
HIV Infection and Cancer

People infected with the **human immunodeficiency virus (HIV)** are known as **people living with HIV**, or **PLWH**. PLWH includes people with early stages of HIV infection as well as people with advanced stages or **AIDS (acquired immunodeficiency syndrome)**. In general, PLWH who have an advanced stage of HIV infection or AIDS are at higher risk for some types of cancer.

Here we will provide a brief overview of HIV and discuss the risks of certain cancers in PLWH, what PLWH can do to reduce their cancer risk or find it early, and how these cancers are generally treated.

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What Are HIV and AIDS?

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Human immunodeficiency virus (HIV) attacks and destroys the body's immune system by killing a specific type of white blood cell known as the CD4 cell (or helper T-cell).

Acquired immune deficiency syndrome (AIDS) is the most advanced stage of HIV. AIDS happens when HIV has badly damaged the immune system, a process that may take years. The loss of CD4 cells leads to a weakened immune system, which allows infections and cancers to occur that usually don't affect healthy people. These are called **opportunistic infections** and **opportunistic cancers**.

As treatment with **anti-retroviral therapy (ART)** has become available, fewer people living with HIV (PLWH) are developing AIDS. In fact, PLWH can live long and healthy lives by taking ART.

How are people infected with HIV?

HIV can spread when an uninfected person is exposed to blood or certain body fluids (semen, vaginal secretions, or breast milk) from an infected person. There are several possible routes of HIV transmission (spread):

- Unprotected vaginal or anal sex with an HIV-infected person
- Sharing needles or supplies used to prepare drugs with an HIV-infected person
- Exposure of infants whose mothers are infected with HIV before, during, and right after birth
- Breastfeeding by mothers with HIV
- Injuries or accidents which break the skin (usually needle sticks) in health care workers while handling the blood of or caring for people infected with HIV

HIV is NOT spread:

- Through casual contact like talking, shaking hands, hugging, coughing, or sneezing
- Through saliva (spit), tears, or sweat
- By sharing dishes, bathrooms, telephones, or computers
- By insect or tick bites or through water

With new precautions and careful testing at blood banks, the risk of HIV spread through transfusions of blood and blood products has been almost eliminated. There is a 1 in 2 million chance of being infected with HIV through a blood transfusion in the United States.

Infection through organ transplants from HIV-infected donors is very rare, because donor organs and tissues are thoroughly tested for HIV before transplant.

How can the risk of HIV spread be reduced?

- **Using condoms during vaginal or anal sex:** Avoid unprotected sex with someone living with HIV. If one partner is known to be infected or their HIV status is uncertain, using condoms every time, from start to finish, can lower the risk.
- **Having injection drug users use clean, sterile needles and supplies:** Never share needles. The second most common cause of HIV infection is sharing used needles or drug equipment with injection drug users living with HIV.
- **Using pre-exposure prophylaxis (PrEP):** For people who are at high risk of HIV infection, taking medicine (as a pill every day) is another way to help lower the risk of infection.
- **Taking post-exposure prophylaxis (PEP):** If you have been exposed to HIV, such as from a broken condom or needle stick injury, PEP treatment might reduce the risk of HIV infection. This treatment involves taking anti-HIV drugs every day for 4 weeks. PEP works best if started as soon as possible after exposure, within 72 hours.
- **Treatment as prevention:** ART greatly reduces the amount of virus in the body, with the goal of being undetectable. Undetectable HIV viral load means HIV is not transmittable and cannot be passed on to others.
- **Reducing mother-to-infant transmission:** All pregnant women should be tested for HIV. If HIV is diagnosed, treatment with ART should be started right away. Treating the mothers and infants with anti-HIV drugs and avoiding breastfeeding reduces the risk of HIV infection in infants. Also, the baby may need to be delivered by C-section if the mother's HIV levels are high.

Should I be tested for HIV?

