

Autoimmune Hepatitis (AIH)



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Pioneering Liver Health

Autoimmune Hepatitis (AIH)

This publication is for people diagnosed with, or experiencing symptoms of, Autoimmune Hepatitis (AIH) and for those who would like to better understand the condition and associated risk factors.

The British Liver Trust works to:

- improve knowledge and understanding of the liver and related health issues
- support people with, and affected by, liver disease
- encourage and fund research into new treatments
- campaign for better services.

All of our publications are reviewed by people living with or affected by liver disease and clinical specialists.

Our website provides up to date information and our Helpline gives advice and support on general and medical enquiries. 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 life¹. It is able to repair itself (even renewing large sections)². However, the liver's ability to repair itself is limited and continuous harm can lead to permanent scarring. Your liver is very tough and able to function even when some of it is damaged³, which means you may not notice any symptoms until your disease is quite advanced and noticeably affecting your health.

Your liver performs hundreds of functions^{1,2,4}. Importantly it:

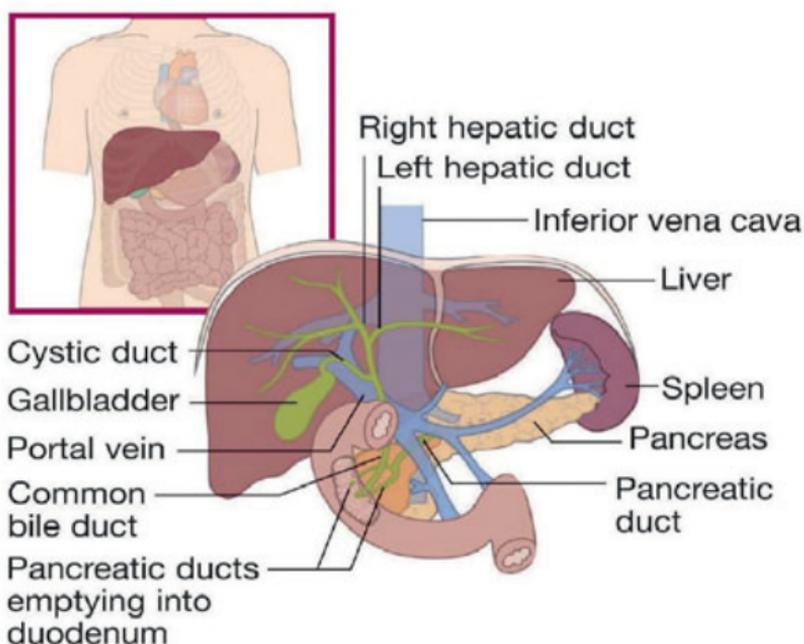
- filters and cleans the blood
- fights infections and disease
- deals with and destroys poisons and drugs
- makes vital proteins which make your blood clot
- produces bile to help break down food in the gut
- processes food once it has been digested
- stores energy that can be used rapidly when the 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 some 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 (up to a point).

How liver disease develops

Your liver responds to harm by becoming inflamed. Any inflammation (see 'Useful words' section, Page 24) of the liver, whatever its cause, is known as hepatitis⁵. Sudden inflammation of the liver is known as acute hepatitis. When inflammation of the liver lasts longer than six months, it is known as chronic hepatitis⁶.

Inflammation is the cellular reaction which occurs when liver cells are attacked by a disease-causing microbe or substance (see 'Useful words' section, Page 24). In a similar way to a scab forming over a skin wound, a temporary fibrous 'scaffold' forms while new liver cells are made^{7,8}. If your liver is repeatedly harmed, new liver cells cannot be made fast enough and the fibrous scaffold remains as a scar⁸. This is called fibrosis, and the time it takes to develop can be different in different people.

