

# Diet and liver disease



Pioneering Liver Health



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## Diet and liver disease

The British Liver Trust works to:

- support everyone affected by all kinds of liver disease
- improve knowledge and understanding of the liver and related health issues
- encourage and fund research into new treatments
- campaign for better services and improved patient care
- increase awareness of the risk factors of liver disease  
and promote earlier diagnosis

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](http://www.britishlivertrust.org.uk)**

For the latest updates to this information, please refer to our website **[www.britishlivertrust.org.uk](http://www.britishlivertrust.org.uk)**

A list of reference sources for this information is available on our website or by contacting **[info@britishlivertrust.org.uk](mailto:info@britishlivertrust.org.uk)**

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This publication is for those who would like to understand dietary considerations for people with different types or stages of liver disease.

## The liver

Your liver is your body's 'factory' carrying out hundreds of jobs that are vital to life. It is very tough and able to continue to function when most of it is damaged. It can also repair itself – even renewing large sections.

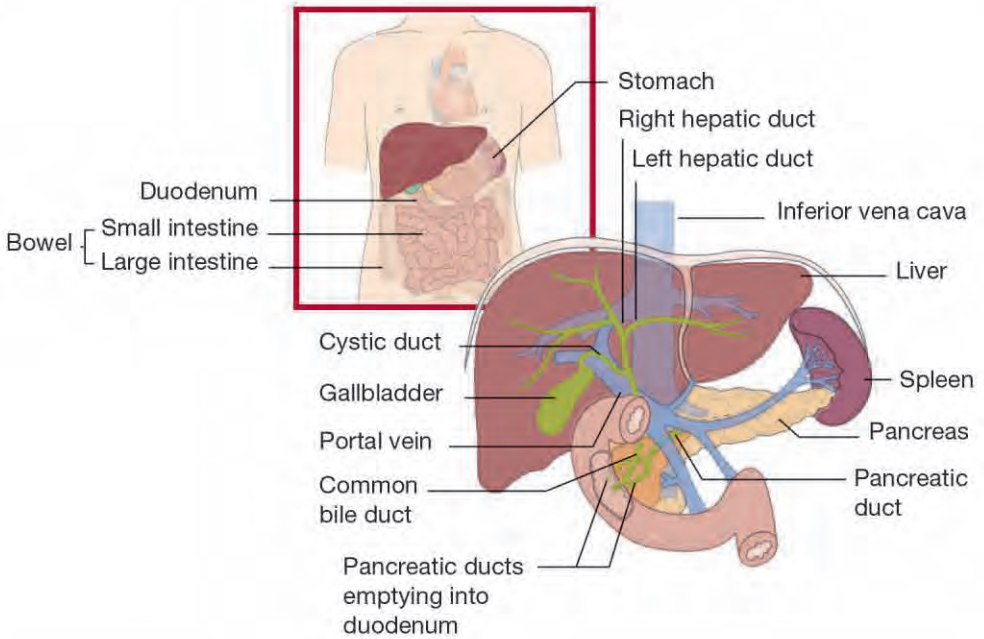
Your liver has around 500 different functions. Importantly it:

- fights infections and disease
- destroys and deals with poisons and drugs
- filters and cleans the blood
- controls the amount of cholesterol
- 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, blood clotting and repairing tissue
- processes food once it has been digested
- produces bile to help break down food in the gut
- stores energy that can be used rapidly when the body needs it most
- stores sugars, vitamins and minerals, including iron
- repairs damage and renews itself.

## How liver disease develops

Liver damage develops over time. 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.

Fibrosis is where scar tissue is formed in the inflamed liver. Fibrosis can take a variable time to develop. Although fibrosis is present the liver keeps on functioning quite well. Treating the cause of the inflammation may prevent the formation of further liver damage and may stop or reverse some or all of the scarring.



Cirrhosis is when inflammation and fibrosis have spread throughout the liver and disrupts the shape and function of the liver. Even at this stage, people can have no signs or symptoms of liver disease. When the working capacity of liver cells has been badly impaired and they are unable to repair or renew the liver, permanent damage occurs.

Cirrhosis can lead to liver failure or liver cancer. All the chemicals and waste products that the liver has to deal with build up in the body. In the final stages of liver disease the build up of waste products may cause multiple organ failure and lead to death.

