

# Anti-HIV drugs

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# Anti-HIV drugs

This booklet is a starting point for anyone who wants to know about treatments for HIV. It provides basic information about the drugs that fight HIV – known as antiretroviral drugs – and deals briefly with dosing, side-effects, drug interactions and drug resistance.

Information contained in this booklet has been reviewed by a panel of medical experts. For full details of side-effects and drug interactions, see the product information leaflets that are produced by drug manufacturers for each drug.

This information was correct at the time of going to press (March 2012). The booklet includes information on drugs which have been licensed in the UK or European Union and are recommended for prescription by the British HIV Association.

The booklet has been written to help you decide what questions to ask your doctor about any course of treatment you might be considering. We don't intend it to replace discussion with your doctor about your treatment.

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### HIV and anti-HIV drugs

HIV is a virus which attacks the immune system – the body's defence system against infection and illness. If you have HIV, you can take drugs to reduce the level of HIV in your body. By taking these drugs, you can slow down or prevent damage to your immune system. These drugs are not a cure, but they can help you stay well and lead a longer and healthier life. Anti-HIV drugs are known as antiretroviral drugs.

#### How antiretroviral drugs work

HIV mainly infects cells in the immune system called CD4 cells. Over many years of HIV infection, the number of CD4 cells drops gradually but continually and the immune system is weakened.

It becomes unable to fight infections and a condition called AIDS (**acquired immune deficiency syndrome**) follows. Antiretroviral drugs work by interrupting this process.

#### The aim of treatment

An untreated person with HIV may have thousands or even millions of HIV particles in every millilitre of blood ('copies'). The aim of treatment is to reduce the amount of HIV (known as the 'viral load') to very low levels; this is called an 'undetectable' viral load. This is generally below 50 copies per millilitre of blood, but there are some ultra-sensitive tests that can measure below 20 copies/ml.

You can find out more about viral load testing in the NAM booklet *CD4, viral load & other tests*.

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To give you the best chance of reducing the amount of HIV in your blood to an undetectable level, your doctor will usually recommend that you take a powerful combination of at least three antiretroviral drugs (sometimes known as **highly active antiretroviral therapy**, or HAART). Once your viral load has become undetectable, your immune system should begin to recover, and your ability to fight infections and your general health are likely to improve.

### **HIV treatment guidelines**

In the UK, standards for HIV treatment and care are set and monitored by the British HIV Association, or BHIVA, the professional association for HIV doctors and other healthcare professionals. These standards are

reviewed regularly. The most recent guidelines on HIV treatment were produced in 2012.

### **When to start treatment**

There is no clear point when anyone with HIV should start treatment with anti-HIV drugs. Your doctor will discuss a range of issues with you, before working with you to decide when you should start. This will include weighing up the likely benefits and risks for you of starting treatment as opposed to waiting until later.

It is recommended in the UK HIV treatment guidelines that you start taking HIV treatment immediately if you are ill because of HIV, or if you have an AIDS-defining illness.

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If you do not have any symptoms, then these guidelines recommend that you start treatment when your CD4 cell count is around 350. CD4 cells are a type of immune system cell, and doctors use the number of CD4 cells you have as a marker of the health of your immune system. Clinics use a test that measures the number of CD4 cells in a cubic millimetre of blood. CD4 cell counts in HIV-negative people range from about 500 to 1500. You can find out more about CD4 cell counts in the NAM booklet *CD4, viral load & other tests*.

Your doctor should start discussing HIV treatment with you when your CD4 cell count is approaching 350. Once your CD4 cell count is around 350, you are advised to start

treatment as soon as you are ready. In some situations – for example, if you have another health condition such as hepatitis – your doctor may recommend you start treatment when your CD4 cell count is still above 350. Studies to determine the best time to start HIV treatment are being carried out.

You can find out more about the UK HIV treatment guidelines in the NAM booklet *HIV therapy*.

Your doctor may ask you if you want to participate in a clinical trial. Clinical trials for people starting HIV treatment may look at the best time to start HIV treatment, or compare different combinations of anti-HIV drugs. You can find out more about taking part in a clinical

trial in NAM's factsheets at [www.aidsmap.com/factsheets](http://www.aidsmap.com/factsheets).

### **Starting HIV treatment with a low CD4 count**

Modern HIV treatment is highly effective. Many people who start HIV treatment when their CD4 count is already low (200 or under) will see it start to climb after starting treatment. Long-term HIV therapy can result in your CD4 count returning to the normal level for someone of your age. However, if possible, it is better to start treatment before your CD4 count drops this low. It can be harder to bring your CD4 count back up to a normal level for your age if it has been very low at one time.

### **The importance of regular check-ups**

If you have HIV, you should see a doctor regularly for a check-up. Most people with HIV attend sexual health clinics or specialist HIV clinics that have doctors and other health professionals trained in HIV care. Even if you do not need to start HIV treatment at this stage, regular blood tests will tell you about the health of your immune system and indicate when you should think about starting.

If you are entitled to free NHS care, this care and the anti-HIV drugs provided through NHS HIV clinics and sexual health clinics are free. Your HIV clinic or an HIV support organisation will be able to tell you if you are eligible for free NHS care.

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### Monitoring the safety and effectiveness of HIV treatment

Before you start taking anti-HIV drugs, or if you need to switch to a new combination, you should have a number of blood tests.

Viral load and CD4 tests will tell you if your HIV is progressing and about the health of your immune system.

When you start or change a drug combination, a viral load will be done within the first month, to check that the drugs are working. After this, testing is generally performed every three to four months, although some doctors may perform tests more often to begin with and less frequently once you are established on treatment and doing well.

Once you are on HIV treatment, you will have tests to measure liver and kidney function, and the levels of fat (cholesterol) and sugar in your blood, to assess any effects of the drugs on these systems.

Your HIV care will also involve a number of other routine tests. These will monitor your general health, to see if your treatment is causing any side-effects.

For more information, see the NAM booklets *CD4, viral load & other tests* and *Adherence & resistance*.

### Preparing to start your HIV treatment

Taking antiretroviral therapy is a long-term commitment. At present, once you start the drugs, you are likely to be on them for the rest of your life.

## HIV and anti-HIV drugs

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You are more likely to take your HIV treatment correctly if you are involved in the decisions about when to start treatment and about which drugs to start treatment with.

Being honest about your lifestyle with yourself and with your doctor can help ensure that you start on a drug combination that is right for you. It's a good idea not to make unrealistic demands on yourself, and to think about how taking medication will fit in with your eating and sleeping patterns, and with your work, family and social life.

Discuss your daily routine with your doctor, adherence nurse or pharmacist to help establish the best times to take your anti-HIV drugs and to identify any concerns before you begin. The

chances are that there will be a combination of anti-HIV drugs available that will mean you don't have to change your lifestyle at all, or make only modest alterations to your routine.

Your doctor will also test to see if your HIV has any resistance to any of the antiretroviral drugs. This is because it is possible to be infected with a strain of HIV that has developed resistance to some drugs.

Clinics also do a genetic test (called HLA-B\*5701) to see if you may be more likely to develop an allergic (hypersensitivity) reaction to the anti-HIV drug abacavir (*Ziagen*, also in the combination pills *Kivexa* and *Trizivir*). For more information, see the NAM booklet *Side-effects*.

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### Taking your HIV treatment

It is very important not to miss doses of your anti-HIV drugs and to take them exactly as prescribed. If you miss doses, or you do not take the drugs as prescribed, the HIV in your body is more likely to develop resistance to them, and sometimes to other drugs in the same class. This can mean the drugs stop working. Developing a routine will help with this, as can using other reminders such as the alarm on your mobile phone or a pill box with an alarm.

To help make sure that you take the right combination of anti-HIV drugs, you should have a test to see if you already have any drug resistance before you start treatment.

If you need to change HIV treatment because your viral load becomes detectable again (see *The aim of treatment* on page 1), then your choice of new drugs should be guided by having another resistance test at this stage to see which drugs will work for you.

