

# HIV treatment

## Summary

When taken as directed, effective HIV treatment helps people with HIV to live long and healthy lives and avoid passing HIV to others. Treatment should be started as soon as possible after a person is diagnosed with HIV. There are many HIV drugs available today that are highly effective and work by preventing HIV from replicating in the body. For treatment to work, it needs to be taken consistently as prescribed. To make sure treatment is working, people with HIV need to have regular healthcare visits for viral load testing and other monitoring.

## What is HIV treatment and how does it work in the body?

HIV treatment refers to medications that can keep HIV under control, which allows a person with HIV to stay healthy and live a long and full life. Our knowledge about HIV treatment and the medications involved have improved over time. Very effective HIV drugs that are easy to take and have few side effects are now available.

When HIV gets into the body, it targets and enters a type of immune cell called the CD4 cell and it uses the cell to make copies of itself. This is called viral replication. When new copies of the HIV virus are released from a CD4 cell, this CD4 cell is destroyed and the virus goes on to infect other CD4 cells, destroying those CD4 cells as well. HIV also alters the functioning of the immune system. If HIV is left untreated, the virus keeps making copies of itself, the number of CD4 cells in the body slowly decreases, and the immune system doesn't work as it should. The depletion of CD4 cells weakens the person's immune system. Eventually this leaves the body vulnerable to life-threatening infections and cancers.

The goal of HIV treatment is to stop the viral replication process and reduce the amount of virus in the body, also known as the viral load, to undetectable levels. It usually takes three months or less to achieve an undetectable viral load, but it can take as long as six months.

HIV treatment does not cure HIV. Even when the viral load is undetectable, HIV remains hidden in the body. HIV treatment is a lifelong commitment that requires taking medication regularly, exactly as prescribed. This is called adherence. Ongoing adherence to HIV treatment is very important. Without enough medication in the blood to suppress the virus, HIV will begin replicating again and spread throughout the body.

# FACT SHEET

Published  
2022

[www.catie.ca](http://www.catie.ca)

 /CATIEinfo

There is no cure for HIV. While there have been occasional reports of HIV being cured in a person, these are rare cases involving special medical circumstances and risky, life-threatening procedures. Research on trying to cure HIV is underway but no breakthroughs are on the horizon and many years of research lie ahead.

## What are the benefits of HIV treatment?

The most important benefit of HIV treatment is an improvement in the health and quality of life of a person living with HIV. With ongoing treatment and care, most people living with HIV can stay healthy (or return to health) and live a long, full life. By limiting HIV's ability to replicate and lowering the amount of virus in a person's body, HIV treatment prevents further damage to the immune system. This allows the immune system to stay strong. For people who have a weakened immune system as a result of late diagnosis of HIV, ongoing treatment will allow the immune system to become stronger and will dramatically reduce the risk of serious HIV-related infections. HIV treatment also helps to lower the chance that people with HIV will develop other health conditions associated with a weakened immune system, such as certain types of cancer. By starting treatment early, remaining in care and staying adherent to HIV drugs, most people with HIV can expect to have a normal lifespan and have a low risk of HIV-related complications.

A second important benefit of HIV treatment is the prevention of HIV transmission. When people living with HIV are on HIV treatment, are engaged in care and maintain an undetectable viral load:

- They will not transmit HIV through sex.
- They will not transmit HIV to their baby through pregnancy or delivery (if they maintain an undetectable viral load throughout pregnancy and childbirth).
- Their chance of transmitting HIV through breastfeeding (also known as chestfeeding) is very low but still possible. For this reason, formula feeding is recommended.

- The chance of transmitting HIV from sharing drug use equipment is also reduced but we don't know by exactly how much. Therefore, it is recommended that people use new needles and other injection drug use equipment every time they use drugs, regardless of their viral load, to prevent HIV transmission and other harms.

