

Human papillomavirus and HIV disease

The human papillomavirus (HPV) is the most common sexual infection in the US. Nearly half of all sexually active people have had HPV at some point in their lives. Since it often doesn't cause symptoms, many never know they've had it.

Though most types of HPV do not cause serious disease, some can lead to cancer. Left untreated, these high-risk types can cause cervical and anal cancers and less common cancers of the vulva, penis, scrotum and mouth. HPV has become a growing concern for people with HIV since they're at higher risk for both HPV infection and disease.

What is HPV?

HPV is a virus that lives in the flat, thin cells on the surface of your skin, called *epithelial* cells. These are also found on the surface of the vagina, vulva, cervix, anus, penis head, mouth and throat, which is why having sex can easily pass the virus onto others. Most people who get HPV clear the infection on their own, often within 6 months to a year.

More than 100 types of HPV exist. Some do not appear to cause health problems while others cause the common wart. About 40 types are responsible for genital warts, while about a dozen high-risk types can cause *dysplasia*, which are abnormal cells that can lead to cancer. HPV types 6 and

11 cause about 90% of genital warts. Types 16 and 18 cause about 70% of cervical and anal cancers. Other high-risk types include 31, 35, 39, 45, 51, 52 and 58.

The HPV types that cause genital warts are not linked to cancer. However, if you have one type of HPV you may also have others, which could be the ones that cause cancer. This is especially true for people with HIV.

What are the symptoms?

Symptoms often don't appear when you have HPV, for both high- and low-risk types. This makes it difficult to know if you have it. Some doctors may not consider HPV an important issue, which may leave you to bring it up during your visits.

For genital warts, symptoms include small, usually painless bumps or growths on the skin. They can be round and flat or differ in size or be shaped like a cauliflower. Genital warts can appear on the vagina, vulva, cervix, penis, scrotum, anus and the areas around the sex organs. They rarely appear in the mouth or throat.



For dysplasia, symptoms are rarely present. It's important to get regular Pap smears to diagnose dysplasia of the cervix or anus as early as possible.

How is HPV spread?

HPV is passed through skin-to-skin contact. It's very easily passed during oral, vaginal and anal sex through mucous membranes, body fluids and small breaks in the skin. This includes surfaces of skin that you can see, like that of the vulva, and on what you can't see, such as the surface of the cervix or anus.

Who is at risk for HPV?

You are more at risk for HPV infection and disease if you're sexually active, especially at an early age. The more sexual partners you and your sex partner has also puts you at higher risk. Anyone can get HPV though it occurs more often in people 17–33 years of age. If you smoke, you're also at higher risk.

People with HIV are more at risk for getting HPV and for more stubborn genital warts and higher rates of

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cervical and anal dysplasia. All people with HIV are at a higher risk for anal dysplasia, whether or not they've had anal sex. Men who have sex with men have about a 17 times higher risk.

How do you prevent HPV?

The only way to prevent getting HPV is by not having sex. Limiting the number of partners and choosing partners who've had few or no sexual partners can help reduce your risk.

Using a condom can also help, but it doesn't fully protect everyone. Stopping smoking will also lower your risk.

For women, getting a vaccine can help them from getting certain types of HPV. The vaccine, Gardasil, protects against low-risk types 6 and 11 and high-risk types 16 and 18. It's nearly 100% effective in those who haven't already had these types. Gardasil is recommended for girls 11–12 years of age before they become sexually active, and as early as 9 and as late as 26 years old. It can also be used in boys of the same age range.

A second vaccine, Cervarix protects against high-risk types 16, 18, 31 and 45. It's also nearly 100% effective in those who haven't had these 4 types. Cervarix does not prevent genital warts.

Women who get vaccinated should still stay on regular Pap schedules. Anyone with HIV may want to discuss with their doctors about getting anal Paps done.

How is HPV diagnosed?

