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hiv&hepatitis

fourth edition 2006

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acknowledgements

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NAM is a charity that publishes information for people affected by HIV and those working with them. We believe information helps people to make decisions about, and be in control of, their lives, health and treatment options.

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hiv&hepatitis

This booklet is aimed at people with HIV who also have hepatitis B or hepatitis C, viruses which can cause serious disease of the liver. This booklet is not intended to replace discussion with your doctor, but should help you to think about questions you would like to have answers to.

contents

The liver 1

The liver is the largest internal organ in your body. It is located at the upper right hand side of the abdomen. Having a healthy liver is important to everybody, but it is especially important to people with HIV as the liver plays an important part in processing medicines used to treat HIV. Viral infections which affect the liver, such as hepatitis A, hepatitis B and hepatitis C can make you very ill, and also mean that the liver isn't able to process medicines properly.

What your liver does

Your liver has three major functions:

- It stores and filters blood, removing unwanted substances.
- It makes bile, which is released into your gut and helps digest fat.
- It processes nutrients from foods, releasing energy into your blood stream, and stores vitamins and minerals.

What can go wrong with your liver

Drinking a lot of alcohol over a long period of time can damage your liver, leading to a condition called cirrhosis, meaning that your liver is permanently scarred and can no longer work properly.

Certain recreational drugs, such as heroin, cocaine, and ecstasy can also damage your liver. Medicines used to treat illnesses and infections, including some HIV drugs, can also damage your liver, causing inflammation, known as hepatitis.

Viruses can also cause disease in the liver. This booklet provides a lot more information on these viruses, mainly hepatitis B and hepatitis C that can cause serious long-term or chronic illness. Information is also included on hepatitis A, which can also make you unwell, but only in the short-term.

Vaccinations 3

Vaccinations are available to protect you from getting infected with hepatitis A and hepatitis B, and if you are HIV-positive you are advised to receive these vaccinations as soon as possible. They are safe and effective in people with HIV and available free of charge at your HIV clinic, a sexual health clinic, or from most GPs.

Both vaccinations consist of a course of injections - two for hepatitis A and three or four for hepatitis B - given over a number of months. It is very important for you to have all the injections for the vaccine to be effective. Regular tests should be performed to see if you need a booster vaccine to continue your protection.

There is no vaccine against hepatitis C.

A small number of people are immune to hepatitis A and B due to earlier infection and you will have tests to see if you are immune before any vaccination is given.

4 Hepatitis B

Hepatitis B virus (often known as HBV) is an infection that can cause severe and even fatal damage to your liver.

It is a very common infection around the world, particularly in Africa and the Indian sub-continent. At some London HIV clinics as many as 6% of gay men are coinfected with both hepatitis B and HIV. It is also common in people who have shared injecting equipment.

Transmission

The reason why so many people with HIV also have hepatitis B is because it can be spread in a similar way to HIV, particularly by contact with blood, semen and vaginal fluid, and from a mother to her baby whilst pregnant.

Hepatitis B is many times more infectious than HIV and it can also be spread in saliva.

In richer countries, such as the UK, hepatitis B has mainly affected gay and bisexual men, injecting drug users, and people with haemophilia. Increasing numbers of cases in the UK involve people who have come here from Africa and India.

It is very important that people with HIV are vaccinated against hepatitis B. Using a condom for anal, vaginal and oral sex reduces the chances of

hepatitis B being passed on during sex. Similarly, you should never share needles or other injecting drug equipment.

Bloods products in the UK are routinely screened for hepatitis B.

Symptoms

The majority of adults who are infected with hepatitis B have no symptoms to suggest that they have the infection, and it is often only diagnosed by routine blood tests.

However, if symptoms do occur after infection you may experience a yellowing of the skin and whites of the eyes (jaundice), loss of appetite, pain in the stomach, nausea and vomiting, have a temperature, joint and muscle aches and feel generally unwell.

These symptoms can be very severe and in some very rare cases can cause death.

Stages of infection

There are four stages of hepatitis B infection.