## When should HIV treatment be started?

People should start HIV treatment as soon as possible after diagnosis. The earlier they start HIV treatment, the better their health outcomes. HIV treatment prevents people from getting sick from HIV-related illnesses and keeps them healthy over time.

The decision to start treatment belongs to the person living with HIV. It is important that people are ready to make the commitment to taking HIV treatment on a regular basis, for life.

## What types of drugs are used for HIV treatment?

A typical drug regimen usually consists of two or three drugs formulated into a single pill and taken every day. However, long-acting formulations of HIV drugs are also available. These formulations are injected by a healthcare provider every one or two months. In the future there may be other long-acting options for treatment.

There are several different groups, known as classes, of HIV drugs. Each class attacks the virus at different points in its replication process. **Entry inhibitors** are a class of drugs that prevent HIV from entering a CD4 cell. The other drug classes prevent HIV from replicating by blocking different enzymes that are needed for HIV to replicate within a CD4 cell. These classes include **nucleoside analogues (nukes)**, **non-nucleoside analogues (non-nukes)**, **integrase inhibitors**, **protease inhibitors** and **capsid inhibitors**. New classes of HIV drugs are under development. A typical HIV treatment regimen includes drugs from at least two classes.

## What factors should be considered when choosing an HIV treatment regimen?

There are many HIV drugs and treatment combinations available. A person living with HIV can discuss their options with their healthcare providers and find a treatment that works for them, with minimal or no side effects.

Effective drug combinations are well defined and published in HIV treatment guidelines, which summarize evidence and expert opinion on the optimal approach to treat HIV. They are used by healthcare providers to recommend treatments to patients.

Various factors need to be taken into consideration when determining which HIV treatment is most appropriate. One important factor is whether the person has a strain of HIV that is drug resistant. Drug resistance occurs when an HIV strain has developed the ability to overcome specific HIV drugs and is thus able to escape the effects of treatment. As HIV develops resistance to different drugs, a person's treatment options may become more limited. A simple blood test can help identify specific HIV drugs that may not work for a person and determine which drugs to include in a person's HIV treatment. This is known as resistance testing. Resistance testing should be done when starting HIV treatment and if treatment stops working and the viral load becomes persistently detectable (rebounds).

A person living with HIV will need to be assessed by a healthcare provider for drug resistance as well as other factors that might affect their treatment regimen, such as:

- the potential for drug interactions with other medications, supplements and other substances such as illicit drugs the person may be taking
- an allergy or hypersensitivity to certain HIV drugs
- certain health conditions that can affect the types of HIV medications that are recommended, such as cardiovascular disease, kidney injury or co-infection with hepatitis B or C
- whether they are or wish to become pregnant

It is important to support people living with HIV to discuss these factors with their healthcare providers so that the best treatment option for them can be found.

## What are the side effects of HIV treatment?

Side effects of current HIV drugs are generally mild, temporary and much less common than for older HIV drugs. Many people experience no side effects at all. Some short-term side effects that may occur when a person first starts treatment include nausea, headache, diarrhea or difficulty sleeping. If side effects occur, they tend to be mild to moderate in severity and disappear after a few days or weeks. If necessary, most of these temporary side effects can be managed with over-the-counter treatments (e.g., taking ibuprofen for a headache) for a few days. The earlier a person is diagnosed with HIV and the sooner they begin treatment, the less likely they are to experience significant side effects from HIV treatment.

It is important for a person to speak to their healthcare providers about the symptoms they experience after starting HIV treatment. If it is determined that a symptom is a side effect of HIV treatment, healthcare providers can work with the person to determine how best to address the issue. If necessary, healthcare providers may suggest ways to manage temporary side effects. In cases where side effects significantly affect a person's quality of life or do not go away over time, healthcare providers may suggest changing the treatment to reduce side effects.

## How is the success of HIV treatment monitored?

There are two key blood tests that healthcare providers use to monitor a person's HIV infection: viral load and CD4 cell count.