## Staying nutritionally well

Eating a good, balanced diet to maintain strength and a healthy weight is essential for people with liver problems. Good nutrition can help to support your liver to function and plays a crucial role in your health.

If you have a liver condition, there are some special considerations you may need to make in your diet to stay nutritionally well and to help to manage your condition. Some of these are specific to certain liver diseases, others relate to how advanced your liver disease is.

In this publication we'll cover: how your liver is affected by the food you eat; elements of a well-balanced diet suitable for most people; disease specific dietary considerations and special or therapeutic nutritional diets for those with more advanced liver disease.

If you are experiencing symptoms such as loss of appetite, nausea, low energy levels, fluid retention in the legs or accumulation of fluid in the abdomen (ascites), you will need to follow a more specialised diet. These, and other problems associated with advanced liver disease, require specialist dietary advice from a registered dietitian.

It is important that you talk to your doctor as well as reading this information. Your consultant will be able to refer you to a registered dietitian. **If you have already been given dietary advice you should not make changes without first talking to your consultant or dietitian.**

The British Liver Trust has a range of publications covering specific areas of liver disease which you may also find helpful.

## Your liver and the food you eat

You need food to power your body, giving it energy and the materials it needs to grow and repair itself. When you eat food, it is broken down in your stomach and intestine (gut) and three main nutrients are extracted:

- carbohydrates
- fat
- protein.

These nutrients are then absorbed into the bloodstream and carried to your liver. Here they are either stored, or changed in such a way that your body can use them at once.

At the same time your liver is also working to detoxify substances which may harm your body such as alcohol; chemicals used in pest control, which may be present on unwashed fruit and vegetables; medicines; other drugs and some of the waste products produced in the body. If you have a liver problem, then your liver may not be able to do these jobs as efficiently as it should.

### **Carbohydrate**

Carbohydrate comes from starch and sugar, and is found in bread, potatoes, rice, pasta, cereals fruit and sweets. Carbohydrate is broken down in the liver to glucose, a form of sugar, which is used as a source of energy.

Any glucose not used immediately for energy is stored as glycogen in the liver and in the muscles. The liver helps to control the level of glucose in the blood. When your body needs extra energy – when running for a bus for example – the glycogen is quickly converted back to glucose and released.

The damage caused by liver disease can affect your liver's ability to store and release glycogen, causing fatigue. If you go for long periods of time between meals, the body will start to use its own muscle tissue or fat, to provide energy, which can lead to malnutrition, muscle wasting and weakness.

## Calories

In the same way that we measure distance in centimetres (cm), the energy in food is measured in units of calories (kcal). For example an apple will have about 50kcal and a chocolate bar will have about 300kcal.

## Fat

Fat comes from butter, cheese, oil, animal fat and from many 'hidden' sources, for example, biscuits, pastry, crisps, cakes and nuts.

Fat can be used as a long-term energy store. Each gram of fat provides 9kcal of energy, compared with only about 4kcal from a gram of carbohydrate or protein. It also provides the fat-soluble vitamins A, D, E and K, and essential fatty acids.

Fat is broken down in the liver to provide supplies of energy, or is stored in tissues to be used when energy sources are low. In some people fat builds up in the liver cells, stopping them from working properly. This is more likely if you are overweight or obese, have diabetes, high blood cholesterol levels or drink alcohol excessively.

## Protein

Protein comes from foods such as meat, fish, eggs, nuts, pulses and dairy products. It is made up of units called amino acids and when these reach the liver they provide building blocks to make cells and tissues throughout the body.

## Vitamins and minerals

In addition to carbohydrates, fat and protein, the body also needs a number of vitamins and minerals to function properly.

Most people can get all the vitamins and minerals they need by choosing a variety of foods from a normal, healthy, well-balanced diet (see 'A well-balanced diet' on page 9). However, if you have cirrhosis, or certain types of liver disease, you may become deficient in (short of) certain vitamins and minerals, and your doctor or dietitian may prescribe supplements.



People who have been drinking alcohol excessively, especially those with alcohol-related cirrhosis, are often deficient in the water soluble vitamins B and C. Those with chronic alcohol-related pancreatitis, primary biliary cirrhosis or primary sclerosing cholangitis, may become short of the fat-soluble vitamins A, D, K and sometimes E.