- **Immune tolerance** - at this stage hepatitis B is able to reproduce freely in the body, even though it does not cause any symptoms. This stage tends to last for several weeks in adults after they become infected with hepatitis B and for years in infants after infection.

- **Immune response** - during this stage the body's natural defences, the immune system, attacks the hepatitis B-infected cells in the liver and starts to clear the infection from the body. In some people who have been recently infected with hepatitis B this phase may last for no more than a few weeks. However, in people who cannot clear the infection it can last for years. Many people develop symptoms and become unwell at this time.
- **Viral clearance** - this is often also known as 'seroconversion' because the body produces antibodies in response to a substance on the surface of the hepatitis B virus called the 'e' antigen. During this stage hepatitis B stops reproducing itself.
- **Immunity to hepatitis B** - this is when the immune system produces a full antibody response to hepatitis B, and clears the body of hepatitis B virus. Hepatitis B genetic material (DNA) usually disappears from the body.

If the last two stages do not occur, you will be left with persistent infection and liver damage.

Monitoring

There are a number of tests to see if you are infected with hepatitis B, or if you have been infected with it, and have managed to clear the infection.

If tests find fragments of hepatitis B virus called surface antigens for more than six months, then you are a chronic carrier of hepatitis B and are potentially infectious to other people.

People who are 'e antigen positive' have higher rates of replication of hepatitis B and are also likely to be more infectious.

If you have antibodies but no antigen after six months of infection, then your immune system has cleared hepatitis B infection.

You are also likely to have regular tests to see if your liver has been affected by hepatitis B. These are called liver function tests and they look at levels of certain proteins and enzymes, which give an indication of how well your liver is working. They should be performed at least every six months.

Ultrasound examinations are also used, particularly if your liver is damaged. In some cases it may be necessary to perform a liver biopsy, when a tiny sample of tissue from the liver is extracted using a hollow needle for examination under a microscope.

The use of these liver biopsies is becoming rarer as new technology means that doctors can get the information they need using blood tests and scans.

Treatments

Treatments are available if you do not clear infection with hepatitis B. There are currently four licensed drugs for the treatment of hepatitis B in the UK. These are alpha interferon, the anti-HIV drug 3TC (lamivudine, *Epivir,* but it's called *Zeffix* when used to treat hepatitis B without HIV therapy), adefovir (*Hepsera*) and entecavir (*Baraclude*).

The aims of hepatitis B treatment are to reduce liver inflammation, reduce the amount of hepatitis B DNA, and ideally, to eradicate hepatitis B antigens from the body and produce antibodies that reduce the risk of progression to cirrhosis and liver damage.

In people who only have hepatitis B these treatments usually eradicate hepatitis B in about a third of the people who take them.

Alpha-interferon

Alpha interferon is given by injection, usually three times a week for four months, and leads to clearance of detectable hepatitis B in between 20 and 40% of people with hepatitis B infection alone. However, it works less well in men, people who have had hepatitis B for a long time, people who have large amounts of hepatitis B DNA, and people who are also infected with HIV.

Alpha-interferon can cause unpleasant side-effects, including flu-like symptoms, aches and pains, depression, and bone marrow suppression.

3TC

3TC is better known as a potent anti-HIV drug (lamivudine, *Epivir*), but also works against hepatitis B and is licensed for the treatment of both infections (as *Zeffix* for the treatment of hepatitis B). The dose of 3TC for hepatitis B treatment is 100mg taken orally once daily. This is lower than the twice-daily 150mg dose of 3TC used when the drug is included in anti-HIV drug combinations. 3TC should never be given as monotherapy (the only drug) to people who have hepatitis B and HIV coinfection if they have a detectable HIV viral load as its use in this way could lead to 3TC resistance developing.

3TC treatment results in viral clearance of hepatitis B in about 20 - 30% of hepatitis B monoinfected individuals who take it. It is not known how long it is necessary to take 3TC for, and although studies have generally looked at people taking the drug for a year or two, lifelong therapy with the drug may be needed.

