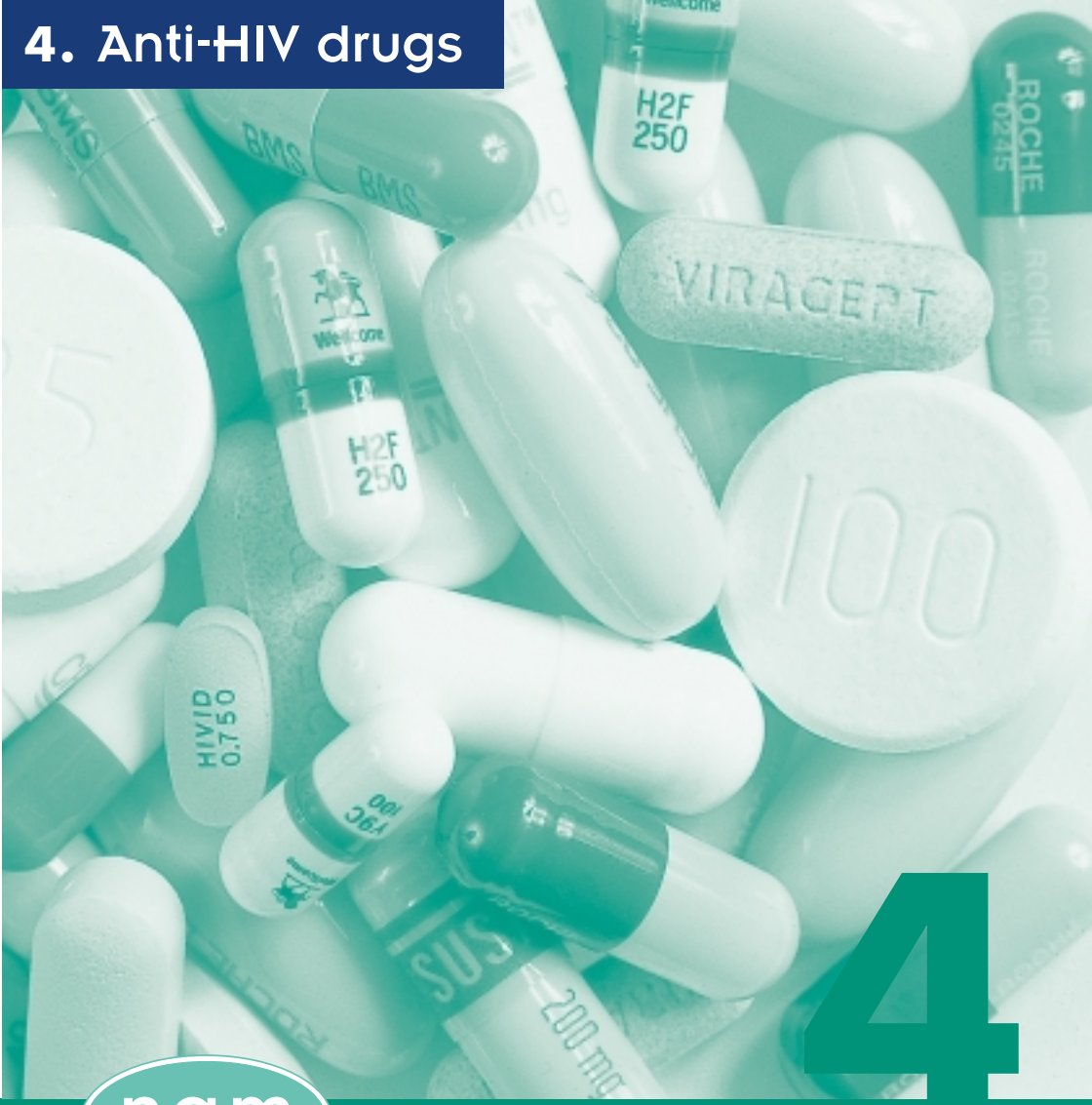

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nam national aids manual

Anti-HIV drugs

information series for positive people

Introduction

This booklet is a starting point for anyone who wants to know about treatments for HIV and AIDS. It provides basic information about the drugs that fight HIV – known as antiretroviral drugs.

It deals briefly with dosing, side-effects, drug interactions, drug resistance and access to drugs. Information about the effects of drugs during pregnancy and the activity of drugs in the brain is included where available. A number of other anti-HIV drugs or immune-boosting treatments are also discussed.

Information contained in this booklet has been checked by a panel of medical experts. It should be used in conjunction with professional medical advice. For full details of side-effects and drug interactions, see Product Information Leaflets. This information was correct at the time of going to press (July 1999).

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Anti-HIV drugs

nam

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 reducing the amount of HIV in your body, you can slow or prevent damage to your immune system. These drugs are not a cure, but they can help you stay well and extend your 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 and the immune system is weakened. If nothing is done to slow or halt this destruction of the immune system, a condition called AIDS 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. The aim of treatment is to reduce the amount of HIV to very low levels e.g. below 50 copies per millilitre of blood.

