

HIV and AIDS



HIV and AIDS are not the same thing and people who get HIV infection do not automatically develop AIDS. In fact, due to advances in treatment, very few people in the UK with HIV go on to develop AIDS. Preventing HIV by having safer sex and avoiding the sharing of needles is key, but if you develop HIV infection, early diagnosis and treatment are life-saving.

What is HIV?

HIV stands for human immunodeficiency virus

This is a virus in the group of viruses called retroviruses. HIV destroys cells in the body, called CD4 T cells. CD4 T cells are a type of white blood cell (a lymphocyte). These are important cells involved in protecting the body against various bacteria, viruses and other germs. HIV actually multiplies within CD4 cells. HIV cannot be destroyed by white blood cells, as it keeps on changing its outer coat, so protecting itself.

HIV symptoms

When you first become infected with HIV it is known as the primary infection. The three most common symptoms (sometimes known as the classic triad) are:

- Sore throat.

- High temperature (fever).
- A blotchy red rash.

About 8 in 10 people develop symptoms at this time. Other symptoms can include feeling sick, diarrhoea, swollen glands, headache, tiredness and general aches and pains. The symptoms can last up to three weeks and are often just thought of as flu or a mild viral illness.

After any primary infection settles, you can remain without any symptoms for several years. Early testing and treatment have revolutionised our concept of HIV infection which is now considered a long-term disease (see 'What is the outlook?', below).

Even without treatment, there are often no symptoms for a long time (often up to ten years) and many people do not realise that they are even infected. However, the virus continues to multiply, the number of CD4 T cells tends to gradually fall and you can pass on the virus to others. During this time some people with HIV who are otherwise well may develop persistent swollen lymph glands (persistent generalised lymphadenopathy) or night sweats.

In time you may start to develop problems such as repeated mouth ulcers, repeated herpes or shingles infections, or a skin condition called seborrhoeic dermatitis, caused by a yeast. Old tuberculosis (TB) infection may reactivate in some cases even before AIDS develops, especially in people in the developing world. Other symptoms of HIV that may occur before AIDS develops include diarrhoea, skin rashes, tiredness and loss of weight.

How is HIV transmitted?

Sexual transmission

This is the most common way to transmit HIV. In 2016, it accounted for more than 9 in 10 new confirmed cases in the UK. Semen, vaginal secretions and blood from an infected person contain HIV. The virus can enter the body through the lining of the vagina, vulva, penis, rectum or mouth during sex.

Having vaginal or anal sex with a sexual partner infected with HIV is the most common route. Oral sex carries a much lower risk. However, this can increase if you have a condition affecting the defence barriers of the mouth, such as ulcers, bleeding or damaged gums or a sore throat. You cannot be infected with HIV by coming into contact with the saliva of an infected person (for example, through

kissing or coming into contact with spit). HIV is not passed on by coughing or sneezing.

Needle sharing

HIV (and other viruses such as hepatitis B and hepatitis C) can be passed on by people who are dependent on injectable drugs and share needles, syringes and other injecting equipment which is contaminated with infected blood. However, needle-exchange services run by hospitals, clinics and drug dependency units and the more ready availability of medicines taken by mouth (such as methadone) have drastically reduced needle-sharing as a source of infection.

Infected blood

In the past, quite a number of cases occurred from infected blood transfusions and other blood products. This is now rare in the UK, as since 1985 all blood products are checked for HIV before being used. It is still a significant problem in developing countries.

Accidental needlestick injuries

There have been no cases of HIV infection from needlestick injuries in a healthcare setting in the UK since 1999. HIV infection from a needlestick injury outside of a healthcare setting has never been recorded anywhere in the world.

From mother to child

HIV can be passed to an unborn child from an HIV-positive mother. However, with appropriate treatment the risk of transmission of HIV from mother to baby can be reduced to less than 1 in 100.

This means that, with appropriate treatment, the vast majority of babies born to HIV-positive mothers will not have HIV. Achieving this depends on detecting HIV before pregnancy, or, in early pregnancy, when antiretroviral medicines (usually referred to as antiretroviral therapy (ART) can be taken by the mother.

Having a caesarean section to deliver the baby reduces the risk even further. HIV can occasionally be passed to babies through breast milk during breastfeeding. If formula milk is available, mothers with HIV are encouraged not to breastfeed.

To become infected with HIV, some infected blood, semen or vaginal secretions would have to get into your body.

Note: you cannot catch HIV from ordinary contact with someone with HIV, such as hugging, shaking hands or touching, or from sharing food, towels, utensils, swimming pools or telephones.

People with HIV can pass the virus on to others whether or not they have any symptoms, unless they have an 'undetectable viral load' as a result of treatment.

How common is HIV?