Genital warts are diagnosed by a visual exam by your doctor. Dysplasia is diagnosed through a cervical or anal Pap test done by your doctor. Here, a small piece of tissue is removed and screened for abnormal cells. An HPV DNA test may also be done. If it hasn't been done and the Pap results show dysplasia, your doctor may run the DNA test to see what types of HPV are present.

To further examine the cervix, your doctor may use a *colposcope*, which is a special microscope that looks at the cells of the cervix, vagina and vulva. To examine the anus, you may have a *digital rectal examination* done, which is when your doctor inserts a finger into the anus to check for bumps or abnormal tissue. An *anoscopy* may also be done, which is when your doctor uses a special microscope to examine the anus more closely.

Cervical dysplasia

All women should start getting routine Pap smears within 3 years of becoming sexually active and no later than 21 years of age. "Routine" most often means every 3 years if Pap results come back normal and more frequently if the results show dysplasia.

Anal dysplasia

Anal infection is rather common. It most often happens due to anal intercourse, but not always. Only a fraction of people with anal HPV infection will develop a lasting case of anal dysplasia. Although even fewer will go on to develop anal cancer, its rate continues to rise especially in HIV-positive people.

How is HPV treated?

Treating HPV focuses on treating its symptoms, like genital warts and dysplasia. For most people, their immune systems are able to rid their bodies of HPV on their own. Therefore, treatments have not been developed to get rid of the virus.

Many treatments exist, and they may depend upon your level of disease. Discuss the options with your doctor to find one that best suits you. Even after treatment, both genital warts and dysplasia can return so treatment may be repeated. It's wise to continue checking and report symptoms should they reappear.

Treating genital warts may be done by you or by your doctor. Treating dysplasia must be done by your doctor. Some treatments cause more discomfort than others, and some need recovery time. People with HIV often need more aggressive treatment. Check the chart on page 4.

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Special concerns for people living with HIV

HPV infection and disease are more common and persistent in people living with HIV. HIV-positive women are at a higher risk for cervical dysplasia. Men and women are both at increased risk for anal dysplasia, whether or not they've engaged in anal sex. Nearly all HIV-positive men who have had receptive anal intercourse have anal HPV infection.

Treating HPV disease is an emerging issue for people with HIV. Standards of care are not in place to screen and treat it which can lead to gaps in medical attention. Those with CD4 counts below 100 are more likely to have more persistent HPV disease and may not respond to HPV treatments as well as others do. Though an anal Pap smear is similar to a cervical Pap, some doctors may not know how to do one or are comfortable with doing one.

Special concerns for pregnant women and people over 50

The risk of passing HPV onto a baby during pregnancy or birth is very low. However, some HPV treatments can cause birth defects, so make sure to tell your doctor if you're pregnant or considering pregnancy.

HPV more often occurs in people aged 17–33, so people over 50 are generally less at risk for getting the infection. However, it's still possible for

an adult to get HPV at any age. HPV infection and disease is not well studied in people over 50.

What may help to ask about at a doctor's visit?

- Do you have enough information about me and my risks for HPV?
- What is my risk for getting HPV and developing HPV disease?
- What tests should I get done to screen for possible HPV?
- How often do you recommend I get a cervical and/or anal Pap smear done?