To provide you with the best chance of reducing the amount of HIV in your blood to very low levels, your doctor may recommend that you take a powerful combination of at least three antiretroviral drugs. Once your viral load has dropped, your immune system should begin to recover and your ability to fight infections is likely to improve.

When to take treatment

There are many opinions about when is the best time to start taking antiretroviral therapy but there is no general rule that applies to everyone. Some people take treatment early on, before there is much damage to the immune system; others start later, when blood tests show they are likely to become sick in the near future. Some people wait until they are sick before taking antiretroviral drugs.

Your decision about when to start therapy should be made in consultation with your doctor. If you are getting persistent 'minor' infections, or if you have had an AIDS-defining illness, (e.g. PCP), your immune system may already be seriously weakened. In this situation, your doctor will strongly advise you to consider taking antiretroviral drugs.

Viral load and CD4 counts are important factors in your decision about when to start treatment. Opinions vary, but many doctors would recommend treatment if your viral load is over 30,000, or if your CD4 count is below 350.

The final decision about when to commence treatment rests with you. Social factors such as family, relationships, work and travel may influence your decision.

Sticking to your drug routine

Taking antiretroviral therapy is a long-term commitment. Once you start the drugs, it is recommended that you continue treatment for the rest of your life.

Also, it is very important not to miss doses and to take the drugs as prescribed. If you miss doses, or you do not take the drugs as you are supposed to, the HIV in your body is more likely to develop resistance to the drugs. This will reduce their long-term effectiveness.

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

There are many tips and aids which may improve your ability to take your drugs as required. For more information, see the booklet entitled *A Spoonful of Sugar – A guide to taking combination anti-HIV therapy* produced by the Terrence Higgins Trust. Telephone 020 7831 0330 for details.

Regular check-ups

If you have HIV, you should see a doctor regularly for a check-up. Most people with HIV attend GUM clinics or specialist HIV clinics which have doctors and other health professionals trained in HIV and AIDS. Even if you do not want to take treatments at this stage, regular blood tests will tell you how the disease is progressing.

Antiretroviral drugs provided through HIV clinics and GUM clinics are free.

Monitoring

Before you start on antiretrovirals, or before you switch to a new combination, you should have a number of blood tests. Viral load and CD4 tests will tell you how advanced your HIV disease is. Tests to measure liver function, and fat and sugar levels in the blood may be conducted to show the effects of the drugs on the normal workings of your body. Your doctor may also test for drug resistance.

Once you are on a new combination, a viral load and CD4 count will be done within the first month of treatment. This is to check that the drugs are working. Testing is generally performed every three months, although some doctors may perform tests more regularly.

For more information, see the booklet *Viral Load*, produced by NAM Publications.

Pregnancy

Combinations of antiretrovirals are now commonly used during pregnancy. However, there is still very little evidence from large, long-term trials about the safety of anti-HIV drugs during pregnancy. Generally, anti-HIV drugs are not recommended during the first three months of pregnancy unless the woman is already on treatment.

As a woman's health improves on antiretrovirals, her fertility may also increase. It is recommended that women considering pregnancy, or women who may conceive, discuss their treatment options with their doctor. The contraceptive pill may be less effective among women on anti-HIV drugs due to drug interactions.

Whether a father's treatment increases the risk of birth defects is not known.

Side-effects

It is very common for people to experience side-effects to antiretroviral therapy, especially during the first few weeks of treatment. Your doctor can prescribe a number of drugs to help you cope with this initial period. Report side-effects, especially rash and fever, to your doctor promptly.

Drug interactions

If you are on two or more drugs, they may interact in a negative way. This booklet lists key drug interactions for the antiretroviral drugs. Some drugs are contraindicated – which means you definitely should not take them together. Reasons for this include serious toxicity and interactions which make one or both drugs ineffective.

Other interactions are less serious. Levels of one or both drugs in your blood may be affected and dosing adjustments may be required.

Some drug interactions may mean you have a greater chance of developing certain side-effects such as peripheral neuropathy.

What's in a name?

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 common to all pharmaceuticals with that chemical make-up (e.g. efavirenz).
- Third, a brand name which belongs to a particular company. A brand name starts with a capital letter and is generally written in italics (e.g. *Sustiva™*).

