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side-effects

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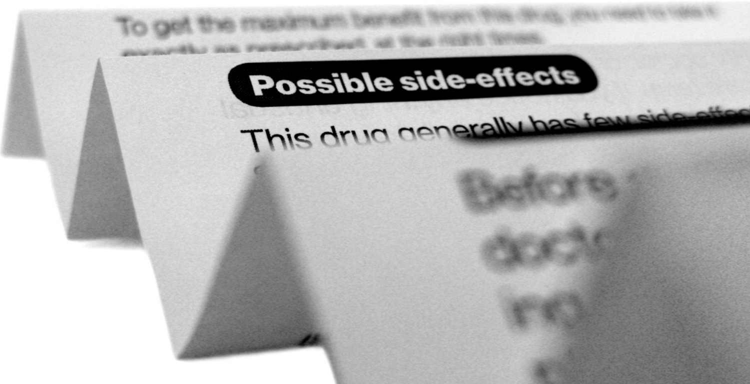

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side-effects

This booklet provides information about the possible side-effects of HIV treatment. All drugs, including those used to treat HIV, can cause unintended/unwanted effects, and you may be reading this because you are worried about such side-effects or have experienced them. There is information here to help you understand, avoid and deal with them.

Side-effects are not inevitable, and just because one is discussed in this booklet does not mean that you will develop it. Even if a side-effect develops, it is usually mild, temporary or treatable.

After reading this booklet, you might want to discuss the side-effects of HIV treatment with your HIV doctor or another member of your healthcare team.

contents

HIV treatment – a longer and healthier life

There is currently no cure for HIV, but treatment with anti-HIV drugs can mean a much longer and healthier life.

The amount of illness and death in people with HIV fell dramatically after combinations of three anti-HIV drugs started to be used in the mid-1990s. There have been further improvements in HIV treatment and care since then and the latest research shows that HIV treatment means someone with HIV can live a more-or-less normal life expectancy. **To put it very simply – HIV treatment works!**

To get the maximum benefit from HIV treatment you need to start taking it at the right time and then take all (or nearly all) the doses of your anti-HIV drugs at the right time and in the right way.

You are most likely to get the greatest benefit from your HIV treatment if you start taking treatment before HIV has done too much damage to your immune system. It is currently recommended that you start treatment when your CD4 cell count is around 350. Starting treatment at this time has been shown to reduce the risk of HIV-related illness and of some other serious illnesses, such as heart, kidney and liver disease as well.

Once you've started treatment, it is important to take all the doses of your anti-HIV drugs correctly. This will mean that there is very little chance that your drugs will stop working because your HIV has become resistant to them. You can find out more about taking your HIV treatment in the NAM booklet, *Adherence & resistance*.

Like any other medicines, the drugs used to treat HIV can have unwanted secondary effects that are sometimes unpleasant or can even make you unwell. These are called side-effects, and can also be called adverse events or adverse reactions.

You will probably have heard about some of the side-effects that anti-HIV drugs can cause and you may even be a little frightened or worried about them.

Although it is important to acknowledge that HIV treatment can cause side-effects, it is also really important to stress that the benefits of HIV treatment by far outweigh the risk of side-effects.

And it is also important to know that the anti-HIV drugs used today cause far fewer side-effects than the drugs that were commonly used ten or even five years ago. It is equally good to know that the choice of drugs is much greater now and something can usually be done if your anti-HIV drugs do cause side-effects – in simple terms, you don't have to 'grin and bear' side-effects.

This booklet provides you with information about side-effects and how to minimise the risk of them developing, how to manage them if they do occur and what to do if you develop a more serious side-effect.

Safeguards against side-effects

To stop HIV reproducing, it is necessary to take a combination of anti-HIV drugs that each target the virus in a slightly different way. These drugs have a very powerful anti-HIV effect, but they can also have unwanted secondary effects, or side-effects.

It isn't just anti-HIV drugs that cause side-effects – all medicines (including complementary and alternative medicines, which include so-called 'natural' and 'herbal' medicines) can have unwanted secondary effects.

Every anti-HIV drug now in use went through years of research. This included clinical trials with hundreds, if not thousands of people with HIV. These trials are to make sure that the drugs work against HIV and are safe to use. For a drug to be approved for use it has to be shown that the benefits of using it outweigh the side-effects that it causes.

Most of the side-effects that are identified in clinical trials tend to be quite mild – for example diarrhoea, feeling sick, or headache, and they are often temporary. But even mild side-effects can affect your quality of life so it is important to know about the risk of them.

Sometimes more serious side-effects are identified in clinical trials and research – and a particularly serious, even dangerous side-effect, can be an allergic reaction to a drug. However, these are rare.

4 Allergic reactions

The two anti-HIV drugs with the biggest risk of allergy are abacavir (*Ziagen*, also in the combination pills *Kivexa* and *Trizivir*) and nevirapine (*Viramune*).

Abacavir hypersensitivity

It is thought that about 8% of people who start treatment with abacavir will develop an allergic reaction to the drug (this is often called an abacavir hypersensitivity reaction). It is linked to a gene called HLA-B*5701 and you should have a blood test to see if you have this gene before you start treatment with abacavir.

If your test for the gene is positive you should not take abacavir or any of the combination pills that include abacavir. If your test result is negative, you can start treatment with abacavir, but should tell your doctor immediately if you develop symptoms such as a fever, rash, nausea, vomiting or abdominal pain as you may still develop an allergic reaction, although the risk of this is small.

If you stop taking abacavir because you have had an allergic reaction to the drug you must never take abacavir again as this can be very dangerous, even fatal.

Nevirapine liver toxicity

A very small number of people who start treatment with nevirapine develop serious liver problems. This reaction also appears to be related to a particular gene. To reduce the risk of an allergic reaction to nevirapine, men with a CD4 cell count above 400 should not start treatment with nevirapine, nor should women with a CD4 cell count of more than 250.