HPV terms

- **Intraepithelial:** Inside the top layers of skin. (*Intra* = inside, *epithelial* = top layer.) This skin tissue is tightly packed. It covers the body and lines its inside surfaces.
- **Squamous:** Flat cells found on the surface of skin. As young cells from the bottom layer of skin rise, they mature and flatten out. HPV likes to live in these cells.
- **Dysplasia:** Growth of abnormal cells. (*Dys* = abnormal, *plasia* = growth.) If skin cells don't mature properly due to HPV, they can look different in shape and size.
- **AIN (anal intraepithelial neoplasia):** Growth of new cells found on the anus. There are 3 grades: AIN 1, low-grade with few dysplasia cells ; AIN 2, moderate with many more dysplasia cells ; and AIN 3, high-grade with all or nearly all the surface as dysplasia (also called CIS).
- **CIN (cervical intraepithelial neoplasia):** Growth of new cells found on the cervix. Similar to AIN, there are 4 grades: CIN 1, CIN 2, and CIN 3.
- **CIS (carcinoma-in-situ):** Simply put, it means "cancer in place". Cancerous cells were found in the top layers of skin but not further into the soft tissue below.
- **SIL (squamous intraepithelial lesion):** Presence of abnormal tissue found in the top layers of skin.
- **LSIL (low-grade SIL):** Surface skin tissue contains a few abnormal cells. LSIL usually clears on its own, though routine screening should continue.
- **HSIL (high-grade SIL):** Surface skin tissue with moderate or severe number of abnormal cells. It's not known which types become cancer.
- **ASCUS (atypical squamous cells of undetermined significance):** Surface skin tissue with some abnormal cells but not enough to be called dysplasia.
- **ASCH (atypical squamous cells, cannot exclude HSIL):** Surface skin tissue with abnormal cells similar to HSIL but cannot be called HSIL.
- **Cancer:** High level of abnormal cells found in tissue that continue to grow on their own. Also called CIS.
- **Invasive cancer:** Diagnosis of cancer that has moved into the soft tissue below the skin and perhaps into other parts of the body.

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Treatments for genital warts and dysplasia

Procedure	Used for	What happens	Success	Possible side effects	Notes
Watch and wait	Internal/external warts, LSIL, HSIL.	Warts may take about 6 months to fully appear.		None.	2 in 5 clear warts on own. Most LSIL resolves on own.
Aldara cream (imiquimod)	External warts, LSIL.	Patient applies 3x/week, up to 16 weeks.	30–50%	Burning and irritation	May take 3–4 weeks to work. Safety in pregnancy unknown.
Condylox or Podofilox (podophyllotoxin)	External warts, LSIL	Patient applies gel/cream 2x/day for 3 days, then 4 days off, up to 16 weeks.	45–80%	Burning, irritation, tenderness.	May need other type of treatment. Safety in pregnancy unknown.
Efudex cream (fluorouracil)	External warts.	Patient applies 3x a week, up to 16 weeks.	45–80%	Burning.	
Trichloroacetic or bichloroacetic acid	Internal/external warts, LSIL, HSIL.	Doctor applies. Patient washes off later.	50–80%	Burns when applied, though usually short-term.	Used several times.
Cryotherapy	Internal/external warts.	Freezes warts off.	60–90%	Possible irritation, burning, and discomfort.	Used several times. Safe during pregnancy.
Electrocautery	Internal/external warts, LSIL, HSIL.	Electric current burns off warts.	80–90%	Irritation, burning, discomfort.	Usually used once. Safe during pregnancy.
Infrared coagulation (IRC)	Internal/external warts, LSIL, HSIL.	Applies a lower level of heat than laser or electrocautery.		Discomfort, irritation, bleeding.	Briefer recovery. Usually 1 treatment. Safe during pregnancy.
Laser	External, maybe internal, warts, LSIL, HSIL.	Laser controls level of treatment.	20–50%	Pain is common.	Safe during pregnancy.
LEEP (loop electro-surgical excision procedure)	Cervical LSIL, HSIL.	Thin wire electrode removes abnormal cells.		Pain, discomfort, bleeding.	Outpatient procedure.
Cone biopsy	Cervical LSIL, HSIL.	Removes tissue from cervix.		Pain with some recovery.	Outpatient procedure.
Podophyllin solution	External warts.	Doctor normally applies. Patient washes off.	30–80%	Discomfort.	3–4 uses only. Not safe in pregnancy. May be carcinogenic.
Outpatient surgery	Internal/external warts, LSIL, HSIL.	Occurs in doctor's office.	Up to 90%	Pain, irritation, ulcers, bleeding.	Longer recovery. Safe during pregnancy.