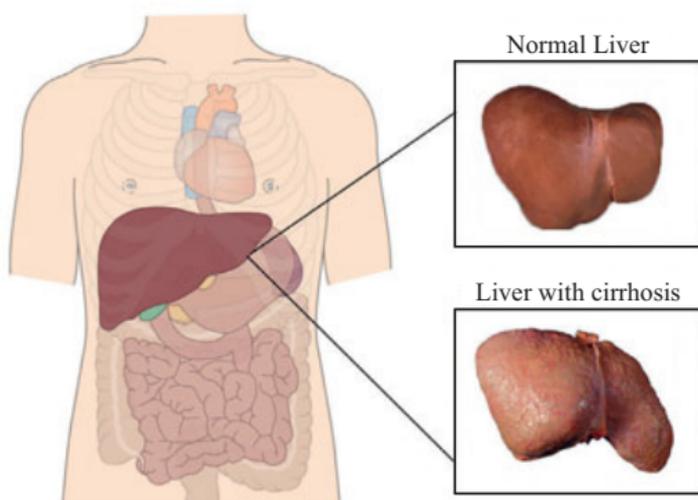
If you have fibrosis, your liver may be able to keep functioning quite well. Removing or treating the cause of the inflammation may reverse some or all of the early fibrosis and can prevent further permanent liver damage^{9,10}.



If the harm to your liver continues, the inflammation and fibrosis can spread throughout your liver, changing its shape and affecting how well your liver cells work. This is known as **compensated** cirrhosis¹. Even at this stage, you may have no obvious signs or symptoms.

The scar tissue in cirrhosis interrupts the blood flow through the liver. As a result the blood pressure in the veins in your abdomen is increased and may result in bleeding from enlarged veins in the oesophagus (gullet) and the stomach. Scar tissue in cirrhosis is difficult to remove and may be permanent^{3,11,12}. 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^{1,11,12} and can lead to liver failure. If damage to your liver continues, it will become unable to function sufficiently (**decompensated** cirrhosis) 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 (a build-up of fluid in the abdomen) and hepatic encephalopathy (confusion and memory loss - see our 'Useful words' section, Page 24)^{13,14}. In the final stages of liver disease the build-up of waste products may lead to severe damage to other organs and loss of life.



What is Autoimmune Hepatitis (AIH)?

Autoimmune Hepatitis, also known as AIH, is a chronic (condition that lasts longer than six months), usually lifelong liver condition. It is an autoimmune disorder; this means your body's immune system (the body's defence against illness) attacks your body's own cells and organs¹⁵.

Your body's immune system normally protects you against infections from bacteria and viruses. To do this, special white blood cells known as lymphocytes recognise molecules from 'foreign' cells and help the body kill the bacteria and viruses. These lymphocytes make large numbers of antibodies (see 'Useful words' section, Page 24) to help you fight off these bacteria, viruses, and other potentially harmful 'foreign' substances. In some autoimmune conditions your body makes antibodies which damage your body's own cells and organs; these antibodies are called autoantibodies and the process is called autoimmunity.

In Autoimmune Hepatitis, most of the damage is caused by the lymphocytes. These attack your normal liver cells (hepatocytes) causing inflammation in the liver that leads to liver damage and features such as liver swelling and tenderness^{16,17}.

Autoimmune Hepatitis, if untreated, is a serious condition which may worsen over time. If it is not treated it can lead to fibrosis, cirrhosis and eventually liver failure and liver cancer. However, with treatment, the outlook for people with this condition is very good¹⁶.

Autoimmune Hepatitis can occur in all people at all ages but how the condition behaves and is treated varies between adults and children. This leaflet applies primarily to adults.

What is hepatitis?

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

- too much alcohol
- a virus, such as hepatitis A, B, C, D and E
- the body's own immune system – Autoimmune Hepatitis
- genetic anomalies (see 'Useful words' section, Page 24)
- fat in the liver
- some drugs and chemicals.

How common is Autoimmune Hepatitis?

Autoimmune Hepatitis is uncommon. It is estimated to affect between 10 and 17 people per 100,000 in Europe. This means it is likely that there are approximately 10,000 people living with AIH in the UK¹⁵.

Men and women can develop Autoimmune Hepatitis but it is 3 to 4 times more common in women. It can develop at any age, however, it is more commonly diagnosed in women around the age of 45¹⁶. It can affect all ethnic groups.

Thirty to fifty percent of people diagnosed with Autoimmune Hepatitis have another autoimmune condition, such as thyroid disease, rheumatoid arthritis, ulcerative colitis or Type 1 diabetes^{15,17}.

Causes of Autoimmune Hepatitis

The cause of most cases of Autoimmune Hepatitis is not clear; but is thought to be a mixture of

- autoimmunity - the process of your immune system making autoantibodies (see 'Useful words' section, Page 24), which 'attack' and damage your body's own cells and organs

- environmental triggers - causes starting outside of the body; for example getting a virus, taking certain medications, or coming into contact with other toxins
- genetic predisposition - inheriting genes which may make it easier for a trigger to set off the disease^{6,17}.