People with cirrhosis are at risk of bone thinning (osteopaenia / osteoporosis). If this is diagnosed, it is likely that your doctor will provide you with supplements of vitamin D and /or calcium. Similarly, if you have chronic autoimmune hepatitis and are taking steroids for this, or any other liver condition, then you are also at risk of bone problems and will be given these supplements.

If your condition has progressed and you have had some bleeding from the gut, you may become short of iron and it may be necessary to take iron supplements.

Vitamins and mineral supplements are not recommended unless advised by your doctor or dietitian.

## A well-balanced diet

To eat healthily you need to get the right balance between different foods. For most people, a well-balanced diet is one that is low in fat, sugar and salt, and high in fibre. Your diet should also contain enough protein and a wide range of vitamins and minerals.

**It is important to remember that your body's nutritional needs may vary depending on the type and severity of your condition. Particularly, if you are unwell and losing weight you may need to vary your diet from the recommendations below. Please refer to the sections on pages 14 and 22 for more advice in those circumstances.**

On the following pages we explain the five food groups, each one providing a different combination of the three essential nutrients – carbohydrates, fat and protein – as well as vitamins and minerals.

The eatwell plate, developed by the Department of Health, will help you to get a feel of how much you should eat from each food group to keep a good balance. For example, starchy foods should make up about a third of the food we eat, as should fruit and vegetables.

## The eatwell plate

Use the eatwell plate to help you get the balance right. It shows how much of what you eat should come from each food group.



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**Group 1.** Bread, cereal, potatoes, rice, pasta, noodles, chapatti (starchy carbohydrates – good for slow release energy).

Choose one of these foods at each meal – they release energy slowly into the bloodstream. High-fibre versions will keep you feeling fuller for longer (if your appetite is poor or you can only manage small portions, too much fibre may not be advisable).

A lot of the fat we get from these foods is the fat we eat with them, such as butter on bread or potatoes, full cream milk on cereal or fat used in cooking<sup>5</sup>. Watch out for these added fats and opt for low fat versions (unless you have been advised by your doctor that you need to gain weight).

**Group 2.** Fruit and vegetables (high in fibre, vitamins and minerals).

Aim for five portions a day. Fruit and vegetables provide essential vitamins and fibre, helping to protect the body against heart disease and some forms of cancer. A 'portion' is 80g or one of the following:

- one glass (150ml) of fruit juice
- three heaped tablespoons of vegetables – raw, cooked, frozen or canned
- one dessert bowl of salad
- one apple, orange, banana or similar sized fruit
- two small fruits – plums, apricots
- a small handful of grapes or cherries
- a half-tin of tinned fruit in natural juice or dessert bowl of stewed fruit.

**Group 3.** Milk and dairy foods (high in protein, good for calcium for healthy bones and teeth and blood clotting).

Milk, yoghurt and cheeses are foods high in saturated fat. Eating small amounts (the eatwell plate shows the proportion of your meal which should be in this group) and choosing low-fat versions, will stop you from putting on excess weight. If you are underweight, adding foods such as butter and cream to meals can help to give you extra calories.

**Group 4.** Meat, poultry, fish, nuts, pulses, beans, tofu, eggs (high in protein).

All these foods provide protein. Beans and pulses also provide useful fibre, vitamins and minerals are useful alternatives to meat if you are vegetarian. Try to have two helpings of protein-rich foods a day. If you are struggling to keep your weight up, you may need extra protein to help to re-build muscles.

Red meat is higher in fat than chicken and fish, but is a very good source of iron, so should be included in the diet at least twice a week. Try to grill, bake or poach food rather than frying.

**Group 5.** High-calorie foods, such as fried and sugary foods (high in saturated fat and sugar).

These foods include cakes, biscuits, chocolate, crisps, fried foods and pastries. These should be eaten in small amounts, or enjoyed occasionally as a treat. However, if you are trying to increase your weight, you could increase the frequency of these foods.

The recommended daily amount of saturated fat is:

- 30g saturated fat for the average man
- 20g saturated fat for the average woman.

Look at the labels on the packaging of the food you buy. This will tell you how much saturated fat (sat fat) is in the food:

- **high** is more than 5g sat fat per 100g
- **low** is 1.5g sat fat per 100g.

It is also important to watch your salt intake. The maximum amount of recommended daily salt for a healthy adult is 6g. This includes 'hidden' salt which is present in many prepared and packaged foods.

Some labels now have 'traffic light' colours on them which indicate if a food is high, medium or low in saturated fats, sugars and salt. Red = high, amber = medium, green = low.