Even if you have resistance to several drugs, the range of anti-HIV drugs available now means there will still be options for you. An undetectable viral load is a realistic objective for nearly everyone, including people who have taken a lot of different treatments in the past and have drug-resistant virus.

If you are having difficulty sticking to your drug routine, discuss alternative combinations that may be easier to take with your doctor or

## HIV and anti-HIV drugs

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pharmacist. There are many tips and aids which may help you take your drugs as required. For more information, speak to your healthcare team, or visit NAM's website: [www.aidsmap.com](http://www.aidsmap.com).

Further information can also be found in NAM's booklet *Adherence & resistance*.

### Side-effects

Like all medications, anti-HIV drugs can cause side-effects. Quite often, these happen during the first few weeks of treatment. Your doctor can prescribe a number of drugs to help you cope with this initial period.

Side-effects most commonly reported include headache, nausea, diarrhoea, and tiredness. You don't have to 'grin and bear' side-effects – tell

your doctor, especially if they are interfering with the quality of your life. There may be other drugs you can try that will suit you better.

Certain side-effects, such as rash and fever, should be reported to your doctor promptly (see entries on individual drugs for information on potentially dangerous side-effects requiring quick action).

In this booklet, we generally divide side-effects into two types:

**Common** – a side-effect which occurs in at least one in a hundred patients who take this drug.

**Rare** – a side-effect which occurs in fewer than one in a hundred patients who take this drug.

We have included rare side-effects if they are potentially dangerous.

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You will be monitored at your regular HIV clinic visits to see if any side-effects might be causing you to develop longer-term health problems.

You can find out more about side-effects and how to deal with them in NAM's booklet *Side-effects*.

### Drug interactions

Taking two or more different drugs together may result in an alteration in the effectiveness or in the side-effects of one or more of the drugs. Some drugs should not be taken in combination with certain antiretrovirals.

It is important that your doctor and pharmacist know about all other medicines and drugs that you are taking - this includes those prescribed by

another doctor, over-the-counter drugs, herbal and alternative treatments, and recreational drugs.

Some drug combinations are contraindicated - which means you definitely should not take them together. Reasons for this include serious side-effects, or interactions which make one or both drugs ineffective or toxic.

Other interactions are less dangerous, but still need to be taken seriously. Levels of one or both drugs in your blood may be affected and you may need to change the doses you take.

Your HIV doctor and pharmacist will check for possible interactions before they prescribe a new drug for you.

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If any other healthcare professional prescribes or recommends a medicine for you, it's important that they know about the drugs you are taking for your HIV. For example, it's known that treatments for erectile dysfunction (such as *Viagra*) can interact with types of anti-HIV drugs that belong to the drug classes protease inhibitors (PIs) and non-nucleoside reverse transcriptase inhibitors (NNRTIs). Interactions with protease inhibitors can increase blood levels of *Viagra* and similar drugs, increasing the risk of side-effects.

You also need to tell your HIV doctor about any drugs you buy over the counter (at a chemist, for example) or from the internet. Some anti-HIV drugs can interact with antihistamines, asthma drugs (steroids), treatments for

indigestion and statins (drugs that are used to control cholesterol, or lipid levels). These treatments can either be prescribed or bought over the counter at high-street chemists.

If you are thinking of using any other drugs, you should tell your HIV doctor or pharmacist so they can check for possible interactions and recommend the most suitable treatment. Or, when you are buying them, you may wish to tell the pharmacist about the anti-HIV drugs you are taking. High-street chemists often have a private area for consultations, or you could write the name of the drugs down and hand them to him or her. If you do need to mention the name of your anti-HIV drugs, it's very unlikely that anyone around you will recognise what they are used to treat.

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Less is known about interactions with recreational drugs. But there are potential interactions between some recreational drugs (for example, ketamine, ecstasy and methamphetamine [crystal meth]) and some NNRTIs and PIs. If you use recreational drugs, it is sensible to discuss this with your doctor, HIV pharmacist or other healthcare provider.

Anti-HIV drugs can also interact with herbal and alternative treatments. In many cases, the interactions are theoretical, or seen in test-tube studies, and more information is needed about the likelihood of a real-life effect.

St John's wort, a herbal remedy used to treat anxiety and depression, lowers blood levels of NNRTIs and PIs.

Test-tube studies have indicated that African potato and *Sutherlandia* may reduce levels of PIs, NNRTIs and maraviroc (*Celsentri*) in the body.

Interactions can also happen with medicines that are not taken by mouth. For example, ritonavir can interact with inhalers and nasal sprays containing fluticasone and salmeterol (e.g. *Flixotide*, *Flixonase*, *Seretide* and *Serevent*), causing serious side-effects.

You can take painkillers, such as paracetamol or ibuprofen (e.g. *Nurofen*), when on anti-HIV drugs, unless there are other medical reasons why you shouldn't take this sort of drug.

## HIV and anti-HIV drugs

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Make sure you tell your clinic doctor and HIV pharmacist about **all** the medicines you are taking. This includes prescribed medicines, medicines you buy from a chemist, herbal or traditional medicines, and recreational drugs. Also check before taking anything new (whether you buy it yourself or have it prescribed by a doctor or dentist).

### HIV treatment and pregnancy

Antiretroviral drugs are used during pregnancy as an effective means of preventing the transmission of HIV from a mother to her baby. Increasingly, evidence suggests that HIV treatment during pregnancy is not harmful. Taking HIV treatment during pregnancy greatly

reduces the risk of passing on HIV to the baby, so the benefits outweigh any risks.

Generally, anti-HIV drugs are not used during the first three months of pregnancy unless you are already on treatment. Pregnant women are recommended to start HIV treatment between 14 and 24 weeks of pregnancy (depending on your health and viral load), unless you need to take it earlier for your own health. You may also be recommended to start earlier if you have a high viral load.

As a woman's health improves, her fertility may also increase. If you are thinking about becoming pregnant, it's recommended you discuss this with your healthcare team before you try to conceive. You should tell your HIV

## HIV and anti-HIV drugs

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doctor or another member of your healthcare team immediately if you become pregnant. You can discuss your treatment options with them and they will often help to arrange your antenatal care and work with other staff, such as an obstetrician, to ensure you get the appropriate care.

Some forms of hormonal contraception, including patches and implants, are less effective in women on many of the anti-HIV drugs, because of drug interactions. Most other forms of contraception are unaffected by having HIV or being on HIV treatment and some new drugs do not affect contraception. You can find out more about contraception options from your healthcare team.

For more information, see the NAM booklet *HIV & women*.

There is no evidence that a baby conceived when the father is on treatment will be affected by the anti-HIV drugs.

### How anti-HIV drugs are dispensed

You will get a prescription for your HIV treatment, when you attend your regular HIV clinic appointment, which you take to either the specialist HIV pharmacy (in larger clinics) or to the hospital's outpatient pharmacy. A high-street chemist will not usually dispense anti-HIV drugs, unless your clinic has an agreement with a particular chemist.

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You should be given supplies to last until your next clinic appointment. Once you are stable on HIV treatment, with an undetectable viral load, you may be able to arrange with your clinic to have your HIV treatment delivered to you (see [www.aidsmap.com](http://www.aidsmap.com) for more information on 'home' delivery, sometimes also called local delivery). You will still need to attend regular HIV clinic appointments to have your health monitored. Always make sure you have enough medication to last until your next clinic appointment. If you think you might run out before this, contact your clinic as soon as possible to arrange a further supply.

The pharmacist will ask you if you are allergic to any medicines and explain how to take the drugs that have been prescribed

to you. Pharmacists can help you with managing your medication use, including adherence, side-effects, drug interactions, food and drink requirements, storage, pill swallowing, and advice on taking your medicines while travelling.

### Names of anti-HIV drugs

Pharmaceutical drugs are given several names:

First, a research name based on its chemical make-up or manufacturer, e.g. DMP266.