Drug Induced Autoimmune Hepatitis (DIAIH)

Some medications can also trigger Autoimmune Hepatitis. However, the number of people who develop drug induced Autoimmune Hepatitis, is extremely small compared with those who benefit from them. Most people with drug induced AIH have no long term effects¹⁸. In this context, drugs include not only those medications prescribed for you by your doctor, but also herbal remedies and 'natural' products so be sure to tell your doctor about everything you are taking.

Rarely however, some medications can cause changes in the way the immune system reacts to liver cells, which can trigger an immune reaction leading to the liver cell becoming damaged and dying.

The two most common causes of drug induced Autoimmune Hepatitis (DIAIH) are Nitrofurantoin, usually used for the treatment or prevention of urinary tract infections (also known as a water infection or a UTI)¹⁹ and Minocycline, an antibiotic usually used for the treatment of acne and some types of bacterial skin infections²⁰.

Often the results of tests you may have to diagnose DIAIH (such as blood samples and possibly a liver biopsy) will be similar to those who have Idiopathic Autoimmune Hepatitis (Autoimmune Hepatitis that develops due to an unknown cause)¹⁸.

The most important treatment for DIAIH is to stop the drug; this may be enough to make you well but some patients will require treatment which is the same as for Idiopathic Autoimmune Hepatitis (see 'Treatment' section, page 13). Treatment usually results in a fast

improvement in liver function and remission (the symptoms you may have will disappear). The good news is that Drug Induced Autoimmune Hepatitis, unlike Autoimmune Hepatitis due to other causes, does not usually relapse (return), after treatment is stopped and so long term treatment is not always needed^{17,18}.

Symptoms of Autoimmune Hepatitis

Symptoms of Autoimmune Hepatitis can range from none to mild to severe. It is common to have no symptoms at the beginning. Some people may not have symptoms when they are diagnosed but they may develop them later. Others develop symptoms quickly over a few days (acute hepatitis – an illness that develops quickly)^{16,17}.

When symptoms do start to appear, they often start over weeks or months. The symptoms are often non-specific and have many possible causes so your doctor may not immediately attribute your symptoms to liver disease. The most common symptoms of AIH are:

- feeling more tired than normal or becoming tired easily
- fatigue (see ‘Useful words’ section, Page 24)
- feeling generally unwell
- mild joint or muscle pains, usually these are worse in the morning
- low appetite (not feeling hungry) and weight loss
- feeling sick (nausea)
- itching (pruritus)
- skin rash
- excessive hair growth (usually in women)
- passing loose or more frequent bowel movements (diarrhoea)
- absent periods/menstruation cycle (amenorrhoea)
- tummy pain or bloating.

More severe symptoms, which usually occur late in the disease, may include:

- the build-up of fluid in the legs, feet and ankles (oedema)
- the build-up of fluid in the tummy (ascites)
- confusion
- jaundice – a condition in which the whites of the eyes go yellow and, in more severe cases, the skin also turns yellow (for more information see ‘Useful words’ section, Page 24)
- bruising
- abnormal blood vessels on the skin
- dark urine (wee)
- pale and/or fatty floating stools (poo).

Testing for Autoimmune Hepatitis

As many people have either no symptoms or symptoms that are common for many other conditions, in the early stages of Autoimmune Hepatitis it is often diagnosed by a medical professional either when you have had routine tests, or tests for an unrelated condition.

For those who have symptoms, diagnosis is usually made through a mixture of taking a careful medical history, performing a physical examination, blood tests and a liver biopsy. A diagnosis of Autoimmune Hepatitis is usually made by looking at your test results and ruling out other causes of liver disease such as fatty liver disease or viral hepatitis.

Blood test

When you have a blood test a small amount of blood (sometimes called a sample) is taken from a vein, usually in your arm but sometimes from your hand, using a fine needle and syringe. You should only feel a tiny pin-prick as this is done.

Some GP surgeries will have a nurse or GP that is able to take the sample, for those that do not, you may have to go to the hospital.

Liver function tests (LFTs)²¹

Liver function tests are blood tests that measure some of the many chemicals in the blood that are made by and released from the liver. An abnormal result may suggest a problem with the liver, and may help to identify the cause. However, having abnormal LFTs does not always mean you have liver damage. Sometimes abnormal LFTs can be an indication that there is a problem with another part of the body, such as an infection or a blood, bone or muscle problem.