If you have advanced cirrhosis you may be advised to reduce your salt intake further (see 'Cirrhosis and advanced liver disease' section).

It is important to choose a variety of foods from the first four groups every day to get a wide range of nutrients. However, your diet should also be designed around you and the needs of your condition.

## Keeping to a healthy weight

Some liver diseases are linked to obesity; 90% of morbidly obese individuals are thought to have fatty livers. Obesity can also speed the damage associated with other conditions such as alcohol related liver disease and can decrease the effectiveness of treatments for hepatitis C.

It is important to maintain a healthy weight; to do this you need to balance the amount of food you eat with the energy you need. If you eat fewer calories than your body needs (especially if you are physically active) you will lose weight. If you eat more than you need, your weight will increase.

### Body Mass Index

Your BMI (body mass index) gives a guide as to whether you are a healthy weight for your height.

$$\text{BMI} = \frac{\text{weight (kg)}}{\text{height (m)} \times \text{height (m)}} \quad \text{for example} \quad \frac{95\text{kg}}{1.8\text{m} \times 1.8\text{m}} = 29.3$$

- BMI below 18.5: under weight
- BMI 18.5-24.9: healthy weight
- BMI 25.0-29.9: overweight
- BMI above 30.0: obese

People of South Asian origin may be at greater risk of ill-health at lower BMI ranges than those shown above, with a BMI of greater than 23 suggested as being overweight.

The amount of energy we need differs according to our sex, age, weight and the amount of physical activity we take. For example, a small elderly woman will need less food than a young, active man. As a basic rule of thumb, healthy adult men are advised to eat about 2,500kcal every day and women 2,000kcal a day. In general, patients with chronic liver disease need more energy and more protein than healthy people.

If you are trying to lose weight you should not 'crash diet'. There is no quick and easy way to lose weight and 'crash dieting' may cause other health complications. Before attempting to lose weight you should consult your doctor so that they can advise you on the safest method of doing so. An increase in exercise and a decrease in calorie intake is usually the best route.

**If you have been diagnosed with advanced liver disease and are experiencing symptoms such as fluid retention in the abdomen, this will affect your weight and your BMI can be misleading.** In this instance your diet will need to be managed very carefully by a dietitian, as it is possible to be overweight as a result of the fluid retention but to be malnourished.

If you have been ill and have lost a lot of weight, you may not feel like eating, and keeping to a well-balanced diet may be difficult. Try to keep eating as much as you can, and ask your doctor or dietitian for advice on how to increase your calories and protein intake.

## Dietary advice for specific liver conditions

This section gives advice on diet for people with particular liver problems. We only have space here to cover some of the information that is available. You may have other questions or worries about your particular condition and the best people to talk to are your doctor or dietitian. If you have already been advised to follow a special diet it is essential to talk to your doctor or dietitian before making any changes. The liver conditions covered in the following pages are:

- alcohol related liver disease
- non-alcohol related fatty liver disease
- acute viral hepatitis
- chronic viral hepatitis
- autoimmune hepatitis
- haemochromatosis
- Wilson's disease
- primary biliary cirrhosis
- primary sclerosing cholangitis
- Gilbert's syndrome.

### Alcohol related liver disease (ALD)

The first stage of injury to your liver, if you have been drinking alcohol excessively, is the build-up of fatty deposits. This can be reversed completely, if you abstain from alcohol. Approximately, one in five (20%) of those with alcohol related fatty liver go on to develop alcohol related hepatitis (inflammation) and eventually cirrhosis.

Many people with alcohol related liver damage are malnourished (lacking in all the nutrients the body requires). This may be due to several factors:

- poor diet
- loss of appetite
- malabsorption (poor absorption of food nutrients) as the liver is less able to produce bile to aid digestion
- alcohol has no nutritional value but requires a lot of energy for the body to process.

You may still be malnourished even if you are overweight depending on what and how you eat, or if your weight has been increased by fluid retention.

People who are malnourished due to alcohol related liver disease may particularly lack the vitamin thiamine (a B vitamin that helps the body convert carbohydrates into energy). You should be prescribed B vitamins if you are drinking alcohol at harmful levels, or are alcohol-dependent, and any of the following apply:

- you are malnourished or at risk of malnourishment, you have decompensated liver disease
- you are in acute or medically assisted withdrawal.