Second, a generic name which is the chemical name of the medicine e.g. efavirenz.

Third, a brand name which belongs to a particular company. A brand name starts with a capital letter

## HIV and anti-HIV drugs

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and is generally written in italics, e.g. *Sustiva*.

This booklet lists the most common names a drug has at the start of a drug entry. The most common name for each drug is used in the text.

### Types of antiretroviral drugs

There are six main types ('classes') of antiretroviral drugs:

*Nucleoside reverse transcriptase inhibitors* (NRTIs) and *nucleotide reverse transcriptase inhibitors* (NtRTIs), which target an HIV protein called reverse transcriptase,

This class of drugs forms the 'backbone' of a first-line HIV treatment combination and is usually taken in a pill that combines a number of drugs.

*Non-nucleoside reverse transcriptase inhibitors* (NNRTIs), which also target reverse transcriptase, but in a different way to NRTIs and NtRTIs.

*Protease inhibitors* (PIs), which target an HIV protein called protease.

*Entry inhibitors*, which stop HIV from entering human cells. There are two types: *Fusion inhibitors* and *CCR5 inhibitors*. CCR5 inhibitors won't work in everyone and are not often used for first-line treatment. You would have a test to see if this type of treatment would be effective before starting on it.

*Integrase inhibitors*, which target a protein in

## Triple-drug combination pills

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HIV called integrase, and stop the virus from integrating into the DNA of human cells.

Each class of drug attacks HIV in a different way. Generally drugs from two (or sometimes three) classes are combined to ensure a powerful attack on HIV.

The drugs listed in this booklet are those licensed for use in the UK or the European Union, and which have been recommended for use in BHIVA's 2012 HIV treatment guidelines. There may be occasions where other anti-HIV drugs, not covered here, are prescribed because of very unusual circumstances. You can find out about these drugs on NAM's website: [www.aidsmap.com](http://www.aidsmap.com).

## Triple-drug combination pills

There are now fixed-dose pills that combine three anti-HIV drugs, from more than one class of drug. These allow many people to take their HIV treatment in one pill, once a day.

There are other combination pills combining two drugs from a single class. These can reduce the number of pills in someone's treatment regimen, but they still need to be taken with at least one other drug as well. These combinations are listed under their drug class later in the booklet.

### ***Atripla***

*Atripla* provides triple-drug combination treatment in one pill, taken once a day. It

## Triple-drug combination pills

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combines 200mg of FTC (emtricitabine), 245mg of tenofovir and 600mg of efavirenz. The dose is one pink tablet once a day.

**Side-effects:** Most commonly, these include sleep disturbances, tiredness, abnormal dreams, impaired concentration, dizziness, rash, nausea, vomiting, diarrhoea, headache, anxiety, depression, raised creatine kinase levels, skin darkening, low blood phosphate levels, weakness, rash, stomach pains, tiredness, bloating, flatulence. See the entries on FTC, tenofovir and efavirenz for more detail.

**Tips on taking it:** Take once a day. In the UK and Europe, it is recommended that *Atripla* should be taken on an empty stomach. Some people find taking it with food reduces side-effects.

You can do this if you find it helpful, but avoid taking it with a high-fat meal; this may increase absorption of the drug, potentially increasing side-effects. If *Atripla* causes confusion or dizziness (because of the efavirenz, which often happens during the first few weeks of taking it), some people find it helpful to take it before going to bed.

**Resistance:** Resistance to efavirenz usually causes resistance to another NNRTI called nevirapine, and possibly to the NNRTI rilpivirine. However, another NNRTI, etravirine, is still likely to be effective.

**Key drug interactions:** See the entries on FTC, tenofovir and efavirenz.

## Triple-drug combination pills

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### ***Eviplera***

*Eviplera* provides triple-drug combination treatment in one pill, taken once a day. It combines 200mg FTC (emtricitabine), 25mg rilpivirine and 245mg tenofovir, in one purplish-pink tablet.

**Tips on taking it:** One tablet, once a day. Always take with a meal.

**Common side-effects:** Nausea, vomiting, diarrhoea, dizziness, insomnia, headache, weakness, rash, stomach pains, fatigue, bloating, flatulence, changes in kidney function, raised creatine kinase levels, low blood phosphate levels, skin darkening. *Eviplera* can cause mood changes and depression. See the entries on FTC, rilpivirine and tenofovir for more detail.

**Rare side-effects:** Changes in heart rhythm (known as QT prolongation).

**Key drug interactions:** Medicines that affect your stomach acidity can block the way *Eviplera* is absorbed. Don't take proton pump inhibitors (PPIs) such as omeprazole with *Eviplera*. Indigestion remedies called H2-blockers should be taken at least 12 hours before or at least four hours after taking *Eviplera*. If taking other indigestion remedies or calcium supplements, they should be taken at least two hours before or at least four hours after taking *Eviplera* as they can prevent it being absorbed properly.

See the entries on FTC, rilpivirine and tenofovir for more information.

### Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs/NtRTIs)

Most people now take these drugs in a fixed-dose pill that combines a number of drugs. These combination pills are listed first and there are also separate entries on the individual drugs.

#### **Combivir**

This is a combination of AZT (zidovudine) and 3TC (lamivudine). The dosage is one white tablet (150mg 3TC and 300mg AZT) twice a day.

**Side-effects:** Most commonly, nausea, vomiting, diarrhoea, tiredness, headache, dizziness, weakness, muscle pain, loss of

appetite, fever, abdominal pain, hair loss, insomnia, rash, runny nose, joint pain. See the entries on AZT and 3TC for more detail.

**Tips on taking it:** One tablet twice a day with or without food.

**Key drug interactions:** See the entries on AZT and 3TC.

#### **Kivexa**

This drug combines 3TC (lamivudine) and abacavir. The dosage of *Kivexa* is one orange tablet (600mg abacavir and 300mg 3TC) once a day.

**Side-effects:** Abacavir can cause a serious hypersensitivity reaction. This is associated

## Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs/NtRTIs)

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with the presence of a particular gene. Before starting treatment with *Kivexa* (or any treatment that contains abacavir) you should have an HLA-B\*5701 test to see if you have this gene. If the test is positive you **must not** take *Kivexa*. If the test is negative, it is highly unlikely that an allergic reaction will occur, but contact your HIV clinic immediately (or A&E if out of hours) if you begin to feel unwell after starting the drug.

In the box with the drug there is an 'alert card', which you should carry with you for the first six weeks of taking *Kivexa*. The particular side-effects you should look out for during this time are:

- Any skin rash **OR**
- If you get one or more symptoms from at

least TWO of the following groups:

- fever
- shortness of breath, sore throat or cough
- nausea or vomiting, or diarrhoea or abdominal pain
- severe tiredness or achiness or generally feeling ill.

Other side-effects include nausea, vomiting, diarrhoea, headache, abdominal pain, hair loss, fever, insomnia, rash, tiredness, loss of appetite, runny nose and joint pain.

See the entries on 3TC and abacavir for more detail.

**Tips on taking it:** Take one tablet, once a day, with or without food.

## Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs/NtRTIs)

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**Key drug interactions:** See the entries for 3TC and abacavir.

### *Trizivir*

This drug combines 3TC (lamivudine), abacavir and AZT (zidovudine). The dose is one green tablet (300mg AZT, 150mg 3TC and 300mg abacavir) taken twice a day.

Treatment with *Trizivir* is not generally recommended. By itself, its anti-HIV effect is often not strong enough to suppress viral load to undetectable levels. Furthermore, as it contains AZT, which has been shown to cause lipoatrophy, it should not be used if other treatment options are available.

**Side-effects:** Abacavir can cause a serious hypersensitivity reaction. This is associated with the presence of a particular gene. Before starting treatment with *Trizivir* (or any treatment that contains abacavir) you should have an HLA-B\*5701 test to see if you have this gene. If the test is positive you **must not** take *Trizivir*. If the test is negative, it is highly unlikely that an allergic reaction will occur, but contact your HIV clinic immediately (or A&E if out of hours) if you begin to feel unwell after starting the drug.