Adefovir

Adefovir (*Hespera*) is used as a treatment for hepatitis B in Europe and the United States. The standard dose is 10mg a day, and the drug is effective against hepatitis B virus that is resistant to 3TC. Side-effects include headache, stomach pain, feeling sick, and diarrhoea. Adefovir has previously been tested as an anti-HIV drug at 60mg and 120mg doses, but was not licensed because (at these doses) the risk of kidney toxicity was too great.

Entecavir

Entecavir (*Baraclude*) has recently been approved in Europe as treatment for patients with chronic hepatitis B infection. It will become available in late 2006. Entecavir is already used in the United States, particularly to treat patients with 3TC resistance.

Hepatitis B and HIV

It was generally thought that having hepatitis B did not make HIV hasten or worsen HIV disease progression and severity.

However, liver disease due to hepatitis B or C has emerged as a significant cause of illness and death in people with HIV since the introduction of effective anti-HIV drugs brought a longer and healthier life for many people with HIV.

Anti-HIV treatment and hepatitis B

Potent anti-HIV treatment can be used safely and effectively if you have hepatitis B.

However, when some HIV and hepatitis B coinfected people start taking anti-HIV treatment they may experience a short-term flare-up of hepatitis B. This is usually the consequence of the anti-HIV treatment restoring the immune system, which then becomes better at responding to infections such as hepatitis B. This improved immune response can lead to active hepatitis B disease.

To try and prevent these flares happening, many doctors recommend that people with chronic hepatitis B infection who are starting anti-HIV treatment should start treatment for hepatitis B infection at the same time.

People with hepatitis B appear to be at greater risk of experiencing the increases in liver enzymes which some anti-HIV drugs can cause. The drugs particularly associated with liver side-effects are ritonavir (*Norvir*), indinavir (*Crixivan*), nevirapine (*Viramune*), AZT (zidovudine, *Retrovir*), ddI (*Videx*), as well as some drugs used to treat other infections to which people with HIV can be vulnerable, including pentamidine, some sulphur-based antibiotics, and ketaconazole.

Hepatitis B treatment if you have HIV

The British HIV Association, the organisation that sets UK guidelines for the treatment of HIV, recommends that if a person with hepatitis B virus is taking potent HIV treatment, then this should include an anti-HIV drug that is also effective against hepatitis B. These are 3TC and tenofovir (*Viread*). Some doctors think that an anti-HIV regimen that combines 3TC and tenofovir may be a very effective treatment for both HIV and hepatitis B. Studies to investigate this are currently underway. Another HIV drug that is effective against hepatitis B is FTC (emtricitabine, *Emtriva*). Tenofovir and FTC are available in a combined pill called *Truvada*.

Because of the possibility of resistance, anti-HIV drugs should not be used for the treatment of hepatitis B if a person is not taking potent HIV treatment. In these circumstances alpha interferon or adefovir should be used.

Hepatitis C

Hepatitis C virus (or HCV) was first identified in 1989 and can affect the liver and lymphatic system. It is not related to hepatitis B, even though it often causes similar symptoms.

It's thought that as many as 500,000 people in the UK are infected with hepatitis C.

Transmission

Hepatitis C is transmitted through blood. The sharing of drug injecting equipment is the most common route if transmission in the UK.

Many people also contracted hepatitis C from blood products before screening and sterilisation was introduced.

It used to be thought that sexual transmission of hepatitis C was rare. However there are increasing numbers of gay men testing positive for hepatitis C. Many of these are HIV-positive and reported unprotected anal sex as their only risk activity. The most recent evidence seems to suggest that the hepatitis C virus is found more frequently in the semen of men who are coinfected with HIV, than in the semen of men who are only infected with hepatitis C. This could be one factor contributing to the rise in infections. Fisting and any other kind of sex that involves contact with blood is likely to pose an increased risk of hepatitis C

infection. Some doctors and researchers think that fisting is the sexual activity that involves the biggest risk of hepatitis C transmission. Cases of hepatitis C transmission from vaginal sex remain rare.

