

Hepatitis B



A large, 3D, red letter 'B' is centered within a white circle that has a thin red outline. The letter 'B' is rendered with a slight shadow and depth, giving it a three-dimensional appearance. The background of the entire page is a solid red color.



Pioneering liver health



Hepatitis B

This publication is for adults diagnosed with hepatitis B and for those who would like to better understand the condition.

The British Liver Trust works to:

- support people with all kinds of liver disease
- improve knowledge and understanding of the liver and related health issues
- encourage and fund research into new treatments
- lobby for better services.

All our publications are reviewed by medical specialists and people living with liver disease. Our website provides information on all forms of adult liver disease and our Helpline gives advice and support on enquiries about liver health. Call the Helpline on **0800 652 7330**, general enquiries on **01425 481320**, or visit **www.britishlivertrust.org.uk**

For the latest updates to this information, please refer to our website **www.britishlivertrust.org.uk**

A list of reference sources for this information is available on our website or by contacting **info@britishlivertrust.org.uk**

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The liver

Your liver is your body's 'factory' carrying out hundreds of jobs that are vital to life. It is able to repair itself (even renewing large sections) however, the liver's ability to repair itself is limited and continuous injury can lead to permanent scarring. Your liver is very tough and able to function even when most of it is damaged, which means you may not notice any symptoms for some time.

Your liver has around 500 functions.

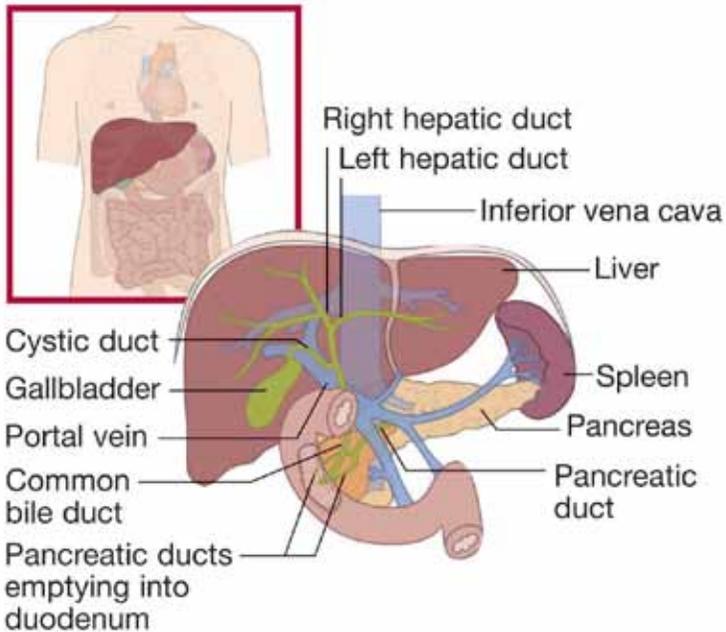
Importantly it:

- filters and cleans the blood
- fights infections and disease
- destroys and deals with poisons and drugs
- makes vital proteins which make your blood clot when you cut yourself
- produces bile to help break down food in the gut
- processes food once it has been digested
- stores energy that can be used rapidly when the body needs it most
- regulates fat breakdown and distribution in the bloodstream
- stores sugars, vitamins and minerals, including iron
- gets rid of waste substances from the body
- produces and maintains the balance of hormones
- produces chemicals – enzymes and other proteins – responsible for most of the chemical reactions in the body, for example, repairing tissue
- repairs damage and renews itself.

How liver disease develops

Your liver responds to injury by becoming inflamed. Any inflammation of the liver is known as hepatitis, whatever its cause. Sudden inflammation of the liver is known as acute hepatitis. Where inflammation of the liver lasts longer than six months, the condition is known as chronic hepatitis.

Inflammation is part of the process of repairing damaged tissue. In a similar way to a scab forming over a skin wound, a temporary fibrous 'scaffold' forms while liver cells regenerate. If your liver is repeatedly injured, new liver cells cannot regenerate fast enough and the fibrous tissue remains as a scar. This is called fibrosis and can take a variable amount of time to develop.

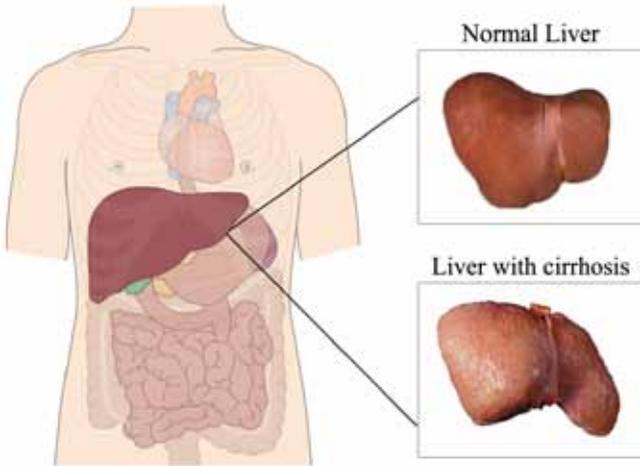


When fibrosis is present, the liver may be able to keep functioning quite well. Removing or treating the cause of the inflammation may reverse some or all of the fibrosis and prevent further liver damage.

If damage continues, the inflammation and fibrosis can spread throughout your liver, disrupting its shape and affecting the working capacity of liver cells. This is known as **compensated** cirrhosis. Even at this stage, people can have no signs or symptoms.

The scar tissue in cirrhosis interrupts the blood flow through the liver. As a result the blood pressure in the veins around your gut is increased and may result in bleeding. Scar tissue in cirrhosis is difficult to remove and may be permanent. However, further progression can be halted and your cirrhosis stabilised, if the cause of the liver damage is removed.

Cirrhosis increases your risk of liver cancer and can lead to liver failure. If damage to your liver continues, it will become unable to function sufficiently **(decompensated)** and start to fail; this is sometimes referred to as end stage liver disease. At this stage chemicals and waste products can build up in the body, commonly causing jaundice, ascites and hepatic encephalopathy. In the final stages of liver disease the build-up of waste products may lead to multiple organ failure and loss of life.



What is hepatitis B?

Hepatitis B, sometimes called hep B or HBV, is a virus carried in the blood and body fluids which infects and damages the liver. A virus is a microscopic particle that needs to get inside living cells in order to reproduce (replicate)¹.

What is hepatitis?

