

# HPV, cervical dysplasia and cervical cancer

## Summary

Cervical cancer typically develops over a period of years, beginning with a precancerous condition called *cervical dysplasia*. The cervix is the narrow, lower end of the uterus (womb).

Cervical dysplasia occurs when clusters of abnormal cells form lesions in the mucosa (“wet lining”) of the cervix.

A sexually transmitted virus called *human papillomavirus* (HPV) causes most cases of cervical dysplasia and cervical cancer. There are different types of HPV. Only some types cause cervical dysplasia and cervical cancer.

Exams and tests can be used to screen for and diagnose cervical dysplasia and cervical cancer. However, cervical dysplasia can be hard to detect through routine exams alone and so regular *Pap tests* are a good idea.

If treated early, cervical dysplasia is less likely to develop into cervical cancer. Treatments are used to remove the lesions before they turn into cancer.

Cervical cancer is usually treated with radiation and chemotherapy or with surgery, to remove the cancer, slow its growth and/or prevent it from spreading.

People living with HIV have a higher risk of developing cervical cancer. However, with regular gynecological monitoring and care, cervical cancer is not common among people living with HIV in Canada and other high-income countries.

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There are several vaccines that can prevent acquiring the most common types of HPV that can lead to cervical cancer.

Consistent and correct condom use reduces, but does not eliminate, the risk of getting HPV or passing it to someone else.

Quitting smoking can help reduce the risk of developing cervical dysplasia and cervical cancer.

Key messages for clients on HPV, cervical dysplasia and cervical cancer, are available at the end of this fact sheet.

**The words we use here** – CATIE is committed to using language that is relevant to everyone. People use different terms to describe their genitals. This text uses medical terms, such as vagina and penis, to describe genitals. Cisgender<sup>i</sup> people can often identify with these terms. Some transgender<sup>ii</sup> people may use other terms, such as front hole and strapless. CATIE acknowledges and respects that people use words that they are most comfortable with.

## What are cervical dysplasia and cervical cancer?

The cervix is the narrow, lower end of the uterus (womb), which connects to the vagina. The cervix can be felt with the tip of a finger inside the vagina. Cervical cancer starts as a precancerous condition called cervical dysplasia (abnormal changes in cells) in the mucosa (“wet lining”) of the cervix. Groups of these abnormal cells form areas of abnormal tissue called *lesions*. Over time, these lesions can develop into cancer.

Some lesions form but then shrink or disappear; some return after disappearing; and some remain present without changing. Other lesions progress from low-grade to high-grade lesions, which can then progress to cancer. Cervical cancer happens when cells in the cervix grow and multiply

uncontrollably, spreading into and damaging surrounding tissue.<sup>1-3</sup>

## What causes cervical dysplasia and cervical cancer?

Almost all cases of cervical dysplasia and cervical cancer are caused by HPV. This makes HPV the most important risk factor for cervical cancer.

HPV is a very common virus. Some types of HPV can be passed on sexually, through bodily fluids, such as semen and vaginal secretions. HPV can also be transmitted through skin-to-skin contact (such as genital-to-genital contact) even when bodily fluids are not present.

There are over 100 different types of HPV. Only some of these types cause cervical dysplasia and cervical cancer. HPV types 16 and 18, in particular, account for most cases of cervical cancer (and anal cancer as well). Other types can cause warts on, in or around the anus or genitals (*anogenital warts*).

Most sexually active people acquire HPV at some point in their lives. In most cases, the immune system clears the HPV infection without any problems. However, this does not make someone immune to future HPV infections because there are many different types of HPV.

One way in which HPV may cause cancer is by interfering with how the body prevents cancer from developing. The human body produces cells that make proteins, which help prevent dysplasia and cancer. In some cases, HPV can shut off these proteins.<sup>2,3</sup>

## Who is at risk?

Anyone with a cervix who is sexually active can get HPV in the cervix, cervical dysplasia or cervical cancer. HPV can be passed through vaginal sex, anal sex and oral sex (mouth on penis, mouth on vagina). It can also be passed through oral-anal contact (rimming) and through the sharing of sex toys. Having multiple sexual partners increases a person’s risk.