Your doctor will look at the different enzymes, proteins and clotting levels (see 'Useful words' section for definitions, Page 24) in your blood. The laboratory that tests your blood will provide your doctor with a 'normal value' range, which your results will be assessed against. Results which are above or below the 'normal range' are called abnormal and may suggest your liver is inflamed. The normal range for any blood test may vary not only between laboratories but also some vary with age and sex so you should be very careful when comparing results.

Raised alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels can indicate how severely the liver is inflamed. These enzymes are normally within the liver cells but when these cells are damaged, the enzymes leak into the blood. These levels are usually raised at the time of diagnosis²².

Autoantibodies and immunoglobulins

If your doctor suspects that you may have Autoimmune Hepatitis, your blood will be tested for the presence of autoantibodies (proteins which 'attack' and can damage your body's own cells and organs) these include smooth muscle antibody (SMA), and antinuclear antibody (ANA), which are normally present in AIH²². In addition, proteins produced by the body's immune cells (called immunoglobulins) may also be increased and your doctor may ask for a test to measure this.

Liver biopsy

A liver biopsy is usually needed to confirm your diagnosis, assess the amount and stage of liver damage and to rule out other causes of liver disease. An excess of specialised cells in the liver that cause inflammation, the lymphocytes, helps to establish the correct diagnosis of Autoimmune Hepatitis^{15,22}.

During a liver biopsy, a tiny piece of the liver is taken for study, under ultrasound guidance. This usually involves a fine hollow needle being passed through the skin into the liver and a small sample of tissue (see the 'Useful words section, Page 24) 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. Before you have the biopsy, the doctor will give you all the information you need about the benefits and risks and ask for your written consent.

The results of your biopsy are 'graded' according to the degree of liver inflammation and scarring, which provides useful information for your doctor.

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

Transient elastography or Fibroscan

Transient elastography is a quick non-invasive technique (commonly undertaken with a scanner such as Fibroscan or Ultrasound) which uses sound waves to measure the amount of scar tissue (fibrosis) in the liver. It is painless and takes only a few minutes to perform, as an outpatient procedure. It is used to assess and to monitor the effects of treatment on the liver disease over several years.

Treatment

Once you have been diagnosed with Autoimmune Hepatitis, treatment is almost always needed. The type of treatment used is called immunosuppression (reducing how active your immune system is). This is done by using a combination of medications.

The main goal of treatment is to stop the liver inflammation by suppressing your immune system (make it less active) but this can also reduce the ability of your immune system to fight infection. Reducing the liver inflammation will improve your symptoms, improve your liver tests, reduce the degree of scarring and help prevent long term liver damage and liver failure. Once treatment has started it is long-term, for at least two years and it is usually lifelong. It may be possible to stop treatment in a few people with AIH, however this is not without risk as a relapse (becoming ill again) can occur and you may need further treatment.

Prednisolone

Prednisolone is part of a group of medications called corticosteroids. It is sometimes called an oral steroid, or often, just steroid (although there are many other types of steroids such as sex steroids and anabolic steroids). Prednisolone is the main steroid used to treat Autoimmune Hepatitis; it can also be used to treat a number of other conditions that are linked to inflammation for example, ulcerative colitis (an inflammatory bowel disease) and rheumatoid arthritis (a disease that affects your joints).

Prednisolone works by suppressing your immune system, helping to reduce the inflammation in the liver. Your doctor will tell you the dose (how much of the medication) you should take and when is best to take it (usually once a day, after breakfast). Most prednisolone tablets should be taken with food to protect your stomach (tummy) from any irritation. Some preparations have a special coating on them and can be taken just before, or after, food. Sometimes your doctor may prescribe the steroids in another form such as prednisone or budesonide^{23,24}.

Steroid treatment card

If you are prescribed prednisolone or other steroids for more than three weeks you should be given a 'steroid treatment card'. It is important that you read this card, carry it with you at all times and that the information on it is kept up to date in case of emergencies. If you are having any medical or dental treatment you should show this card to the person carrying out your treatment as your steroid dose may need adjusting.

It may be dangerous if you suddenly stop your treatment.