It's possible that other drugs, including anti-HIV drugs, might rarely cause allergic reactions too. It is therefore important that you tell your doctor as soon as possible if you develop a rash or fever, or feel generally unwell soon after starting treatment with a new drug.

6 Timing of side-effects

Some side-effects appear soon after treatment with a drug is started as the body adjusts to treatment with the new drug. Such side-effects often lessen, become manageable or go away completely after a few days, weeks or months. They are often called short-term side-effects.

Other side-effects may only appear after a number of months or even years of treatment with a drug, and these are called long-term side-effects.

Drugs sometimes cause side-effects that were not identified during the research into their development and only become clear when the drug is being taken by lots of people for a very long period. It makes good sense to tell your doctor about any unusual symptoms you develop so the cause can be investigated and you can take the most appropriate action.

Who gets side-effects?

Anti-HIV drugs can cause side-effects in anyone. The type and severity of side-effects can also vary between people.

But that doesn't mean that it is inevitable that you will experience side-effects – in fact many people who take HIV treatment do not have any side-effects at all.

Other people find that although they have side-effects, they are mild and that they can live with them, without them causing any distress or inconvenience.

Some people find that they initially experience side-effects that then become less severe or go away completely.

However, a small number of people find that side-effects are a permanent feature of a particular HIV drug and affect their quality of life, even going so far as causing physical or mental illness.

Your risk of developing some side-effects can be affected by a number of factors related to who you are.

One such factor is race. For example, it is known that people of northern European origin are more likely to have the gene that causes allergy to abacavir (see page 4).

Whether you are a man or a woman can also affect your risk of side-effects. As noted above, women should not start treatment with nevirapine if their CD4 cell count is above 250 and men should not start treatment with this drug if their CD4 cell count is above 400. It is also possible that the body-fat changes (lipodystrophy), that some people who took older HIV drugs developed, are more severe in women than in men.

And how you live your life might also affect your risk of some other side-effects. Some anti-HIV drugs, for example, can cause increases in blood fats, and this could be made worse if you eat a lot of fatty foods. There is some concern that treatment with some anti-HIV drugs might increase the risk of cardiovascular disease, and this can be a real concern for people with other risk factors for heart disease such as smoking.

Other HIV drugs have been linked with liver problems, and these can also be caused by drinking too much alcohol or using recreational drugs. Being infected with hepatitis B or hepatitis C can also mean that you have an increased risk of developing liver problems if you are taking certain anti-HIV drugs.

So there are actions, many of which have other health benefits as well, that you can take to reduce the risk of developing certain side-effects. These include eating a balanced diet with lots of fresh fruit and vegetables and not too much fat, taking exercise, not smoking, and not drinking too much alcohol.

Talk to your doctor or another member of the healthcare team at your clinic if you would like advice on changing your diet, stopping smoking or if you want to talk to someone about your alcohol or drug use.

If you have other risk factors for side-effects, for example a family history of heart disease or infection with hepatitis B or C, then it is important that your doctor knows about them. This should mean that you and your doctor can find the most suitable anti-HIV drugs for you.

10 Taking control of side-effects

Side-effects can be annoying, inconvenient, distressing and sometimes even frightening. But it can be helpful to know that it is not inevitable that you will experience them. It can also be helpful to remember that you can take action to reduce the risk of side-effects in the first place. And if you do experience side-effects, there is nearly always something you can do about them.

Your approach to side-effects

Having a realistic approach to side-effects can be a good place to start. Although it is important to recognise that HIV treatment can cause side-effects, it is equally important to acknowledge that:

- HIV treatment is meant to make you better. You do not have to put up with side-effects. If you cannot cope with a side-effect the chances are that something can be done about it.
- HIV treatment can give you the chance of a near-normal lifespan. Putting off starting treatment because of a fear of side-effects can increase your risk of becoming ill. Starting treatment when you have a weak immune system might even increase your risk of side-effects.
- Most side-effects are mild and often lessen, go away completely, or can be controlled with other treatment.
- The anti-HIV drugs that are most widely used today don’t cause the severe side-effects that earlier HIV drugs caused.

- Some side-effects can be controlled safely with other treatment.

- There are now lots of HIV treatment options available and you might be able to switch to a treatment that does not cause the side-effect you are experiencing.

Finding out about side-effects

If you are about to start or change HIV treatment, finding out about the side-effects that anti-HIV drugs can cause might help you choose the most suitable combination of drugs for you.

Later in this booklet are details of some of the most commonly used HIV treatment combinations and details of the side-effects that these drugs can cause. There are also details of what you can do about these side-effects.

You can also find out about side-effects on NAM's website, www.aidsmap.com.

Talking about side-effects

It is important to talk to your doctor, HIV specialist nurse or pharmacist about the risk of side-effects and how they might affect you. During this discussion it's a good idea to mention your medical history, that of your family and any lifestyle issues that might affect your risk of side-effects. It is also good to tell your GP of any HIV medicines that you are taking, to prevent them prescribing a drug which may cause harmful interactions.

Things you need to tell your doctor include:

- Known allergies to any other medicines.
- Other important health conditions – for example heart, liver or kidney disease, or mental health problems such as depression.
- Use of other drugs – prescription, over the counter, complementary or recreational drugs.

If you are worried about a particular side-effect, then tell a member of your healthcare team. They should be able to give you more information about this side-effect and talk through your concerns with you. They may be able to recommend an alternative treatment, or suggest ways of reducing the risk or impact of the side-effect.

You should be told by your doctor or the pharmacist if the medicines you are prescribed might cause any potentially dangerous side-effects and what the symptoms of these can be. If there is anything you do not understand, then it's a good idea to ask for more information. You should be given the contact details of who to contact if you think you might be experiencing potentially dangerous side-effects and your clinic is closed.

Starting or changing HIV treatment is rarely done as an emergency and it is highly unlikely that you will have to make an instant decision about your HIV treatment. If it's possible, you may find it helpful to start treatment at a time when you have few other stresses in your life and you can give yourself time to cope with any early side-effects that you might experience.