Any inflammation of the liver is known as hepatitis. Hepatitis can be caused by a number of things including:

- drinking too much alcohol (the most common cause of liver damage)
- a virus, such as hepatitis B
- the body's own immune system – a liver disease called autoimmune hepatitis
- fatty infiltrations
- the side effects of some drugs and chemicals.

There are a number of viruses that infect the liver. The best known are hepatitis A, B, C, D and E. The ways in which they are transmitted (spread or passed on), how they cause liver damage and the effects they can have on your health are different. Hepatitis B, C, D and E can cause chronic or long term illness.

Hepatitis B is very infectious, 50 – 100 times more infectious than HIV². However, there is a simple test to find out whether you have the virus and an effective vaccine is available to protect you from it.

Where is hepatitis B common?

Hepatitis B is the most widespread form of hepatitis worldwide. It is common in South-East Asia, the Indian subcontinent, the Middle and Far East, Southern Europe³ and Africa².

The World Health Organisation estimates that one third of the world's population has been infected at some time and that there are approximately 350 million people who are chronically infected (when the infection lasts longer than six months)². In Europe, there are estimated to be one million people infected every year⁴.

In the UK, approximately one in 350 people are thought to be chronically infected with hepatitis B⁵. In some inner-city areas, with a high percentage of people from parts of the world where the virus is common, as many as one in 60 pregnant women may be infected⁵.

How is hepatitis B passed on?

Hepatitis B is known as a 'blood-borne virus' (BBV) and can be spread by blood to blood contact². However, hepatitis B is also present in other body fluids such as saliva, semen and vaginal fluid. These can be a source of infection, particularly if they have become contaminated with blood^{2,6}.

The highest amounts of the virus are present in blood. Some people transmit hepatitis B more easily than others because they have more of the virus in their bloodstream. Even a tiny amount of blood from someone who has the virus can

pass on the infection if it gets into your bloodstream, through an open wound, a cut or scratch, or from a contaminated needle.

The virus is able to survive outside the body for at least a week². This means objects and surfaces contaminated with dried blood also pose a risk.

Sex – High risk if unprotected

Sexually active individuals, who have multiple partners and do not use condoms, have a high risk of getting hepatitis B. Hepatitis B can be transmitted by having penetrative, anal or oral sex with an infected person if a condom or dental dam is not used².

If you have a reason to believe you have recently been exposed to the virus, please see the ‘Hepatitis B immunoglobulin (HBIG)’ section, page 25.

Mother to baby – High risk unless treated

Since April 2000⁷ all pregnant women in the UK are given the option to be screened for hepatitis B. Pregnant women with high levels of the virus in their blood may be offered additional treatment including antiviral therapy.

Transmission to the unborn baby does not occur in the uterus (before birth). However, it can be transmitted to the baby during delivery, as the baby is exposed to the mother’s blood in the birth canal. Infection at birth is called ‘perinatal transmission’ and is the most common way the virus is spread globally.

If you already know you have hepatitis B, or your doctor tells you that you have hepatitis B, it is important for your baby to receive an injection of antibodies to the virus and a vaccination at birth as this helps to prevent the infection being passed on in the majority of cases. However, your baby will not be fully protected unless they receive the full course of vaccinations², see page 22.

Although small amounts of the virus have been found in breast milk, there have been no reports of transmission through breast feeding⁶. Taking good care of your nipples to avoid cracking and bleeding, and vaccination of your new-born baby, will prevent any further risk.

Injecting drugs (including steroids) – High risk if you share needles, syringes and other drug ‘works’

You have a high risk of infection if you inject steroids, drugs or share any of the ‘works’ – including needles, syringes, filters, spoons, water or cups. All of these may have a sufficient amount of blood on them to pass on the infection².

If you have been diagnosed with hepatitis B it is important you do not share any drug 'works' as you have a high risk of infecting others.

Travel – Medium to high risk if not vaccinated

More than 12% of cases in the UK are thought to result from people travelling to and working in countries where there is increased risk of hepatitis B infection⁸. Around 40% of these cases are due to unprotected sexual activity⁸.

Vaccination is strongly recommended for all travellers to countries where hepatitis B is common, even if you are travelling to a country where you or your parents were born. Being born in a country where hepatitis B is common does not mean you are naturally protected from infection.

People that intend to stay in an area where hepatitis B is common, particularly if they are likely to need medical treatment, should get vaccinated.

There have been no known reported cases, worldwide, of hepatitis B being transmitted through insect or flea bites⁹.

If you think you might have been exposed to hepatitis B, see your doctor immediately.

Family contact – Medium risk if not vaccinated

The risk of infection to non-sexual family members (i.e. parents or children) is very small. However, the risk increases if the first family member to become infected is an infant or child as they are less able to take care with blood and bodily fluids.

You are advised to avoid sharing toiletry items such as toothbrushes, razors, nail scissors, tweezers and hair clippers as there may be a small amount of blood left on them⁶. It is important to maintain a high level of cleanliness of shared facilities, such as the toilet, especially for females during menstruation.

It is fine to wash your everyday clothing along with those belonging to other family members as long as a hot cycle (at least 60 degrees) and detergent are used (biological or non-biological)¹⁰. If you know that your clothes have blood or other bodily fluids on them that may contain the virus, as a precaution, you should wash these separately.

Work and environment – Medium risk in certain professions

Certain jobs can put people at risk from hepatitis because they may involve contact with infectious body fluids². These include:

- healthcare workers
- other workers who might come into contact with body fluids including morticians, sewage workers, those in emergency services, barbers or hairdressers, tattooists, acupuncturists and people in the fitness industry
- people who might have injuries and come into contact with others with injuries, such as those involved in contact sports or in the building industry
- foster carers and people who live or work in accommodation for people with severe learning disabilities
- prison staff and prison inmates.

People who may be at increased risk because of their work or environment should be vaccinated against hepatitis B.

Sharing personal items – Low to medium risk

Personal items such as toothbrushes, razors, nail scissors, tweezers and hair clippers may have traces of contaminated blood on them sufficient to pass on the infection. You should avoid sharing these items².

Social contact – Low risk

Hepatitis B is not passed on through social contact, for example, holding hands, hugging, sharing towels, cups, plates or cooking utensils^{6,11}. However, if your child has hepatitis B the risk of transmission via social contact is greater as they are less likely to understand how to prevent the spread of infection, or why preventing further infection is important.

Although hepatitis B can be found in bodily fluids it is not known to be transmitted through sneezing or coughing.