Viral load is a measure of viral activity in the body and is measured as the number of copies of the virus in one millilitre (mL) of blood. A detectable viral load means that there is a measurable amount of virus in the blood and indicates active replication of HIV. Without treatment, viral load can range

from a few thousand copies of HIV to several hundred thousand copies or higher per millilitre of blood. Effective treatment reduces viral load in the blood to undetectable levels, that is, to levels so low that routine laboratory tests cannot detect the virus. Most viral load tests used in Canada cannot detect HIV in the blood if there are fewer than 40 to 50 copies/mL of the virus but some newer tests can detect as few as 20 copies/mL. Even when the viral load is undetectable in blood, small amounts of the virus are still hiding in the body. Occasionally a person on successful treatment may experience a viral load “blip” (a detectable viral load on one test that returns to undetectable on the subsequent test). Blips can occur because of vaccination, an infection other than HIV or severe seasonal allergic reactions. Blips do not mean that treatment has stopped working. When the viral load of a person on successful treatment becomes detectable and remains that way over successive viral load tests, this is called virological failure. Virological failure indicates that the treatment is no longer working and will need to be changed. If virological failure happens, it is important for patients to work with their healthcare providers to determine why the viral load has become detectable to minimize the risk of future virological failure.

CD4 cell count is an indicator of the strength of the immune system and is measured as the number of CD4 cells in one cubic millimetre (mm<sup>3</sup>) of blood. Generally, a CD4 cell count above 500 is considered to be within the normal range. A low or decreasing CD4 cell count indicates declining health of the immune system. As the CD4 cell count declines, the chance of developing serious infections increases. A CD4 cell count below 200 puts a person at risk for life-threatening illnesses, including those caused by opportunistic infections (infections that occur in people with weakened immune systems, including people with HIV) and certain cancers.

### **What are the possible reasons why treatment may not work, or may stop working?**

HIV treatments are effective for most people. However, a small minority of people are not able to achieve an undetectable viral load after starting treatment. Others may have an undetectable

viral load at one point, and then experience virologic failure.

The most common reason that treatment does not work, or stops working, is that the person is not taking their medication as prescribed. People may have difficulty adhering to their HIV treatment for many reasons. For example, they may forget to take their pills or renew their prescription on time, they may regularly miss doses because they believe HIV drugs are somehow harmful or because taking the medications reminds them that they have HIV, or they may have difficulty maintaining a constant supply of medications because of unstable housing or lack of money or fear that others might discover that they are taking HIV drugs. People who have depression, severe fatigue or other health conditions affecting daily routines may also have challenges with treatment adherence.

Some people may stop taking their medications altogether for a short or long period of time because they feel healthy and don't believe they need to take medications any longer. This is called a treatment interruption. Stopping HIV treatment is dangerous because it can negatively impact a person's health when HIV begins replicating again. If someone is considering interrupting their treatment, it is very important that they discuss their concerns and options with their healthcare providers *before* they stop taking their medications.

Besides adherence issues, other reasons for treatment not working include drug or food interactions or drug resistance. Inconsistent adherence to treatment or stopping and restarting treatment can allow HIV to develop resistance to the drugs being taken. It can also result in resistance to the entire class of drugs. Drug resistance limits treatment options because the specific drugs or drug classes to which HIV has become resistant are no longer effective. Depending on the reason for persistently detectable viral loads, a new HIV treatment regimen might be needed.

## What supports might a person need to start treatment and remain adherent to treatment and engaged in care?

After someone is diagnosed with HIV, they may benefit from a diverse range of supports related to informational needs, emotional and mental health, adherence challenges, access to services and other needs or issues depending on their particular circumstances.

For some people, an HIV diagnosis can be stressful. It is a life-changing event and HIV still carries a lot of stigma in society. The news of a diagnosis may bring distressing feelings, such as shock, sadness, fear, anger, doubt or denial. Service providers should provide adequate referrals or services to support their clients after an HIV diagnosis.