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

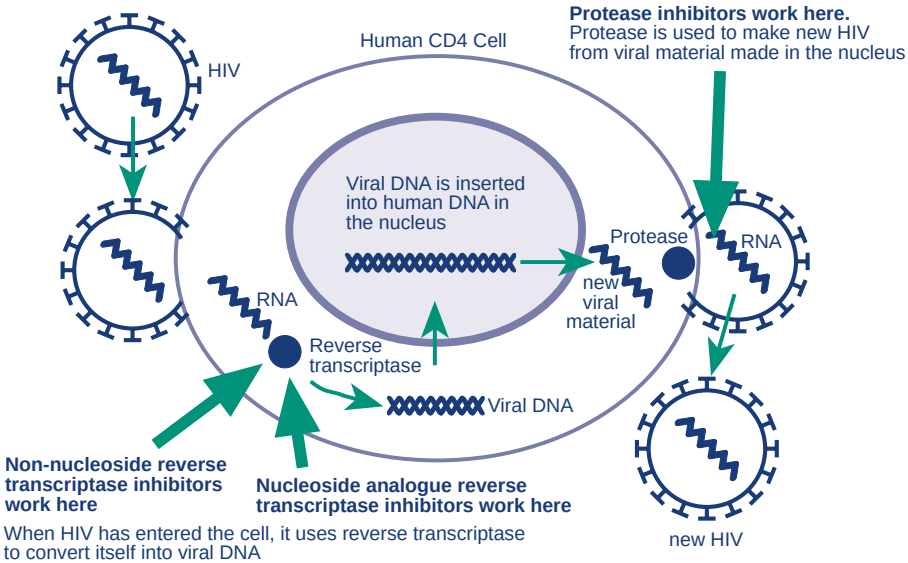
Types of antiretroviral drugs

There are three main types of antiretroviral drugs:

- nucleoside analogue reverse transcriptase inhibitors (NRTIs) which target an HIV protein called reverse transcriptase;
- protease inhibitors (PIs) which target an HIV protein called protease;
- non-nucleoside reverse transcriptase inhibitors (NNRTIs) which also target reverse transcriptase.

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.

Where antiretrovirals block HIV



When HIV has entered the cell, it uses reverse transcriptase to convert itself into viral DNA

Nucleoside analogue reverse transcriptase inhibitors (NRTIs)

NRTIs were the first type of drugs available to treat HIV. Today, two NRTIs often form the backbone of any anti-HIV drug combination. NRTIs may also be called nukes. The NRTIs are:

AZT, zidovudine, *Retrovir™*

ddI, didanosine, *Videx™*

ddC, zalcitabine, *Hivid™*

3TC, lamivudine, *Epivir™*

d4T, stavudine, *Zerit™*

abacavir, *Ziagen™*

Common dual combinations of NRTIs that are used as a part of three or four drug combinations are: d4T/ddI, AZT/3TC (often given as a combined pill called *Combivir™*, d4T/3TC, AZT/ddI. Combinations that should be avoided are: d4T/AZT, d4T/ddC and ddI/ddC.

Protease inhibitors (PIs)

Protease inhibitors were the second class of antiretroviral drugs to be available on prescription. In combination with other antiretrovirals, they are very effective treatments for HIV.

The protease inhibitors are:

indinavir, *Crixivan™*

saquinavir hard gel, *Invirase™*

saquinavir soft gel, *Fortovase™*

ritonavir, *Norvir™*

nelfinavir, *Viracept™*

Another drug, amprenavir (141W94 or *Agenerase™*), is not yet approved for marketing, but it is available through a special access scheme for people with few treatment options.

Usually one protease inhibitor is added to a combination of two NRTIs. Sometimes combinations of two protease inhibitors and two NRTIs are used. Common combinations of two protease inhibitors are: ritonavir/saquinavir, nelfinavir/saquinavir and ritonavir/indinavir.

Other combinations may include one or two protease inhibitors, one NNRTI, and one or two NRTIs. If a person's initial combination has not worked, some doctors may recommend a combination of four or more antiretrovirals.

Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

An NNRTI is often taken with two NRTIs as an alternative to a protease inhibitor. NNRTIs may also be called 'non-nukes'.

Two NNRTIs are currently approved for use:

nevirapine, *Viramune™*

efavirenz, DMP 266, *Sustiva™*.

One other NNRTI is available through a special access scheme in the UK: delavirdine, *Rescriptor™*.

NRTIs

Nucleoside analogue reverse transcriptase inhibitors

AZT

Names: AZT (also ZDV), zidovudine, *Retrovir™*

Approved dosage: One white and blue 250mg capsule taken twice a day.
A 300mg tablet and a 100mg capsule are available for dose variations.

Children: AZT approved for use in children. Liquid formulation available.

Tips on taking it: try to take the doses twelve hours apart. Take with or after food to reduce nausea. Anti-nausea drugs may be used up-front.

Common side-effects: nausea, vomiting, fatigue, headache, insomnia, rash, blood disorders.
Rare side-effect: liver problems.

Resistance to AZT: may cause resistance to d4T, adefovir and abacavir. Unlikely to cause resistance to 3TC, ddI and ddC.

Key drug interactions: other drugs (e.g. hydroxyurea, ganciclovir) that cause blood disorders may worsen side-effects. Do not take with d4T. Drug levels may be affected if methadone, phenytoin, or probenecid are taken with AZT. Doses of clarithromycin and AZT should taken one hour apart.