Blood transfusions and medical treatment – Very low risk in the UK

All blood donations in the UK have been tested for hepatitis B since 1972 and screening of blood products was introduced in 1984, which has all but eliminated these as a source of infection. Anyone who has regular transfusions or receives frequent and/or large volumes of blood components are advised to be vaccinated

against hepatitis B before the start of treatment². In countries where blood is not tested, blood transfusions may still be a source of infection.

The virus can also be passed on from medical and dental treatment in countries where equipment is not sterilised properly².

Acupuncture, tattoos and body piercing – Very low risk in professional parlours

Having a tattoo, body-piercing or even acupuncture can pose a risk if unsterile equipment is used². The best way to protect yourself is to ensure that disposable needles are used and that they come straight out of a sterile packet.

If you have been diagnosed with hepatitis B and plan to have any of the above procedures, you should inform the person performing the procedure so that they can take precautions to protect themselves and others from infection.

Other body fluids – Very low risk

Traces of hepatitis B have been found in sweat, tears, breast milk and urine but transmission from these fluids has not been reported.

Hepatitis B has also been found in faeces (stools) and vomit (sick) however, unless they are visibly contaminated with blood, the risk of contracting hepatitis B from faeces and vomit is very low.

Co-infection

Co-infection is when a person is infected with more than one virus at the same time. Other blood borne viruses, such as HIV and hepatitis C, share similar routes of infection to hepatitis B and so some people may be infected with another virus as well.

If you have been diagnosed with hepatitis B, you should be tested for other forms of viral hepatitis and HIV. Having more than one virus can affect treatment options and outcomes and can speed up the process of liver damage¹².

A few people with hepatitis B will also have another virus called the delta virus, or hepatitis D. Hepatitis D needs the hepatitis B virus to survive² which means that it is only possible to have hepatitis D if you have hepatitis B.

Hepatitis D is also passed on in blood and is most common in injecting drug users, though it is not common in the UK overall. Being infected with both viruses can lead to more serious liver disease.

If you are diagnosed with hepatitis B, vaccination against hepatitis A is recommended as this can be much more serious in people who already have another liver condition.

The trust has publications on hepatitis A, C and E containing further information.

What are the symptoms of hepatitis B?

After the virus enters your body there may be no symptoms for one to six months. This is known as the incubation period¹².

Like with most liver diseases, many people with hepatitis B never have any symptoms and, as people may not know they are infected, they can pass on the virus to others without realising.

Symptoms

Some people may only have a mild illness and feel they are not ill enough to see a doctor. There are many general symptoms, some of which may be confused with flu²:

- tiredness
- aches and pains
- fever
- loss of appetite
- nausea (feeling sick) and sickness
- stomach ache
- some people find they can't tolerate cigarettes or alcohol.

A few people develop a serious illness and need to be looked after in hospital.

More severe symptoms may include:

- diarrhoea
- bowel motions may become pale
- urine may turn dark
- jaundice, a condition in which the whites of the eyes go yellow and in more severe cases the skin also turns yellow (see Useful words section, page 32).

What is the difference between acute and chronic hepatitis B?

Hepatitis B can cause an acute or a chronic illness.

- An acute illness is a sudden illness that lasts for a short period (less than six months).
- A chronic illness is one that lasts more than six months, possibly for the rest of your life. Sometimes symptoms may come and go.

Acute hepatitis B

It can take a while to recover from acute hepatitis B and, even though most people will feel better within a few weeks, they may still experience tiredness and lack of energy for many months². Other people may recover and 'clear' (rid) the virus from their body without ever knowing they have been infected².

Acute hepatitis B infection can be severe and a small number of people (1 in 100) develop acute liver failure (fulminant hepatitis)^{2,13}. If your symptoms change to severe vomiting, dehydration or your conscious level alters, you should go straight to your local hospital's Accident and Emergency (A&E) department for emergency treatment.

Chronic hepatitis B

Hepatitis B is called chronic when the infection lasts longer than six months². Up to one in ten people (between 5 and 10%) with acute hepatitis B may go on to have chronic hepatitis B if infected as an adult. Up to 95% of children infected will remain infected¹⁴. Many people are infected in childhood and are often not aware that they have hepatitis B. They may only find out when they develop future complications caused by the virus. The earlier you are infected in life, the higher your chance of developing a chronic illness².

Some people who are chronically infected with hepatitis B are known as ‘inactive’ carriers. This means they have the hepatitis B virus in their blood and can pass it on to others, but the virus is not causing their liver any consistent damage, their viral levels are persistently low and they do not require any medication⁶.

Sometimes the virus can reactivate, it is therefore important for inactive carriers to be monitored regularly by the professional managing their hepatitis B as there is still an increased risk of cirrhosis and liver cancer¹⁵. Some inactive carriers naturally clear the virus from their body, but this can take many years¹¹.

If tests (see page 15) show that levels of the virus in your blood are high and affecting your liver, then it is likely that you have an active infection. About one in four people (25%) who have an active chronic infection develop serious liver disease², including cirrhosis. After many years a small number of them go on to develop primary liver cancer, known as hepatocellular carcinoma (HCC).

Cirrhosis

Long-term, continuous damage to the liver results in the liver becoming scarred. Irregular bumps, known as nodules, replace the smooth liver tissue and the liver becomes harder. As a result, the liver runs out of healing cells. This can lead to complete liver failure, which can be fatal without a liver transplant¹⁶.

You may not show any symptoms of liver damage until cirrhosis is quite advanced.

Liver cancer

If you have chronic hepatitis B and/or cirrhosis, you have an increased risk of developing primary liver cancer – hepatocellular carcinoma (HCC). Between three and five people out of 100 who have chronic hepatitis B infection (3-5%) go on to develop HCC each year¹⁷.

For those with hepatitis B, co-infection with hepatitis C and/or drinking alcohol can further increase the risk of developing liver cancer¹⁸.

Liver cancer initially has few symptoms. Regular ultrasound checks are recommended for those with cirrhosis to help detect any early signs of cancer and give the best chance of treatment (see “Treatment section”)¹⁷.

Testing for hepatitis B

Hepatitis B is detected by a blood test that looks for antibodies (protein substances) produced by your body's immune system to fight the virus². You can have the blood test at a GP surgery, a hospital clinic or a sexual health (genito-urinary medicine, or GUM) clinic.

It may take several weeks before you know whether your test result is positive or negative. In the time between the test and your results, you should take precautions not to transmit the virus to anyone else.

