Causes, Risk Factors, and Prevention

Risk Factors

A risk factor is anything that affects your chance of getting a disease such as cancer. Learn more about the risk factors for penile cancer.

- What Are the Risk Factors for Penile Cancer?
- Do We Know What Causes Penile Cancer?

Prevention

There is no way to completely prevent penile cancer. But there are things you can do that might lower your risk. Learn more.

- Can Penile Cancer Be Prevented?

What Are the Risk Factors for Penile Cancer?

A risk factor is anything that affects your chance of getting a disease such as cancer. Different cancers have different risk factors. Some cancer risk factors, like smoking, can be changed. Others, like a person's age or family history, can't be changed.

But having a risk factor, or even several, does not mean that you will get the disease. On the other hand, some men who develop penile cancer have no known risk factors.

Scientists have found certain risk factors that make a man more likely to develop penile cancer.
Human papilloma virus (HPV) infection

Human papilloma virus (HPV) is a group of more than 150 related viruses. They are called papilloma viruses because some of them cause growths called papillomas, which are more commonly called warts. Different HPV types cause different types of warts in various parts of the body. Certain HPV types can infect the genital organs and the anal area, causing raised, bumpy warts called condyloma acuminata (or just condylomas).

Other HPV types have been linked with certain cancers. For example, infection with some types of HPV appears to be an important risk factor for penile cancer. HPV is found in about half of all penile cancers.

HPV is passed from one person to another during skin-to-skin contact with an infected area of the body. HPV can be spread during sex – including vaginal, anal, and oral – but sex doesn’t have to occur for the infection to spread. All that is needed is skin-to-skin contact with an area of the body infected with HPV. Infection with HPV can also spread from one part of the body to another. For example, infection may start in the penis and then spread to the anus.

HPV infection is common. Some research has suggested that about half of all men have a genital HPV infection at any point in time. In most men, the body clears the infection on its own. In some, however, the infection does not go away and becomes chronic. Chronic infection, especially with certain HPV types, can eventually cause some types of cancer, including penile cancer. Men who are not circumcised are more likely to get and stay infected with HPV.

For more on HPV, see HPV and Cancer.

Not being circumcised

Circumcision removes all (or part) of the foreskin. This procedure is most often done in infants but it can be done later in life. Men who were circumcised as children have a lower chance of getting penile cancer than those who were not, but the same protective effect is not seen if the foreskin is removed as an adult. Some studies even suggested a higher risk of penile cancer in men who were circumcised as adults.

The reason for the lower risk in circumcised men is not entirely clear, but it may be related to other known risk factors. For example, men who are circumcised can’t develop the condition called phimosis, and don’t accumulate material known as smegma (see next section). Men with smegma or phimosis have an increased risk of
penile cancer. The later a man is circumcised, the more likely it is that one of these conditions will occur first. Also, circumcised men are less likely to get and stay infected with the human papilloma virus (HPV), even after accounting for differences in sexual behavior. Again, the later a man is circumcised, the more likely it is that he will be infected with HPV before the procedure.

In weighing the risks and benefits of circumcision, doctors consider the fact that penile cancer is very uncommon in the United States, even among uncircumcised men. Although the American Academy of Pediatrics has stated that the health benefits of circumcision in newborn males outweigh the risks, it also states these benefits are not great enough to recommend that all newborns be routinely circumcised.

In the end, decisions about circumcision are highly personal and often depend more on social and religious factors than on medical evidence.

**Phimosis and smegma**

Uncircumcised men with certain conditions are at higher risk for penile cancer.

**Phimosis**

In men who are not circumcised, the foreskin can sometimes become tight and difficult to retract. This condition is known as *phimosis*. Penile cancer is more common in men with phimosis. The reason for this is not clear, but it might be related to the buildup of smegma.

**Smegma**

Sometimes secretions can build up underneath an intact foreskin. If the area under the foreskin isn’t cleaned well, these secretions build up enough to become a thick, sometimes smelly substance called *smegma*. Smegma is more common in men with phimosis, but can occur in anyone with a foreskin, if the foreskin is not retracted regularly to clean the head of the penis.

In the past some experts were concerned that smegma might contain compounds that can cause cancer. Most experts now believe that smegma itself probably doesn’t cause penile cancer, but it can irritate and inflame the penis, which can increase the risk of cancer. It may also make it harder to see very early cancers.
Smoking

Men who smoke are more likely to develop penile cancer. Smokers who have HPV infections have an even higher risk. Smoking exposes your body to many cancer-causing chemicals. These harmful substances are inhaled into the lungs, where they are absorbed into the blood. They can travel in the bloodstream throughout the body to cause cancer in many different areas. Researchers believe that these substances damage genes in cells of the penis, which can lead to penile cancer. Smoking also increases the risk of HPV infection, probably due to its effects on immune function.

UV light treatment of psoriasis

Men who have a skin disease called psoriasis are sometimes treated with drugs called psoralens, followed by exposing the body to an ultraviolet A (UVA) light source. This is known as PUVA therapy. Men who have had this treatment have been found to have a higher rate of penile cancer. Because of this risk, men being treated with PUVA now have their genitals covered during treatment.

Age

The risk of penile cancer goes up with age. The average age of a man when diagnosed is 68, and about 4 out of 5 penile cancers are diagnosed in men over age 55.

AIDS

Men with AIDS have a higher risk of penile cancer. This higher risk seems to be related to their weakened immune system, which is a result of this disease. But it might also be linked to other risk factors that men with HIV (the virus that causes AIDS) are more likely to have. For example, men with HIV are more likely to smoke and to be infected with HPV.

