

HIV treatment

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Currently available HIV treatment cannot cure HIV. But it can mean a longer and healthier life.

Taking a combination of drugs that work against HIV (these are often called antiretroviral drugs) can reduce the amount of HIV in the blood to a level that is so low that it cannot be detected using standard viral load tests. This is called an 'undetectable viral load' and is the aim of HIV treatment.

Having an undetectable viral load means that your immune system can recover and stay strong so it can fight off infections.

There are different types, or classes, of anti-HIV drugs. Each class works against HIV in a different way. HIV treatment normally includes three drugs from two different classes.

Classes of anti-HIV drugs

- Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs).
- Non-nucleoside reverse transcriptase inhibitors (NNRTIs).
- Protease inhibitors (PIs).
- Fusion and entry inhibitors.
- Integrase inhibitors.

Most people take a combination that includes two NRTIs and either an NNRTI or a protease inhibitor.

Both entry and integrase inhibitors are approved for use by people starting HIV treatment, but at the moment they are usually reserved for people who have taken a lot of HIV treatment in the past.

NRTIs and NNRTIs

These drugs target a substance called reverse transcriptase that HIV uses to infect immune system cells.

There are three types of drug that work against reverse transcriptase.

The NRTIs are 3TC (lamivudine, *Epivir*), abacavir (*Ziagen*), AZT (zidovudine, *Retrovir*), ddI (didanosine, *Videx*), d4T (stavudine, *Zerit*), and FTC (emtricitabine, *Emtriva*).

Some NRTIs have been combined into a single pill to make them easier to take. These are abacavir and 3TC (*Kivexa*), AZT and 3TC (*Combivir*), and abacavir, AZT and 3TC (*Trizivir*).

There is one nucleotide reverse transcriptase inhibitor (NtRTI), tenofovir (*Viread*), which works against HIV in a similar way to NRTIs. It is available in a combined pill with FTC called *Truvada*.

The NNRTIs are efavirenz (*Sustiva*), etravirine (*Intelence*), nevirapine (*Viramune*) and rilpivirine (*Edurant*).

Efavirenz, FTC and tenofovir are available in a combination pill called *Atripla*. Rilpivirine, FTC and tenofovir are available in a combination pill called *Eviplera*.

Protease inhibitors

Protease is an enzyme in HIV. The drugs that target it are called protease inhibitors.

Nearly all the protease inhibitors used today are 'boosted'. This means they have their power increased by the addition of a small dose of a second protease inhibitor called ritonavir (*Norvir*).

Boosted protease inhibitors recommended for people starting HIV treatment for the first time are atazanavir (*Reyataz*)/ritonavir, darunavir (*Prezista*)/ritonavir, fosamprenavir (*Telzir*)/ritonavir, lopinavir/ritonavir (this is a combination pill called *Kaletra*) and saquinavir (*Invirase*)/ritonavir.

Tipranavir (*Aptivus*)/ritonavir is only approved for people who have taken a lot of HIV treatment in the past.

There are two other protease inhibitors that are now rarely used. These are indinavir (*Crixivan*) and nelfinavir (*Viracept*).

Fusion and entry inhibitors

Drugs from these classes prevent HIV from infecting cells. Their use is normally reserved for people who have taken a lot of anti-HIV drugs in the past.

There is one fusion inhibitor. It is called T-20 (enfuvirtide, *Fuzeon*) and is given by injection.

One entry inhibitor, or CCR5 inhibitor, is also approved. It is called maraviroc (*Celsentri*). For this drug to work you need to have what's called a 'CCR5 co-receptor' on the surface of HIV. Not everybody who has taken a lot of HIV drugs in the past has this. Your clinic will conduct a test called a tropism test to see if you are suitable for treatment with a CCR5 inhibitor. This drug can be taken by people starting and changing HIV treatment.

Integrase inhibitors

These prevent HIV from integrating with immune system cells. One drug from this class has been approved, it is called raltegravir (*Isentress*). It can be taken by people starting or changing HIV treatment.

When to start treatment

If you are unwell because of HIV, then you should start taking anti-HIV drugs.

It is also recommended that you start taking HIV treatment when your CD4 cell count falls to around 350.

But there is a lot of debate about the best time to start treatment – there are some circumstances in which you may be advised to start treatment when your CD4 count is above 350, such as if you also have hepatitis.

What to start treatment with

UK guidelines currently recommend starting treatment with the NNRTI efavirenz. This is usually taken with *Truvada* (FTC and tenofovir) or *Kivexa* (abacavir and 3TC).

Another NNRTI, nevirapine, or a boosted protease inhibitor, are options for some people. *Kivexa* (abacavir and 3TC) may be an alternative to *Truvada* for people with kidney problems. *Kivexa* should be avoided if you have a risk of heart disease.

Side-effects

All drugs can cause side-effects. The side-effects that your HIV drugs can cause should be explained to you before you start taking them. Side-effects often go away or become milder after a few weeks. Tell your doctor about side-effects, particularly rashes. If you are finding it hard to manage side-effects it is often possible to do something about them.

Resistance

HIV can develop resistance to the drugs used to treat it. You should have a resistance test before you start or change treatment to make sure you are taking the most suitable drugs.

Taking your drugs properly can help prevent resistance developing. You can read more about this in the factsheets *Adherence* and *Adherence tips*. These are available at www.aidsmap.com/factsheets.