Steroids when taken for long periods of time (over years) cause thinning of the bones (osteoporosis) which can lead to an increased risk of fractures, particularly in females after menopause. This can be prevented by taking regular weight bearing exercise, avoiding cigarette smoking and consideration of treatment with oral calcium and Vitamin D supplements. Bone density measurements are used to diagnose and monitor the treatment of osteoporosis.

It is usual to start with a higher dose and for this to then be reduced over time. Your doctor will aim to find the lowest dose you can take while still controlling the inflammation; this will be different from person to person.

It is important to consult the doctor looking after your Autoimmune Hepatitis before stopping or reducing your medication – do not stop taking your medications suddenly.

Azathioprine

Azathioprine is an immunosuppressant (a medication which reduces how active your immune system is). It is used to treat Autoimmune Hepatitis and other chronic

inflammatory and autoimmune conditions. It is also used to help stop the body fighting (rejecting) a new organ after a transplant.

Azathioprine works by suppressing your immune system, similarly to prednisolone, thereby reducing inflammation and the symptoms it causes.

Your doctor will prescribe a dose (tell you how much) of the medication for you to take; this will depend on your weight and condition. The tablets should be taken with plenty of water, after eating a meal or with a snack, to help stop you feeling sick.

You should continue to take this medication until your doctor tells you otherwise; stopping this medication without talking to your doctor could cause a relapse in your condition (cause you to become ill again)^{25,26}.

Budesonide

Budesonide is a steroid given orally (by mouth) for patients with mild or moderate AIH. It is absorbed in the gut and travels to the liver where it reduces the liver inflammation. It is degraded in the liver and does not get into the blood stream and therefore does not affect the rest of the body. It has the advantage over prednisolone as it causes less steroid side effects (listed below). It is particularly useful in young women who are more aware of the side effects of prednisolone.

Will my treatment have side effects?

Before you start your treatment your doctor will discuss possible side effects of your medication with you. It is important to remember that side effects for each type of treatment can be very different from person to person. You may not experience those listed but being aware of them will help you to recognise them if you experience them.

Once you know what the side effects are for you, and at what point after taking your medication they happen, often you can ease them. If you are feeling sick try to avoid foods which are rich or spicy. If you cannot

manage three meals a day, try eating regular smaller amounts²³.

You should speak with your doctors if you are experiencing any side effects as you may need to adjust how much of the medication you are taking and they may be able to give you some advice on how to ease them. A full list of possible side effects can be found on the information leaflet that comes with your medicine.

Prednisolone can produce side effects in some people, some of which will improve as your body gets used to the new medicine. Common side effects include:

- stomach (tummy) pain, feeling sick
- indigestion (trouble digesting food)
- feeling confused, mood or behaviour changes
- finding it hard to sleep and feeling tired
- muscle weakness
- increased weight
- increased chance of infection, especially thrush (a yeast infection, symptoms include itching, irritation, swelling or discharge of the genital area)
- irregular periods
- 'thinning' of the bones' (osteoporosis). However, there are some medicines that can help to protect against this
- skin problems such as poor healing after injuries, thinning skin, and bruising easily. Stretch marks can sometimes develop
- increase in blood pressure
- increase in blood sugars (diabetes) especially if you have or are predisposed to diabetes
- increased risk of developing cataracts, duodenal ulcers and stomach ulcers.

Budesonide can produce similar side effects to prednisolone, but they occur much less commonly.

Azathioprine can produce side effects in some people; if you experience any of the following you should contact your doctor straight away:

- vomiting (being sick) or diarrhoea (loose stools – poo)
- skin rash
- fever (high temperature)
- feeling extremely tired, dizzy or weak
- muscle pain or stiffness
- changes in the amount or the colour of your urine (wee).
- a low white blood count (see below)
- inflammation of the pancreas.

Azathioprine can also affect your bone marrow (which makes your blood cells) and can lower your white cells so your doctor will usually arrange for you to have regular blood checks to monitor your white count.

Important things to remember while on treatment for AIH:

- Do not reduce the amount of medication or stop taking it completely without first speaking to your specialist as this can cause withdrawal symptoms, which can cause serious problems.
- Remember to carry your 'steroid card' if you are on treatment with prednisolone or budesonide for longer than three weeks.
- Make sure your doctor knows all the other medications you are taking, prescribed or non-prescribed, as some medications, complementary alternatives and vitamins can react badly with others. It is important not to take anti-inflammatory pain killers (for example ibuprofen) or indigestion remedies unless advised by your doctor.