If your test result is positive (there are antibodies in your blood), your GP or other healthcare worker will refer you to a liver specialist (called a hepatologist) or a specialist in digestive diseases (a gastroenterologist) to assess how long you have had the virus and its activity (viral load).

They will carry out blood tests to screen for other infections such as hepatitis A, C, D and HIV. This is because co-infection can influence treatment options.

A number of other tests may be used to find out if the virus is affecting your liver, and the amount of damage that may be occurring. Please see below.

Assessing liver damage

Liver function tests (LFTs)

Liver function tests (LFTs) measure various chemicals in the blood made by the liver. An abnormal result indicates a problem with the liver, and may help to identify the cause. Further tests may be needed to clarify the cause of the liver problem.

As the liver performs its various functions it makes chemicals that pass into the bloodstream and bile. Various liver disorders alter the blood level of these chemicals¹⁹.

The tests are used to help diagnose liver disorders; the pattern of the blood results may help to confirm which disorder is causing the problem. For example, the levels of liver enzymes and proteins in your blood can increase during liver inflammation (hepatitis).

If you have hepatitis B, your doctor will look specifically at the level of enzymes: alanine aminotransferase (ALT), aspartate aminotransferase (AST) and gamma-glutamyl transferase (GGT).

However, having abnormal LFTs does not always mean you have liver damage. Sometimes raised LFTs can be an indication that there is a problem with another part of the body.

If you have hepatitis B your LFTs can fluctuate throughout the progression of the disease. However, they can be normal. Having normal LFTs does not mean that liver damage is not occurring and further tests may be needed.

Ultrasound scan

An ultrasound scan is a routine procedure; the same technology is used in pregnancy to examine the unborn baby. It is usually performed in the X-ray department of the hospital or in an outpatient clinic. The procedure is very safe and should not be painful, but it may take 10 to 15 minutes to complete.

You will be asked to uncover the top right half of your abdomen (below your ribs) and lie on your back. Gel will be applied to your skin which may feel slightly cold. A probe will be moved across the surface of your skin. The gel helps to make this movement easier and makes sure that sound waves can be directed through your skin as the probe passes over your liver area. Anything solid will cause the sound wave to be reflected back via the probe and will be turned into an image that can be seen on a screen. Sometimes you may be asked to move into a different position so that your liver can be clearly seen on the screen.

For further information please refer to our 'Liver disease tests explained' publication.

Liver biopsy

During a liver biopsy, a tiny piece of the liver is taken for study. This usually involves a fine hollow needle being passed through the skin into the liver and a small sample of tissue being withdrawn.

The test is usually done under local anaesthetic and most people will be allowed home later the same day, although for some it may mean an overnight stay in hospital. As the test can be uncomfortable and there is a very small risk of internal bleeding or bile leakage, a stay in bed of at least six hours after the procedure is required. Ask your doctor for more information on this.

The results of your biopsy are graded and staged according to the degree of liver inflammation and scarring.

Treatment of hepatitis B

Acute hepatitis B

During the acute phase of hepatitis B, most people do not require treatment. For the majority of people, the symptoms resolve and the person can 'clear' the infection, usually within six months, meaning they are no longer infectious; their blood will always show the hepatitis B antibodies but they should never be infected again (they become 'immune'). However, some people will find that if, in the future, they have chemotherapy the virus will reactivate. If you have had the virus, you should inform your doctor of the previous infection before you start your chemotherapy.

For a very small minority of people, there are serious symptoms from acute hepatitis B, called fulminant hepatitis. Symptoms can include collapsing, severe jaundice and swelling of your stomach. This is a rare but serious condition and a prompt liver transplant may be needed¹³.

Chronic hepatitis B

Chronic hepatitis B often requires treatment to stop or reduce the activity of the virus from damaging the liver, by limiting the replication (breeding) of the virus.

Your specialist will look at your test results, age and general health in order to recommend the appropriate treatment for you.

Not everyone will require treatment straight away. If you have low levels of the virus in your blood (a low viral load) and there is little sign of liver damage, it is likely that regular monitoring will be recommended and treatment started only if there are signs of disease progression²⁰.

The time frame before treatment is required will vary with each person; it may be several years. Once treatment is started it may need to be continued long term.

Over time, the virus can develop resistance to the treatment medications, making them less effective. If this occurs your doctors may change your medications.

To help prevent resistance to your medications it is important to take all of them as advised.

When treatment is needed, two types of drug therapy can be used; interferon or an antiviral treatment.

Interferon

This is similar to the interferon that your body's immune system produces naturally to fight infection. It is used to boost and support your immune system to mount a defence against the virus.

The form of interferon²⁰ most commonly used is 'pegylated interferon'. This needs to be injected once a week. You should be shown how to inject yourself using a technique similar to that used to treat diabetes. Interferon is given for a set length of time, lasting up to 48 weeks.

Interferon treatment cannot be used in all circumstances as treatment response is low; it depends on the strain of the virus, and its current stage. Interferon causes no resistance, but reactivation of the virus can occur once treatment has stopped. Side effects can also be greater than with antiviral treatments. However, it offers the best chance of clearing the virus completely²⁰. If you have decompensated cirrhosis you will be offered an antiviral treatment.

Antiviral treatments

There are a number of different 'antiviral' treatment regimes aimed at suppressing or destroying HBV by stopping the replication of the virus. For most, long term treatment is required.

Most treatment regimes involve either one potent drug (such as entecavir, or tenofovir) or, rarely, a combination of drugs, taken orally (such as tenofovir plus amivudine or tenofovir plus entecavir)¹⁵. In the past a drug called lamivudine was often used on its own but it has been superseded by drugs that create less resistance, and is now not frequently used as a first line therapy however, in some circumstances it may be recommended¹⁵. You should discuss treatment options with your doctor.

It is very important that once treatment is started it is taken as recommended and continued for many years. Stopping treatment for even a short period of time can lead to 'drug resistance', causing the drugs to stop working. It is therefore very important to ensure that you always have an adequate supply of tablets along with a reserve supply, in case you run out of tablets or lose your main supply. Once you have started treatment you should never stop your treatment without discussion with your doctor.

Some of these medications are being reviewed by a Government body called NICE (National Institute for Health and Clinical Excellence), which looks at their cost and clinical effectiveness. NICE has given guidance on several of the

medications, recommending how the NHS should use them for the treatment of hepatitis B, new guidelines are due to be issued in 2012.

New developments

Other medications are being investigated in clinical trials for use in combination or alone. Most of these are in tablet or capsule form and do not require injection.