In the box with the drug there is an 'alert card', which you should carry with you for the first six weeks of taking *Trizivir*. The particular side-effects you should look out for during this time are:

## Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs/NtRTIs)

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- Any skin rash OR
- If you get one or more symptoms from at least TWO of the following groups:
  - fever
  - shortness of breath, sore throat or cough
  - nausea or vomiting, or diarrhoea or abdominal pain
  - severe tiredness or achiness or generally feeling ill.

Other side-effects include nausea, vomiting, diarrhoea, headache, abdominal pain, hair loss, fever, insomnia, rash, tiredness, runny nose, joint pain, weakness, muscle pain and loss of appetite.

See the entries on 3TC, abacavir and AZT for more detail.

**Tips on taking it:** Take one tablet twice a day, with or without food.

**Key drug interactions:** See the entries for 3TC, abacavir and AZT.

### *Truvada*

FTC and tenofovir are combined in this pill. The dose is one blue tablet (200mg FTC and 245mg tenofovir) once a day.

**Side-effects:** Nausea, vomiting, diarrhoea, dizziness, headache, rash, weakness, stomach pains, fatigue, bloating, flatulence, raised creatine kinase levels, low blood phosphate levels and skin darkening. See the entries for FTC and tenofovir for more detail.

## Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs/NtRTIs)

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**Tips on taking it:** Take once a day, preferably with food, although you can take *Truvada* on an empty stomach.

**Key drug interactions:** See the entries for FTC and tenofovir.

### 3TC

**Names:** 3TC, lamivudine, *Epivir*

**Approved dosage:** 300mg daily, as one white 150mg tablet twice a day, or two white 150mg tablets once a day, or one larger, grey 300mg tablet once a day. Also available in a combined form with AZT called *Combivir*, in a combined form with AZT and abacavir called *Trizivir*, and in a combined form with abacavir called *Kivexa*.

**Children:** Approved for use in children. Liquid suspension available.

**Tips on taking it:** Take with or without food.

**Common side-effects:** Nausea, vomiting, diarrhoea, headache, abdominal pain, hair loss, fever, insomnia, rash, tiredness and joint pain.

**Rare side-effects:** Lactic acidosis, liver damage.

**Key drug interactions:** 3TC should not be used with the anti-HIV drug FTC. 3TC should not be taken with high doses of the antibiotic cotrimoxazole.

## Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs/NtRTIs)

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### Abacavir

**Names:** Abacavir, *Ziagen*

**Approved dosage:** 600mg daily, either as one 300mg yellow tablet twice daily or two 300mg tablets once a day. Abacavir and 3TC are available in a combined formulation called *Kivexa*. Abacavir is also available in a combined form with AZT and 3TC called *Trizivir*.

**Children:** Liquid formulation available.

**Tips on taking it:** Take with or without food.

**Common side-effects:** Nausea, vomiting, diarrhoea, fever, headache, abdominal pain, tiredness and loss of appetite.

**Rare side-effects:** Hypersensitivity reaction, lactic acidosis. Some, but not all, research has linked abacavir with an increased risk of heart attack. For this reason, abacavir is not recommended if you have other risk factors for heart disease. Your doctor will discuss this with you.

**Important warning:** Abacavir can cause a serious hypersensitivity reaction. This is associated with the presence of a particular gene. Before starting treatment with abacavir (or any treatment that contains abacavir) you should have an HLA-B\*5701 test to see if you have this gene. If the test is positive you **must not** take abacavir. If the test is negative, it is highly unlikely that an allergic reaction will occur, but contact your HIV clinic immediately

## Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs/NtRTIs)

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(or A&E if out of hours) if you begin to feel unwell after starting the drug.

In the box with the drug there is an 'alert card', which you should carry with you for the first six weeks of taking abacavir. The particular side-effects you should look out for during this time are:

- Any skin rash **OR**
- If you get one or more symptoms from at least TWO of the following groups:
  - fever
  - shortness of breath, sore throat or cough
  - nausea or vomiting, or diarrhoea or abdominal pain
  - severe tiredness or achiness or generally feeling ill.

You should never retry abacavir, or take *Trizivir* or *Kivexa*, if you have had an allergic reaction to abacavir previously.

**Key drug interactions:** Care should be taken when abacavir is taken with ribavirin, used to treat hepatitis C. Phenytoin, used to treat epilepsy, may also interact with abacavir.

### AZT

**Names:** AZT, zidovudine

**Approved dosage:** AZT is available as a generic drug, so its appearance will depend on which type your clinic buys.

The approved dose is one 250mg capsule taken twice a day. A 100mg capsule is

## Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs/NtRTIs)

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available for dose variations. Also available in a combined tablet with 3TC called *Combivir* and in a combined tablet with 3TC and abacavir, called *Trizivir*.

**Children:** Approved for use in children. Liquid formulation available.

**Tips on taking it:** Can be taken with or without food, but taking with food reduces nausea.

**Common side-effects:** Nausea, vomiting, fatigue, headache, dizziness, weakness, muscle pain, loss of appetite, fever.

**Rare side-effects:** Blood disorders, lipoatrophy, lactic acidosis.

**Key drug interactions:** Do not take with the anti-HIV drug tipranavir. Close monitoring or dose adjustment needed if taking with the antibiotic clarithromycin or phenytoin, a drug used to treat epilepsy. Several other types of drugs, when taken with AZT, can cause an increase in side-effects, so it is important to talk to your doctor about any other drugs you are taking. These include, but are not limited to, methadone and drugs to treat infections, cancer and malaria.

### FTC

**Names:** FTC, emtricitabine, *Emtriva*

**Approved dosage:** One blue and white 200mg capsule once a day. FTC is also available in a combination tablet with tenofovir called

## Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs/NtRTIs)

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*Truvada*, in a combination tablet with tenofovir and efavirenz called *Atripla*, and in a combination tablet with rilpivirine and tenofovir called *Eviplera*.

**Note:** People who have kidney abnormalities may be advised by their doctor to take a lower dose.

**Children:** Approved for use by children aged four months and over.

**Tips on taking it:** Can be taken with or without food. In the UK and Europe, it is recommended that *Atripla* should be taken on an empty stomach. Some people find taking it with food reduces side-effects, but avoid taking it with a high-fat meal; this may increase absorption of

the drug, potentially increasing side-effects. *Eviplera* should always be taken with food.

**Common side-effects:** Nausea, diarrhoea, headache, raised creatine kinase levels, skin darkening.

**Rare side-effects:** Lactic acidosis, liver damage.

**Key drug interactions:** FTC should not be used with the anti-HIV drug 3TC (lamivudine).

### Tenofovir

**Names:** Tenofovir, *Viread*

**Approved dosage:** One blue 245mg tablet daily. Dose may be adjusted if kidney function

## Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs/NtRTIs)

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impaired. Also available in a combination tablet with FTC called *Truvada*, in a combination tablet with FTC and efavirenz called *Atripla*, and in a combination tablet with rilpivirine and tenofovir called *Eviplera*.

**Tips on taking it:** Take with food, to increase absorption. However, recommendations in the US say the drug can be taken with or without food. In the UK and Europe, it is recommended that *Atripla* should be taken on an empty stomach. Some people find taking it with food reduces side-effects, but avoid taking it with a high-fat meal; this may increase absorption of the drug, potentially increasing side-effects. *Eviplera* should always be taken with food.

**Common side-effects:** Nausea, vomiting, diarrhoea, flatulence, dizziness, low blood phosphate levels, weakness, rash, headache, stomach pains, fatigue and bloating.

**Rare side-effects:** Kidney problems, bone thinning.

**Key drug interactions:** Taking tenofovir and atazanavir together decreases the concentration of atazanavir, so it should only be used if boosted with ritonavir. Protease inhibitors also increase concentration of tenofovir, so if taken together your healthcare team should monitor you carefully for side-effects.