When a person has HPV, other factors can contribute to the development of cervical dysplasia and cervical cancer.

People with weakened immune systems are at greater risk for cervical dysplasia and cervical cancer. This includes people living with HIV. This risk seems to increase as CD4 counts decrease.

Other important risk factors for cervical dysplasia and cervical cancer include cigarette smoking, and history of other sexually transmitted infections. Using oral contraceptives (birth control pills) for a long time also increases the risk.

Having given birth to multiple children is a risk factor for cervical cancer as well; the risk increases with each additional child a person gives birth to after the first. Individuals born to pregnant people who took a form of estrogen supplement called Diethylstilbestrol (DES) during pregnancy are also at higher risk of some kinds of cervical cancer. Symptoms or history of other HPV-related conditions, such as anal cancer, can also indicate that a person is at risk for cervical cancer, because the HPV types that cause these conditions might also cause cervical cancer.

People living with HIV have a higher risk of acquiring an HPV infection and of developing dysplastic lesions.<sup>3-7</sup>

## Symptoms

Individuals with cervical dysplasia often do not experience any clear symptoms until it is advanced or has become cervical cancer. Early stage cervical cancer may not produce any signs or symptoms either. In more advanced cervical cancer, symptoms may include pain in the abdomen or lower back, pain or bleeding while having vaginal intercourse, unusual vaginal discharge, or bleeding between menstrual periods. Some of these symptoms are not specific to cervical cancer, so they may be mistaken for other conditions.

Having anogenital warts may be a sign that a person should be tested for cervical dysplasia or cervical cancer. Even though anogenital warts and cervical cancer are caused by different types of HPV, people with the type(s) that cause anogenital warts are more likely to also have the type(s) that cause cervical cancer. Anogenital warts usually consist of a series of bumps or mini-cauliflower-like growths. These may be easily visible if they are located in, on

or around the vagina or anus. Warts on the cervix or in the anal canal may not be detected prior to internal examination.<sup>2,3,8</sup>

## Progression of cervical cancer

The abnormal cells that develop as a result of cervical dysplasia can eventually develop into cervical cancer, particularly if not detected and treated early. If the cancer has spread deeply into the cervix or adjacent tissues, removing the cancer or preventing its spread may require surgical removal of the cervix, uterus and/or other parts of the reproductive system. If cervical cancer is not diagnosed and treated early, the cancer is more likely to spread to other parts of the body. More aggressive cancer treatments may then be required.<sup>1,3,8,9</sup>

## Testing and diagnosis

Regular pelvic examinations including Pap tests and HPV testing can help diagnose or monitor HPV, cervical dysplasia or cervical cancer. National guidelines in Canada recommend routine screening for cervical cancer every three years, starting at age 25, but recommendations differ by province and territory.

Screening for cervical dysplasia and cervical cancer involves the use of a cervical Pap test. To do a Pap test, a healthcare provider inserts a tiny brush and a small wooden spatula into the vagina and rubs them over the cervix to loosen and collect cells. The cells are smeared on a glass slide that is then sent to a laboratory for study. The cells are examined to determine whether they show signs of cervical dysplasia or cervical cancer. Pap tests are also used to “grade” any abnormalities that are found. *Low-grade* lesions have some chance of leading to cancer. *High-grade* lesions are more advanced and more likely to develop into cancer.

Although Pap tests are useful, they can produce “false-negative” results. In other words, the lab may report a test result as “normal” when there actually are abnormalities in the cells of the cervix. For this reason, HPV testing may be used in addition to Pap tests during screening. For HPV testing, doctors collect a small amount of fluid from the

cervix and have it tested for the presence of HPV. The purpose of this test is to find out what types of HPV are present. Once this is known, the tests can be used to predict the presence of cervical dysplasia or cervical cancer. If Pap tests do not detect these conditions, the presence of HPV may indicate the need for closer examination.