Ask your specialist or medical advisor for further information about current and emerging antiviral treatments.

Will my treatment have side effects?

It is important to remember that side effects for each type of treatment vary considerably from person to person. You may not experience those listed but being aware of them will help you to recognise them if they occur.

In general interferon causes more side effects than the antiviral drugs. However, interferon is used for a short time and the antiviral drugs are taken long term.

Interferon produces side effects in many people, especially in the early stages of treatment. Some people get flu-like symptoms such as²¹:

- nausea (feeling sick)
- headaches
- fever
- tiredness
- muscle aches.

Interferon can take between four and 36 hours to cause side effects. Once you know what the side effects are for you, and at what point they occur, often you can address them. For example, flu-like symptoms can be helped by taking paracetamol.

More severe side effects for interferon may include:

- depression
- anxiety
- hypertension (high blood pressure)
- hypotension (low blood pressure).

Pregnancy and hepatitis B treatment

Family planning should always be discussed with your doctor before starting your hepatitis B treatment. If you are pregnant, or planning to become pregnant in the near future, you may be advised to delay treatment until after your baby is born¹⁵.

It is important to use effective contraception when taking interferon as there is a risk to the foetus. If you become pregnant while taking interferon it is important to talk to your doctor, as soon as possible, to discuss your treatment options.

In some people antiviral treatments may be better tolerated than interferon. However, other people may experience the following side effects^{21,22,23}:

- nausea (feeling sick)
- headaches
- fatigue
- flatulence (wind)
- diarrhoea
- dyspepsia (indigestion)
- dizziness.

People who have very bad side effects may not be able to take a full dose or a full course of treatment. It is important not to stop your treatment before you have consulted with your specialist. It is equally important to go for regular check-ups during treatment so that any side effects can be carefully monitored.

Coping with side effects

It is important to develop a good support system before starting treatment. There are many on-line or local support groups that can provide information and emotional support (visit the British Liver Trust's website to find a local support group near you).

Family and friends can also help you. Sometimes when you are feeling down it is little things like cleaning the house, making a meal or child care that can be of most benefit.

Consider the time of day that you take your medication. Ask your doctor if you can take your medication before bed so that you can sleep through the worst of

the side effects. If you feel nauseous (sick), try not to take your medication before food. Massage or relaxation techniques may help with anxiety or muscle aches. Make sure you drink plenty of fluids (without alcohol or caffeine) so that you do not become dehydrated.

Your doctor may prescribe other medications to help control some of your symptoms if they are persistent or severe.

Will the treatment work?

Treatment generally does not offer a cure, but it can help delay or prevent cirrhosis. In a small number of people taking interferon, their immune systems will be sufficiently boosted to stop the replication of the virus²⁰.

Whilst being treated with interferon your alanine aminotransferase (ALT) and blood count should be monitored by monthly blood tests. Additionally, an assessment of your viral load should be carried out at 12 and 24 weeks to check treatment response.

Early testing of your viral load during the first 12 weeks of treatment may help to give an idea of the probability of achieving seroconversion (see 'Useful words' section) however, the value of early testing depends on many different factors which you should discuss with your doctor. Not everyone responds well to treatment with interferon, and for these people, stopping interferon treatment may be considered¹⁵ and antiviral treatment may be suggested; this may not start straight away.

Some people get better to start with, but become unwell again as soon as treatment stops. This should be monitored by a blood test every six months to check that the response to treatment has continued²⁰.

If you are receiving antiviral treatments you should have regular blood tests every three to six months to assess your response and to detect any treatment resistance²⁰. If resistance develops your doctor may prescribe another antiviral treatment or regime.

People who were born with the virus, because their mother was a carrier, tend to respond less well. However, antiviral treatment may still be recommended to help prevent cirrhosis developing and to reduce the chance of the infection being passed on.

Co-infection with HIV is not a barrier to any particular treatment but requires careful management between specialist teams.

Surveillance for liver cancer

Hepatocellular carcinoma (HCC) is mainly caused by cirrhosis of the liver. Any disease that causes cirrhosis of the liver can lead to a hepatoma. Hepatitis B has a particularly strong link with HCC. If you have hepatitis B and have been diagnosed with cirrhosis you should receive regular ultrasound scans and blood tests (every six to twelve months) to monitor your liver. Early detection of any tumours will give the best opportunity for successful treatment. If you have hepatitis B, the risk of cirrhosis is increased if you are co-infected with hepatitis C (HCV), HIV, consume too much alcohol or smoke.

Screening should also be considered if you are over 40 years old and have hepatitis B as you are also at an increased risk of developing HCC. Your doctor should discuss this with you.

Liver transplantation

For some people with cirrhosis who develop life threatening complications, liver transplantation is an option. Although this is a major operation, 89% of liver transplant recipients are still alive after one year and 86% after two years²⁴.

Hepatitis B can infect the new liver and will sometimes cause severe disease but this may take some years to develop.

How can I prevent hepatitis B?

There is a vaccine to prevent hepatitis B and also a special injection of antibodies called 'immunoglobulin' which can offer temporary protection. The World Health Organisation (WHO) estimates 85% of hepatitis related deaths are preventable through vaccination. Understanding simple safety measures will also help prevent transmission of hepatitis B.

Vaccination

The hepatitis B vaccine is a treated substance containing an 'inactivated' form of part of the hepatitis B virus (not a 'live' vaccine). This means it cannot cause disease¹. It is introduced into your body to cause an immune reaction to protect you from getting the hepatitis B virus.

The vaccination is given to you by injection in your arm. A course of at least three injections is required. There are several options for the timing of these injections (schedules):

- The standard schedule: a first injection of the vaccine is followed by a second dose a month later and another five months after that (0, 1, 6 months). You may be offered this schedule if you are not at high risk of contracting hepatitis B, i.e. you are travelling to a high risk country after the course will have finished.
- The accelerated schedule: a first injection of the vaccine is followed by a second dose a month later and another one month after that (0, 1, 2 months). You will be offered this schedule if you are at high risk of contracting hepatitis B², for example, through occupational exposure, a close family member, or you are travelling to a high risk country within the next six months.
- The very rapid schedule: a first injection of the vaccine is followed by a second dose at seven days and another at 21 days (0, 7, 21 days). This schedule is used where people over the age of 18 years are at immediate risk.

It is important to have all three doses of the vaccine in the schedule as you will not be fully protected until you have had the third injection. A blood test is recommended one to two months after the third injection to find out whether the vaccine has worked.

