer?

Hello to everyone and thanks for this question. Yes, we do have a vaccination against cervical cancer because this type of cancer is mainly caused by a viral infection. The human papilloma virus, in short HPV, is responsible for cervical cancer in 95% of all cases. It is a DNA virus that has more than 170 genotypes.¹ Forty of these genotypes are transmitted through sexual intercourse. In most cases, an infection causes no symptoms. Sometimes, it causes lesions in the vagina, vulva, cervix, anus or in mouth and throat. The location of the lesions depend on the kind of sexual intercourse. Ninety percent of the lesions resolve spontaneously within two years. However, the other 10% develop into cancer within 15 to 20 years.

With 84%, cervical cancer is the most frequent form of all HPV-related cancers. In addition, transmission from mother to her baby is possible. The genotypes HPV 16 and 18 are classified as highly carcinogenic and are responsible for 70% of the burden of cervical cancer.²

Who is at risk of developing a cervical cancer due to an infection with HPV?

In principle, everyone who practices sexual intercourse is at risk of contracting HPV. However, studies have shown that women carry a greater risk of developing cervical cancer when they started their sexual life at an early age, had multiple partners, and suffered from other sexually transmitted infections.

In addition, women living with HIV have a six times higher risk of developing cervical cancer. 5% of all women with cervical cancer are HIV positive. In women with untreated HIV infection, cervical cancer can develop much faster than in healthy women. It may take only 5 to 10 years.¹

We already heard that cervical cancer is one of the most common cancer types in women. Is that the case in all parts of the world?

Actually, there are big geographic differences in the prevalence of cervical cancer. Ninety percent of this type of cancer occur in low- and middle-income countries, where it accounts for almost 12% of all cancers in women. In comparison, in high-income regions, cervical cancer accounts for less than 1% of all cancers in women. Mortality is also much higher in poorer settings: It can be 18 times higher than mortality in northern countries. ¹

In high-income countries, prevention programmes have been in place for decades. Women are screened regularly through cervical smears, so-called PAP-smears. Regular screening allows pre-cancerous lesions to be identified, easily treated and cured before invasive cancer develops. In addition, high-income countries have started HPV vaccination campaigns some years ago.

In low-and middle-income countries, there is limited access to these preventative measures. Access to treatment of cancerous lesions through surgery or radio- and chemotherapy is often limited and late. ¹ Therefore, a vaccine that can prevent cervical cancer is a huge step forward. Can you tell us more about this vaccine?

Currently there are four dead virus vaccines available: One protects against HPV 16 and 18, the types that cause 70% of cervical cancers. Two other vaccines protect against HPV 6 and 11, which cause anogenital warts, which are usually benign tumours. Finally, there is a vaccine against five additional HPV genotypes, which cause about 20% of cervical cancers.

When should a person become vaccinated?

Actually, all of these vaccines should be administered in two doses before the onset of sexual activity, meaning before the first exposure to an HPV infection. That means that we should usually vaccinate girls and boys at the onset of their adolescence before they have had their first sexual experience. Adolescents living with HIV should get three doses according to current data.

Cervical cancer is a women's cancer. Why should we also vaccinate boys?

Of course, boys cannot develop cervical cancer. But they can get HPV related cancers in adulthood as well, especially cancer of the penis, the anus, the mouth and the throat, though these cancers are rare. The main reason for immunizing boys is that they help spreading HPV to their sexual partners. Therefore, if we want to eradicate cervical cancer, we must not only vaccinate those who may suffer from it but also those who spread the virus. If we immunize girls and boys, we will reach herd immunity sooner.

What about adults? Can they not benefit from the HPV vaccination?

Adults should only be vaccinated if they were not sexually active before which is rather uncommon. They benefit more from screening and early treatment. In 2020, the World Health Assembly adopted a "global strategy towards eliminating cervical cancer as a public health problem". It recommends a comprehensive approach with three different pillars.

These include primary prevention, which means vaccination against HPV of girls and boys between the ages of 9 to 14 years, before they become sexually active.

The secondary prevention targets women who are already sexually active and over 30 years old or only 25 years of age if they are living with HIV. These women should undergo screening regularly to detect lesions early before they become invasive cancer.

The tertiary prevention pillar targets women infected with HPV by offering diagnosis and early treatment with surgery, radio- and chemotherapy.²

The WHO has set up the 90-70-90 targets for its member countries, which they should have reached by 2030. 90% of girls and boys should be fully vaccinated with HPV vaccine by the age of 15; 70% of women should be screened with a high-performance test at the age of 35; and 90% of women who are identified with cervical pre-cancer or cancer should receive treatment.

This comprehensive approach sounds very good. However, it requires medical equipment, trained health personnel and components of social mobilization and community education. It seems that screening is about as important as vaccination, since the latter is focussing on adolescents.

Yes, you are right, screening is extremely important. In many countries, it is done by visual inspection with acetic acid, in short VIA. Other health facilities also offer PAP-smears. WHO now recommends a new HPV-DNA test that detects within a few hours the high-risk strains 16 and 18 as well as 12 other HPV types leading to cancer development. The women can collect the vaginal samples themselves. The sample is then analysed with the test array on a molecular instrument. The test seems to be simple and fast. However, it is new and a global rollout will most likely take some more time.

Okay, let me wrap this up: HPV is a virus with many different genotypes that causes lesions mainly in the genital organs, which might in the medium run turn into cancer. Vaccination against the virus prevents these lesions and therefore cancer. This applies to girls and to boys. Vaccination has to be given twice before the onset of sexual activity, usually at the age between 9 and 14 years. It is safe and about 90% effective. Because of the missing 10% of effectiveness and all adult women who have not been vaccinated, screening and early detection of cervical cancer is still important if we want to eradicate this menace worldwide. To this aim, WHO has set bold targets.

It has never been so easy to fight cancer. Let us vaccinate and be vaccinated!

Until then stay safe and stay blessed!

Internet sources as of June 1st, 2022

1 [www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers/human-papillomavirus-\(hpv\)](http://www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers/human-papillomavirus-(hpv))

2 www.who.int/news-room/fact-sheets/detail/cervical-cancer