Depending on the results of a Pap test and/or HPV test, a person may be referred to a specialist (a gynecologist) for a colposcopy. During a colposcopy, a specialist uses a lighted magnifying instrument called a colposcope to look inside the vagina and visually examine the cervix. The cervix is lightly washed with a weak vinegar solution before the colposcope is put in place. The vinegar solution makes abnormal cells stand out more clearly against the surrounding tissue.

During the colposcopy, the specialist may take a biopsy. A biopsy is the removal of a small tissue sample so that it can be checked for the cell abnormalities that characterize cervical dysplasia or cervical cancer. Biopsy is also used to “grade” any abnormalities that are found. Grade 1 (CIN-1) means mild, or low-grade cervical dysplasia which may develop into cancer. Grades 2 and 3 (CIN-2; CIN-3) mean severe or high-grade dysplasia, which are *more likely* to develop into cancer. A result of “CIS” (carcinoma in situ) means that a small area of cancer has been found.<sup>9-14</sup>

## Notification of partners

HPV is not a reportable infection in Canada. This means that when an infection is confirmed by a clinic, healthcare provider or laboratory it is not required to be reported to public health authorities. Partner notification is not required as a public health measure, unlike with a diagnosis of chlamydia, gonorrhoea, syphilis or HIV.<sup>15</sup>

## Treatment

HPV itself cannot be treated, but the immune system is able to clear most cases of HPV. A variety of treatments are used for cervical dysplasia and cervical cancer. Treatments vary, depending on severity, location and size, and whether any cancer present has spread to other parts of the body.

Whether or not the person wishes to become pregnant can also affect treatment decisions. People with cervical cancer may be referred to a gynecologist-oncologist or an oncologist—a doctor who specializes in the treatment of cancer.

There are several ways that cervical dysplasia may be treated:

- *Cryotherapy* destroys the lesion by freezing. This procedure can be done in the doctor’s office. There can be some discomfort or pain. After the treatment, spotting and watery discharge are common.
- *Laser treatment* destroys the lesion with an intense beam of infrared light. This procedure is often done in a day-surgery clinic. It can be uncomfortable and can cause spotting and discharge afterward.
- *LEEP* stands for *loop electrosurgical excision procedure*. The lesion is surgically removed by an electrical current that passes through a very fine wire loop and cauterizes the cervix at the same time so that it does not bleed afterward.
- *Cone biopsy* removes a cone-shaped piece of tissue from the opening of the cervix and can remove a lesion or very small cancer. It is usually done in a hospital with a laser or a scalpel and patients are given an anesthetic. Some bleeding and pain or discomfort is common after this treatment.

There are several treatment options if cancer is confirmed:

- *Surgery* may be used to remove cancerous tissue. If the cancer has spread, surgery to remove the cervix and uterus, called a hysterectomy, may be necessary. Sometimes the fallopian tubes, ovaries and lymph nodes from the pelvis are removed at the same time.
- *Radiation therapy* is often prescribed for cervical cancer that has spread beyond the cervix. In radiation therapy, high-energy rays are used to kill cancer cells.
- *Chemotherapy* may be used by itself or in addition to radiation therapy if the cancer has spread. Anticancer drugs are used in the blood to kill cancer cells.<sup>3,11,12</sup>

## What about HIV?

HIV weakens the immune system which can make a person more vulnerable to some illnesses, including cervical cancer.

Effective HIV treatment (also known as antiretroviral therapy or ART) can reduce the amount of HIV in the body, increase CD4 cell counts, and greatly lowers the risk of developing many illnesses traditionally associated with HIV, including cervical cancer. But even with effective HIV treatment, people living with HIV have a higher risk of HPV-related disease - including faster progression to cancer.

However, studies have found that, with regular gynecological exams and Pap tests, cervical cancer is not common among people living with HIV in high-income countries. Therefore, people with HIV should get regular care, including screening for HPV-related disease and talk with a doctor or nurse about getting vaccinated against HPV if necessary.<sup>16-18</sup>

## Prevention

HPV vaccines are widely available and highly effective at preventing certain types of HPV, including those that most often cause cervical dysplasia and cervical cancer.

The vaccines do not provide protection against HPV types that people are already infected with but provide excellent protection against HPV types the person has not been exposed to.