It is recommended that those who are at a continued risk should be given a fourth injection 12 months after the first dose²⁵.

Around 10-15% of people will not respond to the vaccine²⁵ and they may have to take another course. Some people may not respond to the vaccine at all. Your response to the vaccine may be poor if²⁵:

- you are over 40 years
- you are obese
- you smoke
- you consume large amounts of alcohol (especially those with decompensated liver disease)
- you have celiac disease
- you are immunosuppressed
- you are on renal dialysis.

It is recommended that people who are at continuing risk of infection should be given a single booster injection, once only, five years after the initial injection²⁵.

Who should have the hepatitis B vaccination?

In the UK the government has a 'selective' vaccination policy. This means that they recommend vaccination of the following people who are considered to be at 'high risk' of getting hepatitis B:

- babies born to infected mothers¹²
- close family and friends of infected people such as partners, children and other household members¹²
- patients who receive regular blood transfusions or blood products, patients who have renal failure, and people who care for them^{12,25}
- people who have a chronic liver condition²⁵
- people travelling to countries with high to medium prevalence of hepatitis B²⁵
- injecting drug users (IDUs)¹²
- sex workers, both male and female¹²
- people who change their sexual partners frequently or men who have sex with men¹²
- people whose type of work places them at risk, such as nurses, doctors, prison wardens, dentists, healthcare workers and laboratory staff²⁵
- people who live and work in accommodation for people with severe learning difficulties¹²
- prisoners²⁵
- families adopting children from countries with high to medium prevalence of hepatitis¹²
- people who are infected with a blood borne virus (BBV), or have another form of hepatitis, such as hepatitis A, C, D, E or HIV and are at risk of co-infection.

People who are at risk can get vaccinated at their GP practice, travel health clinics or at a GUM clinic (genito-urinary medicine). If you are at risk for medical reasons, the vaccine is provided free of charge by the NHS. However, if you need to be vaccinated because your job puts you at risk or you are travelling, GPs may charge for the vaccine or direct you to a private clinic²⁶.

If you are at risk as a result of your working environment, your employer has an obligation to pay for and arrange vaccination²⁷.

Hepatitis B Immunoglobulin (HBIG)

HBIG is an injection of antibodies which is used after exposure to the virus. It provides rapid short term protection, until your body is able to produce its own antibodies in response to the hepatitis B vaccine.

HBIG is not widely available, as it is expensive and is only effective for three to six months after administration. Those who have been exposed or are at continuous high risk of exposure should be vaccinated to avoid transmission of hepatitis B.

Anyone who has not had the hepatitis B vaccination and has been exposed to the virus, including those who may have been exposed to the virus during the course of their work such as nurses, doctors, prison wardens and dentists, should be given HBIG immediately along with the first dose of the vaccine. Ideally HBIG should be administered within 48 hours of exposure², but can be considered up to a week afterwards²⁵.

All babies born to infected mothers should be given an immediate injection of immunoglobulin and the first dose of the vaccine, as soon as possible after they are born, to help prevent infection from their mother.

It is essential that the baby receives the full course of vaccine, a second dose a month later, another at two months old and a fourth vaccine at 12 months (0, 1, 2 and 12 months)². All babies should be tested at one year to confirm they do not have the hepatitis B virus.

Completion of all four vaccines has a successful protection rate of 95%².

Reducing the risk of passing on the virus

If you suspect or know you have hepatitis B you must reduce the risk of infecting others.

- Clean and cover your cuts, scratches and open wounds with a waterproof plaster.
- Clean up blood from floors and work surfaces with household bleach.
- Do not use anyone else's, or let them use your, toothbrush, razor, scissors, tweezers or other personal items.
- Ensure drug injecting equipment is sterile and do not share it.
- Practice safer sex by using a condom in all circumstances.
- Do not donate blood or semen or register as an organ donor.

Important issues to consider

Will I have to pay for my treatment?

No, you should be able to receive free medical treatment at a doctor's surgery in your local health authority area if you are a resident in the UK. This means that you are living in the UK legally and for a settled purpose. Your GP will register you as a 'permanent resident'.

If you have been in the UK for less than three months, you can still receive free medical treatment from your local doctor's surgery. They will register you as a 'temporary resident'.

If you are found to have hepatitis B, your specialist will issue your medication on prescription. Like most adults you will have to pay a standard charge when collecting all prescriptions at the pharmacy. If you are on benefits or some other forms of support you may not need to pay for your prescriptions. For more information about who is eligible for NHS care and free prescriptions visit: www.direct.gov.uk

Who should I tell?

If you are diagnosed with hepatitis B you will need to inform close family members, such as your partner or children, so that they can consult a doctor to be tested and vaccinated against the virus. It is important that you take the time to understand the routes of transmission, as it will be clearer to you who else will need to know you have the virus; for example, housemates or previous sexual partners.

Family and friends will also be able to offer comfort and support to you. Most people do not know very much about hepatitis B and how it is passed on, so it is likely they will ask you questions about the virus. It will be useful to work out what they may want to know beforehand. Showing them a copy of this publication may also help them understand more.

Being able to answer their questions will help to calm any unnecessary fears about the risk to you and to them.

People may think you can catch hepatitis B like a cold or flu. They may think that shaking hands, hugging or even kissing an infected person will give them the virus. Letting them know that normal social contact cannot spread the virus can be reassuring to them.

Who else do I need to inform?

If you are having any other medical treatment, visiting the dentist, having a tattoo, body piercing or acupuncture; you must let the practitioner know that you have hepatitis B so they can take precautions to protect themselves and others.

You have no legal obligation to inform your employer. However, you do have a legal duty to ensure your own health and safety and that of others while at work²⁷. The type of work that you do will influence the level of risk to others. Working with your employer means you can prevent others being infected. If you do decide to tell your employer they are obliged to keep this information confidential and cannot pass it on without your consent.

Who can I talk to?

It is a good idea to talk about your own concerns with a professional. This might be a doctor, health advisor, counsellor or perhaps a drug worker. Clinical nurse specialists trained to help people cope with hepatitis and its symptoms are based at some hospitals. You can obtain advice by phoning the British Liver Trust Helpline (0800 652 7330) or by contacting one of our support groups around the country (a list of support groups and their contact details can be found on our website).