The number of new people diagnosed with HIV in the UK is currently declining. In 2018 there were 4,453 new diagnoses of HIV in the UK. This had reduced from 6,278 in 2014. In the same year, there were 103,800 people living with HIV in the UK. 97% of those diagnosed were on treatment.

There are many more people with HIV in England than in the other countries of the UK, and the highest proportion of these are in London. In England, the rates of new diagnoses of HIV have fallen from 2,356 in 2012, to 754 in 2021. 6% of people diagnosed with HIV in England have AIDS at the time of diagnosis.

Of these numbers, the vast majority of HIV infection was acquired through sexual contact. In 2021 in England, of those living with HIV, broadly equal numbers were acquired through heterosexual sex and through sex between men. A small minority of cases were acquired through drug use and infected needles, passing from mother to child during childbirth, or through infected blood products. See the link in the further reading section at the bottom of the article for exact numbers.

According to the Terrence Higgins Trust, around 5,000 people have HIV but have not been diagnosed and are unaware.

HIV is much more common in some parts of the world. Globally, the World Health Organization (WHO) estimates that almost 21 million people are on treatment for HIV.

What tests are done?

How do I get tested for HIV?

Most sexual health clinics offer a rapid blood test for HIV and can give results within thirty minutes. Even if rapid testing is not available, the results are usually back within a week. Modern tests will pick up the infection a month after first being infected (as opposed to three months with the older tests).

GPs can also arrange blood tests. The result will go on your health record but negative results are no longer considered important by organisations such as insurance and loan companies. It is recommended that all men who have sex with men should be tested every year. They should be tested more often if they:

- Have anal sex without a condom.
- Have multiple partners.
- Have been diagnosed with another sexually transmitted infection (STI).
- Develop symptoms of primary or late-stage HIV.

It became legal to sell HIV home testing kits in the UK in April 2014. However, if using a self-testing kit, make sure it carries the CE (Conformité Européenne) mark indicating it is safe for home use. In the UK, you can obtain a self-testing kit free in some areas. Another option is to use a postal test where you send your sample off in the post for testing. A free test in this way can be arranged via charities such as the Terrence Higgins Trust.

Assessing the extent of disease

If you are confirmed to have HIV, your doctor may do a blood test to check the amount of virus in your blood (the viral load) and the number of CD4 T cells in your blood. These tests may be done from time to time to assess how far the disease has progressed (and the response to treatment).

Tests to diagnose AIDS-related conditions

There is no test for AIDS but you may have a range of other tests to detect opportunistic infections or other AIDS-related conditions. These will depend on the type of symptoms that you develop.

How can infection with HIV be prevented?

There is no vaccine to prevent HIV. Development of one is proving to be very difficult, as the HIV virus is constantly mutating and changing. Therefore, the main way to prevent infection by HIV is to avoid activities that put you at risk, such as sharing needles and having sex without a condom.

Some cases of HIV can be prevented in other ways - for example:

- If you are an injecting drug user then do not share needles or other injecting equipment. If available, use local needle exchange schemes.

- If you think you have been exposed to HIV through sharing needles or sexual contact, you should contact your sexual health clinic as soon as possible. If it is thought that there is a high risk that you may pick up the infection, you will be offered a course of anti-HIV medicines. These are most effective when taken as soon as possible after exposure and certainly within 72 hours. This is called 'post-exposure prophylaxis'.
- Healthcare workers should follow local guidelines to reduce the chance of needlestick injury. If you do have an injury, see your occupational health specialist urgently. A course of anti-HIV medicines such as post-exposure prophylaxis (PEP) started as soon as possible and no later than 72 hours after the injury may prevent infection with HIV developing.
- If you are pregnant and have HIV infection then you need special antenatal care to reduce the risk of passing on the virus to your baby. HIV treatments can be taken during pregnancy. An HIV test is offered to all pregnant women in the UK.

How does HIV cause problems in the body?

Once HIV is in your body the virus attaches to and gets into the CD4 T cells. The virus then uses the genetic code inside the cell (the DNA) to make copies of itself (replicate). As new virus particles break out of a CD4 T cell, the cell dies. The new virus particles then attach and enter new CD4 T cells and so the process continues. Millions of new virus particles are made in CD4 T cells each day and millions of CD4 T cells die each day.

To counter the virus destruction, the body continues to make new CD4 T cells each day. However, over time, the virus usually wins and the number of CD4 T cells gradually falls (usually over several years). Once the level of CD4 T cells goes below a certain level, your immune system is weakened.

If your immune system is severely weakened by HIV infection, you are likely to develop various opportunistic infections. These are infections caused by germs which are commonly around us. You would not normally develop infections from these germs if you have a healthy immune system. A low level of CD4 T cells also increases the risk of developing other conditions which the immune system helps to prevent, such as certain cancers.

HIV treatment

Although there is still no cure for HIV, treatment is now effective at allowing people with HIV to live their lives as normally as possible. Since the introduction of medicines to treat HIV, the death rates from AIDS have reduced dramatically. With effective treatment, very few people go on to develop AIDS.