Your life and side-effects

The way you lead your life can help reduce the risk of developing some side-effects, or make side-effects less severe if they do occur.

Starting or changing HIV treatment is likely to be a major event in your life, so be realistic about your ability to cope with potential side-effects. It makes good sense not to plan other major life changes that coincide with starting or changing treatment.

It is also useful to remember some general health tips.

- Make sure you eat! And think about what you eat. A good balanced diet is essential to overall health. A good place to find out about diet is the NAM booklet, *Nutrition*. Your HIV clinic will be able to refer you to a dietitian who can offer advice and information about your diet.

- Sleep is essential to good physical and mental health. If you are having problems sleeping, then it is good to know that help is available. Your HIV clinic or your GP will be able to help.

- Feeling able to cope with life's ups and downs is just as important as being in good physical health. You can find out more about looking after your mental health in the NAM booklet, *HIV & mental health*.

- Regular exercise is important. It will make you feel better and can also reduce the risk of developing some serious illnesses. You may want to ask at your HIV clinic if they can refer you to an exercise scheme for HIV-positive people.

- Smoking causes many health problems, including lung cancers, heart disease and strokes. Don't start smoking. Try to stop smoking if you already smoke. The NHS offers free help if you want to stop smoking. Talk to your doctor for more information.

- Watch how much alcohol you drink. Regularly drinking more than the recommended number of units can cause health problems such as liver disease, heart disease and stroke.

- Be careful about using recreational drugs. If you're concerned about either your alcohol or drug use, then you might want to mention this to someone at your HIV clinic, or your GP, as help will be available.

Changing experience of side-effects

Many people taking HIV treatment will experience some sort of side-effect at some time. But most of these side-effects are mild, temporary or treatable.

So it might be useful to remember that even if you are having a difficult experience of side-effects, or feeling low because of them, it is highly unlikely that this will always be your experience.

But it's equally important to remember that you don't have to put up with side-effects, or deal with them on your own. HIV treatment is intended to make you better. If you cannot cope with a side-effect, then it makes good sense to tell your HIV doctor, nurse or pharmacist – help will be available.

Reporting side-effects

It's important to tell your doctor about any symptoms that you are experiencing that might be due to side-effects. Your doctor will be able to give you advice and help you make a decision about what to do about the symptom.

You can also report side-effects to the government agency in charge of monitoring the safety of medicines using something called the Yellow Card Scheme.

You can do this online here:
www.yellowcard.gov.uk.

You'll be asked to fill out a form which is confidential.

If your side-effect has been caused by an anti-HIV drug you'll also be asked to provide some additional information such as your CD4 cell count, viral load, previous illnesses and previous side-effects. This information helps researchers to understand if the risk of side-effects is connected with any particular factors.

Starting treatment for the first time?

HIV doctors have guidelines on how to use anti-HIV drugs. The drugs recommended are the most effective and safest drugs available for the treatment of HIV.

The drugs recommended for people starting HIV treatment for the first time generally have few side-effects. It is particularly good to know that they do not cause the more serious side-effects that were caused by some of the older HIV drugs – these drugs are now only used rarely because there are alternatives available, which are safer and often easier to take.

Because so few people now need to stop or change treatment because of side-effects, doctors have estimated that people will probably be able to take the currently available first-choice anti-HIV drugs safely for decades.

New British HIV treatment guidelines were issued in 2008 recommending that HIV treatment should be started when a person's CD4 cell count is around 350 (earlier guidelines recommended starting treatment with a CD4 cell count of around 200). One of the main reasons why doctors felt able to recommend starting treatment earlier was because there are now anti-HIV drugs available that seem to be safe and only cause mild side-effects.

Remember, if you experience any side-effects, then mention them at your clinic. If a side-effect persists, you don't have to suffer in silence and it's nearly always possible to do something about it.

Recommended first HIV treatment combination

If you are starting HIV treatment for the first time the recommended treatment is a combination of drugs that includes:

- Efavirenz (*Sustiva*). This is a non-nucleoside reverse transcriptase inhibitor (NNRTI)

with either:

- *Truvada*. This is a combination pill containing the nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs) FTC (emtricitabine) and tenofovir

or:

- *Kivexa*. This is a combination pill containing the NRTIs 3TC (lamivudine) and abacavir.

You can find out more about these drugs in the NAM booklet, *Anti-HIV drugs*. The NAM booklet *HIV therapy* also provides information on starting HIV treatment.

Although these drugs are effective and generally safe, they can still cause side-effects. Details of some of the most common are provided on the following pages.

Side-effects of efavirenz

Efavirenz is generally a very safe drug and few people need to stop taking it because of side-effects. But it can cause side-effects including problems concentrating, dizziness, sleep disturbances such as insomnia (difficulty sleeping), vivid dreams and nightmares. Mental health problems including depression, anxiety and low mood have also been reported as side-effects of efavirenz.

These side-effects are often most noticeable in the first few weeks after treatment with efavirenz is started and then lessen or even go away completely. However, a small number of people experience longer-term or more serious sleep and mood problems due to treatment with efavirenz and some people need to stop taking the drug because of these.

Make sure you tell your doctor if you experience any of these side-effects.

If you do experience side-effects caused by efavirenz then discuss these with your doctor. There may be a number of options available to you to help reduce these side-effects. One simple step you can take is avoiding taking efavirenz with a high-fat meal as doing this will increase the level of the drug in your body and can increase the side-effects. You could also talk to your doctor about what time you take the dose, as taking it an hour or so before bed means that the drug level should be highest when you are asleep.

If you have a history of mental health problems then efavirenz might not be a good choice and you may wish to talk about other treatment options with your doctor.

You should not take efavirenz if you are thinking of becoming pregnant. There is a theoretical risk that it can cause birth defects. If you become pregnant whilst taking efavirenz, you should contact your clinic for advice.

Side-effects of *Truvada*

The drugs in *Truvada* (FTC and tenofovir) are generally very safe and few people need to stop taking *Truvada* because of side-effects.