Do not take tenofovir at the same time as the anti-hepatitis drugs adefovir dipivoxil (*Hepsera*).

## Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

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It's important your doctor knows about any other drugs you are taking in case they increase your risk of kidney problems. This includes creatine supplements used to increase exercise performance, as they can interfere with the results of kidney function blood tests. Make sure you tell your doctor if you are taking creatine, and don't take it for two days before any blood tests.

## Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

### Efavirenz

**Names:** Efavirenz, *Sustiva*

**Approved dosage:** One dark-yellow 600mg tablet once a day or three dark-yellow 200mg capsules once a day. Efavirenz is also available in a combination tablet with FTC and tenofovir (*Atripla*).

**Children:** Approved for use in children aged three years and above, who weigh more than 13kg. Oral solution available (but note that the

## Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

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dose of the solution is different from the dose of the tablets or capsules).

**Tips on taking it:** Recommended to take on an empty stomach. Some people find taking it with food reduces side-effects, but avoid taking it with a high-fat meal; this may increase absorption of the drug, potentially increasing side-effects. If efavirenz causes confusion or dizziness, taking before going to bed can help.

**Common side-effects:** Rash, dizziness, headache, diarrhoea, nausea, vomiting and tiredness.

Efavirenz can cause mood and sleep problems. These are most commonly experienced during the first four weeks of treatment and include

feeling 'out of sorts', confusion, impaired concentration, sleep disturbance, abnormal dreams, anxiety and depression. In most cases these side-effects go away by themselves and it isn't necessary to stop taking efavirenz. However, some people find them intolerable and need to change treatment as a result. If you have a history of mental health problems, efavirenz may not be a good choice for you. Talk to your doctor about other treatment options.

**Rare side-effects:** Severe rash, psychosis, liver problems.

**Resistance to efavirenz:** Is likely to cause resistance to nevirapine and possibly to rilpivirine.

## Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

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**Key drug interactions:** Some drugs can interact with efavirenz and cause dangerous side-effects. Do not take efavirenz with the anti-hepatitis drug boceprevir; ergot alkaloids (used to treat migraine and cluster headaches and to control labour); midazolam (used to help you sleep); pimozone (used to treat certain mental health conditions); or St John's wort.

Some drugs can interact with efavirenz and change blood levels of one or both drugs, so dose adjustments may be needed. This is the case for the anti-HIV drugs darunavir, lopinavir/ritonavir (*Kaletra*), ritonavir, ritonavir-boosted atazanavir, fosamprenavir and maraviroc. This is also the case for some drugs used to treat bacterial infections such as TB (including

clarithromycin, rifabutin and rifampicin), anti-fungal treatments, anticonvulsants, statins, methadone, sertraline, calcium channel blockers, immunosuppressants and warfarin.

Efavirenz may reduce the effectiveness of some hormonal contraceptives (such as the 'pill', patches or an implant). If you are using this type of contraceptive to prevent pregnancy you should use an additional or different type of contraception.

### Etravirine

**Names:** Etravirine, *Intencele*.

**Approved dose:** One white 200mg tablet or two white 100mg tablets taken twice a day. Your doctor may recommend taking 400mg

## Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

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etravirine once a day. However, do not change to this dosage without consulting your doctor.

**Tips on taking it:** Take with food. If you find it difficult to take the tablet whole, you can disperse it in a glass of water. Stir it well and drink it straight away. Add some more water and drink that too, to make sure you have taken the entire dose.

**Common side-effects:** Rash, peripheral neuropathy.

**Rare side-effects:** Severe rash, including Stevens Johnson syndrome. You should watch out for the following symptoms accompanying any rash if you are starting etravirine: fever, generally feeling ill, extreme tiredness, muscle

or joint aches, blisters, oral lesions, eye inflammation, facial swelling and/or signs and symptoms of liver problems (e.g., yellowing of your skin or whites of your eyes, dark or tea-coloured urine, pale-coloured stools/bowel movements, nausea, vomiting, loss of appetite, or pain, aching or sensitivity on your right side below your ribs). If you develop these symptoms whilst taking this drug you should contact your HIV clinic immediately or A&E if out of hours.

**Resistance:** Etravirine can work in people whose HIV has resistance to other NNRTIs.

**Key drug interactions:** Do not take with the anti-HIV drugs fosamprenavir/ritonavir, atazanavir/ritonavir, protease inhibitors taken

## Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

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without ritonavir or other NNRTIs. It is not recommended to take etravirine with some drugs used to treat epilepsy, rifampicin (an antibiotic used to treat infections, including TB), or St John's wort.

When taken with the anti-HIV drug maraviroc and a protease inhibitor, a dose adjustment of maraviroc may be needed.

Some drugs can interact with etravirine and change blood levels of one or both drugs, so dose adjustments may be needed. It's important your doctor knows about any other drugs you are taking, including drugs used to treat bacterial infections, including TB (clarithromycin, rifabutin), statins, drugs used to treat certain heart conditions,

antifungal treatments, immunosuppressants, drugs used to treat erectile dysfunction, clopidogrel, dexamethasone, diazepam and warfarin.

Etravirine may reduce the effectiveness of hormonal contraceptives (such as the 'pill', patches or an implant). If you are using this type of contraceptive to prevent pregnancy you should use an additional or different type of contraception.

### Nevirapine

**Names:** Nevirapine, *Viramune*, *Viramune prolonged-release*

**Approved dosage:** Men should not start treatment with nevirapine if their CD4 cell

## Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

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count is above 400 and women should not start treatment with nevirapine if their CD4 cell count is above 250, as this increases the risk of potentially dangerous side-effects.

One white 200mg tablet once a day for the first two weeks and then one 200mg tablet twice a day thereafter.

Alternatively, one 400mg yellow tablet of once-daily prolonged-release formulation (*Viramune prolonged-release*). People starting HIV treatment will take a 14-day lead-in dose of 200mg of immediate-release nevirapine in order to reduce the risk of rash, a common side-effect during the first few weeks of nevirapine treatment. Treatment with *Viramune prolonged-release* should not

begin until the rash has gone away. Always tell your doctor about any rash you develop while taking nevirapine. If a rash persists for more than one month, or becomes more severe, an alternative drug should be used.

**Children:** Syrup available.

**Tips on taking it:** Take with or without food. *Viramune prolonged-release* must be swallowed whole and not crushed, chewed or divided.

**Common side-effects:** Allergic reaction, headache, rash (usually in the first six weeks of treatment), fatigue, stomach pain, diarrhoea, nausea and liver toxicity (usually in the first six weeks of treatment). During the first 18 weeks of treatment with nevirapine, the health of

## Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

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your liver will be intensively monitored; you will be advised to have liver function tests every one to two weeks for the first six weeks.

**Rare side-effects:** Severe rash (Stevens Johnson syndrome). Symptoms include: fever, generally feeling ill, extreme tiredness, muscle or joint aches, blisters, oral lesions, eye inflammation, facial swelling, signs and symptoms of liver problems (e.g., yellowing of your skin or whites of your eyes, dark or tea-coloured urine, pale-coloured stools/bowel movements, nausea, vomiting, loss of appetite, or pain, aching or sensitivity on your right side below your ribs). If you develop these symptoms whilst taking this drug, you should contact your HIV clinic immediately (or A&E if out of hours).

**Resistance to nevirapine:** Is likely to cause resistance to efavirenz and possibly to rilpivirine.

**Key drug interactions:** Do not take St John's wort with nevirapine.

Some drugs interact with nevirapine and change blood levels of the drugs, which may stop them working or cause side-effects. These include the anti-HIV drugs atazanavir, lopinavir/ritonavir (*Kaletra*), fosamprenavir and efavirenz.

It's also particularly important your doctor knows if you are taking any of the following drugs with nevirapine, so that the effects can be monitored: antibiotics used to treat certain

## Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

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infections, such as TB (including rifampicin, rifabutin and clarithromycin), anti-fungal treatments, methadone and warfarin.