Consult your doctor or dietitian if this has not been prescribed.

The most important change to your diet which you can make is to stop drinking alcohol. Eating a balanced diet, with sufficient protein and carbohydrate, is essential. Initially, especially if hospitalised, you may be recommended high energy, high protein drinks with vitamin and mineral supplements. If you are very unwell, you may need to have a liquid supplement via a feeding tube into your stomach.

### **Non-alcohol related fatty liver disease (NAFLD)**

Non-alcohol related fatty liver disease is a term for a wide range of conditions in which there is a build-up of fat in the liver cells of people who do not drink alcohol excessively. Initially the fat deposits may not be associated with any symptoms, however, in some people this may progress to inflammation - non-alcohol related steatohepatitis (NASH) which may in turn lead to scarring and cirrhosis.

You are more likely to develop a fatty liver if you:

- are overweight or obese, particularly if you put on weight around your middle (apple shaped)
- have high blood cholesterol
- have diabetes
- have been diagnosed with insulin resistance (where your body does not respond to insulin as it should).

If you have a fatty liver you may be advised to make changes to your diet and lifestyle including:

- cutting out or down on alcohol (remember, alcoholic drinks are often high in calories)
- taking regular exercise, such as walking or swimming
- eating plenty of fruit and vegetables
- eating slow-release starchy foods, such as bread and potatoes
- avoiding refined sugars and saturated fats – as in chocolate, cakes and biscuits (you may find the information on cutting down on fat on page 20 helpful)
- if necessary, slowly reducing your weight to a healthy level for your build and age, and keeping it there.

If you are diabetic, then it is important to work with your doctor to keep your blood sugar levels under good control. If your blood cholesterol is high or you are insulin resistant, you may be prescribed medication as well given dietary advice.

## **Acute viral hepatitis**

If you have a short-term (acute) hepatitis infection caused by a virus – like hepatitis A, for example – you may actually feel quite well and should try to eat a normal diet. However, some people may need extra nutrition to prevent unplanned weight loss and may benefit from a high energy and high protein diet. A dietitian can advise on this.

If you develop nausea and vomiting, which makes eating difficult, then the advice given under ‘Coping with eating difficulties’ later in this publication may help.



## **Chronic viral hepatitis**

If you have a long-term hepatitis infection (when infection lasts longer than six months) caused by a virus such as hepatitis B or C, you can eat a normal, well-balanced diet.

Try to maintain a body weight appropriate for your height and build. Maintaining a healthy weight is important as studies show that obesity can speed up the damage caused by hepatitis C and can also affect how well you respond to treatment.

Some people find they have problems with poor appetite and unintended weight loss, particularly during treatment with anti-viral agents. A poor appetite, nausea and vomiting 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.

Some people report that they find taking oral ribavirin with dietary fats helps to reduce any side-effects, as does drinking water throughout the day to keep fluid levels up.

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

## **Autoimmune hepatitis**

Some people with autoimmune hepatitis who are prescribed steroids, find their appetite increases and that they gradually gain weight. If this happens to you, it is still important to eat a varied and well-balanced diet. If taking long-term steroids, it is also important that, you are prescribed calcium and vitamin D supplements to reduce the risk of osteoporosis. If, however, you are gaining too much weight, you should try to reduce calorie-rich foods – including sugar, sweets, cakes, biscuits, fried food, pasties and pies, crisps and chocolate. You should use low fat milk and spreads and fill up on fruit and vegetables.

If weight gain is a problem, your doctor may suggest specialist help from a dietitian.

## Haemochromatosis

If you have been diagnosed with genetic haemochromatosis, your body will absorb more iron than normal. Treatment with regular venesection (the removal of a unit of blood) is a very effective means of getting rid of the excess iron. There is no need for specific dietary change and it is important to eat a balanced diet.

It is recommended to:

- avoid taking supplements or multi-vitamins with iron
- avoid foods which are fortified with iron such as some drinks and breakfast cereals
- be cautious with vitamin C in pill form (max 500mg/day) as this can increase the absorption of iron. Vitamin C from fruit and vegetables does not need to be avoided
- watch your alcohol intake as excess can speed liver damage and may increase iron absorption.

Some foods such as calcium, as found in dairy foods, and tannin, as found in tea may reduce the amount of iron absorbed when taken with food. However, the overall effect on iron absorption over a period of days or weeks is small.