But both FTC and tenofovir can cause diarrhoea and nausea (feeling sick). A small number of people have reported dizziness as a side-effect of tenofovir, and headache and difficulty sleeping have been reported as side-effects of FTC. You can take other medicines, such as anti-diarrhoea pills, anti-sickness (sometimes called anti-nausea pills or anti-emetics), and pain killers to help relieve these side-effects if they develop.

There is a small long-term risk of developing bone problems as a result of treatment with tenofovir. Your doctor should do regular blood tests to check levels of minerals to make sure that you are not at risk of this side-effect.

Kidney problems may also be a side-effect of tenofovir, particularly for people who are taking other medicines that affect the kidneys, or for those who have other risk factors for kidney disease, such as high blood pressure or diabetes. Your doctor should do regular blood tests to check the health of your kidneys.

In rare cases, FTC can cause changes in the colour of the skin, particularly in people of non-white race. You should talk to your doctor if this happens to discuss your treatment options.

Side-effects of *Kivexa*

The drugs in *Kivexa* (3TC and abacavir) are generally safe. But abacavir can cause a potentially dangerous allergic reaction. If you are thinking about treatment with abacavir it is very important that you first have a blood test to see if you have a gene linked to this allergic reaction called HLA-B*5701. If your result is positive you should not take abacavir. If it is negative, it is highly unlikely that you will have an allergic reaction but you should still report any fever, rash or headache to your doctor immediately. If you stop taking abacavir because you have had an allergic reaction to the drug you must never take abacavir again as this can be very dangerous, even fatal.

Some (but not all) research has linked abacavir to an increased risk of heart attack, particularly for people who have other risk factors for heart disease. Because of this, abacavir is not recommended for people who have risk factors for heart disease.

Both abacavir and 3TC can cause headache, nausea, vomiting and diarrhoea. These side-effects are usually quite mild and lessen or go away completely after a few weeks of treatment. Your doctor can also give you other medicines to control these side-effects if you need them.

A rarer side-effect of 3TC is hair loss and if you experience this you should talk to your doctor about your treatment options.

Starting treatment with a protease inhibitor

Rather than take efavirenz, an alternative option is to base treatment on a type of anti-HIV drug called a boosted protease inhibitor (these protease inhibitors have their anti-HIV effect boosted by taking them with a small dose of a second protease inhibitor called ritonavir).

The recommended boosted protease inhibitors for people starting treatment for the first time are:

- lopinavir/ritonavir (*Kaletra*)

- atazanavir (*Reyataz*) plus ritonavir

- darunavir (*Prezista*) plus ritonavir
- fosamprenavir (*Telzir*) plus ritonavir
- saquinavir (*Invirase*) plus ritonavir.

Side-effects of boosted protease inhibitors

Protease inhibitors seem more likely than efavirenz to cause side-effects. The main side-effect associated with protease inhibitors (with the exception of atazanavir) is stomach problems including diarrhoea, feeling sick (nausea) and being sick (vomiting). As with many other side-effects, these are often worse in the first few weeks of treatment with a protease inhibitor and often lessen or go away over time. You can take medicines to help control diarrhoea and to stop you being sick.

Kaletra, fosamprenavir and saquinavir can cause increases in blood fats. Your doctor will do regular blood tests to measure levels of cholesterol and blood sugars. Changing your diet, exercise and, if needed, treatment with drugs called statins can all lower cholesterol.

Atazanavir can cause a non-dangerous yellowing of the skin and eyes that goes away if treatment with the drug is stopped.

Other options if you are starting treatment for the first time

The NNRTI nevirapine (*Viramune*) is an alternative treatment for people starting treatment for the first time. It is only recommended for certain groups of patients, particularly women who are pregnant or thinking of becoming pregnant, or people who want to avoid taking efavirenz because of its side-effects.

For women who are pregnant, or thinking of becoming pregnant, the NRTI combination pill *Combivir* (AZT and 3TC) plus nevirapine is an option. This is because there is good evidence that AZT is effective at preventing mother-to-child transmission of HIV.

Side-effects of nevirapine

The main side-effect of nevirapine is rash. To reduce the risk of this, for the first two weeks of treatment the dose of nevirapine is 200mg once daily, after which it is increased to 200mg twice daily. But a small number of people need to change treatment because of the rash the nevirapine can cause, and a very small number of people require hospitalisation because of this. Very rarely people develop a serious skin condition called Stevens Johnson syndrome.

Nevirapine can cause liver problems. Because of this, women should not start treatment with nevirapine if their CD4 cell count is above 250, and men should not start treatment with nevirapine if their CD4 cell count is above 400.

Side-effects of *Combivir*

Combivir (AZT and 3TC) is not generally recommended for people starting treatment for the first time because AZT can cause fat loss from the face, limbs and buttocks.

Changing treatment from AZT to tenofovir can lead to a very slow return in limb fat.

Drugs not recommended for first-line HIV treatment

Some drugs are no longer recommended and they are only used in some circumstances. The NRTI d4T (stavudine, *Zerit*) is not recommended for people who have other anti-HIV drugs available to them. This is because it causes fat loss from the face, limbs and buttocks. It can also cause painful damage to the nerves in the lower limbs, a side-effect that is called peripheral neuropathy.

One of the reasons why the NRTI ddI (didanosine, *Videx*) is not recommended for first-line HIV treatment is the side-effects it can cause. These include peripheral neuropathy, pancreatitis and a rare, but unpleasant and potentially dangerous, side-effect called lactic acidosis. There is more information on these side-effects later in this booklet.

Changing treatment because of side-effects

HIV treatment is meant to make your health better. If you are experiencing treatment side-effects it is a good idea to make sure that your HIV doctor knows about them. It is nearly always possible to do something about side-effects.

In some circumstances you may need or want to change treatment because of side-effects. This is more likely to be an option if you have little or no resistance to anti-HIV drugs and your viral load is undetectable. Then you should be able to stop the drug that is causing your side-effect and switch to an alternative treatment.