Ignorance about hepatitis B among the general public can sometimes cause problems. It is a good idea to be selective about whom you inform of your illness, at least to begin with. There will be helpful people involved in your day to day life who you may find it useful to tell. These include someone you trust at work or someone able to do regular errands for you. It might just be a person who is always willing to listen to your problems. Think about who these people are and make a list of them. Letting them know about your illness will help to build your support base as you progress with your treatment.

Confidentiality

Most drug agencies and GUM (genito-urinary medicine) clinics offer a confidential testing service and your GP can also arrange testing for you. If your test is positive, the clinic will forward on your result to your GP so they can arrange ongoing care and treatment.

Any doctor who diagnoses viral hepatitis is legally required to report this information¹², in confidence, to local public health doctors who are responsible for preventing the spread of infection. These public health doctors work under the strictest guidance about confidentiality. National data is then reported anonymously to help monitor the spread and to inform the prevention and treatment of hepatitis.

Insurance & mortgages

Insurance companies must only ask information that is relevant to the insurance you are taking out and cannot ask whether you have taken a hepatitis B test, had counselling due to the test or have received a negative hepatitis B test. However, an insurance company is allowed to ask you if you have had a positive hepatitis B test result or if you are receiving treatment for hepatitis B²⁸.

A positive test result may mean a life insurance policy or a mortgage linked to a life policy could be refused or the premium much increased²⁸. If this happens, it is worth talking to your doctor as many consultants are willing to write to a mortgage or insurance company stating your health and life expectancy.

An insurance company may contact your doctor asking them to complete a medical report before accepting your application. Your doctor must obtain your consent before completing the report and is only allowed to disclose information relevant to your application. Your doctor can choose not to answer any questions they find inappropriate.

When purchasing travel insurance, you must inform your insurance company of any pre-existing conditions (including hepatitis B) and confirm that your policy will cover them. Failure to do so may result in your policy being void; this means you will not be insured and may have to pay for any medical treatment or losses you incur. You may need to contact a specialist insurance company who provide medical travel insurance.

You can contact the Trust for a list of companies who are happy to cover people with liver conditions.

Looking after yourself

If you are diagnosed with hepatitis B you should be tested for other blood borne viruses (infections). If you are not found to have hepatitis A you should be offered a vaccination to prevent future infection.

If you have hepatitis B you should receive an annual flu vaccine and pneumococcal vaccine every 10 years as it is likely your immune system will be weakened putting you at a greater risk of developing serious complications of flu, such as bronchitis and pneumonia²⁹.

Diet

There is no special diet for people with hepatitis B. Most people do not need to change their diet at all. However, eating a good, balanced diet is one of the most important things you can do to keep yourself well. Regular low calorie meals containing protein (such as meat, fish or beans), starch (such as bread, potatoes or rice) and vitamins (in fruit and vegetables) is the best approach. The following will also help:

- eating plenty of fruit and vegetables: aim for five portions a day
- avoiding salty foods
- eating plenty of high-fibre foods such as brown rice, wholemeal bread and pasta
- eating a low fat diet to avoid irritating your digestive system
- eating a low cholesterol diet.

People who are experiencing symptoms or who have cirrhosis may need further advice. For further information on a well balanced diet and other dietary considerations please see our 'Diet and liver disease' publication.

Some people find they have problems with poor appetite and unintended weight loss, particularly during treatment with antiviral agents. A poor appetite, nausea and vomiting (sickness) are unpleasant but these symptoms only cause a nutritional problem if they last longer than a few days or if you are continuing to lose weight. If this is the case you should consult your doctor and ask to be referred to a dietitian for guidance.

Periods of fasting, for instance for religious reasons, are not recommended if you have a chronic liver disease.

Alcohol and smoking

Alcohol is processed by your liver and, as a result, can be dangerous for anyone with liver problems. Avoid alcohol if you have chronic hepatitis B as alcohol can accelerate the rate of liver damage and can limit the effectiveness of antiviral treatment³⁰.

Smoking is dangerous to everyone's health. People with liver disease are more vulnerable to infection and to poor health overall, so smoking or exposure to passive smoking is not advisable.

If you smoke, speak to your doctor about what help is available with cutting down and giving up.

Exercise

Exercise will help you to maintain a healthy weight. The Department of Health recommends adults should take at least half an hour's gentle exercise a day, leaving you warm and slightly out of breath. You can do this all at once or, if you find it easier, in shorter 10 minute bouts. If you are overweight, the amount of exercise you do may need to be increased from 30 minutes to 45-90 minutes a day to help you to lose weight.

Finding an exercise that you enjoy will help; try walking, swimming, cycling or dancing. If you are overweight, speak to your doctor about losing weight safely. Avoid crash diets and rapid weight loss as these rarely work and you are unlikely to maintain weight loss. They can also be dangerous and increase the risk of malnutrition and gallstones. A safe weekly rate of weight loss is between 0.5kg and 1kg (1-2lb).

Complementary and alternative medicines

People with liver conditions sometimes use complementary therapies alongside their conventional medical treatment. These may help you feel better and cope better with your condition and treatment. To ensure your chosen therapy does not affect your medical treatment, you should also discuss any therapies you may use with your doctor.

It is important that you inform your therapist if you have hepatitis B so they can contact your doctor (this may be necessary to avoid conflict with your medical treatment) and take extra precautions against the spread of infection.

Some therapies, such as acupuncture, need particular awareness because of the increased risk of transmission. When receiving acupuncture try to choose a British Acupuncture Council (BAC) member as they have to be educated to degree standard and should follow a code of safe practice. Before treatment begins make sure that the surface you will lie on is covered with fresh paper roll, towels or sheets. Also ensure that all equipment being used is opened from sealed sterile packs in your presence. After treatment ensure that all equipment is disposed of immediately in a sharps bin.

Many complementary and alternative medicines available are suggested to ease the symptoms of liver disease. However, most of these are processed by the liver, so can be toxic to people with liver problems. Some can damage the liver and make you more severely ill.

Many products are not classified as a medicine and therefore are not licensed, which means you cannot be sure how much of the active ingredient you are getting or how pure it is. Traditional herbal medicines do not have to undergo the stringent regulatory processes that medical drugs have to, therefore, manufacturers do not have to prove effectiveness in well designed large trials.

It is wise to be cautious about the claims made for herbal remedies, particularly those advertised on the internet, as they can offer false hope. **It is a good idea to discuss the use of these remedies with your doctor.**

Useful words

Acute – a short sharp illness that may be severe but from which most people will recover in a few weeks without lasting effects.