Brain: AZT is effective against HIV in the brain and the central nervous system.

Pregnancy: AZT during pregnancy and labour reduces mother-to-baby transmission.

Combivir™

AZT is also available in a combined form with 3TC. The AZT/3TC pill is called *Combivir™*. Dosage of *Combivir™* is one white tablet (150mg 3TC and 300mg AZT) twice a day.

ddI

Names: ddI, didanosine, *Videx™*

Approved dosage for individuals over 60kg (9½ stone): Either 4 large white, orange-flavoured 100mg tablets once a day or 2 tablets twice a day.

Approved dosage for individuals under 60kg: Either 3 large white, orange-flavoured 100mg tablets once a day or 125mg twice daily comprising one large 100mg tablet, and one 25mg tablet.

Note on dosage: people who have kidney or liver abnormalities may be advised by their doctor to take a lower dose.

Experimental dosage: 200mg tablets, and a powdered form of ddI for making an oral solution, are available through a special access scheme to people unable to tolerate the 100mg tablets.

Children: approved for use in children. Liquid formulation available.

Tips on taking it: take on an empty stomach to maximise the amount of ddI that gets into your blood. Take ddI at least 2 hours after eating (or 4 hours after a very big meal), and wait another half an hour before eating again. During this fasting period avoid: fruit juices (except clear apple juice), fizzy drinks, milk. Smoking may also reduce the absorption of ddI.

ddI should not be taken at the same time of day as some other medications. For example, ddI and protease inhibitors must be taken at least one hour apart.

Crush and dissolve ddI in ice-cold water or clear apple juice. If you take a dose first thing in the morning, dissolve your dose the night before and leave in the fridge. Pill-crushers are available from pharmacies.

Common side-effects: diarrhoea, peripheral neuropathy, nausea.

Rare side-effect: pancreatitis, greater risk if high alcohol consumption. Liver problems.

Resistance to ddI: low risk of resistance to ddC, 3TC and abacavir. Rarely causes resistance to d4T, and AZT.

Key drug interactions: ddI should be taken two hours apart from some drugs (e.g. itraconazole, ketoconazole, indinavir). Levels of some drugs such as ciprofloxacin, ganciclovir and delavirdine may be affected. Do not take with ddC, intravenous pentamidine or tetracycline antibiotics. Drugs such as H2 blockers, omeprazole, rifampicin, and rifabutin may increase the risk of pancreatitis.

When taken with hydroxyurea, the amount of active ddI in cells increases. Hydroxyurea may improve the effectiveness of ddI.

ddC

Names: ddC, zalcitabine, *Hivid™*

Approved dosage: one pale blue/grey 0.75mg tablet 3 times a day.

Experimental dosage: one blue/grey tablet and 1 beige 0.5mg tablet twice a day (total 1.25mg twice a day).

Children: syrup available for children through a special access scheme.

Tips on taking it: take with or after food to reduce nausea.

Common side-effects: peripheral neuropathy, mouth ulcers, diarrhoea, nausea, rash.

Rare side-effects: pancreatitis (very rare), liver problems.

Resistance to ddC: low risk of resistance to ddI, 3TC and abacavir. Rarely causes resistance to d4T and AZT.

Key drug interactions: do not take with ddI. Other drugs that can cause peripheral neuropathy, pancreatitis, or ulcers increase the risk of these side-effects of ddC.

3TC

Names: 3TC, lamivudine, *Epivir™*

Approved dosage: one white 150mg tablet twice a day.

Also available in a combined form with AZT. The AZT/3TC pill is called *Combivir™*. (see page 8).

Children: approved for use in children. Liquid suspension available.

Tips on taking it: with or without food.

Common side-effects: headache, tiredness.

Rare side-effects: rash, diarrhoea, nausea, abdominal pain, blood disorders, peripheral neuropathy, insomnia and liver problems.

Resistance to 3TC: unlikely to affect your ability to benefit from other NRTIs, except possibly abacavir. Drug-resistant 3TC may continue to have antiviral effect.

Key drug interactions: few significant drug interactions. Any drug that causes neutropenia may increase side-effects.

DRUG CHART

Drugs are reproduced **actual size**

NRTIs

AZT
(also ZDV), zidovudine, *Retrovir™*
page 8

ddI, didanosine, *Videx™*
page 9

ddC, zalcitabine, *Hivid™*
page 10

3TC, lamivudine, *Epivir™*
page 10

d4T, stavudine, *Zerit™*
page 13

abacavir, 1592, *Ziagen™*
page 13

Combivir™
(combined AZT and 3TC)
page 8

Protease inhibitors

Invirase™ (hard gel)

Fortovase™ (soft gel)

saquinavir - **page 14**

indinavir, *Crixivan™* - **page 15**

ritonavir, *Norvir™* - **page 16**
Also in liquid form.

nelfinavir, *Viracept™* - **page 17**

amprenavir, 141W94 (formerly known as VX578), *Agenerase™*
page 17

NNRTIs

nevirapine, *Viramune™* - **page 18**

delavirdine, *Rescriptor™* - **page 18**

efavirenz, DMP 266, *Sustiva™*
page 19

Other drugs

adefovir dipivoxil, bis POM PMEA, *Preveon™* - **page 20**

hydroxyurea, *Hydrea™* - **page 20**

d4T

Names: d4T, stavudine, *Zerit™*

Approved dosage for people over 60kg (9½ stone): one dark orange 40mg capsule twice a day.