- You should avoid liquorice or products containing liquorice as it can interact with your treatment.
- It is important to avoid anyone who has or may have measles, shingles or chickenpox. If you become ill you should make an appointment to see your doctor as soon as possible.
- Some vaccinations should not be given to you during treatment and for some time after treatment. If you require any vaccinations while on treatment, you should check they are safe with your doctor and tell the person giving them that you are on steroids.
- Your doctor should have discussed the slightly increased risk of developing some cancers while on treatment. For this reason it is important that you do not use a sunbed and should avoid strong sunlight (always use a sun cream with a sun protection factor (SPF) of at least 30).
- You should avoid becoming pregnant during a relapse of AIH; make sure you talk to your doctor about the most suitable contraceptive for you and your partner. You should only breast feed while taking medication if you have spoken with your doctor or midwife.
- Azathioprine is safe to take during conception and pregnancy and should be continued. There is an increased risk of relapse of AIH for the three months after delivery.

Other drugs to treat AIH

The inflammation can be controlled well in most people using a combination of steroids and azathioprine. Indeed in some people, the steroids can be stopped and azathioprine is enough to control the disease. However, some people cannot tolerate these drugs or they are not effective enough. There are other drugs that liver doctors will use but these too have side-effects. The most common second line drug is mycophenolate

but many other immunosuppressive medications (including ciclosporin, tacrolimus, cyclophosphamide, rituxamab and 6-mercaptopurine) have been used under close medical supervision.

Overlap syndromes

In some people, the symptoms, signs and tests show an overlap between AIH and other autoimmune conditions of the liver (especially conditions called primary sclerosing cholangitis and primary biliary cholangitis) and, in some people, the features of AIH may change over time to resemble these other conditions. This is known as an 'overlap syndrome' and your doctor may prescribe other medications.

Looking after yourself

Alcohol

Alcohol is a toxin processed by your liver and, as a result, it can be dangerous for anyone with liver problems. Check with your doctor whether it is safe for you to drink any alcohol and, if so, how much.

Smoking

Smoking is dangerous to everyone's health^{30,31,32}. Smoking can increase the severity of liver damage³³. 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.

Diet and exercise

Being overweight or obese can affect the progression, or treatment of your liver condition. If you have a liver condition, there may be some special considerations you need to make in your diet to stay nutritionally well and to help manage your condition. Some of these are specific to certain liver diseases, others relate to how advanced your liver condition is (see our 'Diet and liver disease' publication).

For most people there is no special diet, however eating a good, balanced diet is one of the most important things you can do to keep yourself well. Regular balanced meals containing protein (such as meat, fish or beans), starch (such as bread, potatoes or rice) and vitamins (in fruit and vegetables) are the best approach. If you have cirrhosis, or a specific liver condition requiring a special diet and you would like some further advice, you can ask your GP or hospital consultant to be referred to a dietitian (a specialist in nutrition and diet).

Exercise will help you to maintain a healthy weight. The Department of Health recommends adults should take at least half an hour's 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 bouts³⁴.

Finding an exercise that you enjoy will help; you can include activities in your daily routine such as brisk walking, swimming, cycling or running. Playing a sport, joining a group or attending a regular exercise class can be a great way to keep you motivated.

The Department of Health also recommends including activities to strengthen your muscles at least two days a week. You should try to include all the big muscle groups in the body; the legs, hips, chest, abdomen (tummy), shoulders and arms. Activities such as push ups, weight training, jumping, climbing, sit ups, pull ups or using a resistance band all count³⁴.

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 or gallstones. A safe weekly rate of weight loss for adults is between 0.5kg and 1kg (1-2lb)³⁵.

It is important that while you are taking prednisolone you avoid liquorice or products containing liquorice as it can interact with your treatment.

Complementary and alternative medicines and therapies

Many complementary and alternative medicines available suggest they can ease the symptoms of liver disease. As with any other medicine, you should use them with care; before taking any medicine you should check with your doctor that it is safe to do so. Most medicines are processed by the liver so they can be toxic to people with liver problems³⁶. Some can damage the liver and make you more severely ill. At present, healthcare professionals are not clear on the role and place of some complementary medicines in managing liver disease; more research is needed on their use^{37,38}.

