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 vaginal cancer.

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

Prevention

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

- Can Vaginal Cancer Be Prevented?

What Are the Risk Factors for Vaginal Cancer?

A risk factor is anything that affects your chance of getting a disease such as cancer. Different cancers have different risk factors. For example, exposing skin to strong sunlight is a risk factor for skin cancer. Smoking is a risk factor for many cancers.

There are different kinds of risk factors. Some, such as your age or race, can’t be changed. Others may be related to personal choices such as smoking, drinking, or diet. Some factors influence risk more than others. But risk factors don’t tell us everything. Having a risk factor, or even several, does not mean that a person will get the disease. Also, not having any risk factors doesn’t mean that you won’t get it, either.

Scientists have found that certain risk factors make a woman more likely to develop
vaginal cancer. But many women with vaginal cancer don’t have any apparent risk factors. And even if a woman with vaginal cancer has one or more risk factors, it’s impossible to know for sure how much that risk factor contributed to causing the cancer.

**Age**

Squamous cell cancer of the vagina occurs mainly in older women. Only 15% of cases are found in women younger than 40. Almost half of cases occur in women who are 70 years old or older.

**Diethylstilbestrol (DES)**

DES is a hormonal drug that was given to some women to prevent miscarriage between 1940 and 1971. Women whose mothers took DES (when pregnant with them) develop clear-cell adenocarcinoma of the vagina or cervix more often than would normally be expected. There is about 1 case of this type of cancer in every 1,000 daughters of women who took DES during their pregnancy. This means that about 99.9% of DES daughters do not develop this cancer.

DES-related clear cell adenocarcinoma is more common in the vagina than the cervix. The risk appears to be greatest in those whose mothers took the drug during their first 16 weeks of pregnancy. Their average age when they are diagnosed is 19 years. Since the use of DES during pregnancy was stopped by the FDA in 1971, even the youngest DES daughters are older than 35 – past the age of highest risk. But a woman is not safe from a DES-related cancer at any age. Doctors do not know exactly how long women remain at risk.

DES daughters have an increased risk of developing clear cell carcinomas, but women don’t have to be exposed to DES for clear cell carcinoma to develop. In fact, women were diagnosed with this type of cancer before DES was invented.

DES daughters are also more likely to have high grade cervical dysplasia (CIN 3) and vaginal dysplasia (VAIN 3) when compared to women who were never exposed.

You can learn more about DES in [DES Exposure: Questions and Answers](#).

**Vaginal adenosis**

Normally, the vagina is lined by flat cells called *squamous cells*. In about 40% of women
who have already started having periods, the vagina may have one or more areas lined instead by glandular cells. These cells look like those found in the glands of the cervix, the lining of the body of the uterus (endometrium), and the lining of the fallopian tubes. These areas of gland cells are called adenosis. It occurs in nearly all women who were exposed to DES during their mothers’ pregnancy. Having adenosis increases the risk of developing clear cell carcinoma, but this cancer is still very rare. The risk of clear cell carcinoma in a woman who has adenosis that is not related to DES is very, very small. Still, many doctors feel that any woman with adenosis should have very careful screening and follow-up.

Human papilloma virus

Human papilloma virus (HPV) is a group of more than 150 related viruses. They are called papilloma viruses because some of them cause a type of growth called a papilloma. Papillomas -- more commonly known as warts -- are not cancers.

Different HPV types can cause different types of warts in different parts of the body. Some types cause common warts on the hands and feet. Other types tend to cause warts on the lips or tongue.

Certain HPV types can infect the outer female and male genital organs and the anal area, causing raised, bumpy warts. These warts may barely be visible or they may be several inches across. The medical term for genital warts is condyloma acuminatum. Two types of HPV, HPV 6 and HPV 11, cause most cases of genital warts. These 2 types are seldom linked to cancer, and so are called low-risk types of HPV.

Other HPV types have been linked with cancers of the cervix and vulva in women, cancer of the penis in men, and cancers of the anus and throat (in men and women). These are known as high-risk types of HPV and include HPV 16, HPV 18, HPV 31, as well as others. Infection with a high-risk HPV may produce no visible signs until pre-cancerous changes or cancer develops.

HPV can be passed from one person to another during skin-to-skin contact. One way HPV is spread is through sex, including vaginal and anal intercourse and even oral sex.

Up to 9 of every 10 vaginal cancers and pre-cancers (vaginal intraepithelial neoplasia – VAIN) are linked to infection with HPV.

Vaccines have been developed to help prevent infection with some types of HPV. Right now, 2 different HPV vaccines have been approved for use in the United States by the Food and Drug Administration (FDA): Gardasil® and Cervarix®. These are discussed in
more detail in HPV Vaccines.