Approved dosage for people under 60kg: usually one light orange 30mg capsule twice a day.

Note on dosage: people with impaired kidney function or peripheral neuropathy may take 15 or 20mg twice a day. d4T is available as 40mg, 30mg, 20mg and 15mg capsules.

Children: approved for use in children. d4T comes in a powder form.

Tips on taking it: take with or without food. Taking it with food reduces nausea.

Common side-effects: peripheral neuropathy, headache, nausea, diarrhoea or constipation.

Rare side-effects: pancreatitis, liver problems.

Resistance to d4T: low risk of resistance to AZT, 3TC, ddI, ddC, abacavir.

Key drug interactions: do not take with AZT. Drugs that may cause peripheral neuropathy or pancreatitis may increase the risk of these side-effects.

Brain: d4T crosses the blood-brain barrier and may be effective against HIV in the brain.

abacavir

Names: abacavir, 1592, *Ziagen™*

Approved dosage: one 300mg yellow-orange tablet twice daily.

Children: liquid formulation available.

Tips on taking it: abacavir can be taken with or without food.

Common side-effects: nausea and vomiting; headaches; weakness; diarrhoea; insomnia; dizziness, and abdominal pain. An allergic reaction (often involving fever and rash) occurs in 3% of people taking abacavir, usually within four weeks of starting the drug. See your doctor immediately if you develop a rash while on abacavir. It is dangerous to re-try abacavir if you have had an allergic reaction to it previously. Rare side-effects: liver problems.

Resistance to abacavir: abacavir may be ineffective if you have extensive experience with AZT/3TC and/or ddI.

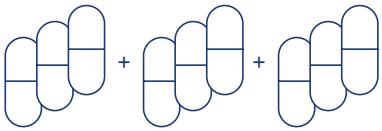
Key drug interactions: no significant drug interactions yet identified.

Brain: abacavir may cross the blood-brain barrier and may be effective against HIV in the brain.

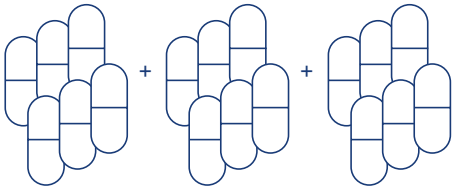
Protease inhibitors

saquinavir

Names: saquinavir, *Invirase™* (hard gel), *Fortovase™* (soft gel).



Approved dosage *Invirase™*: three green and mustard 200mg capsules three times a day. (Original version of saquinavir now only used in combination with other protease inhibitors).



Approved dosage *Fortovase™*: six cream 200mg capsules three times a day.

Experimental dosages: with 400mg ritonavir, take two 200mg capsules of either *Invirase™* or *Fortovase™* twice a day. With nelfinavir: take five nelfinavir 250mg tablets and six 200mg capsules of *Fortovase™* twice a day. Twice daily *Fortovase™*: 8 eight capsules twice a day.

Storage: store *Fortovase™* at room temperature (below 25 degrees) for up to three months.

Children: *Invirase™* not approved for use by children. *Fortovase™* not available to children.

Tips on taking *Invirase™*: take within two hours of a full meal to increase the amount that gets into your blood. Grapefruit juice may increase absorption.

Tips on taking *Fortovase™*: take within two hours of food.

Common side-effects: diarrhoea, stomach pain, nausea, lipodystrophy and metabolic disorders.
Rare side-effects: diabetes.

Resistance to saquinavir: may mean resistance to nelfinavir, indinavir and ritonavir.

Key drug interactions: do not take with rifampicin, rifabutin, astemizole, terfenadine, cisapride. Careful monitoring and dose adjustments may be needed if taking saquinavir with many other drugs including: NNRTIs, methadone, anti-arrhythmics, some anti-depressants, some anti-convulsants, some lipid-lowering drugs, dapsone, ergotamine, dihydroergotamine, dexamethasone, *Viagra™*. If combined with ritonavir, drug interactions may change.

indinavir

Names: indinavir, *Crixivan™*

Approved dosage: two 400mg cream-coloured capsules every eight hours.

Experimental dosage with ritonavir; 400mg of both drugs twice daily. Or, two 400mg capsules of indinavir and 100mg of ritonavir twice a day.

Storage: must be stored with a desiccant to keep the capsules dry. Can be kept in a dosette box without a desiccant for up to three days.