Changing treatment can be more complex if you have a detectable viral load or you have HIV that is resistant to some anti-HIV drugs. Your doctor will look at the results of resistance tests and then discuss possible treatment options with you. Having resistance will, however, limit the number of replacement drugs that are available to you.

It also makes good sense to ask about the possible side-effects of the drugs you are considering switching to.

Treatment for people who have taken a lot of anti-HIV drugs in the past

In recent years a number of anti-HIV drugs have become available that provide very important treatment options for people who have taken a lot of HIV treatment in the past, particularly those with drug-resistant virus.

These drugs are particularly effective against HIV because they work against the virus in a slightly different way to the older anti-HIV drugs. These drugs are:

- T-20 (enfuvirtide, *Fuzeon*)

- maraviroc (*Celsentri*)

- raltegravir (*Isentress*)
- etravirine (*Intelence*).

They are generally safe and only cause mild side-effects. Information so far suggests that few people need to stop taking these drugs because of side-effects.

Nevertheless, you may need to consider the possibility of some side-effects.

Side-effects of T-20

This is the only anti-HIV drug that has to be given by injection. The key side-effects are pain and a hardening of the skin at the site of the injection. These are often called injection-site reactions. If you need to take T-20, you'll be given information about how to inject it and how to reduce the risk of injection-site reactions developing.

T-20 has some rarer side-effects as well, which your doctor should explain to you before you start treatment with it.

Side-effects of maraviroc

The main side-effect of maraviroc is nausea. If this is a problem, it can be controlled in many people with anti-sickness medicines.

Serious liver side-effects have been reported in a small number of patients. If you are also infected with hepatitis B or hepatitis C or have any other liver problems, then your doctor should monitor you carefully and do blood tests to check the health of your liver.

Side-effects of raltegravir

Feeling dizzy, stomach pains, sweating and pains in the joints have been reported by some people taking raltegravir.

Side-effects of etravirine

Stomach problems including feeling or being sick and diarrhoea can be side-effects of etravirine. Your doctor can give you medicines to control these if they are a problem. Other possible side-effects include high blood pressure and changes in your blood chemistry. You should have regular tests to monitor these as part of your routine HIV care.

Common side-effects

This section of the booklet provides some more information on the commonest side-effects that the anti-HIV drugs currently in use can cause.

It is intended to provide you with information to help you recognise a side-effect should you develop one. There's also information on what you can do to help control side-effects.

It makes good sense to remember a few things about side-effects:

- Many symptoms, for example headaches, diarrhoea, feeling or being sick and rashes can have causes other than anti-HIV drugs. If you develop such a symptom HIV treatment might not be the cause.

- Mention suspected side-effects to your doctor. It is important to find out the cause of symptoms you are experiencing.

- You do not have to put up with side-effects – there is nearly always something that can be done about them.

Diarrhoea

Diarrhoea is a possible side-effect of most anti-HIV drugs.

With some drugs, diarrhoea goes away after the first few weeks or months of treatment; however, for some people it becomes a permanent feature of taking a particular drug.

Changes in diet have little effect on protease inhibitor and other drug-related diarrhoea. However, a variety of treatments are available which can help control diarrhoea, particularly the anti-diarrhoea medicine loperamide (trade name *Imodium*). Your doctor should give you a prescription for this if you start any HIV treatment that can cause diarrhoea.

It is important that you continue to eat and drink even if you have diarrhoea caused by your medication. If diarrhoea is a problem for you, then it is a good idea to talk to your doctor about your options.

Remember that diarrhoea can have other causes as well, so it makes good sense to tell your doctor if you have persistent diarrhoea so its cause can be investigated.

There is more information on how to deal with diarrhoea in the NAM booklet, *Nutrition*.

Feeling or being sick

Feeling sick (nausea) or being sick (vomiting) are possible side-effects of most anti-HIV drugs. Your doctor should give you pills to stop you being sick if you are starting an anti-HIV drug that has nausea and vomiting as a possible side-effect.

As with many other possible side-effects, nausea and vomiting tend to be worst in the first few weeks after you start treatment and then often lessen or go away completely.

Nausea and vomiting can have other causes, so your HIV treatment might not be the cause. It makes good sense to tell your HIV doctor if you are feeling sick or being sick, particularly if you have other symptoms as well, especially a fever.

Whatever the cause, do not feel obliged to just put up with it – nausea and vomiting can prevent you from getting enough food and nutrients and from sticking with your HIV treatment. As well as asking your doctor about anti-sickness medication, the following practical tips may be helpful and can be discussed with your doctor, pharmacist or a dietitian:

- Eat small, frequent meals throughout the day rather than two or three large meals.
- Don't eat liquid and solid food at the same meal. Space them at least one hour apart.
- Avoid eating greasy, fatty, fried or spicy food. Instead, choose bland food.
- Try dry food such as toast, crackers, cereal, and fruit and vegetables that are bland or soft.
- Salty food such as crackers, pretzels and popcorn can help reduce nausea. Carry a packet with you when you leave the house.
- Don't lie flat for at least an hour after you eat.

- Eat food cold or at room temperature – hot food can worsen nausea.

- Herbal tea (e.g. peppermint or chamomile) or root ginger can help settle upset stomachs.

Headache

Headache is a possible side-effect of many anti-HIV drugs. In most cases, these are mild and lessen or go away completely after a few weeks of treatment with the drug. Pain killers like paracetamol can provide relief.

It makes good sense to tell your doctor about headaches, particularly if they are severe or last more than a few days.

Mood and sleep problems

Efavirenz (*Sustiva*), FTC (emtricitabine, *Emtriva*) and tenofovir (*Viread*), drugs that are combined in the once-daily pill *Atripla*, can cause a number of mood and sleep problems.

When these side-effects occur, they are normally mild and lessen or go away after a few weeks of treatment. But for some people they are not tolerable and they need to change treatment because of them. Tell your doctor if you are experiencing these side-effects.