Sharing household items that may have tiny amounts of blood on them, such as razors, toothbrushes and nail scissors should be avoided.

Mother-to-baby transmission of hepatitis C is thought to be uncommon, but the risk is increased if the mother is also infected with HIV. A high hepatitis C viral load also increases the chance that a mother will pass on hepatitis C to her baby. As with HIV, a caesarean delivery reduces the chance of mother-to-child transmission of hepatitis C.

Some studies have found a risk from breastfeeding, but the evidence is inconclusive. However, in the UK and other countries where safe alternatives are available, mothers with HIV should never breastfeed.

Symptoms

Less than 5% of people experience symptoms when they are first infected with hepatitis C. When they do occur, symptoms can include jaundice, diarrhoea, and feeling sick.

In the longer term, about half of people with hepatitis C will experience some symptoms. The most common ones are feeling generally unwell, extreme tiredness, weight loss, intolerance of alcohol and fatty food, and depression.

Disease progression

A small proportion of people infected with hepatitis C clear the infection naturally. Around 85% will go on to develop chronic hepatitis C.

Patterns of disease vary from person to person. Some people never experience any symptoms, but about a third will develop serious liver disease after 15 to 25 years of infection.

The severity of disease can be affected by the strain of hepatitis C you have been infected with, and the way your body is able to respond to the infection. It is thought that it may take between 30 and 40 years for hepatitis C to cause cirrhosis - serious scarring to the liver. But men, people who drink alcohol, older people, and people who also have HIV seem to have faster hepatitis C disease progression.

Fibrosis and cirrhosis

Hepatitis C (and hepatitis B, excessive drinking and drug use) can damage the tissue in your liver. Two terms are used to describe this - fibrosis and cirrhosis.

If your liver has fibrosis this means that it has been hardened and scarred. In its early stages, fibrosis can be reversed.

Cirrhosis causes permanent scarring of the liver and this means that it can no longer work properly. This can be very serious, causing jaundice, internal bleeding, and swelling of the abdomen. Damage caused by cirrhosis is permanent.

Liver cancer

Chronic hepatitis B and hepatitis C significantly increase the chances of liver cancer developing.

If you have hepatitis C, liver cancer is most likely to happen when you have cirrhosis, particularly if you are a heavy drinker. Smoking may also speed up the rate of cirrhosis and increase the risk of developing liver cancer.

Liver cancer is difficult to treat and surgery is often the only option, involving the removal of part of the liver. Small tumours can be removed, but the chance of a new tumour developing within five years is high. Chemotherapy has no proven benefit against liver cancer.

Diagnosing and monitoring hepatitis C

A blood test can tell if you have been exposed to hepatitis C and have antibodies to it. The British HIV Association recommend that you are tested for hepatitis C at least once, and have more frequent tests if you are at risk of hepatitis C.

A test is also available to measure hepatitis C viral load (PCR). This can show if you are one of the small numbers of people who clear hepatitis C from the body naturally. Unlike HIV viral load testing, a hepatitis C viral load is not an indicator of when to start treatment. However, it can be used to show how long you should continue to take treatment against hepatitis C. If you have a very high hepatitis C viral load (above two million copies) you may require a longer course of treatment.

Tests on levels of enzymes produced by your liver, called liver function tests, can give an indication of whether or not hepatitis C has damaged your liver. However, some people with hepatitis C can have normal liver function tests even though they have suffered significant liver damage.

If the degree of liver damage you have suffered is unclear, then you may need to

have a liver biopsy. This involves using a hollow needle to remove a small sample of the liver, which is checked under the microscope for signs of liver damage.

Liver biopsies can also be used to help decide what kind of hepatitis C treatment you need and how long it should last for.

But scans and blood tests can now often be used in their place.

How does HIV affect hepatitis C?

In the past few years several studies have confirmed the link between HIV and hepatitis C co-infection and faster progression of liver disease. It seems that people coinfected with HIV and hepatitis C are more likely to develop liver disease than people infected only with hepatitis C. This seems to be the case even if you have a high CD4 count. More severe liver damage is seen in people who have advanced HIV.