Nevirapine may reduce the effectiveness of hormonal contraceptives (such as the 'pill', patches or an implant). If you are using this type of contraceptive to prevent pregnancy you should use an additional or different type of contraception.

### Rilpivirine

**Names:** rilpivirine, *Edurant*

**Approved dosage:** One white 25mg tablet taken once a day. Also available in a combination tablet with FTC and tenofovir (*Eviplera*).

**Tips on taking it:** Always take with a meal.

**Common side-effects:** Insomnia, headache, rash. May cause depression and mood changes.

**Rare side-effects:** At doses above 25mg, changes in heart rhythm (known as QT prolongation).

**Key drug interactions:** It's not recommended that rilpivirine be used in combination with other NNRTIs.

Do not take rilpivirine with the anticonvulsants carbamazepine, oxcarbazepine, phenobarbital or phenytoin or with St John's wort. Rilpivirine should not be taken at the same time as the antibiotics rifampicin and rifabutin (often

used to treat TB). Some other antibiotics can increase blood levels of rilpivirine.

Medicines that affect stomach acidity can block the way rilpivirine is absorbed. Don't take proton pump inhibitors (PPIs), such as omeprazole. Indigestion remedies called H2-blockers (such as ranitidine, *Zantac*) should be taken at least 12 hours before or at least four hours after taking rilpivirine. If taking other indigestion remedies or calcium supplements, they should be taken at least two hours before or at least four hours after taking rilpivirine as they can prevent it being absorbed properly.

It may be necessary to increase methadone doses when taken at the same time as rilpivirine.

## Protease inhibitors

Most protease inhibitors are prescribed with another drug (also a protease inhibitor) called ritonavir. Ritonavir is used to boost the effects of the other protease inhibitor in your body. Without ritonavir, your body would metabolise (break down) the protease inhibitor too quickly and it would not work effectively against the virus.

**Drug interactions:** Protease inhibitors, including ritonavir, have multiple drug interactions. Most of these are caused by the boosting effect of ritonavir, which increases the levels of many drugs, including other protease inhibitors.

## Protease inhibitors

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Do not take any protease inhibitors with the following medication:

- drugs for certain heart conditions, such as amiodarone, astemizole, flecainide, lercanidipine, quinidine and dabigatran
- alfuzosin (used to treat urinary problems)
- the anti-TB drug rifampicin
- the lipid-lowering drug simvastatin. Other statins such as rosuvastatin and atorvastatin can be used, but at lower doses
- the anticoagulant (a drug that prevents blood clotting) rivaroxaban
- midazolam, a benzodiazepine used to help you sleep, if taken orally. Midazolam can be used at reduced dose when injected as a sedative for certain procedures
- erectile dysfunction drugs, such as sildenafil

(*Viagra*), tadalafil (*Cialis*) or vardenafil (*Levitra*) used at full dose. Get advice from your HIV doctor or pharmacist before taking any drugs for erectile dysfunction

- ergot derivatives (used to treat cluster headaches and migraines and to manage labour)
- the antimalarial halofantrine
- St John's wort, the herbal antidepressant.

Some drugs can interact with protease inhibitors and change blood levels of one or both drugs, so dose adjustments may be needed. This is the case for:

- calcium channel blockers (for example, diltiazem and verapamil)
- the heart drug digoxin

## Protease inhibitors

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- the anticoagulant warfarin (with the exception of atazanavir)
- the asthma and allergy drugs fluticasone, salmeterol and budesonide (including inhalers or nasal sprays)
- treatments for acid reflux and ulcers called proton pump inhibitors and H2 receptor antagonists
- indigestion remedies
- some anti-fungal treatments (although not shampoos)
- anticonvulsants (drugs used to treat epilepsy; for example, phenytoin, carbamazepine). Some anticonvulsants should never be used with some PIs (see individual entries)
- the anti-TB drugs rifabutin and rifapentine
- immunosuppressants

- injectable steroids such as triamcinolone (*Kenalog*)
- some chemotherapy drugs.

Methadone levels may be reduced by protease inhibitors, and require an increase in dose to achieve the same effect.

Protease inhibitors may reduce the effectiveness of some hormonal contraceptives (such as the 'pill', patches or an implant). If you are using this type of contraceptive to prevent pregnancy you may need to use an additional or different type of contraception.

## Protease inhibitors

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### Atazanavir

**Names:** Atazanavir, *Reyataz*

**Approved dosage:** One red and blue 300mg capsule plus one white 100mg ritonavir tablet taken together once a day. If the combination also contains efavirenz the dose is 400mg (two turquoise 200mg capsules) plus one 100mg ritonavir tablet taken together once a day.

**Tips on taking it:** Take with food to improve absorption.

**Common side-effects:** Nausea, diarrhoea, rash, stomach ache, headache, insomnia, vomiting, heartburn, hyperbilirubinaemia (raised bilirubin levels, sometimes leading to jaundice), lipodystrophy, liver toxicity, diabetes.

**Rare side-effects:** Kidney stones, abnormal liver function, changes in heart rhythm.

**Key drug interactions:** See the start of this section on protease inhibitors for more information on possible interactions.

Drugs that affect the acidity of your stomach and gastrointestinal tract can stop atazanavir being absorbed, meaning it may not be effective at suppressing HIV:

- **Proton pump inhibitors** (indigestion remedies that reduce gastric acid, such as lansoprazole or omeprazole) should not be taken with atazanavir, unless they have been prescribed by your HIV doctor and the dose of atazanavir is increased.

## Protease inhibitors

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- **H2-receptor antagonists** (treatments for ulcers, such as ranitidine [*Zantac*]) should be taken only once a day, 4 to 12 hours after atazanavir. If atazanavir is taken with tenofovir, you should never take H2-receptor antagonists.
- **Indigestion remedies or calcium supplements** should be taken at least two hours before or one hour after atazanavir.
- 'Buffered' medicines (drugs that have been prepared so they are released slowly into the body) should be taken at least two hours before or one hour after atazanavir.

Talk to your HIV doctor or pharmacist before taking any of these drugs with atazanavir.

Atazanavir should not be taken with the anti-HIV drug nevirapine or the chemotherapy drug irinotecan.

The anti-HIV drugs efavirenz and nevirapine reduce the levels of atazanavir in the body and dose adjustments of atazanavir are recommended.

### Darunavir

**Names:** Darunavir, *Prezista*

**Approved dosage:** 800mg (two orange 400mg tablets) plus one 100mg white ritonavir tablet taken together once a day. For more resistant HIV, your doctor may prescribe one 600mg tablet plus one 100mg ritonavir tablet taken together twice a day.

## Protease inhibitors

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**Tips on taking it:** Must be taken with food to improve absorption.

**Common side-effects:** Diarrhoea, nausea, rash, stomach pain, vomiting, headache, fever, lipodystrophy, liver toxicity, diabetes.

**Rare side-effects:** Abnormal liver function, changes in heart rhythm.

**Resistance to darunavir:** The drug works well in many people with resistance to other protease inhibitors.

**Key drug interactions:** See the start of this section on protease inhibitors for more information on possible interactions.

Do not take darunavir with the anti-HIV drug lopinavir/ritonavir (*Kaletra*). The lipid-lowering drug pravastatin should be taken with caution with darunavir.

### Fosamprenavir

**Names:** Fosamprenavir, *Telzir*

**Approved dosage:** One pink 700mg tablet with one white 100mg tablet of ritonavir twice daily.

**Tips on taking it:** Take with or without food.

**Common side-effects:** Raised lipids, nausea, vomiting, diarrhoea, rash, abdominal pain, headache, dizziness, tiredness, tingling around the mouth, changes in liver and

## Protease inhibitors

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pancreas function, lipodystrophy, liver toxicity, diabetes.

**Rare side-effects:** Severe rash, changes in heart rhythm.

**Resistance to fosamprenavir:** Is likely to cause resistance to ritonavir.

**Key drug interactions:** See the start of this section on protease inhibitors for more information on possible interactions.