Licensing has been introduced for some traditional herbal medicines³⁹. However, many herbal products are not classified as a medicine and can be legally sold as food or cosmetic. This means there is no regulation of these products and so you cannot be sure how much of the active ingredient(s) that you are getting, or how pure it is. Unregulated products are not monitored or assessed for how effective or safe they are. Some remedies can damage the liver and make you more severely ill.

It is wise to be cautious about the claims made about herbal remedies, particularly those advertised on the internet.

It is important to discuss the use of these remedies with your doctor before taking them.

Some people choose to use complementary therapies alongside their conventional medical treatment, both to ease symptoms and for emotional well-being. Such therapies may include massage, aromatherapy, meditation or acupuncture. To ensure your chosen therapy does not adversely affect your health or medical treatment, you should;

- discuss any therapies you are thinking of using with your doctor before you use them

- make sure your practitioner is registered with an accredited body; your doctor may be able to refer you to a locally recommended practitioner
- always inform your practitioner of your medical conditions as these may impact on the type of therapies that are safe for you.

Useful words

Absorption – the process by which fluids, oral medications and nutrients are taken into the blood stream from the small intestine.

Acute – a sudden illness that may be severe but lasts for a short period.

Albumin – the main protein in human blood which is manufactured by the liver. Low albumin levels may be an indication of liver damage. However, other diseases can also cause this. Albumin acts as a carrier for some chemicals in the blood and is important in keeping fluid in the blood vessels rather than leaking into the tissues.

Alkaline phosphatase (ALP) – an enzyme found in certain cell membranes of the liver. Increases in ALP and another liver enzyme called gamma-glutamyl transferase (GGT), can indicate obstructive or cholestatic liver disease (where bile is not properly transported from the liver because of a problem with the bile duct).

Alanine aminotransferase (ALT) – a liver enzyme; also found in the blood, normally in small amounts. Larger amounts enter the blood following liver cell damage. 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.

Anomalies – something that is different to what is expected, standard or normal.

Antibody – a specific protein (immunoglobulin) produced by your body as part of a defence response against a foreign substance entering the body in order to render it harmless.

Antigen – any substance which is recognised by the body as foreign or potentially dangerous, the body's immune system responds by producing antibodies.

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 in the body.

Autoantibodies – antibodies that may cause inflammation by attacking your own body tissue because they have mistaken it as foreign. Often having autoantibodies in the blood is harmless.

Autoimmune disease – a type of disease where the immune system loses the ability to distinguish between its own material and foreign material, causing mistaken attacks on parts of the body.

Balanced diet – a diet that contains all the different substances your body needs, in the right amounts, to keep you healthy.

Bilirubin – a yellow pigment and waste product from the breakdown of haemoglobin. Increases of bilirubin in your blood can indicate liver disease, especially disease of the bile ducts (see jaundice).

BMI – body mass index, a calculation of height and weight, used to determine if someone is a healthy weight, overweight or obese.

Calories – units of energy, sometimes written as kilocalories (kcal) or kilojoules (kJ).

Carbohydrate – a substance that provides energy or fuel for your body. ‘Simple’ carbohydrates are sugars as found in fruit, honey and jam. ‘Complex’ carbohydrates are starches, as found in bread, rice and potatoes.

Cell – the basic functioning unit or ‘building block’ of living things; it can reproduce itself exactly. Your body is made up of cells, each with its own unique functions and features. Within the outer skin (membrane) of each cell is a central compartment known as the cell ‘nucleus’, which contains your genetic material.

Chronic – an illness that lasts more than six months, possibly for the rest of a person’s life.

Cirrhosis – a condition where injury to the liver results in replacement of normal liver tissue with scar tissue (fibrosis), nodules of regenerated liver cells and

hardening of the liver. The working capacity of liver cells become badly impaired and they are unable to repair the liver; this is caused by long-term, continuous damage.

Compensated Cirrhosis – the stage at which the liver is severely scarred but there are enough healthy cells enabling the liver to perform all of its functions adequately. People who have compensated cirrhosis may feel quite well.

Decompensated Cirrhosis – where the liver is not capable of performing all of its normal functions. People may experience a variety of symptoms, including ascites, bleeding varices, jaundice and hepatic encephalopathy.

Diet – the amount and range of food a person eats.

End-stage liver disease – a term sometimes used for cirrhosis. It can be more useful to describe a person's cirrhosis as either 'compensated' or 'decompensated' (see above).