**Cervical cancer**

Having cervical cancer or pre-cancer (cervical intraepithelial neoplasia or cervical dysplasia) increases a woman’s risk of vaginal squamous cell cancer. This is most likely because cervical and vaginal cancers have similar risk factors, such as HPV infection and smoking.

Some studies suggest that treating cervical cancer with radiation therapy may increase the risk of vaginal cancer, but this was not seen in other studies, and the issue remains unresolved.

**Smoking**

Smoking cigarettes more than doubles a woman’s risk of getting vaginal cancer.

**Alcohol**

Drinking alcohol might affect the risk of vaginal cancer. A study of alcoholic women found more cases of vaginal cancer than expected. But this study was flawed because it didn’t look at other factors that can alter risk, such as smoking and HPV infection. A more recent study that did take these other risk factors into account found a decreased risk of vaginal cancer in women who do not drink alcohol at all.

**Human immunodeficiency virus**

Infection with HIV (human immunodeficiency virus), the virus that causes AIDS, also increases the risk of vaginal cancer.

**Vaginal irritation**

In some women, stretched pelvic ligaments may let the uterus sag into the vagina or even extend outside the vagina. This condition is called uterine prolapse and can be treated by surgery or by wearing a pessary, a device to keep the uterus in place. Some studies suggest that long-term (chronic) irritation of the vagina in women using a pessary may slightly increase the risk of squamous cell vaginal cancer. But this
association is extremely rare, and no studies have conclusively proven that pessaries actually cause vaginal cancer.

- References
  See all references for Vaginal Cancer

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Do We Know What Causes Vaginal Cancer?

The exact cause of most vaginal cancers is not known. But scientists have found that it is associated with a number of other conditions described in What are the risk factors for vaginal cancer? Research is now being done to learn more about how these risk factors cause cells of the vagina to become cancerous.

Research has shown that normal cells make substances called tumor suppressor gene products to keep from growing too rapidly and becoming cancers. High-risk HPV (human papilloma virus) types (like 16 and 18) produce 2 proteins (E6 and E7) that can interfere with the functioning of known tumor suppressor gene products.

As mentioned in the section on risk factors, women exposed to diethylstilbestrol (DES) as a fetus (that is, their mothers took DES during pregnancy) are at increased risk for developing clear cell carcinoma. DES also increases the likelihood of vaginal adenosis (gland-type cells in the vaginal lining rather than the usual squamous cells). Most women with vaginal adenosis never develop vaginal clear cell carcinoma. However, those with a rare type of adenosis (called atypical tuboendometrial adenosis) do have an increased risk of developing this cancer.

- References
  See all references for Vaginal Cancer

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Can Vaginal Cancer Be Prevented?

The best way to reduce the risk of vaginal cancer is to avoid known risk factors and to find and treat any vaginal pre-cancers. But since many women with vaginal cancer have no known risk factors, it is not possible to completely prevent this disease.

Avoid HPV exposure

Infection with human papillomavirus (HPV) is a risk factor for vaginal cancer. HPV infections occur mainly in younger women and are less common in women over 30. The reason for this is not clear.

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 intercourse, anal intercourse, and oral sex – but sex doesn’t have to occur for the infection to spread. All that is needed is for there to be skin-to-skin contact with an area of the body infected with HPV. The virus can be spread through genital-to-genital contact. It’s even possible for a genital infection to spread through hand-to-genital contact.

An HPV infection also seems to be able to be spread from one part of the body to another. This means that an infection may start in the cervix and then spread to the vagina and vulva.

It can be very hard to avoid being exposed to HPV. It might be possible to prevent genital HPV infection by not letting others come in contact with your anal or genital area, but even then there could be other ways to become infected that aren’t yet clear. For example, a recent study showed that HPV can be present on sex toys, so sharing sex toys could potentially spread HPV.

Infection with HPV is common, and in most cases the body is able to clear the infection on its own. But in some cases the infection does not go away and becomes chronic. Chronic infection, especially with high-risk HPV types, can eventually cause certain cancers, including vaginal cancer and pre-cancer.

Certain types of sexual behavior increase a woman’s risk of getting a genital HPV infection, such as having sex at an early age and having many sex partners. Although
women who have had many sexual partners are more likely to get infected with HPV, a woman who has had only one sexual partner can still get infected. This is more likely if she has a partner who has had many sex partners or if her partner is an uncircumcised male.

Delaying sex until you are older can help you avoid HPV. It also helps if you limit your number of sex partners and avoid having sex with someone who has had many other sex partners.

A person can be infected with HPV for years without any symptoms, so the absence of visible warts cannot 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 and men**

The 2 main factors influencing the risk of genital HPV infection in men are circumcision and the number of sexual partners. Men who are circumcised (have had the foreskin of the penis removed) have a lower chance of becoming and staying infected with HPV.