Do not take fosamprenavir with the anti-HIV drugs etravirine or tipranavir. Do not take fosamprenavir with the anti-hepatitis drug telaprevir or the antimalarial halofantrine.

### Lopinavir/ritonavir (as *Kaletra*)

**Names:** Lopinavir/ritonavir, *Kaletra*

**Note:** Lopinavir is only available in combination with ritonavir.

**Approved dosage:** 400mg lopinavir plus 100mg ritonavir twice a day, in yellow tablets containing 200mg lopinavir and 50mg ritonavir; two tablets are taken twice daily. Once-daily dose of four yellow tablets each containing 200mg of lopinavir and 50mg ritonavir is available for people starting treatment for the first time.

**Children:** A *Kaletra* tablet containing 100mg of lopinavir and 25mg of ritonavir is available for use by children who can swallow a tablet. A liquid formulation is also available.

## Protease inhibitors

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**Tips on taking it:** The tablet can be taken with or without food, but must not be broken, chewed or crushed. Taking with food can reduce potential irritation of the stomach.

**Common side-effects:** Lipodystrophy, raised liver enzymes, nausea, vomiting, diarrhoea, abdominal pain, weakness, headache, heartburn, raised lipids, liver toxicity, diabetes.

**Rare side-effects:** Changes in heart rhythm.

**Resistance to lopinavir/ritonavir:** Likely cross-resistance with ritonavir and, to some extent, fosamprenavir. High-level resistance to other protease inhibitors may reduce the effectiveness of lopinavir/ritonavir.

**Key drug interactions:** See the start of this section on protease inhibitors for more information on possible interactions.

Efavirenz and nevirapine reduce levels of *Kaletra* and dose adjustments are sometimes recommended when taking twice-daily *Kaletra*. Once-daily *Kaletra* should not usually be taken together with either efavirenz or nevirapine. *Kaletra* should not be taken with tipranavir/ritonavir or with darunavir.

Once-daily *Kaletra* should not be taken with carbamazepine, phenobarbital or phenytoin (used to treat epilepsy).

Do not take *Kaletra* with the anti-hepatitis drug telaprevir; fentanyl (for pain relief); trazodone;

## Protease inhibitors

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*Zyban*; or anti-cancer drugs called tyrosine kinase inhibitors.

### Ritonavir

**Names:** Ritonavir, *Norvir*

**Approved dosage:** Ritonavir was one of the first protease inhibitors developed and is approved for use as an anti-HIV drug at a dose of 600mg twice a day. It is no longer used in this way due to its side-effects. However, it is given at very low doses (too low for any HIV effect) to 'boost' the level of other PIs. When used for its boosting effects, the dose of ritonavir is usually 100mg or 200mg once or twice daily (depending on the frequency with which you take the protease inhibitor it is boosting).

**Tips on taking it:** Take with food to reduce nausea. Do not chew, break or crush tablets. Ritonavir tablets and liquid should always be stored at room temperature.

**Common (at full dose):** Raised lipid and liver enzymes, nausea, vomiting, diarrhoea, abdominal pain, headache, weakness, numbness around the mouth, bad taste in mouth, lipodystrophy, liver toxicity, diabetes.

**Common (at low dose):** Raised lipid levels.

**Rare:** Changes in heart rhythm.

**Resistance to ritonavir:** Likely to be some resistance to fosamprenavir.

## Protease inhibitors

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**Key drug interactions:** See the start of this section on protease inhibitors for more information on possible interactions.

Ritonavir interacts with many other medications. Consult your doctor or HIV pharmacist before taking any other drugs with ritonavir or a ritonavir-boosted drug (including inhalers, nasal sprays, medicines bought from a high-street chemist, herbal preparations and recreational drugs).

### Tipranavir

**Names:** Tipranavir, *Aptivus*

**Approved dosage:** Two 250mg pink capsules together with 200mg (two 100mg cream-coloured tablets) ritonavir, twice daily.

**Tips on taking it:** To be taken with food. Tipranavir capsules should be stored in the fridge, but can be kept at room temperature (below 25 degrees C) for up to 60 days.

**Common side-effects:** Nausea, diarrhoea, vomiting, abdominal pain, tiredness, headache, fever, lipid increases, flatulence, liver abnormalities, rash, lipodystrophy, diabetes, liver toxicity.

**Rare side-effects:** Bleeding in brain, changes in heart rhythm.

**Resistance to tipranavir:** Test-tube studies report that resistance to tipranavir is slow to develop, and that there is no clear pattern of

## Protease inhibitors

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cross-resistance to currently available protease inhibitors.

**Key drug interactions:** See the start of this section on protease inhibitors for more information on possible interactions.

Tipranavir can reduce the effectiveness of abacavir and AZT. It's recommended that it not be taken with either of these drugs unless no other NRTI is available.

Some drugs can interact with tipranavir and change blood levels of one or both drugs, so dose adjustments may be needed. This is the case for: antidepressants; disulfiram (*Antabuse*); and the antibiotic metronidazole; anticonvulsants (used to treat epilepsy). Care

should be taken with the antifungal treatments itraconazole and ketoconazole, and high doses (more than 200mg a day) of these and fluconazole avoided.

### Fusion inhibitors

There is currently one drug in the fusion inhibitor class, called T-20 (enfuvirtide, *Fuzeon*). This is now only prescribed in very rare and specific circumstances. Anyone on T-20 will receive detailed information on the drug and how to use it from their doctor.

### CCR5 inhibitors

#### Maraviroc

**Names:** Maraviroc, *Celsentri*

**Approved dosage:** The dose of maraviroc is dependent on the other anti-HIV drugs you take. Your HIV doctor or pharmacist will talk to you about which dose is appropriate for you. Most people will take one blue tablet (300mg or 150mg) twice daily.

**Note:** Maraviroc should only be used by people with a type of HIV called CCR5-tropic HIV. Not everybody has this type of virus; if you do not have it, you should not take maraviroc. Your HIV clinic should carry out a test called a tropism test to see if you

## CCR5 inhibitors

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have CCR5-tropic HIV before prescribing the drug.

**Tips on taking it:** Take with or without food.

**Common side-effects:** Nausea, diarrhoea, fatigue, headache.

**Rare side-effects:** Allergic reaction including itchy rash, yellowing of the eyes, vomiting, dark urine and abdominal pain on the right side; liver problems.

**Resistance to maraviroc:** Resistance to maraviroc is still being studied and appears to occur in a different way to other anti-HIV drugs.

**Key drug interactions:** Dose adjustment needed when maraviroc is taken with some other anti-HIV drugs.

If you are prescribed certain drugs, including oral ketoconazole (not the shampoo), itraconazole and clarithromycin, your dose of maraviroc may need to be changed. Your doctor or pharmacist will discuss this with you.

People on the anti-TB drug rifampicin and on carbamazepine, phenobarbital and phenytoin (used to treat epilepsy) will need an adjusted dose of maraviroc. Your doctor or pharmacist will discuss this with you.

St John's wort should not be taken with maraviroc.

# Integrase inhibitors

## Raltegravir

**Names:** Raltegravir, *Isentress*

**Dose:** One pink 400mg tablet twice daily.

**Tips on taking it:** Take with or without food.

**Important warning:** An allergic (hypersensitivity) reaction has been reported in some people using raltegravir. See your HIV clinic immediately (or A&E if out of hours) if you develop a rash together with any of these symptoms: fever; feeling generally unwell or extremely tired; muscle or joint ache; blistering of the skin; mouth ulcers; swelling of the eye, lips, mouth or face; breathing difficulties;

yellowing of the skin or eyes; dark urine; pale stools; or pain, aching or sensitivity on the right-hand side of the body, below the ribs.

**Common side-effects:** Headache, insomnia.

**Rare side-effects:** Severe rash, hypersensitivity reaction, extreme thirst (polydipsia).

**Key drug interactions:** If you are prescribed the TB drug rifampicin, your dose of raltegravir may be increased to 800mg (two tablets) twice daily, as rifampicin can reduce drug levels of raltegravir.