- References

See all references for Penile Cancer

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Do We Know What Causes Penile Cancer?

The exact cause of most penile cancers is not known. However, scientists have found that the disease is linked with a number of other conditions (described in What Are the Risk Factors for Penile Cancer?). Research is now being done to learn more about how these risk factors might cause cells of the penis to become cancerous.

For example, research has shown that normal cells regulate themselves by making substances called tumor suppressor gene products to keep them from growing too fast and becoming cancers. Two proteins (E6 and E7) made by high-risk types of human papilloma virus (HPV) can block the function of tumor suppressor gene products in cells, which may make them more likely to become cancerous.

Smoking creates cancer-causing chemicals that spread throughout the body and can damage the DNA inside cells of the penis. DNA is the chemical in our cells that makes up our genes. (Genes control how our cells grow and divide.) DNA damage affecting genes that control cell growth can contribute to the development of cancer.

- References
  See all references for Penile Cancer

Can Penile Cancer Be Prevented?

The large variations in penile cancer rates throughout the world strongly suggest that many penile cancers can be prevented. The best way to reduce the risk of penile cancer is to avoid known risk factors whenever possible. (See What Are the Risk Factors for Penile Cancer?) But some men with penile cancer have no known avoidable risk
factors, so it’s not possible to prevent this disease completely.

In the past, circumcision (removing the foreskin on the penis) has been suggested as a way to lower penile cancer risk. This was based on studies that reported much lower penile cancer rates among circumcised men than among uncircumcised men. But in some studies, the protective effect of circumcision was no longer seen after factors like smegma and phimosis were taken into account.

In the United States, the risk of penile cancer is low even among uncircumcised men. Men who wish to lower their risk of penile cancer can do so in other ways, such as by avoiding human papilloma virus (HPV) and human immunodeficiency virus (HIV) infection and by not smoking. Men who aren’t circumcised can also lower their risk of penile cancer by practicing good genital hygiene. Although infant circumcision can lower the risk of penile cancer, based on the low risk of this cancer in the US, it would take over 900 circumcisions to prevent one case of penile cancer in this country.

**Genital hygiene**

Perhaps the most important factor in preventing penile cancer in uncircumcised men is good genital hygiene. Uncircumcised men need to pull back (retract) the foreskin and clean the entire penis. If the foreskin is constricted and difficult to retract (a condition called *phimosis*), a doctor may be able to prescribe a cream or ointment that can make it easier to do so. If this doesn’t work the doctor may cut the skin of the foreskin in a procedure called a *dorsal slit* to make retraction easier.

**Avoiding HPV infection**

All men should do what they can to avoid being infected with HPV. Along with lowering penile cancer risk, this could have an even bigger impact on the risk of cervical cancer in their female partners.

The main factors influencing the risk of genital HPV infection in men are circumcision and the number of sexual partners. Men who are circumcised have a lower chance of becoming and staying infected with HPV. The reasons for this are unclear. It may be that after circumcision the skin on the glans (tip of the penis) goes through changes that make it more resistant to HPV infection. Another theory is that the surface of the foreskin (which is removed by circumcision) is more easily infected by HPV. Still, circumcision does not protect completely against HPV infection. Men who are circumcised can still get HPV and pass it on to their partners. The risk of being infected with HPV is also strongly linked to having many sexual partners (over a man’s lifetime).
Condoms provide some protection against HPV, but they don’t prevent infection completely. Men who use condoms regularly are less likely to be infected with HPV and pass it on to their female partners. Condoms can’t protect completely because they don’t cover every possible HPV-infected area of the body, such as the skin on the genital or anal area. Still, condoms do provide some protection against HPV, and they also protect against HIV and some other sexually transmitted infections.

A man can have an HPV infection for years without any symptoms, so the absence of visible warts can’t be used to tell if someone has HPV. Even when someone doesn’t have warts (or any other symptom), he (or she) can still be infected with HPV and pass the virus to somebody else.

**HPV vaccines**

Vaccines can help protect against certain HPV infections. All of them protect against infection with HPV subtypes 16 and 18. Some can also protect against infections with other HPV subtypes, including some types that cause anal and genital warts. All of the vaccines available in the US are approved for use in females, but only Gardasil® and Gardasil 9® are approved for use in males.

Although we know that these vaccines can help protect against infection with HPV, so far, they have not been studied to see if they lower the risk of penile cancer.

HPV vaccines work best if given before a person starts having sex (and is exposed to HPV). Giving the vaccine when they are young helps ensure that the person getting the vaccine has not yet been exposed to HPV and so is more likely to benefit.

The Advisory Committee on Immunization Practices (ACIP), part of the US Centers for Disease Control and Prevention (CDC), recommends that either of the Gardasil vaccines be given routinely to males aged 11 or 12 years. ACIP also recommends that the vaccine be given to males aged 13 through 21 years who haven’t been vaccinated previously or who have not completed the 3-dose series. Men aged 22 through 26 years may also be vaccinated. The vaccine is not recommended for older men because it’s more likely they would have already been infected with HPV at some point.

The hope is that HPV vaccines may eventually help reduce the risk of all cancers linked to HPV, including penile cancers.

For more on vaccines against HPV, see [HPV Vaccines](#).

**Not smoking**
Smoking also increases penile cancer risk, so not smoking might lower that risk. Quitting smoking or never starting in the first place is a good way to reduce your risk of many diseases, including penile cancer.

- References
  See all references for Penile Cancer

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