Albumin – the main protein in human blood, manufactured by the liver. Low albumin levels can be an indication of liver damage.

Alanine aminotransferase (ALT) – a liver enzyme, it enters the blood following liver trauma. An ALT test is used to monitor and assess the amount of this enzyme in the blood and is a marker of liver irritation and inflammation.

Antibody – a type of immunoglobulin (protein) produced by your body as part of a defence reaction against an invading substance (antigen).

Antigen – an invading substance that may be part of a virus. Your body's immune defence will defend against the antigen by producing antibodies.

Alanine aminotransferase (ALT) – a liver enzyme, it enters the blood following liver damage. An ALT test is used to monitor and assess the degree of liver inflammation in patients with hepatitis of any cause.

Aspartate aminotransferase (AST) – is a liver enzyme, but it is less specific to the liver than ALT (see above). A raised AST level may also indicate muscle damage elsewhere in the body.

Bile – a yellow/green fluid made by your liver to help digest foods containing fat and cholesterol.

Bilirubin – a breakdown or waste product of haemoglobin. Increases of bilirubin in your blood can indicate liver disease, especially disease of the bile ducts.

Chronic – an illness that lasts a long time (more than six months), possibly for the rest of a person's life.

Encephalopathy – disturbed brain function leading to mental confusion and memory loss. Encephalopathy can follow the development of cirrhosis, for example.

Fulminant hepatitis – a rare and frequently deadly form of acute hepatitis B in which a patient's condition can rapidly worsen, with symptoms including severe jaundice, stomach swelling, encephalopathy (see above), severe liver tissue damage, bleeding, kidney failure, and coma.

Hepatic – anything relating to the liver.

Immunoglobulins (Ig) – large proteins that act as antibodies found in your body fluids and cell tissues that bind to invading organisms, such as bacteria or viruses, to destroy them.

Inflammation – the first response of your immune system to infection, commonly indicated by heat, swelling, pain and tenderness.

Jaundice – a condition in which the whites of the eyes go yellow and in more severe cases the skin also turns yellow. This is caused by accumulation in the blood of bilirubin; a yellow pigment and a waste product normally disposed of by the liver in bile (see bilirubin). Jaundice usually indicates a problem with the liver, though it can be caused by other conditions.

Polymerase chain reaction (PCR) – a test that gives a numerical value to your viral load.

Prothrombin time – a test that measures the time it takes for your blood to clot.

Seroconversion – The change in a blood test result from negative to positive, showing the development of antibodies (protein substances) in response to hepatitis B infection or immunisation. Following seroconversion, a person will test positive in tests based on the presence of antibodies.

Vaccine – a vaccine is a substance containing treated antigens to stimulate the body to produce antibodies against a specific disease (antigenic material). There are two types of vaccine, live or inactivated (very weakened or dead), neither of which can cause disease. When it is administered it will cause an immune reaction to protect you against contracting the virus.

Viral load – the amount of virus in your blood.

Who else can help?

Hepatitis B Foundation UK

The Great Barn, Godmersham Park, Canterbury, Kent CT4 7DT

Tel: 01227 738 279 (office)

Helpline: 0800 046 1911 Monday to Friday 9am to 4.45pm

Web: www.hepb.org.uk

A charity that aims to promote: interventions designed to prevent hepatitis B infection, the welfare of people with hepatitis B infection and its related complications and to facilitate supportive networking between patients, their families and friends.

NICE

MidCity Place, 71 High Holborn, London, WC1V 6NA

Tel: 0845 003 7780

Email: nice@nice.org.uk

Web: www.nice.org.uk

NICE is the NHS body responsible for producing national guidance on health technologies and treatments. NICE assesses technologies for their clinical and cost-effectiveness. Once it has recommended a medicine, the NHS is obliged to make it available for patients. More information is available on the NICE website.

Terrence Higgins Trust

Central Office, 314-320 Grays Inn Road, London, WC1X 8DP

Tel: 020 7812 1600

Helpline: 0808 802 1221

Monday to Friday 10.00am to 10.00pm, Saturday to Sunday 12.00pm to 6.00pm

Email: info@tht.org.uk

Web: www.tht.org.uk

A charity offering a wide range of support services for people affected by HIV. This website provides useful information about hepatitis B and HIV/HBV co-infection. For further information about the three main types of viral hepatitis affecting gay men you can visit www.hepinfo.org, another site produced by the Terrence Higgins Trust.

Health and Safety Executive (HSE)

2 Southwark Bridge

London

SE1 9HS

Tel: 0151 951 4000

Web: www.hse.gov.uk

HSE is the national independent watchdog for work-related health, safety and illness. They are an independent regulator and act in the public interest to reduce work-related death and serious injury across Great Britain's workplaces.

NHS services

NHS Direct (England)

Tel: 0845 46 47

Web: www.nhsdirect.nhs.uk

24 hour health advice.

NHS Direct (Wales)

Tel: 0845 46 47

Web: www.nhsdirect.wales.nhs.uk

24 hour health advice.

NHS 24 (Scotland)

Tel: 0845 24 24 24

Web: www.nhs24.com

24 hour health advice.

Further information

The British Liver Trust publishes a large range of leaflets about the liver and liver problems written for the general public.

Leaflets that you may find particularly helpful include:

- *Alcohol and liver disease*
- *Cirrhosis of the liver*
- *Diet and liver disease*
- *Hepatitis A*
- *Hepatitis C*
- *Hepatitis E*
- *Liver cancer*
- *Liver disease tests explained*
- *Liver transplantation*
- *Living with liver disease*

Translations of our information on hepatitis B can be downloaded from the British Liver Trust website.

Contact us for more information:

Helpline: 0800 652 7330

Tel: 01425 481320 **Fax:** 01425 481335

Email: info@britishlivertrust.org.uk

Web: www.britishlivertrust.org.uk

This leaflet is for information only. Professional, medical or other advice should be obtained before acting on anything contained in the leaflet as no responsibility can be accepted by the British Liver Trust as a result of action taken or not taken because of the contents.

Special Thanks

Professor Graham Foster, Professor of Hepatology, Barts & The London School of Medicine & Dentistry, London.

Ms Louise Campbell, Senior Nurse Liver Unit, Imperial College Healthcare NHS Trust, St Mary's Hospital, London.



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Freepost RLZS-RJXB-BYLX, British Liver Trust,
2 Southampton Road, Ringwood, BH24 1HY.
Tel: 01425 481320 Fax: 01425 481335
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THANK YOU



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