It is also important to remember that even if someone has received one of the vaccines, they are only protected against the cancer-causing HPV types covered by the vaccine they have received.

Different vaccines prevent different types of HPV. Although several vaccines are approved to reduce the risk of HPV infection (and related cancer) in Canada, the most commonly used today reduces the risk of infection with nine types of HPV. This vaccine is called Gardasil-9. It is estimated that HPV vaccination can prevent up to 90% of high-risk, precancerous cervical lesions (high-grade cervical dysplasia) from developing.

Because the types of HPV that cause cervical dysplasia and cervical cancer are transmitted sexually, prevention benefits are greatest if a person is vaccinated before they have had their first sexual encounter. But even if a person is sexually active or has already acquired an HPV infection, vaccination can protect them from getting types of HPV they have not yet acquired.

People living with HIV are at reduced risk from HPV infection when given HPV vaccination. However, it is unclear whether HPV vaccination is as effective among people living with HIV as it is among people who are not living with HIV.

All provinces and territories provide school-based immunization programs for young people, starting in grades four to seven. "Catch-up" programs are also available in all provinces and territories for people who did not receive vaccination through school-based programs, but availability varies, based on age or sex.

The correct and consistent use of condoms during sex can reduce the risk of getting HPV or passing it to someone else, but does not eliminate the risk completely. This is because HPV can be transmitted from areas of skin not covered by a condom to the skin of a sexual partner.

There are two types of condoms available. The external condom (sometimes called the "male" condom) is a sheath made from polyurethane, latex or polyisoprene that covers the penis during sex. The internal condom (sometimes called the insertive or "female" condom) is a pouch made of polyurethane or a synthetic latex material called nitrile that can be inserted into the vagina or rectum. Some trans men may cut a condom or oral dam to fit their genitals.

The use of condoms or oral dams can reduce the risk of passing on HPV during oral sex or rimming.

When sharing sex toys, using a new condom and cleaning the toy between each use can reduce the risk of HPV transmission.

Quitting or reducing smoking reduces the risk of developing cervical dysplasia and cervical cancer.

Routine screening for cervical dysplasia with Pap tests and HPV tests can increase the chances of catching the dysplasia early, so that it can be treated before cancer develops.<sup>8,17,19–22</sup>

## Notes

i Cisgender – someone whose gender identity aligns with the sex they were assigned at birth

ii Transgender – an umbrella term that describes people with diverse gender identities and gender expressions that do not conform to stereotypical ideas about what it means to be a girl/woman or boy/man in society

(Definitions taken from *Creating Authentic Spaces: A gender identity and gender expression toolkit to support the implementation of institutional and social change*, published by The 519, Toronto, Ontario.)

## Resources

Condoms for the prevention of HIV transmission – *fact sheet*

Safer Sex Guide – *client resource*

Oral Sex – *client resource*

Viral STI Basics – *fact sheet*

Sexually Transmitted Infections – *booklet (Public Health Agency of Canada)*

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# What you need to know about human papillomavirus (HPV) and cervical cancer

*Human papillomavirus (HPV)* is a virus that is most easily passed during sexual contact. The body clears most HPV infections on its own. But certain types of the virus can cause a condition called *cervical dysplasia*, which can then develop into cervical cancer. The cervix is the narrow, lower end of the uterus (womb), which connects to the vagina. Certain types of HPV can cause other types of cancer. Some other types can cause warts of the genitals or anus (*anogenital warts*).

HPV cannot be cured by medication, but vaccines can prevent a person from getting some types of HPV, including the types that most often cause cervical cancer. Consistent and correct condom use can reduce but not eliminate the risk of getting or passing on HPV during vaginal, anal or oral sex, and when sharing sex toys.

Early screening and treatment for cervical dysplasia can help prevent cervical cancer from developing. If cervical cancer is caught and treated early, this can prevent the cancer from getting worse or spreading.

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## What are human papillomavirus (HPV), cervical dysplasia and cervical cancer?

HPV is a virus that is most easily passed on during sex. There are many different types of HPV, and they can infect different parts of the body.