Some people find that taking their medication just before going to bed helps. A short course of sleeping tablets may also help to re-establish your sleep patterns.

Rash

Rash can be a side-effect of a number of anti-HIV drugs.

Such rashes often lessen or go away after a few weeks of treatment, but even so it is a good idea to report rashes to your doctor as some rashes can indicate the presence of serious side-effects (particularly if you are taking abacavir or nevirapine), or infections.

Sexual problems

Sexual problems (sometimes called sexual dysfunction) are common in people with HIV. They are often thought of as a side-effect of HIV treatment, but can have a number of possible causes, so it's often difficult to say if HIV treatment is the cause.

Sexual problems can include a loss of interest in sex, or reduced sexual performance (for example, delayed orgasm or an inability to achieve and maintain an erection).

As well as treatment side-effects (not only of HIV drugs but of commonly used medicines like antidepressants as well), possible causes also include anxiety and stress, mental health problems like depression, drug and alcohol use, illness and ageing.

More is known about sexual problems in HIV-positive men than HIV-positive women. Protease inhibitors are the type of anti-HIV drug most associated with sexual problems in men – normally problems achieving or maintaining an erection.

The extent to which protease inhibitors cause erectile problems is far from certain, and it's not inevitable that you'll develop such problems if you start treatment with a protease inhibitor.

If you do develop sexual problems, it's good to know that there's a lot that can be done about them. It makes good sense to mention them to a member of your healthcare team.

It's important to consider if there are any psychological issues that could be contributing to your sexual problems.

There could be medical causes for your sexual problems, so your doctor may do tests to monitor your testosterone level or check the health of your heart and arteries.

Medicines are available to treat erectile dysfunction in men. They are called *Cialis*, *Levitra* and *Viagra*. They work by increasing the flow of blood to the penis.

Your doctor may be able to provide you with an NHS prescription for these drugs, or it may be possible to have them prescribed privately.

All three of these drugs can interact with anti-HIV drugs, particularly protease inhibitors and NNRTIs. If you are taking HIV treatment, your prescribed dose of an erectile dysfunction drug will be reduced to half the standard dose.

Tell your HIV doctor or pharmacist about other medicines you are taking as some can interact with erectile dysfunction drugs.

And it's important to know that you shouldn't use poppers if you are taking erectile dysfunction drugs as this combination can cause a potentially dangerous drop in blood pressure.

Tiredness

Tiredness (fatigue) is a possible side-effect of most anti-HIV drugs.

As with most other side-effects, the risk of fatigue is greatest in the first few weeks after you start treatment with a drug, and then lessens or goes away completely.

It makes good sense to tell your doctor if fatigue is a problem for you. If the cause is your HIV treatment there is a good chance that something can be done about it. Fatigue can have other causes as well, so mention tiredness to your doctor so he or she can investigate possible causes.

Getting enough sleep, eating a good balanced diet, and regular exercise can also help with fatigue.

Kidney problems

Tenofovir (*Viread*, also in the combination pills *Truvada* and *Atripla*) is processed by the body through the kidneys, and there is some evidence that people with other risk-factors for kidney disease (for example high blood pressure or diabetes) might have an increased risk of developing kidney problems when taking this drug.

The now rarely used protease inhibitor indinavir (*Crixivan*) can cause kidney stones, and their treatment might involve outpatient treatment or a short stay in hospital.

Your routine HIV care should involve regular tests to check on the health of your kidneys.

If you develop kidney problems then it may be necessary to change your HIV treatment or to have special treatment for your kidneys.

Lipodystrophy

Lipodystrophy is the term used for changes in body shape. It was originally thought that the cause was protease inhibitors, but it now seems that some drugs in the NRTI class may be the main cause. The use of the drugs most associated with lipodystrophy – AZT and d4T – is now avoided as much as possible.

Body-fat changes seen in people taking HIV drugs can involve fat loss, fat gain, or a mixture of both. This may result in:

increased waist size (without rolls of fat); increased breast size; fat gain around the back of the neck and upper back; fat gain around the neck and jaw; facial wasting, especially of the cheeks; wasting of the buttocks; prominent veins in the arms and legs (because of fat loss). Some people have developed small lumps of fat called lipomas, often in the limbs or trunk.

The abdominal fat gain in lipodystrophy is made up of hard fat that accumulates around the internal organs, causing the belly to feel taut and pushed out. This is different to the squeezable fat gained if people put weight on through over-eating or lack of exercise.

As noted above, the use of the drugs most associated with lipodystrophy is now avoided as much as possible. People who took either AZT or d4T and who switched to tenofovir (*Viread*) have experienced very slow returns of fat in the limbs.

Fat loss from the face can be repaired in a number of ways. The most commonly used technique involves injections of a product called *New Fill* into the affected areas. This treatment is often available from HIV clinics so ask your doctor or another member of your healthcare team if this treatment is available to you.

Surgery can be an option for removing fat accumulation around the neck, and lipomas can also be surgically removed if needed.

Other possible treatments involve human growth hormone or anabolic steroids. Again, you can talk to your doctor about these.

Regular cardiovascular exercise and weight training has been shown to have some positive effect on fat gain.

People who have experienced body-fat changes have sometimes found this stigmatising – a visible sign that they are taking HIV treatment. The bodily changes can also affect the way that people feel about themselves. If you have developed lipodystrophy and have felt this way, acknowledging your feelings and talking to somebody about them can be very helpful. Your HIV clinic should be able to talk to you about accessing talking therapies or getting treatment for depression if you think it would be helpful for you.

Metabolic changes

Anti-HIV drugs can also disrupt your metabolism – the way your body processes the things it needs to work properly.

Specifically, anti-HIV drugs can cause abnormal levels of blood lipids – cholesterol and triglycerides and also blood sugar.

Cholesterol

There are two types of cholesterol: HDL cholesterol, often called 'good' cholesterol, and LDL, or 'bad' cholesterol.

