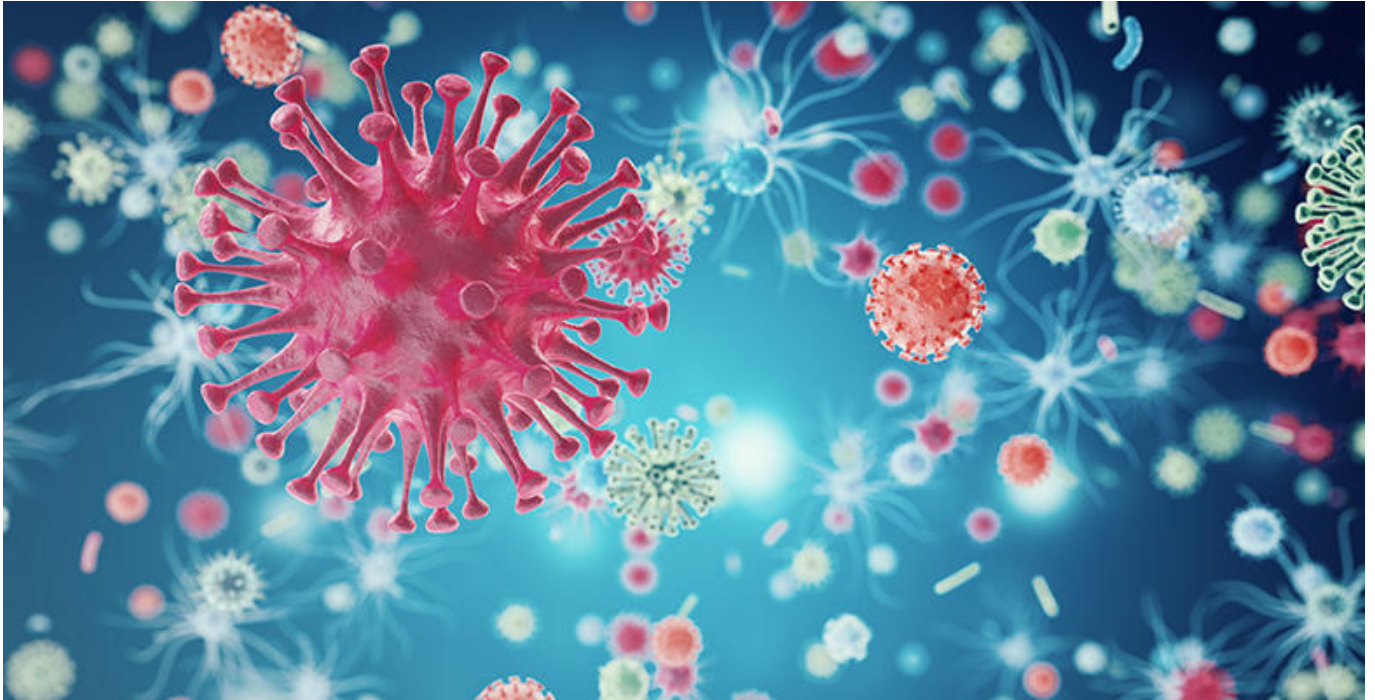


# How HIV infects the body and the lifecycle of HIV



## FAST FACTS

- HIV infects white blood cells in the body's immune system called T-helper cells (or CD4 cells).
- The virus attaches itself to the T-helper cell; it then fuses with it, takes control of its DNA, replicates itself and releases more HIV into the blood.
- Knowing how HIV infects the body helps people understand prevention and treatment options, and why it's important to start antiretroviral treatment as soon as possible after testing positive.

## The HIV lifecycle

HIV infects a type of white blood cell in the body's immune system called a T-helper cell (also called a CD4 cell). These vital cells keep us healthy by fighting off infections and diseases.

HIV cannot grow or reproduce on its own. Instead, the virus attaches itself to a T-helper cell and fuses with it. It then takes control of the cell's DNA, replicates itself inside the cell, and finally releases more HIV into the blood – continuing the multiplication process. This is the HIV lifecycle.

In this way HIV weakens the body's natural defences and over time severely damages the immune system. How quickly the virus develops depends on a person's general health, how soon after

getting HIV they're diagnosed and start antiretroviral treatment, and how consistently they take their treatment.

## Antiretroviral treatment and the HIV lifecycle

[Antiretroviral treatment](#) combines a range of drugs that target different stages in the HIV lifecycle, making it very effective. If it's taken correctly, it keeps the immune system healthy, prevents the symptoms and illnesses associated with AIDS from developing, and means that people can enjoy long and healthy lives.

If someone doesn't take their treatment correctly or consistently, [drug resistance](#) can develop. At this point the drugs are no longer stopping the virus from replicating.

## Stages of the HIV lifecycle

### 1. Binding and fusion

The virus attaches itself to a T-helper cell and releases HIV into the cell.

*Fusion or entry inhibitor drugs stop this happening.*

### 2. Conversion and integration

Once inside the T-helper cell, HIV changes its genetic material so it can enter the nucleus of the cell and take control of it.

*NRTIs (nucleoside reverse transcriptase inhibitors), NNRTIs (non-nucleoside reverse transcriptase inhibitors) and integrase inhibitor drugs stop this happening.*

### 3. Replication

The infected T-helper cell then produces more HIV proteins that are used to produce more HIV particles inside the cell.

### 4. Assembly, budding and maturation

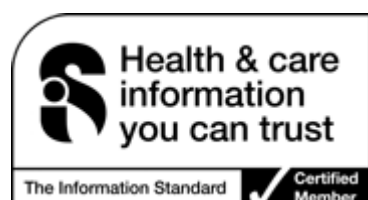
The new HIV particles are then released from the T-helper cell into the bloodstream which infect other cells; and so the process begins again.

*Protease inhibitor drugs stop this happening.*

## The science of HIV

Knowing how HIV infects the body helps people understand [prevention](#) and [treatment](#) options, and why it's important to start antiretroviral treatment as soon as possible after testing positive. If you'd like to find out more about the HIV lifecycle, take a look at our [Science of HIV and AIDS](#) section.

*Photo credit: ©iStock.com/Rost-9D*



## Sources:

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Last full review: 28 September 2018

Next full review: 28 September 2019

Last updated: 4 October 2018