It is not uncommon for people with HIV to feel low or even depressed, especially soon after the diagnosis is made. If you have any feelings of depression then you should speak with your doctor. Read our feature on how to cope with a HIV diagnosis.

Treatment to tackle the virus itself

HIV is now a treatable medical condition and most people with the virus remain fit and well on treatment. Since the 1990s a number of medicines have been developed called antiretroviral medicines. Antiretroviral medicines work against HIV infection by slowing down the copying (replication) of the virus in the body. Newer medicines are more effective than medicines used in the past.

There are six different types of antiretroviral medicines available to prescribe in the UK. The following are examples of the medicines used but it is not an exhaustive list: abacavir, didanosine, emtricitabine, lamivudine, stavudine, tenofovir, efavirenz, etravirine, nevirapine, rilpivirine, atazanavir, darunavir, fosamprenavir, indinavir, lopinavir, ritonavir, saquinavir, tipranavir, raltegravir, enfuvirtide and maraviroc.

A combination treatment, containing cabotegravir and rilpivirine, which can be given as a tablet or by two-monthly injection, has now also been recommended by the National Institute for Health and Care Excellence (NICE) for adults with HIV who have suppression of the virus on existing treatment and have no evidence that their condition is resistant to similar medicines.

These medicines work in different ways but all stop the HIV from copying (replicating) itself. This method of treatment is called antiretroviral therapy (ART). You may still occasionally see this referred to as highly active antiretroviral therapy (HAART). There is also a medicine called cobicistat which increases the action of antiretrovirals but does not have any effect on the virus itself.

Taking three or more antiretroviral medicines/antiretroviral therapies at the same time, each attacking HIV at different points in its cycle of replication, is more effective than one or two medicines alone. Taking a combination of different

medicines also reduces the risk that the virus will become resistant to any individual medicine. In 2008 the first one pill a day treatment was launched. Each pill contains three different medicines. This is popular, as it is convenient to take and has few side-effects.

The choice of medicines is considered and chosen for each individual patient. The treatment for HIV can be complicated but the majority of people diagnosed with HIV now take ART in a combination format just once or twice a day. A team of healthcare professionals is usually involved in looking after you and giving you your treatment.

The aim of treatment is to reduce the viral load to low levels. In most people who are treated with ART, the viral load reduces to very low levels and the number of CD4 T cells rises. This means your immune system is no longer as weakened and you are not likely to develop opportunistic infections. However, it is vital to take the medication regularly and exactly as prescribed to maintain success and to help prevent the virus from becoming resistant to the medicines.

There is a growing body of evidence that taking ART reduces the risk of passing the HIV infection on to others. It is possible for it reduce the viral load so well that the virus can't be transmitted, even when having sex without a condom.

When is treatment with antiretroviral medicines started?

The British HIV Association (BHIVA) recommends that anyone with HIV who is ready to commit to treatment should start taking it as soon as possible regardless of CD4 count. Evidence shows that starting treatment as soon as possible after diagnosis offers significant benefits over delaying treatment until CD4 T cell count drops.

Treatment and prevention of infections

Wearing a condom when having sex is very important to protect against other STIs, including herpes and hepatitis. People with HIV are usually vaccinated against hepatitis A and hepatitis B, influenza and the pneumococcus (a common cause of pneumonia).

Opportunistic infections are usually treated with antibiotics, antifungals or anti-TB medicines, depending on which infection develops. Even if you have not developed an infection, once the CD4 T cells fall to a low level, you will normally be

advised to take a regular dose of one or more antibiotics or other medicines to prevent certain opportunistic infections from developing.

What is AIDS?

AIDS stands for acquired immunodeficiency syndrome

This is a term which covers the range of infections and illnesses which can result from a weakened immune system caused by HIV. Because antiretroviral therapy (ART) has altered the way we think about the condition, the term 'late-stage HIV' is being increasingly used instead of AIDS.

AIDS symptoms

The term AIDS is used to describe the most advanced stages of HIV infection and is being overtaken by the term late-stage HIV. People who are treated early in an HIV infection do not develop this stage. AIDS is a general term which includes various diseases which can result from a very weakened immune system.

Typically, a person with AIDS has:

- A very low level of CD4 T cells (around 200 cells per cubic millimetre of blood or below); and/or
- One or more opportunistic infections such as *Pneumocystis jirovecii* pneumonia, severe thrush in the vagina or mouth, fungal infections, TB, *Mycobacterium avium* complex, toxoplasmosis, cytomegalovirus, etc. These infections can cause a range of symptoms including sweats, fever, cough, diarrhoea, weight loss and generally feeling unwell.