Enzyme – a protein that speeds up a chemical reaction within a cell, without being changed or used up in the reaction. Each enzyme has a specific job; there are many types of enzyme for the various different reactions.

Fatigue - can be described as a continuous lack of energy and motivation or physical and/or mental exhaustion. It can be caused by stress, medication, mental and physical illness or disease.

Fibrosis – where scar tissue is formed in an inflamed liver. Fibrosis can take a variable time to develop and, even with scar tissue present, the liver can keep on functioning quite well. However, continued building up of scar tissue may lead to cirrhosis.

Gastroenterologist – a doctor who specialises in diseases of the gullet, stomach, bowel and their associated organs; the pancreas, liver and spleen.

Gene – a segment of a chromosome (or unit of DNA) that carries the instructions or code for making a specific protein or set of proteins responsible for, or contributing to, a specific physical trait or action.

Genetic – how your physical and behavioural characteristics are passed on (inherited). Your genes determine your eye and hair colour, how tall you are and what blood group you are. They can also cause or increase your risk of some medical conditions such as Wilson's disease and Cystic Fibrosis.

GGT – gamma-glutamyl transferase, a liver enzyme in your blood, it is measured to check for liver damage. Blood levels can also be higher in response to alcohol and various drugs, with the absence of liver disease.

Hepatic – anything relating to the liver.

Hepatic Encephalopathy (HE) – disturbed brain function, leading to mental confusion and memory loss. This occurs when the liver is severely damaged and is unable to process waste products which are then carried to the brain in the blood.

Hepatocellular Carcinoma (HCC) – cancer of the liver cells, also called hepatoma. Along with biliary tree cancer, HCC is one of the two main types of primary liver cancer (cancer which starts in the liver).

Hepatocyte – a liver cell.

Hepatologist – a doctor who specialises in liver diseases.

Immune system – the name given to the white blood cells and antibodies, made by the body to defend against bacteria, illness, germs and other foreign bodies.

Immunosuppressant – a drug that suppresses the body's defences (immune system). Usually used after an organ transplant to stop the body rejecting the donor organ or to treat autoimmune diseases such as Autoimmune Hepatitis.

Immunosuppression – where the ability of your immune system to fight infection or disease is suppressed.

Inflammation – the body's reaction to acute and chronic injury or infection, commonly characterised by swelling, pain, redness and heat.

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.

Liver function tests (LFTs) – a panel of tests used to indicate whether your liver is inflamed (hepatitis), damaged or not working properly. They measure levels of certain enzyme and protein substances in your blood that may alter when liver damage is present.

Lymphocyte – a small white blood cell (leucocyte) that plays a large role in defending the body against disease.

Lysosomes – structures within cells which contain enzymes responsible for breaking down foreign substances in the cell.

Nutrient – a substance required from our diet for growth, energy production and the body's functioning. Nutrients can be 'organic', such as carbohydrates, fats, proteins and vitamins, or 'inorganic'. Inorganic nutrients are usually dietary minerals, water, oxygen or iron.

Primary Biliary Cholangitis (previously Cirrhosis) – also known as PBC, is a chronic disease that damages the bile ducts, inside your liver. The damage to your bile ducts can become severe causing a reduction in the flow of bile. If this happens, bile starts to build up in your liver, damaging the liver cells, causing inflammation and scarring to the liver. PBC is believed to be an autoimmune condition. Nine out of ten people with PBC are women.

Primary Sclerosing Cholangitis (PSC) – a liver disease that causes the bile ducts, inside or outside of the liver, to shrink in size. As they shrink, they block the flow of the bile which causes damage to the liver cells, leading to inflammation and scarring to the liver. PSC is twice as common in men as in women.

Protein – the active molecule in cells that determine the physical structure of the organs and tissue that make up your body. Proteins also control the biological and chemical reactions within your body.

Steroid – natural or synthetic compounds sharing the same four-ring molecular structure. Synthetic steroids can be used to reduce pain, swelling and other symptoms of inflammation.

Thyroid – a butterfly-shaped endocrine (hormone-secreting) gland in your neck that is found on both sides of the trachea (windpipe). Its main job is to regulate the body's metabolic rate by the release of thyroid hormone.

Tissue – a group of similar cells that together carry out a specific function.

Ulcerative Colitis – a condition where inflammation and ulcers form in the rectum and the colon (part of your bowels).

We hope you have found this publication helpful

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