HIV infection may not cause symptoms for years, and a person can have HIV for a long time and not know it. The US Centers for Disease Control and Prevention (CDC) recommends HIV testing at least once for everyone between the ages of 13 and 64. However, HIV testing is often not done unless you have certain medical problems, are pregnant, or ask to be tested.

If you have any doubt about your HIV status, talk with your doctor or visit a health department clinic where testing is offered. To have the HIV test done without giving your name and address (anonymous testing), you can buy a home collection kit at the drugstore or online or go to an anonymous testing site. Some state health departments also offer anonymous HIV tests.

HIV testing is covered by insurance without a co-pay. If you don't have insurance, look for a testing site that provides free tests.

HIV is often diagnosed after the development of opportunistic infections or cancer. But with testing, HIV infection can be diagnosed and treatment can be started before a person gets seriously ill.

How is HIV treated?

HIV is a type of virus called a **retrovirus**. Treatment for HIV is known as **anti-retroviral therapy** or **ART**. Treatment for HIV often uses 3 or more ART drugs. These medications are taken daily to help keep the virus from making more copies of itself (reproducing).

The combination of anti-HIV drugs varies with each person depending on:

- Disease stage
- Whether the infection is resistant to any of the ART medicines
- Side effects
- Other factors, such as other diseases that person may have

Different combinations might be tried. Over time the ART medications may need to be changed.

Once a person has been diagnosed with HIV, ART should start as soon as possible. HIV infections cannot be cured, but they can be managed long term with ART. By taking ART regularly, PLWH can have a normal life span and people with AIDS can live longer.

The main goal of ART is to lower the amount of HIV in a person's blood. This can reduce damage to the immune system and decrease the risk of opportunistic infections, cancers, and AIDS. Reducing the amount of HIV also greatly lowers the risk of spread.

It is important that a PLWH takes their ART as prescribed to keep their HIV blood levels as low as possible. This improves a person's quality of life and lowers the chances of serious illnesses and long-term effects of HIV.

Other measures that can be taken to support the immune system involve good self-care, such as:

- Eating well and getting regular exercise
- Managing stress
- Avoiding infections (which may include staying away from people who are sick, practicing food safety, getting certain vaccines, taking antibiotics, using safer sex practices, and other measures)
- [Stopping tobacco](#)¹, [alcohol](#)², and other drug use

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/tobacco.html
2. www.cancer.org/cancer/risk-prevention/diet-physical-activity/acs-guidelines-nutrition-physical-activity-cancer-prevention/guidelines.html

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HIV and Cancer

- [Acquired immune deficiency syndrome \(AIDS\)-defining cancers](#)
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HIV doesn't seem to cause cancer directly, but over time it causes the immune system to become weaker, putting people living with HIV (PLWH) at an increased risk of many types of cancer. In addition, PLWH who are diagnosed with cancer are more likely to die from that cancer than people without HIV.

There are a number of factors that can contribute to this increased risk.

- HIV can lead to ongoing inflammation and damage to the immune system.
- PLWH are more likely to have other viruses that can cause cancer, such as [human papillomavirus](#)¹ (HPV) , or [other viruses](#)² including human herpes virus 8 (HHV-8) (also known as Kaposi sarcoma-associated herpesvirus (KSHV), hepatitis B or C virus (HBV or HCV), or Epstein Barr virus (EBV).
- PLWH are more likely to use tobacco and have higher rates of alcohol and substance use disorders.

PLWH are living longer because of effective anti-retroviral therapy (ART), and they are developing the same types of cancer commonly seen in older people. However, PLWH are often diagnosed at a later stage when the cancer may be harder to treat. It is especially important for PLWH to follow [cancer screening guidelines](#)³ to try and find cancer early.

Acquired immune deficiency syndrome (AIDS)-defining cancers

PLWH are much more likely to get certain types of cancer than people who are not infected. HIV can damage the immune system, allowing certain types of cancer to develop, called **opportunistic cancers**. These are considered **AIDS-defining cancers**. These are types of cancer that occur so often in people with AIDS that their presence in a person infected with HIV is a sign that AIDS has developed.