### Summary

- Combination HIV treatment prevents HIV from damaging your immune system, and so prevents ill health and prolongs lives.
- The best time to begin anti-HIV drugs is not known. Decisions are guided mainly by the CD4 count and any symptoms that you may have. Generally, it is currently recommended that treatment starts before the CD4 count falls below 350. Research continues to determine the best time to start HIV treatment.
- Your doctor may recommend you start treatment when your CD4 cell count is above 350 in some circumstances.
- Combinations of at least three anti-HIV drugs provide the best chance of reducing the amount of HIV in your blood to very low levels (an undetectable viral load).
- Taking your anti-HIV drugs as prescribed is extremely important, as this will prolong the benefit you will get from them, and reduce the risk of resistance to the drugs developing.
- Tell a member of your HIV healthcare team (doctor, nurse or pharmacist) if you are having problems, including side-effects, with your anti-HIV drugs. Make sure they know about any other medicines you are taking (including those bought from a chemist, herbal preparations and recreational drugs).

# Glossary

**adherence** The act of taking treatment exactly as prescribed, i.e. at the right times, with or without food as needed.

**antiretroviral** A medicine that acts against retroviruses such as HIV.

**CD4** A molecule on the surface of some white blood cells onto which HIV can bind. The CD4 cell count roughly reflects the state of the immune system.

**immune system** The body's mechanisms for fighting infection and getting rid of cells that are not working properly.

**lipodystrophy** A disruption in the way the body produces, uses and stores fat.

**opportunistic infection** Specific infections that cause disease in someone with a damaged immune system.

**regimen** A drug or treatment combination and the way it is taken.

**resistance** A drug-resistant HIV strain is one that is less susceptible to the effects of one or more anti-HIV drugs.

**undetectable viral load** A level of viral load too low to be picked up by the viral load test being used. Achieving an undetectable viral load is the aim of HIV treatment.

**viral load** Measurement of the amount of virus in a sample of blood. HIV viral load is checked to see if treatments are working.



# Talking points

*A checklist for you and your doctor*



*Talking points* is designed to help people with HIV prepare for their doctor's appointments, and support them to participate in decisions about their treatment.

Users are invited to answer a series of questions about their health, building a personalised checklist of important issues to talk to their doctor about when considering their treatment options.

Give it a go today.

 [www.aidsmap.com/talking-points](http://www.aidsmap.com/talking-points)

This booklet is part of NAM's information series for HIV-positive people. The whole series is freely available on our website, **www.aidsmap.com**, as well as our other resources, news, FAQs, and information on HIV services.

The screenshot shows the AIDSmap website interface. At the top, the browser address bar displays "http://www.aidsmap.com". The website logo "nam aidsmap" is prominent, with the tagline "HIV & AIDS - sharing knowledge, changing lives" below it. A search bar is located in the top right corner. A navigation menu includes links for Home, News, HIV Basics, Topics, Resources, Translations, E-atlas, and About us, along with a "Donate" button featuring a ribbon icon. A main banner states: "NAM works to change lives by sharing information about HIV and AIDS. We believe independent, clear and accurate information is vital in the fight against HIV and AIDS. More about us >".

The main content area features a large section for the "International AIDS Society Conference". It includes a grid of photos of delegates and a text block: "Delegates making their way back from Rome are leaving with a sense of optimism, as scientific breakthroughs demonstrate the efficacy of a range of prevention approaches. But there are challenges ahead for the global HIV community in applying the lessons learned from the conference." Below this, there are three bullet points: "Read NAM's daily conference bulletins", "Revolutionary and luminary: meet Eric Fleutolet", and "Get all of our news from the conference".

To the right of the main content are several interactive buttons: "Sign up for our emails" (with an envelope icon), "Recently diagnosed" (with question mark icons), "Find an HIV service" (with a world map icon), "Our resources" (with a folder icon), and "Connect with NAM" (with social media icons for Twitter and Facebook).

At the bottom, there is a row of five smaller article thumbnails with titles: "International AIDS Society Conference", "Paying people to be healthy", "Task shifting of care", "No one forced into treatment", and "Preventing HIV".

# Keep yourself up to date – get more from NAM

## HIV Treatment Update

NAM's quarterly newsletter keeps you up to date with the latest news and developments about HIV, to help you talk to your doctor, and make decisions about your health and treatment.



## HIV Weekly

NAM's weekly email round-up of the latest HIV news. Sign up today at [www.aidsmap.com/bulletins](http://www.aidsmap.com/bulletins) for straightforward news reporting and easy-to-read summaries of the latest HIV research.



**To subscribe to either of these publications, please use the form on the reverse**

To read previous copies of HTU visit [www.aidsmap.com/htu](http://www.aidsmap.com/htu)  
or for general HIV news [www.aidsmap.com/news](http://www.aidsmap.com/news)

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**Please complete this form and send to NAM, FREEPOST LON17995 London, SW9 6BR**

Under the terms of the Data Protection Act you may advise us at any time if you do not wish to receive further mailings from NAM



# What did you think of this booklet?

We need your help – please, please help support NAM's work by returning this form.

At NAM, we really value feedback – it is used to help us keep our resources useful to you and others.

**How useful was this booklet to you?**

Very useful

Useful

Not very useful

Not at all useful



**Has this booklet helped you make decisions about your health and treatment?**

Yes, very much

Yes

A little bit

No



**Has this booklet made you feel more informed about key issues?**

Yes, very much

Yes

A little bit

No



**Has this booklet made you feel more confident when talking to your healthcare team/doctor/GP?**

Yes, very much

Yes

A little bit

No



Please turn over 



In your own words tell us how this booklet has helped you

Are there other topics that booklets like this should cover?  
Please give details.

**This questionnaire is anonymous and confidential.**

NAM is a charity, returning this form is a simple and easy way for you to support our work so in turn we can continue to support you and others with free, useful, independent information. Thank you for taking the time to help us.

Please tear off this page and post it for free to: **NAM, FREEPOST, LON17995 London, SW9 6BR**



## HIV helplines

### THT Direct

From the Terrence Higgins Trust

Telephone 0808 802 1221

Opening hours Monday-Friday, 10am-10pm

Saturday & Sunday, 12pm-6pm

### I Do It Right

Telephone 0800 0967 500

Opening hours Monday-Friday, 10am-6pm

### HIV i-Base Treatment Phonenumber

Telephone 0808 800 6013

Opening hours Monday-Wednesday, 12pm-4pm

### NAM information series for HIV-positive people - visit [www.aidsmap.com/booklets](http://www.aidsmap.com/booklets)

The booklet series includes: ● Adherence & resistance ● CD4, viral load & other tests ● HIV & children ● HIV & hepatitis ● HIV, mental health & emotional wellbeing ● HIV & sex ● HIV, stigma & discrimination ● HIV & TB ● HIV & women ● HIV therapy ● Nutrition ● Side-effects

## More from NAM

### [aidsmap.com](http://aidsmap.com)

NAM's website [aidsmap.com](http://aidsmap.com) hosts a huge range of useful resources on key HIV topics. With booklets, factsheets, frequently asked questions about HIV, news and a map of local services, you can keep up to date and find information to support the decisions you make about your treatment and health. It is a reliable source of independent information that you can trust.

### HIV Health Support Service

NAM supports THT in providing one-to-one and group skills sessions on health and treatments to people living with HIV. Call THT Direct for details.

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Acrobat Reader.

Call NAM on  
020 3242 0820.

## About NAM

NAM is a charity that works to change lives by sharing information about HIV & AIDS. We believe that independent, clear, accurate information is vital to those living with HIV.

## Please help us

If you would like to support our work and help us to continue to provide resources like this one, please donate today at [www.aidsmap.com/donate](http://www.aidsmap.com/donate) or call us on 020 3242 0820.



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[www.theinformationstandard.org](http://www.theinformationstandard.org)