Many people with HPV have no symptoms, so they don't know they have an infection – but they can still pass it on.

Some types of HPV can cause cancers, including cancer of the cervix (cervical cancer). The cervix is the narrow, lower end of the uterus (womb), which connects to the vagina.

Cervical cancer starts as a condition called cervical dysplasia. Cervical dysplasia happens when abnormal cells form together in groups called *lesions* (areas of abnormal tissue).

If it is not identified and treated early, cervical dysplasia sometimes leads to cervical cancer.

Cervical dysplasia usually doesn't show symptoms, particularly in the early stages. Similarly, cervical cancer often shows no obvious symptoms until it is advanced and harder to treat. Symptoms of cervical cancer can include pain in the abdomen (belly) or lower back; pain or bleeding during sex, unusual fluid coming out of the vagina, or bleeding from the vagina between periods (menstruation). Some of these symptoms are not specific to cervical cancer, so they may be mistaken for other conditions.

## Am I at risk of getting HPV, cervical dysplasia or cervical cancer?

Almost all cases of cervical dysplasia and cervical cancer are caused by HPV, so having HPV is the most important risk factor for these conditions.

Anyone who is sexually active, including people who experience sexual violence, can get HPV.

HPV is most easily passed on during insertive sex without a condom. This includes vaginal and anal sex.

HPV can also be passed on through:

- oral sex (mouth on penis; mouth on vagina)
- oral-anal contact (rimming)
- sharing sex toys
- during a hand job or fingering
- through skin-to-skin contact of the genitals (even if no body fluids are present)

For people who have one or more of the types of HPV that can cause cervical cancer, certain factors increase the chances of cervical cancer developing.

These include:

- cigarette smoking
- unhealthy diet
- long term use of oral contraceptives (birth control pills)

Some groups of people carry a higher burden of cervical cancer (it is more common):

- people who have given birth to more than one child
- people born to a pregnant parent who used certain kinds of estrogen supplement
- people who have had other HPV-related conditions like anal cancer

## HPV and HIV

HIV weakens the immune system which can make a person more vulnerable to some illnesses, including cervical cancer. Effective HIV treatment greatly lowers the chances of developing HIV-related illnesses including some cancers.

HIV treatment can't prevent cervical cancer on its own, but with regular exams and *Pap tests*, studies have shown that in high-income countries like Canada, cervical cancer is not common in people living with HIV.

## What can I do?

### Reduce your chances of getting HPV infections

Get vaccinated against HPV. HPV vaccines are widely available and highly effective. Talk to your healthcare provider about your options.

Use a condom during vaginal intercourse and anal intercourse.

Use a condom or oral dam during oral sex.

When sharing a sex toy, use a new condom and wash the toy between every use.

### Get tested

If you experience any symptoms of cervical cancer, speak with a healthcare provider right away.

If you don't have any symptoms, speak with your healthcare provider about when you should start routine screening for cervical dysplasia and cervical cancer.

To screen for cervical dysplasia and cancer, a healthcare provider does a cervical Pap test. During this test, a tiny brush and small spatula are inserted into the vagina to collect cells from the cervix. These cells are then studied in a lab to see if they are abnormal. Tests may also be done to see if a person has a type of HPV that can cause cervical cancer.

If abnormal cells, or a cancer-causing HPV type are found, a specialist may do a follow-up exam using a special magnifying device (colposcopy). This allows the specialist to examine the cervix closely. A small tissue sample (biopsy) may be taken, to determine if there are signs of dysplasia or cancer.

### Get treated

HPV cannot be cured from the body with medication.

Several treatments are used for cervical dysplasia to remove or destroy lesions before they lead to cancer. Treatments include freezing (cryotherapy), laser treatment and surgery. Some of these treatments can be quite effective if the dysplasia is treated early.

Treatments for cervical cancer aim to remove cancerous tissue, slow the cancer's growth and/ or prevent it from spreading to other parts of the body. Treatment may involve surgery, radiation therapy, chemotherapy or combinations of these and other treatments. Treatments are most effective if the cancer is diagnosed and treated early.

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