Levels of HDL cholesterol are often reduced in people with HIV and other chronic illnesses. High levels of LDL cholesterol indicate that you are at greater risk of heart disease, and increases in LDL cholesterol are often seen in people taking anti-HIV drugs.

If you have high LDL cholesterol, the following factors increase your risk of heart disease even further:

- Smoking.
- High blood pressure.
- A family history of heart disease.
- Being physically unfit.
- Being aged over 45 for men and over 55 for women.

- Insulin resistance or diabetes.
- High blood sugars.
- Being very overweight, particularly with a lot of fat around the middle.
- Use of stimulant recreational drugs like cocaine or amphetamines.

It is particularly important to monitor LDL cholesterol levels if you are taking a protease inhibitor.

Triglycerides

Triglycerides are fatty acids derived from fat, sugar and starches in food. These travel through the bloodstream and are stored in tissues or in the liver. Levels of triglycerides can be increased by some anti-HIV drugs.

Glucose

Glucose is a form of sugar found in the blood. High levels of glucose can increase the risk of heart disease. Levels of glucose can be increased by some anti-HIV drugs.

Insulin

Insulin is the substance produced by the body to control glucose levels in the blood. Some people taking anti-HIV drugs need to produce more insulin to keep their blood levels of glucose normal. This is called insulin resistance. It may be necessary to have your insulin levels tested.

Symptoms of metabolic change

Abnormal levels of fats and sugars in the blood can sometimes cause symptoms including:

- Tiredness.
- Dizziness (due to high blood pressure).
- Loss of concentration.
- More frequent urination.
- Thirst.

However, some people don't notice any symptoms, even when they've had abnormal levels of fats and sugars for a long time and are at greater risk of heart disease.

Heart disease and anti-HIV drugs

Levels of fats in your blood may start to rise when you start HIV treatment, particularly if you are taking certain protease inhibitors. Sometimes they can increase so much that it's necessary to change your diet, start exercising, or take a medication to control them.

Large studies of people taking protease inhibitors have shown that they have a slight, but nevertheless significant, increase in their risk of heart disease. Some (but not all) studies have also suggested that abacavir

(*Ziagen*, also in the combination pills *Kivexa* and *Trizivir*) might increase the risk of heart disease, particularly for people who already have risk factors for heart problems.

If you have any existing risk factors for heart disease, your HIV treatment should be carefully chosen to ensure that it doesn't raise the risk even further. And a 'risk' of heart disease does not automatically mean that heart problems will develop. A lot can be done to prevent this happening.

First of all, your cholesterol, triglyceride and glucose levels should be monitored at each routine clinic visit. This will mean that your doctor can spot any warning signs early.

Looking after your heart

There is also a lot you can do to help keep your blood lipids within safe limits. This includes eating a good diet with lots of fresh fruit and vegetables and without too much fat, regular exercise, and not smoking.

Lipid-lowering drugs

In some circumstances your doctor might prescribe what are called lipid-lowering drugs. These are used to treat heart disease and hardening of the arteries and include statins (to lower cholesterol) and fibrates (to lower triglycerides and also cholesterol). Some statins can interact with protease inhibitors, and both statins and triglycerides can cause their own side-effects, so your doctor will monitor you to see if these are developing.

Some drugs are also being investigated to see how effective they are at controlling glucose and insulin in HIV-positive people.

Liver problems

Most HIV drugs are processed by the body using the liver, and a small number of people have experienced liver problems when taking HIV treatment. In many cases, these people had other risk factors, for example infection with hepatitis B or C virus, treatment with other medicines that can harm the liver, or lifestyle issues, such as drug or alcohol use, that were damaging to the liver.

Your routine HIV care will involve blood tests to monitor the health of your liver. If you do develop liver problems, possible options include changing your HIV treatment or having additional treatment for your liver problems.

Changes in your diet may also help, so try and eat lots of fresh fruit and vegetables and avoid fatty food. Drinking too much alcohol and the use of some recreational drugs can also damage the liver or make existing liver problems worse. Your HIV clinic will be able to offer advice and support if you are worried about your alcohol or drug use.

Peripheral neuropathy

Nerve damage can be a very painful side-effect of some anti-HIV drugs, and can also be directly caused by HIV itself.

Neuropathy is damage to the nerves, and the nerves that can be damaged by some anti-HIV drugs are in the limbs (and very rarely, male genitals). Therefore this side-effect is called peripheral neuropathy.

Peripheral neuropathy usually involves damage to the nerves in the lower legs and feet or, less commonly, the hands. The symptoms can range from mild tingling and numbness through to excruciating pain that makes it impossible even to wear a pair of socks. Usually both sides of the body are equally affected.

Other symptoms of neuropathy can include dizziness, diarrhoea and sexual dysfunction in men (inability to obtain or sustain an erection).

The two main drugs that can cause peripheral neuropathy are d4T and ddI. These drugs are now only used if there are no other treatment options available. There is some evidence that 3TC may involve a risk of peripheral neuropathy.

It can also be caused by other drugs prescribed for people with HIV, such as some antibiotics, TB drugs and therapies for Kaposi's sarcoma (often abbreviated to KS).

If you do develop drug-related neuropathy, it is important that your HIV treatment is changed immediately (but do get your doctor's advice before making any changes to your medical treatment). Once the drug has been stopped, the neuropathy may continue to get worse for a couple of weeks, but then it nearly always goes away over time.

In the meantime, your doctor can prescribe treatments to reduce the pain. Trials have shown that a drug called *L-Acetyl-Carnitine* can help reduce the symptoms of neuropathy.

There is also evidence that the recreational drug cannabis can help. But it's important to know that cannabis use is illegal, and there can be other health implications.

There are several different causes of nerve damage among people with HIV – for example HIV itself, other infections, or diet problems. It is therefore very important to tell your doctor if you have tingling, numbness or pain in your feet so that the cause can be properly investigated.

Bone problems

A very small number of people taking the anti-HIV drug tenofovir (*Viread*, also in the combination pills *Truvada* and *Atripla*) and possibly protease inhibitors have developed bone problems.