Tips on taking it: ideally take indinavir on an empty stomach. Avoid food two hours before and one hour after taking indinavir. A light, low-fat snack is permitted, e.g. 30g cereal with 100g skimmed milk or a tea or coffee with sugar and skimmed milk plus one biscuit or two small slices of toast with low-fat spread and 15g of jam per slice. For more suggestions, see NAM's *Nutrition* booklet, or discuss your options with an HIV dietician. (If indinavir is taken with ritonavir, there are no food restrictions).

Drink 1.5 litres of water or a non-caffeinated drink in addition to your usual fluid intake, to reduce the risk of kidney stones.

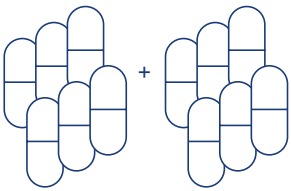
Common side-effects: kidney stones, pain when urinating, tiny stones in urine, dry lips and skin, liver abnormalities, nausea, lipodystrophy and metabolic changes. Low fluid intake will increase your risk of developing kidney problems.
Rare side-effects: diabetes.

Resistance to indinavir: causes resistance to ritonavir, and is likely to cause resistance to saquinavir, nelfinavir and amprenavir.

Key drug interactions: do not take indinavir with terfenadine, astemizole, cisapride, alprazolam, pimozide, rifampicin, amiodarone, quinidine and ergot alkaloids. Careful monitoring and dose adjustments may be needed if indinavir is taken with drugs including: rifabutin, ketoconazole, the NNRTIs, *Viagra™* and some lipid-lowering drugs.

ritonavir

Names: ritonavir, *Norvir™*



Approved dosage: 7.5ml of ritonavir liquid twice daily. Start on a low dose and increase over 14 days to minimise side-effects. Production of ritonavir hard gelatin capsules was suspended in 1998. A new formulation, *Norvir™* Soft Elastic Capsule, is available on named patient basis, and should be licensed by Autumn 1999. *Norvir™* SEC contain 100mg ritonavir and the standard dose (where ritonavir is the only protease inhibitor in your combination) is six capsules twice daily.

Experimental dosage: if taking ritonavir with saquinavir, take 4 ritonavir capsules or 5ml of liquid twice a day. With indinavir, take 4 ritonavir capsules or 5ml of liquid twice daily with one 400mg indinavir capsule; or take one ritonavir capsule or 1.25ml of liquid twice daily with two 400mg indinavir capsules.

Storage: Store liquid and *Norvir™* SEC below 25 degrees C but do not refrigerate.

Children: ritonavir is not formally approved for use in children, although it can be made available.

Tips on taking it: take with food to reduce nausea. If taking the liquid, try mixing it with a milk-based nutritional supplement. Do not mix with water, fizzy drinks or fruit juice. To disguise the taste, suck ice cubes or icy fruit juice before and after your dose. Alternatively, follow ritonavir with chocolate, mango, peanut butter, salty crisps or other food with strong flavour.

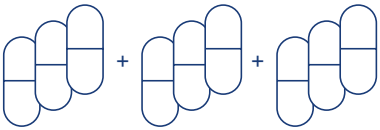
Common side-effects: diarrhoea, stomach pain, nausea, vomiting, weakness, taste abnormalities, loss of appetite, numbness around the mouth, lipodystrophy and metabolic irregularities.
Rare side-effects: kidney problems, diabetes.

Resistance to ritonavir: causes resistance to indinavir and is likely to mean some resistance to nelfinavir, saquinavir and amprenavir.

Key drug interactions: ritonavir interacts with many other medications. Consult your doctor or HIV pharmacist before taking other drugs with ritonavir. Do not take ritonavir with piroxicam, dextropropoxyphene, pethidine; amiodarone, encainide, flecainide, propafenone, quinidine; bupoprion; astemizole, terfenadine; clozapine, pimozide; alprazolam, clorazepate, diazepam, estazolam; bepridil; cisapride; fluorazepam, midazolam, triazolam, zolpidem.

nelfinavir

Names: nelfinavir, *Viracept™*



Approved dosage: three blue 250mg tablets three times a day.

Experimental dosage: five 250mg tablets twice a day. Commonly taken.

Children: nelfinavir is approved for use in children. Available in powder form.

Tips on taking it: take up to two hours after a meal to increase absorption. A glass of water will stop the tablets from sticking in your throat.

Common side-effects: diarrhoea, nausea, lipodystrophy and metabolic disorders.

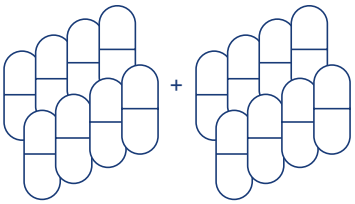
Resistance to nelfinavir: is likely to cause resistance to saquinavir and may cause resistance to ritonavir and indinavir.