Men who have not been circumcised are more likely to be infected with HPV and pass it on to their partners. The reasons for this are unclear. It may be that the skin on the glans 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 completely protect against HPV infection – men who are circumcised can still get HPV and pass it on to their partners.

The risk of a man being infected with HPV is also strongly linked to having many sexual partners over a man’s lifetime.

**Condoms and HPV**

Condoms ("rubbers") provide some protection against HPV. One study found that when condoms are used correctly every time sex occurs, they can lower the HPV infection rate by about 70%. Condoms cannot protect completely because they don’t cover every possible HPV-infected area of the body, such as 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 diseases. Condoms (when used by the male partner) also seem to help genital HPV infections clear (go away) faster in both women and men.
Get vaccinated

Vaccines are available that 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.

These vaccines can only be used to prevent HPV infection – they do not help treat an existing infection. To be most effective, the vaccines should be given before a person is exposed to HPV (such as through sexual activity).

Some of these vaccines, Gardasil® and Gardasil 9®, are approved to help prevent vaginal cancers and pre-cancers. They are also approved to help prevent others cancers, as well as anal and genital warts.

Cervarix®, another HPV vaccine available in the US, also helps prevent some HPV infections. It is known to help prevent cervical cancers and pre-cancers, but so far hasn’t been shown to help prevent vaginal cancer or pre-cancer.

More HPV vaccines are being developed and tested.

For more information about HPV and HPV vaccines, see HPV (Human Papilloma Virus).

Don’t smoke

Not smoking is another way to lower vaginal cancer risk. Women who don’t smoke are also less likely to develop a number of other cancers, such as those of the lungs, mouth, throat, bladder, kidneys, and several other organs.

Find and treat pre-cancerous conditions

Most vaginal squamous cell cancers are believed to start out as pre-cancerous changes, called vaginal intraepithelial neoplasia or VAIN. VAIN may be present for years before turning into a true (invasive) cancer. Screening for cervical cancer (such as with a Pap test or HPV test) can sometimes pick up these pre-cancers. If a pre-cancer is found, it can be treated, stopping cancer before it really starts.

Still, since vaginal cancer and VAIN are rare, doctors do not often do other tests to look
for these conditions in women who do not have symptoms or a history of pre-cancer or cancer of the cervix, vagina, or vulva.

**How Pap tests and pelvic examinations are done**

First, the skin of the outer vaginal lips (labia majora) and inner lips (labia minora) is examined for any visible abnormalities. The health care professional first places a speculum inside the vagina. A speculum is a metal or plastic instrument that keeps the vagina open so that the cervix can be seen clearly. Next, using a small spatula, a sample of cells and mucus is lightly scraped from the exocervix (the surface of the cervix that is closest to the vagina). A small brush or a cotton-tipped swab is then inserted into the cervical opening to take a sample from the endocervix (the inside part of the cervix that is closest to the body of the uterus). Then, the speculum is removed.

The doctor then checks the organs of the pelvis by inserting 1 or 2 gloved fingers of one hand into the vagina while feeling (palpating) the lower abdomen, just above the pubic bone, with the other. The doctor may do a rectal exam at this time also. It's very important to know that a Pap test is not always done when a pelvic exam is done, so if you are uncertain you should ask if one was done.

Vaginal intraepithelial neoplasia (VAIN; pre-cancer of the vagina) may not be visible during a routine exam of the vagina. But it may be found with a Pap test. Because cervical cancer is much more common than vaginal cancer, Pap test samples are scraped or brushed from the cervix. However, some cells of the vaginal lining are usually also picked up at the same time. That allows cases of VAIN to be found in women whose vaginal lining is not intentionally scraped. Still, the main goal of a Pap test is to find cervical pre-cancers and early cervical cancers, not vaginal cancer or VAIN. That's why women who have had a total hysterectomy (removal of the uterus and cervix) stop getting Pap tests, unless the hysterectomy was done as a treatment for cervical pre-cancer (or cancer).

In women whose cervix has been removed by surgery to treat cervical cancer or pre-cancer, Pap test samples may be taken from the lining of the upper vagina to look for cervical cancer (that has come back), and to look for early vaginal cancer or VAIN. Vaginal cancer and VAIN are more common in women who have had cervical cancer or pre-cancer.

Many women with VAIN may also have a pre-cancer of the cervix (known as *cervical intraepithelial neoplasia or CIN*). If abnormal cells are seen on a Pap test, the next step is a procedure called *colposcopy*, in which the cervix, the vagina, and at times the vulva are examined with a special instrument called a *colposcope*. 
References

See all references for Vaginal Cancer

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