Nearly always, they also had other risk factors for bone problems. Your doctor will do blood tests to monitor the health of your bones. These tests are likely to be particularly important if you have other risk factors for bone problems such as family history, diet, age, sex, smoking and not exercising.

Lactic acidosis

Lactic acidosis is a serious side-effect of some drugs from the NRTI class. The use of the drugs most associated with it, d4T and ddI, is now avoided as much as possible. But it can be a very rare side-effect of 3TC, abacavir and FTC.

The term lactic acidosis is used to describe high levels of a substance called lactate in the blood. Lactate is a by-product of the processing of sugar within the body.

Initial signs and symptoms of lactic acidosis include general gastrointestinal symptoms such as nausea (feeling sick), vomiting, bloating, abdominal pain and lack of appetite, feeling generally unwell, and difficulty in breathing. Of course, these symptoms can also occur for many other reasons, but it makes good sense to tell your doctor as soon as possible if you develop any of these symptoms. In people who have lactic acidosis, the liver may be swollen and tender and liver enzymes, which are measured by a liver function test, may be abnormally high. Other signs which may be detected on laboratory tests include low bicarbonate, raised lactate, and deteriorating kidney function.

Your routine HIV care will include blood tests that can show if you have a risk of developing this very rare side-effect.

Changing HIV treatment is often the best way of dealing with lactic acidosis.

Pancreatitis

Pancreatitis is inflammation of the pancreas and is a very rare side-effect of drugs from the NRTI class. The NRTI most associated with pancreatitis is ddI, and the use of this drug is now avoided as much as possible.

People who have other risk factors for pancreatitis, particularly heavy drinking and a very low CD4 cell count, are at higher risk of getting pancreatitis if they are taking ddI. In addition, people who are receiving treatment for HIV including ddI, and treatment for hepatitis C at the same time, seem to be at a higher risk of developing the condition.

Symptoms include feeling sick, being sick, and pain, which can be very severe in the area where the ribs join in the middle of the chest. The stomach can also be very tender and painful to the touch. If the pancreas stops working properly, food might not be digested properly and this can cause weight loss and diarrhoea, which is pale and very smelly due to undigested fat.

Your doctor will do regular blood tests to check if you have a risk of developing pancreatitis.

Summary

- HIV treatment is very effective and can mean a long and healthy life, but anti-HIV drugs can cause unwanted side-effects.

- HIV treatment is meant to make you better; you don't have to put up with side-effects.

- It's not inevitable that you will experience side-effects and if side-effects do develop it's often possible to do something about them.

- Some anti-HIV drugs can cause an allergic reaction and you will be told about the symptoms to look out for and what to do if you experience them.

- You're most likely to notice side-effects soon after you start taking a new drug and these usually lessen or go away with time.

- It always makes good sense to tell your doctor about any side-effects you are experiencing.

- The side-effects caused by the most commonly used HIV drugs tend to be mild.
- Common side-effects are diarrhoea, feeling or being sick, headache, rash and tiredness. It's usually possible to take medicines to control these.
- Some side-effects develop after you've been taking a medicine for a period of months or even years. You'll have tests to check for these and it makes good sense to tell your doctor about any unusual symptoms.
- You can find more information on all the topics in this booklet on NAM's website: www.aidsmap.com

Glossary

Allergic reaction A reaction by the immune system to a substance, such as a medicine, that in most people would cause no symptoms.

CD4 A molecule on the surface of some cells on to which HIV can bind. The CD4 count roughly reflects the state of the immune system.

Clinical trial A research study with people, usually to find out how well a new drug or treatment works and how safe it is.

Entry inhibitor Family of antiretrovirals that includes maraviroc.

Fusion inhibitor Family of antiretrovirals that includes T-20.

Hypersensitivity Another word for allergy.

Integrase inhibitor The family of antiretrovirals that includes raltegravir.

NNRTI Non-nucleoside reverse transcriptase inhibitor, the family of antiretrovirals that includes efavirenz, etravirine and nevirapine.

NRTI Nucleoside reverse transcriptase inhibitor, the family of antiretrovirals that includes 3TC, abacavir, AZT, d4T, ddI and FTC.

Protease inhibitor The family of antiretrovirals that includes atazanavir, darunavir, fosamprenavir, indinavir, lopinavir/ritonavir, nelfinavir, ritonavir, saquinavir and tipranavir.

Resistance A drug-resistant HIV strain is one that is less sensitive to the effects of one or more anti-HIV drugs because of changes in its structure.

Side-effect An unwanted secondary effect of a treatment.

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As a result of reading this booklet I have learnt:	Strongly agree	Agree	Neither	Disagree	Strongly disagree
■ Something new and useful about the side-effects of HIV treatment	☐	☐	☐	☐	☐
■ What to do if I experience side-effects	☐	☐	☐	☐	☐
■ Ways of managing certain side-effects	☐	☐	☐	☐	☐

Please tell us if there is anything else you have learnt as a result of reading this booklet:

....

As a result of reading this booklet I am now more likely to:					
■ Ask my healthcare team about side-effects	☐	☐	☐	☐	☐
■ Feel less anxious about side-effects	☐	☐	☐	☐	☐
■ Feel more confident talking to my healthcare team	☐	☐	☐	☐	☐
■ Feel better equipped to take decisions regarding my treatment and care	☐	☐	☐	☐	☐

Please tell us if there is anything else you are more likely to do or feel as a result of reading this booklet:

....

Please tear off this page and post it to: NAM, FREEPOST LON17995 London, SW9 6BR. Alternatively you can complete the questionnaire at www.aidsmap.com/feedback, where you can also try our HIV treatment and health knowledge quiz, which will help ensure you have all the information you need to get the best out of your health care or treatment.

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Thank you very much for taking the time to fill in this questionnaire.
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from the Terrence Higgins Trust

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opening hours Monday-Friday, 10am-10pm

Saturday & Sunday, 12pm-6pm

African AIDS Helpline

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