Kaposi sarcoma, non-Hodgkin lymphoma, and cervical cancer are considered to be AIDS-defining cancers.

Kaposi sarcoma

[Kaposi sarcoma](#)⁴ (KS) develops from the cells that line [lymph](#)⁵ or blood vessels. In the United States, the most common type of KS is related to infection with both the human herpes virus 8 (HHV-8) and HIV virus.

HHV-8, also known as Kaposi sarcoma-associated herpesvirus (KSHV), does not seem to cause disease in most healthy people. However, PLWH who are also infected with HHV-8 are much more likely to develop KS.

KS causes dark purplish or brownish spots (called **lesions**) on the skin or in the mouth. These may be flat or raised. KS may also affect the lymph nodes and other organs, such as the digestive tract, lungs, liver, and spleen. In some cases, KS can cause serious problems or may even become life-threatening.

For someone with AIDS-related KS, taking antiretroviral therapy (ART) allows their immune function to get better and may shrink KS lesions. For some, ART may be the only treatment needed. For people with more advanced disease or whose disease does not respond to ART alone, other treatments for KS may be needed such as chemotherapy or radiation.

Non-Hodgkin lymphoma

[Non-Hodgkin lymphoma](#)⁶ (NHL) is a cancer that affects white blood cells called **lymphocytes**, which are part of the immune system.

There are many different types of NHL, but certain fast growing types are more common in PLWH. These include diffuse large B-cell lymphoma, Burkitt's lymphoma, and central nervous system (CNS) lymphoma. PLWH are also more likely to get some types of lymphoma that have been linked with viruses, especially Epstein-Barr Virus.

PLWH are at a higher risk of developing cancer in their brain or spinal cord (central nervous system or CNS). People with lymphoma in their CNS can have headaches, confusion, vision problems, weakness or changes in feeling in their face, arms, or legs, and in some cases, seizures. Treatment for AIDS-related NHL will depend on the type and stage of NHL, but usually involves chemotherapy. Treatment is usually the same as for people with NHL who don't have HIV.

Cervical cancer

[Cervical cancer](#)⁷ is cancer of the cervix, the lower part of the uterus (womb). Nearly all

cervical cancers are caused by infection with the human papillomavirus (HPV).

People with a cervix who are infected with HIV and HPV are at higher risk for developing pre-cancer changes in their cervix than those without HIV infection. Pre-cancer cervical changes in PLWH are also more likely to develop into aggressive or invasive cancer faster than usual.

It is important to talk to your health care team about cervical cancer screening. [Screening for cervical cancer](#)⁸ and pre-cancer changes needs to start at age 25 for people with a cervix and who do not have HIV, but should be done as soon as possible after being diagnosed with HIV. Depending on the results of the screening test, more testing may be needed. PLWH might need more frequent screening of cervical cancer than those who don't have HIV.

If pre-cancer changes are found, they should be treated to keep them from turning into cervical cancer. This is done by removing or destroying the outer layers of the cervix.

It is also important to talk to the health care team about [HPV vaccines](#)⁹ that can help prevent HPV infection and some cancers linked to it.

Non-AIDS-defining cancers

There are other types of cancer that are more likely to occur in PLWH. These include:

- [Anal cancer](#)¹⁰
- [Hodgkin lymphoma](#)¹¹ (Hodgkin disease)
- [Lung cancer](#)¹²
- [Mouth and throat cancers](#)¹³
- Some types of [skin cancer](#)¹⁴
- [Liver cancer](#)¹⁵

Some of these cancers have been linked to different viruses. These viruses can cause cancer in people with and without HIV, but the risk might be higher in PLWH because their immune systems are weaker. For example, anal cancer and some mouth and throat cancers are linked to infection with HPV, the same virus that causes cervical cancer. Liver cancer is known to be more common in people infected with the hepatitis B or C viruses. Hodgkin lymphoma is often associated with EBV.

The higher risk for some cancers in PLWH may be in part because of other known risk factors, such as cigarette smoking. Lung cancer is one of the most common cancers in

PLWH. The elevated risk of lung cancer in PLWH is not completely explained by smoking though.