Providing information about the health and prevention benefits of HIV treatment can play an important role in reducing stress and improving a person's sense of empowerment and well-being. It can help to create hopeful expectations for the future and encourage engagement in HIV care.

For the best possible health outcomes, it is important that a newly diagnosed person is immediately connected and engaged with appropriate medical care for their HIV.

The decision to start HIV treatment is big because it involves a lifelong commitment to taking medications as prescribed. Some people may feel highly motivated to start treatment soon after they are diagnosed. Some people may not wish to start treatment right away, for different reasons. Service providers can support people to consider this decision by providing information about the benefits and risks, but it is important to support them respectfully and without judgment.

Once a person decides to start treatment, service providers should be prepared to refer them to local healthcare providers. Some people may benefit from additional supports to become engaged in regular medical care, such as patient navigation services, accompaniment to medical appointments or help accessing medications through private or public insurance plans.

There are a number of ways that service providers can support people on treatment, including providing information and practical advice, as well as playing a role in helping to address broader issues in a person's life.

Some people may benefit from advice about ways to remember to take pills daily. Strategies can include:

- using an adherence app or alarm reminder on their mobile phone
- using plastic pill boxes to store a week's worth of pills or asking the pharmacy to package the treatment in blister packs according to the daily dosing schedule
- keeping medications in a space where they are likely to see them, such as their bedside table, bathroom counter or kitchen cupboard
- keeping a small supply of medications in other places, such as at their workplace or at a partner's or friend's house that they go to regularly
- when travelling, planning ahead to bring the right number of pills, plus some extra, and packing medications in carry-on luggage
- speaking to other people who are living with HIV about strategies that work for them

For some people, circumstances in their life may make it difficult or impossible to adhere to treatment. It is important to recognize that broader social, economic and structural factors (such as racism, homelessness, food insecurity and poverty) create health inequities by affecting people's ability to access and engage with treatment, care and support services. Service providers can help to address these barriers. People who are on HIV treatment may need to be provided with or linked to supports that can help address other health and social issues they are dealing with, such as mental health, substance use disorders or housing instability. Talking to clients about HIV care offers an opportunity to engage individuals in additional health and social services. Providing referrals and linkage to other appropriate and relevant support services can help to improve a person's health and well-being, as well as their ability to adhere

to treatment and to become (or remain) engaged in care.

## **CATIE resources**

HIV treatment and an undetectable viral load to prevent HIV transmission – *fact sheet*

HIV viral load testing – *fact sheet*

Common HIV drugs available in Canada for adults – *poster*

A Practical Guide to HIV Drug Side Effects – *client resource*

Managing your health – *client resource*

The Power of Undetectable: What you need to know about HIV treatment as prevention – *client resource*

Your Guide to HIV Treatment – *client resource*

HIV Treatment to Prevent HIV – *video*

Bedside Manner – *video series*

## Disclaimer

CATIE strengthens Canada's response to HIV and hepatitis C by bridging research and practice. We connect healthcare and community-based service providers with the latest science, and promote good practices for prevention and treatment programs.

CATIE endeavours to provide up-to-date and accurate information at the time of publication, but it should not be considered medical advice. Decisions about particular medical treatments should always be made in consultation with a qualified medical practitioner. CATIE resources may contain descriptions or depictions of sex, sexuality or drug use, with the goal of promoting public health. Any opinions expressed herein may not reflect the policies or opinions of CATIE or any partners or funders.

Production of this document has been made possible through a financial contribution from the Public Health Agency of Canada.

## Permission to reproduce

This document is copyrighted. It may be reprinted and distributed in its entirety for non-commercial purposes without prior permission, but permission must be obtained to edit its content. The following credit must appear on any reprint: *This information was provided by the Canadian AIDS Treatment Information Exchange (CATIE). For more information, contact CATIE at info@catie.ca.*

CATIE fact sheets are available for free at [www.catie.ca](http://www.catie.ca)

[www.catie.ca](http://www.catie.ca)

 /CATIEinfo