Key drug interactions: careful monitoring and dose adjustments may be needed if nelfinavir is taken with drugs including: rifabutin, methadone, carbamazapine, phenytoin, *Viagra™*, and some lipid-lowering drugs. Do not take nelfinavir with terfenadine, rifampicin, astemizole, cisapride, pimozide, amiodarone, quinidine, midazole, triazolam or ergot alkaloids.

amprenavir

Names: amprenavir, 141W94 (formerly known as VX578), *Agenerase™*

Status: not yet approved for use. Available through clinical trials, and a special access scheme for adults and children.



Experimental dosage: eight cream 150mg capsules twice a day.

Children: liquid formulation available.

Tips on taking it: take with or without food.

Common side-effects: headache, nausea, diarrhoea, rash, fatigue. It is not yet known whether amprenavir will also be associated with lipodystrophy and metabolic disorders.

Resistance to amprenavir: likely to cause resistance to ritonavir. May mean resistance to saquinavir, indinavir and nelfinavir. 3TC resistance may increase sensitivity to amprenavir.

Key drug interactions: early research indicates the levels of erythromycin, rifabutin, efavirenz, indinavir may be affected. Don't take with rifampicin, terfenadine, astemizole, cisapride. Amprenavir contains high levels of vitamin E, so supplements containing vitamin E should not be taken at the same time.

NNRTIs

Non-nucleoside reverse transcriptase inhibitors

nevirapine

Names: nevirapine, *Viramune™*

Approved dosage: one white 200mg tablet twice a day. Take one pill daily for the first two weeks to reduce your chance of developing rash, then start the full dose.

Experimental dosage: two white 200mg tablets once a day.

Children: nevirapine available through a special access scheme. Syrup available.

Tips on taking it: take with or without food.

Common side-effects: rash, fatigue, liver problems, muscle pain, depression.
Rare side-effect: Stevens-Johnson Syndrome (usually after about a fortnight).

Resistance to nevirapine: is likely to mean resistance to delavirdine and efavirenz.

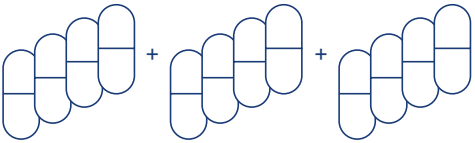
Key drug interactions: drug levels may be affected if nevirapine is taken with a number of drugs including indinavir, ketoconazole, *Viagra™*. Nevirapine may reduce the effectiveness of oral contraceptives. Drugs that may worsen side-effects are clarithromycin, erythromycin and amoxicillin.

Brain: nevirapine may have some effect against HIV in the brain.

delavirdine

Names: delavirdine, *Rescriptor™*

Status: delavirdine is not yet formally approved for use in Europe. Widely available to adults and children through a special access scheme from Pharmacia and Upjohn.



Experimental dosage: four white 100mg tablets three times a day. Twice daily dosing of delavirdine (6 tablets twice a day) is being studied. 200mg and 300mg tablets are in development.

Tips on taking it: take with or without food. Tablets may be dissolved in cola or water.

Common side-effects: mild skin rash, fever, headache, fatigue, nausea, diarrhoea and liver abnormalities.

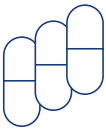
Rare side-effect: Stevens-Johnson Syndrome (very rare).

Resistance to delavirdine: is likely to mean resistance to nevirapine and efavirenz.

Key drug interactions: levels of many drugs may be affected by delavirdine, so discuss all medications with your doctor or HIV pharmacist. Some anti-histamines may worsen side-effects of delavirdine. Do not take with terfenadine, astemizole, cisapride, pimozide, amiodarone, quinidine and ergot alkaloids. Delavirdine may interfere with oral contraceptives.

efavirenz

Names: efavirenz, DMP 266, *Sustiva™*



Approved dosage: three 200mg capsules once each day.

Children: Approved for use in children 3 years and above, weighing more than 13kg. Syrup available.

Tips on taking it: take with or without food. Avoid taking it with a high fat meal which may increase absorption.
If efavirenz causes confusion or dizziness, take before going to bed.

Common side-effects: rash (less common than with nevirapine and delavirdine), dizziness, diarrhoea, headache.
Psychological effects, which may occur in the first four weeks of treatment and then usually stop, include feeling 'out of sorts', vivid dreams, euphoria, suicidal thoughts, psychotic episodes.
Rare side-effects: Stevens-Johnson Syndrome (very rare).

Resistance to efavirenz: is likely to mean resistance to delavirdine and nevirapine.

Key drug interactions: alters blood levels of the protease inhibitors. May interfere with oral contraceptives. Do not take efavirenz with hard gel saquinavir, clarithromycin, terfenadine, astemizole, cisapride, triazolam, rifampicin and midazolam. Drug levels may be affected if taken with *Viagra™*.

Brain: efavirenz crosses the blood-brain barrier and has some action against HIV in the brain and the central nervous system.