The effect of hepatitis C on HIV

In countries like the UK, where potent anti-HIV treatment is widely available and people are living longer, healthier lives with HIV, liver disease is now a major cause of hospital admission and death among HIV-infected people.

This is because of hepatitis B and C liver-related problems. Hepatitis C does not appear to significantly alter your chances of becoming ill due to HIV, developing AIDS, dying of an AIDS-defining illness, or responding poorly to anti-HIV treatments.

Anti-HIV treatment if you have HIV and hepatitis C

Potent anti-HIV treatment can be used safely and effectively if you are coinfected with HIV and hepatitis C. However, you may be at greater risk of side-effects affecting the liver, which some anti-HIV drugs can cause.

For instance, new research indicates that coinfected patients should use the anti-HIV drugs ddI and d4T (stavudine, *Zerit*) with caution, due to the increased risk of developing hepatic steatosis, or fatty liver - which is the accumulation of fatty acids in the liver.

You and your doctor should bear this in mind when selecting which anti-HIV drugs you are going to take, and careful monitoring of your liver after you start taking anti-HIV treatment is strongly recommended.

Your decision about when to start anti-HIV treatment should be based on your CD4 cell count and HIV viral load, as it is in people who have HIV alone.

You may be at greater risk of developing some of the metabolic disorders that can be a side-effect of potent anti-HIV treatment, such as insulin resistance and diabetes.

Some people with hepatitis C have a lower CD4 count rise on anti-HIV treatment than those without hepatitis C.

Treatments for hepatitis C

Treatments are available for hepatitis C.

The British HIV Association recommends that before you start treatment for hepatitis C, doctors who are expert in the treatment of hepatitis C and HIV assess you.

Before treatment is started it is important to have a test to show which strain, or genotype, of hepatitis C you have been infected with, as hepatitis C genotype can predict your response to treatment.

There are at least six types of hepatitis C genotype. Type 1 is the most common in the UK and Europe. Unfortunately, type 1 responds least well to the currently available treatments for hepatitis C.

Unlike antiretroviral therapy, treatment for hepatitis C is not indefinite. It usually consists of a 24- or 48-week course of treatment, and the length of treatment you receive is dependent upon

the genotype you are infected with and your response to treatment. A test after twelve weeks can predict if you are not going to respond to treatment.

There are currently three antiviral drugs available for the treatment of hepatitis C. These are ribavirin, alpha interferon, and pegylated interferon sometimes called peg-interferon (*Pegasys, PegIntron, ViraferonPeg*).

Alpha interferon can be used by itself or in combination with ribavirin. Pegylated interferon can also be used either by itself or in combination with ribavirin. Ribavirin should never be used as a treatment for hepatitis C by itself.

Treatment with pegylated interferon and ribavirin is now the standard of care recommended by the British HIV Association, as it seems to produce better results.

Aims of hepatitis C treatment

If you have a CD4 cell count above 200, the aim of treatment should be to eradicate hepatitis C completely. Although 50-80% of HIV-negative individuals respond to treatment with pegylated interferon and ribavirin, the response rate in people coinfected with HIV and hepatitis C is much lower.

If clearance of hepatitis C is not possible, then treatment should have the aim of normalising liver function, reducing the inflammation in your liver caused by hepatitis C, and the prevention of further damage to the liver.

If you have very advanced HIV disease the aim of hepatitis C treatment is likely to be different and focus on improving your tolerance of anti-HIV drugs, improving liver function, reducing your risk of death from liver problems, and improving your quality of life.

Side-effects of hepatitis C treatment

The side-effects of hepatitis C treatment can be very severe, though they tend to lessen as treatment goes on.

Side-effects include high temperatures, joint pain, weight loss, feeling sick, and depression. Depression is particularly common in people taking alpha or peg-interferon and you may be offered antidepressants if you are taking this drug. There is also some evidence that anti-hepatitis C treatment can cause eye problems, and you should tell your doctor immediately if you experience any problems with your vision.