In addition, people with AIDS have an increased risk of developing other conditions such as:

- Certain cancers. Kaposi's sarcoma is a cancer which is usually only seen in people with AIDS. There is also an increased risk of developing cancer of the neck of the womb (cervix) and lymphoma.
- An AIDS-related brain illness such as AIDS dementia (HIV encephalopathy).
- A severe body wasting syndrome.

Many different symptoms can develop from the above conditions. Children with AIDS can develop the same opportunistic infections and problems experienced by adults. In addition, they may also develop severe common infections of childhood such as severe ear infections or severe tonsillitis.

AIDS is unlikely to develop in people who have been treated in the early stages of HIV infection. Even in people who do not receive treatment, there is usually a time lag of several years between first being infected with HIV and then developing infections and other AIDS-related problems. This is because it usually takes several years for the number of CD4 T cells to reduce to a level where your immune system is weakened.

When taking medicines for HIV and AIDS

Some important considerations are:

- Adherence – taking your medicines exactly as prescribed.
- What to do if you miss a dose.
- Dietary restrictions.
- Regular blood tests.
- Taking other medicines.

Adherence – taking your medicines exactly as prescribed

It is vital to take the medication regularly and exactly as prescribed, to maintain success and to help to prevent the virus from becoming resistant to the medicines. Even if you miss one or two doses, the virus can become resistant to treatment.

What to do if you miss a dose

If you forget to take a dose, take your medicines as soon as you remember. However, if you remember just as you are about to take your next dose, do not take two doses at the same time to make up for the missed dose. If in doubt, speak with your pharmacist or doctor.

If you are regularly forgetting to take your medicine, talk with your doctor or pharmacist; there may be other combination medicines that are more suitable for you.

Regular blood tests

You are likely to have regular blood tests to monitor how well these medicines are working. You will usually have a CD4 T-cell count and a viral load blood test before you start treatment. This is called a baseline measurement. After starting treatment, your doctor will usually measure your viral load and CD4 T-cell count

after one month and then about every three months thereafter. If your treatment is effective then your viral load will decrease and your CD4 T cells will increase.

You may need more blood tests if you feel unwell or develop symptoms such as an infection.

Taking other medicines

Quite a few medicines that you may be prescribed for other conditions or that you can buy from pharmacies or supermarkets can interfere with HIV medicines. This includes herbal medicines. Always ask your pharmacist or doctor before taking any new medicines. For more information see the leaflet that came with your medicine.

What are the possible side-effects?

As with other powerful medicines, antiretroviral medicines can cause side-effects in some cases. In addition, some of these medicines can react with other commonly used medications. It may be necessary to change an initial combination of medicines to a different combination because of problems with side-effects, reactions or resistance of the virus to an initial medicine. Therefore, different people with HIV can often take different combinations of medicines.

The side-effects for most HIV medicines are usually mild and often go away after a few weeks. Common side-effects include feeling sick (nausea), being sick (vomiting) and headache. If these side-effects do not go away, your doctor can prescribe some other medicines to help with these problems. If this does not help, your doctor may change your medicines.

Other less common side-effects include:

- Damage to the liver, kidneys or pancreas.
- Skin rash.
- Dry skin, nail problems, hair loss.
- Damage to the nerves (peripheral neuropathy).
- Fat loss (lipoatrophy).
- Fat accumulation.
- Increased blood-sugar levels and risk of type 2 diabetes.

See the leaflet that comes with your particular brand for a full list of possible side-effects and cautions.

What is the usual length of treatment?

Once you have started treatment you will need to take these medicines for the rest of your life. This is in order to keep your immune system healthy and to prevent you from getting infections.

How well do medicines for HIV and AIDS work?

Although these medicines do not cure HIV, they slow the progression of HIV to AIDS. They are effective at allowing people with HIV to live their lives as normally as possible. Since the introduction of medicines to treat HIV, the death rates from AIDS have reduced dramatically. Newer medicines are more effective than medicines used in the past.

What happens if I do not take HIV medicines?

If you have HIV and do not take HIV medicines, eventually – typically, over a number of years – your viral load increases and the number of CD4 T cells decreases significantly. Your immune system becomes very weak. This means that you are open to getting infections and your body is unable to fight the infection. These infections can become serious and overwhelming for your body and you are likely to die.

What is the outlook?

People with HIV who are diagnosed in good time can expect to lead a near-normal lifespan. A recent study to predict the life expectancy of people infected with HIV found that a 20-year-old person with a good CD4 count a year after starting ART could expect to live to 78.

Those who are diagnosed late with a lower CD4 count, or those who do not respond well to the first year of ART, are more likely to have a poor outlook (prognosis). However, even when someone has been diagnosed with a low CD4 count, treatment can effectively bring them back to a good level of health. Life expectancy also depends on other factors such as smoking, alcohol intake and use of other medicines.

In short - for people who have access to modern medicines, the outlook has improved greatly in recent years.