Pregnancy: Animal studies found efavirenz caused abnormalities in the offspring. People planning pregnancy should not take efavirenz.

Other drugs

adefovir

Names: adefovir dipivoxil, bis POM PMEA, *Preveon™*

Type of drug: an antiretroviral called a nucleotide analogue reverse transcriptase inhibitor, a fourth class of anti-HIV drugs. Status: available through clinical trials in the UK. Research ongoing. Special access scheme likely in 1999.

Experimental dosage: 60mg once a day.

Tips on taking it: take with 500mg L-carnitine to reduce side-effects.

Common side-effects: kidney abnormalities, neutropenia, nausea, vomiting, liver problems.

Resistance: research ongoing. Test-tube studies suggest cross-resistance between adefovir and AZT, ddI and abacavir.

Key drug interactions: research ongoing. May require dose adjustment if taken with delavirdine. Risk of side-effects increased if taken with isoniazid.

Other drugs in this class: PMPA

hydroxyurea

Names: hydroxyurea, *Hydrea™*

Type of drug: hydroxyurea inhibits a human enzyme which is used to make human and HIV genetic building blocks. As a consequence of this interference, NRTIs are much more active in cells. When hydroxyurea is used with some NRTIs, particularly ddI, there is an increased anti-HIV effect.

Status: licensed to treat leukaemia (cancer of the blood).

Dosage: one pink and grey/blue 500mg capsule twice a day.

Tips on taking it: take with or without food.

Common side-effects: blood disorders, nausea, hair loss (all more common at higher doses).

Resistance to hydroxyurea: unlikely to occur.

Drug interactions: increases anti-HIV effects of some NRTIs and adefovir. Drugs that cause blood disorders may increase the risk of side-effects.

Immune based therapies

In addition to antiretroviral therapies to combat HIV, treatments aimed at strengthening the immune system are currently being studied.

Interleukin-2 is a naturally occurring chemical in the immune system which stimulates CD4 cell production. Clinical trials of interleukin-2 as an immune stimulant for people with HIV are underway in London and Brighton.

Remune™ is a therapeutic vaccine which aims at simulating an HIV-specific immune response. Clinical trials ongoing in the UK.

Anti-oxidants

Anti-oxidants are chemicals which can control damaging molecules called free radicals. Some researchers think that free radicals, present in high levels among people with HIV, damage the immune system. It has been suggested that anti-oxidants such as vitamin C and glutathione can improve the immune system's response to HIV, although this is not yet proven.

Glossary

AIDS: Acquired Immune Deficiency Syndrome.

AIDS-defining illness: one of a group of illnesses associated with AIDS. If you are HIV-positive and you have one of these illnesses, you are said to have AIDS. e.g. PCP, Kaposi's sarcoma.

absorption: the amount of drug that gets into blood.

approved dosage: an effective and safe dose of the drug that has been approved by drug licensing authorities.

blood disorders: refers to conditions such as anaemia (low red blood cells) which causes fatigue, and neutropenia (low white blood cells).

experimental dosage: dosage/s being tested in trials and not approved by authorities.

GUM clinics: genito-urinary medicine or sexual health clinics.

lipodystrophy: changes to body fat and shape associated with protease inhibitors and other anti-HIV drugs (including facial wasting, wasting in the arms and legs, increased abdominal fat, increased breast size in women).

metabolic irregularities: protease inhibitors and other anti-HIV drugs are associated with irregularities in the body's processing of sugar and fat. High levels of fat in the blood and insulin resistance may be, in part, the result of anti-HIV therapy, and may increase the risk of diabetes, pancreatitis and heart disease. Also associated with increased and irregular bleeding in haemophiliacs, and in-grown or infected finger and toe-nails.

neutropenia: see blood disorders.

pancreatitis: inflammation of the pancreas. A serious, possibly life-threatening condition.

PCP: pneumocystis carinii pneumonia – a type of pneumonia

peripheral neuropathy: nerve damage which causes pins and needles, altered sensation and pain, usually in the hands and feet.

resistance: refers to the presence of drug-resistant HIV. Drug-resistant HIV can escape the effects of an anti-HIV drug. Once a person has resistance to one drug in a class, other drugs of that class may also have less effect against HIV.

special access scheme: before a drug is fully approved and marketed, a pharmaceutical company may make a new treatment available through a special access scheme. This is sometimes called named patient basis or expanded access.

Stevens-Johnson Syndrome: a severe or even life-threatening allergic reaction.

viral load: the amount of HIV in the blood.

More information

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Email: info@nam.org.uk

NAM Publications produces the *HIV and AIDS Treatments Directory*, the monthly newsletter *AIDS Treatment Update*, monthly factsheets, and information booklets about HIV/AIDS and treatments. NAM also produces a directory of all HIV/AIDS services, clinics and community organisations throughout the UK.

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Email: bp@bodypositive.demon.co.uk

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