Other major side-effects of alpha interferon include blood abnormalities such as a low white blood cell (neutropenia), and/or a low platelet count (thrombocytopenia).

If you are taking ribavirin you should not take it with the anti-HIV drugs ddI, d4T or tenofovir because of the risk of the very serious side-effects, such as pancreatitis and lactic acidosis.

Which infection to treat first - HIV or hepatitis C?

The British HIV Association recommends that the infection that is the greatest threat to your health should be treated first.

If you have a good CD4 cell count and are not becoming ill because of HIV, then you should be offered the choice of receiving treatment for hepatitis C before you start anti-HIV treatments.

However, if your CD4 cell count is low (below 200), falling rapidly, or if you are becoming ill because of HIV, then you should start antiretroviral therapy first.

Hepatitis C drugs in the pipeline

Many doctors are optimistic that much better drugs will be available for hepatitis C in the future. These include hepatitis C protease inhibitors. However, it could be many years before these drugs are available.

If you are going to take treatment for hepatitis C, then you might want to consider joining a clinical trial, if there's one available. This means that you will be monitored more frequently and may receive newer treatments.

Liver transplants

Liver transplants can be successful in people with HIV. An increasing number have been performed on people who are coinfected with HIV and hepatitis B or C.

You are most likely to have a successful liver transplant if you have cirrhosis and HIV has not done too much damage to your immune system or you have responded well to antiretroviral therapy.

26 Hepatitis A

Hepatitis A can cause a short-term (or acute) illness, which normally last ten to 14 days. It has no long-term, or chronic phase. You can normally expect to get better without any special treatment, and once you have had hepatitis A you cannot get it again.

Hepatitis A is spread by contact with infected human faeces (stools, excrement). Contamination of food, drinking water and ice cubes is a common route of transmission, but it can also be passed on during sex, particularly by rimming (oral-anal contact).

You might be sick for longer because of hepatitis A if you have HIV, and having hepatitis A may also mean that you have to stop taking your HIV drugs or other medicines for a period of time. This is because many medicines are broken down by the liver, and when the liver is inflamed because of hepatitis A, it is unable to process medicines properly, meaning that your risk of side-effects is increased.

Complementary therapies

Many people with hepatitis use complementary or alternative therapies, either as a treatment for their liver disease or to help relieve the symptoms or treatment side-effects.

As Chinese medicine becomes increasingly popular in the UK, more people with liver disease use herbal treatments such as milk thistle. But be careful. The use of complementary and alternative medicines can involve risks. Always tell your HIV/hepatitis doctor and pharmacist what other treatments, over-the-counter, complementary, or alternative you are taking.

There is no evidence from clinical trials to show that complementary and alternative treatments work. What's more, some popular herbal treatments, such as the herbal antidepressant St John's Wort can stop anti-HIV drugs working properly. Also, large doses of garlic supplements stop the protease inhibitors saquinavir (*Invirase*) working properly, and large doses of vitamin C have the same effect on the protease inhibitor indinavir.

28 Treatment networks

The British HIV Association recommends that your treatment for HIV and hepatitis B or C should involve a network of specialist doctors.

As well as your HIV consultant this should include the local hepatology team (doctors who are specialists in treating liver disease), virologists, and if appropriate, the regional transplant centre.

This may mean that you have to see several different doctors and nurses in different hospital departments (or even in different hospitals) for your HIV and hepatitis treatment and care.

There should be good communication between the doctors and departments looking after you, but if you are concerned that important information is not being passed on make sure that you tell a member of your healthcare team.

Remember, if you are not happy with the standard of HIV care you are receiving, you can change and receive your treatment and care from another HIV clinic.