Of course, as PLWH are now living longer, they are also developing cancers that are not clearly linked to HIV but are more common in older people, such as [breast](#)¹⁶, [colorectal](#)¹⁷, and [prostate cancer](#)¹⁸.

What can PLWH do to lower their risk or find cancer early?

Lowering cancer risk

- **Antiretroviral therapy (ART):** One of the most important ways that PLWH can lower their risk of cancer is to stay on their ART medicines to help keep the HIV under control. This can greatly decrease the risk for AIDS and cancer.
- **Vaccines:** It is important for PLWH to get vaccinated against viruses that can cause cancer. These are needed if the PLWH hasn't been vaccinated and is not found to be infected with viruses such as HPV and hepatitis B virus.

In addition, PLWH should follow the healthy living steps recommended for everyone who wants to lower their risk of cancer. These include:

- [Staying away from tobacco and secondhand smoke](#)¹⁹
- [Getting to and staying at a healthy weight](#)²⁰
- [Getting regular physical activity](#)²¹
- [Eating a healthy diet](#)²²
- [Avoiding or limiting alcohol](#)²³
- [Limiting exposure to the sun](#)²⁴

Finding cancer early

Screening tests are used to find cancer before a person has any symptoms. Regular screening increases the chances of detecting certain cancers early before they have a chance to spread. The same cancer screening tests are recommended for PLWH as for people without HIV. The American Cancer Society and other organizations have [screening guidelines for breast, cervical, colorectal, lung and prostate cancers](#)²⁵.

For Kaposi sarcoma and non-Hodgkin lymphoma, there are no screening tests at this time that help find them early. Still, regular medical checkups may help find signs or

symptoms of these cancers in PLWH.

For people who have a cervix, cervical cancer can often be found early or even prevented by getting regular screening tests. This is especially important if the PLWH has had a positive test for HPV. Experts recommend that people with a cervix who are living with HIV have a cervical screening test as soon as possible after being diagnosed. Depending on the results of the screening test, more testing may be needed. How often screening is needed depends on the results of the first screening test and might be done more often for PLWH.

Other special screening tests for cancer in people with HIV are being studied. For example, because people with HIV are also at higher risk of anal cancer, some experts might recommend a screening test very much like cervical cancer screening, but one that takes samples of cells from the lining of the anus.

Unfortunately, HIV and AIDS still carry a stigma that might make PLWH put off getting screened or seeking health care. However, delaying screening or putting off getting symptoms checked out can lead to later diagnosis which can make a cancer harder to treat.

Cancer treatment in people with HIV or AIDS

PLWH who develop cancer should be given the same cancer treatment as people without HIV. The cancer treatment itself is based on the type and stage (extent) of the cancer. It is very important that PLWH continue their ART while getting cancer treatments. ART allows many PLWH who have cancer to get full doses of chemotherapy and other standard cancer treatments. PLWH may need additional care and medicines to support them during cancer treatment. This may include medicines to help keep their immune system working and to prevent infections. This allows PLWH to have the best outcomes and has led to better survival.

Treatment of both HIV and cancer can be complex, so it is very important that cancer doctors (oncologists) and HIV specialists work closely together. There may be a need to make changes to ART to decrease interactions between the cancer treatment and the HIV treatment. It is important that PLWH find a cancer doctor who understands how HIV can affect cancer care and will work with an HIV specialist.

Even with standard cancer treatments, PLWH may still be more likely to die from certain types of cancer such as colorectal, lung, melanoma, and breast cancer. It is not clear why PLWH have higher death rates from cancer than people without HIV.

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/hpv.html
2. www.cancer.org/cancer/risk-prevention/infections/infections-that-can-lead-to-cancer/viruses.html
3. www.cancer.org/cancer/screening.html
4. www.cancer.org/cancer/types/kaposi-sarcoma.html
5. www.cancer.org/cancer/diagnosis-staging/lymph-nodes-and-cancer.html
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