Further information

Your HIV clinic should be able to offer you information and support about hepatitis. You may also find the following organisations useful:

The British Liver Trust
Portman House, 44 High Street,
Ringwood, BH24 1AG
01425 463080
www.britishlivertrust.org.uk

UK Hepatitis C Resource Centre
195 Old Kent Road, London SE1 4AG
and 276 Bath St, Glasgow G2 4JR
020 7378 5496 and 0141 353 6969
www.hepcentre.org.uk

Haemophilia Society
Chesterfield House, 385 Euston Road,
London NW1 3AU
Freephone helpline 0800 018 6068
www.haemophilia.org.uk

Birchgrove Group
(for people with haemophilia and HIV)
PO Box 9755, Solihull B92 9WA
Birchgrove1@hotmail.com

30 Summary

- The liver is a human organ that plays an important part in processing drugs.
- Hepatitis B and hepatitis C are serious viral infections that affect the liver.
- You should be tested for hepatitis B and hepatitis C.
- Coinfection with HIV and hepatitis B or hepatitis C (or both) is quite common.
- Hepatitis B can make you ill in both the short and long-term.
- Treatments are available for hepatitis B, some of which also work against HIV.
- Hepatitis C can cause serious long-term health problems and is a major cause of illness and death in people with HIV.
- Treatments are available for hepatitis C, and treatment decisions should be made on an individual basis.
- When treatment is offered it should consist of a combination of pegylated interferon and ribavirin.
- Vaccinations are available for hepatitis A and B and everybody who is HIV-positive should receive them.

Glossary

acute A recebtly developed condition

anaemia A shortage or change in the function of red blood cells. These carry oxygen to the cells in the body.

antibody Protein substance produced by the immune system in response to a foreign organism.

antigen Something the immune system can recognise as foreign and attack.

antiretroviral A substance that acts against retroviruses such as HIV.

antiviral A drug that acts against viruses

biopsy A small sample of tissue that can be examined for signs of disease

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

cholesterol A waxy substance, mostly made by the body and used to produce steroid hormones.

chronic A long-term condition.

clinical trial A research study involving participants, usually to find out how well a new drug or treatment works in people and how safe it is.

diabetes A condition characterised by raised concentrations of sugar in the blood, due to problems with the production or action of insulin.

genotype The genetic make-up of an organism

haemophilia An inherited condition, characterised by an inability of the blood to clot and to bleed profusely from even minor cuts and injuries.

hepatitis Inflammation of the liver

insulin A hormone produced by the pancreas that tends to lower blood sugar levels.

jaundice A yellowing of the skin and whites of the eyes associated with liver and gall bladder problems.

liver The organ involved in digestion of food and excretion of waste products from the body

metabolism The mechanisms which sustain life, turning sugar and fat into energy.

nausea Feeling sick.

neutropenia A shortage of neutrophilis, immune cells in the blood which can attack bacteria and fungal infections.

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

pancreas A glandular organ situated behind the stomach that secretes insulin and digestive enzymes.

pancreatitis A condition of the pancreas causing severe abdominal pain, shock and collapse, which can be fatal.

protease inhibitor Family of antiretrovirals which targets the protease enzyme.

seroconversion The time when a person's antibody status changes from negative to positive.

strain A variant characterised by a specific genotype.

toxicity The extent of ways in which a drug poisons the body.

transaminase An enzyme that can be measured in a blood sample that indicates the health of the liver.

tumour Uncontrolled new tissue growth, in which cells multiply rapidly.

undetectable viral load A level of viral load that is too low to be picked up by the particular viral load test being used.

vaccine A substance that contains components from an infectious organism. By stimulating an immune response (but not disease), it protects from subsequent infection by that organism.

viral load Measurement of the amount of virus in the sample.

virus A microscopic germ that reproduces within the living cells of an organism it infects.

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The Sexual Healthline

from the Department of Health

telephone 0800 567123

opening hours daily, 24 hours

Terrence Higgins Trust Helpline

telephone 0845 1221 200

opening hours Monday-Friday, 10am-10pm
Saturday & Sunday, 12noon-6pm

HIV i-Base Treatment Phoneline

telephone 0808 800 6013

opening hours Monday-Wednesday, 12pm-4pm

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