## Wilson's disease

If you have Wilson's disease, your liver cannot adequately metabolise and remove copper from your body. This condition is treated using a copper chelating agent, such as penicillamine, to bind copper and remove it. These agents are very effective and there really is little need to restrict dietary copper intake.

Most foods contain copper, and some foods contain large amounts, for example chocolate, nuts, mushrooms, shellfish and offal. However, doctors only rarely suggest the avoidance of these foods if you are taking and responding well to your medication.

If you are being treated with penicillamine you may require supplements of vitamin B. This is because penicillamine can increase your body's need for pyridoxine (vitamin B6). It is useful to ask your doctor if you require supplements. Some people with Wilson's disease may also be treated with zinc as this agent can block the absorption of copper from food in the intestine.

## **Gilbert's Syndrome**

Gilbert's syndrome (GS) is a condition in which you have higher than normal amounts of bilirubin in your blood. Avoid dieting or fasting as this may cause your bilirubin levels to rise, as may dehydration. It is important that you eat regularly and healthily, and drink plenty of water.

Some people report that they cannot tolerate eating carbohydrate foods very well (such as bread, pasta, rice and potatoes). Make sure you have enough protein in your diet to compensate if you have to reduce your carbohydrate intake.

## **Primary biliary cirrhosis and Primary sclerosing cholangitis**

If you have primary biliary cirrhosis (PBC) or primary sclerosing cholangitis (PSC) your bile ducts will be affected. You may have trouble absorbing fat and may need to change your diet.

In order to break down fats the liver produces a substance called bile. This is stored in the gallbladder and released via the bile ducts after a meal. PBC and PSC affect the flow of bile and therefore you may find you cannot tolerate fats well.

In this situation fat is passed in your stools and you develop a type of diarrhoea, known as steatorrhoea, which causes bulky, pale faeces/stools that are difficult to flush away.

If this happens, you will be advised to reduce the amount of fat in your diet. However, fat is essential – it contains the fat-soluble vitamins A, D, E and K, as well as essential fatty acids – and should not be cut out of your diet completely without proper advice from a dietitian. Your doctor may recommend vitamin injections or supplements. You should not take supplements without advice from your doctor.

People vary in the amount of fat they can tolerate so this does not mean you will necessarily need to eat a strict, low-fat diet. Most people find they are able to work out how much fat they can tolerate by 'trial and error' through reducing amounts of the higher fat foods. Improvement in bowel habits show that your body is tolerating the amount of fat you are eating. Stools will become less frequent, darker and easier to flush away.

## Cutting down on fat

If you want to cut down on the fat you eat you need to avoid 'hidden' fats as well as the obvious ones you can see in meat and greasy foods. The list below gives examples of high-fat foods and ideas for alternatives.

- butter, margarine, lard, dripping, mayonnaise – try using low fat alternatives
- cream and full-cream milk – substitute semi skimmed or skimmed versions. There is as much calcium (needed for healthy bones) in half-fat or skimmed milk as there is in full-cream milk
- cheese – try lower-fat hard cheese and low-fat cottage cheese
- all kinds of cooking oil including olive oil, sunflower and vegetable oil – use these sparingly; try using a table spoon to measure the amount you are adding instead of pouring straight from the container
- fatty meats, such as duck and belly pork – eat more fish, poultry, lean red meat
- meat products such as sausages and pies – you may be able to eat small amounts of these. Try adding more vegetables, beans or pulses, tofu or meat substitutes to meals and reduce the amount of meat
- chips, crisps and nuts – try oven-chips or replacing chips with a low fat alternative like a jacket potato
- biscuits, cakes and pastry – try low-fat alternatives such as teacakes, scones and low fat cakes or biscuits
- many processed foods are high in fat – for example pizza, lasagne, ready-made curry or other dishes. Eat only small amounts or use a low fat version.

## Cooking with less fat

The list below gives some ideas on how to reduce the amount of fat you use in cooking.

- grill, bake, boil, steam or casserole meals instead of frying or roasting to avoid adding extra fats
- trim visible fat off meat and remove the skin from poultry before cooking
- skim fat off the surface of soups and casseroles.

If you are cutting down the fat in your diet you should try to eat extra carbohydrate to make up any shortfall in energy. This means more starch and sugar, for example, toast, crackers, crumpets or tea-cakes, bread and honey. Take advice from a dietitian to make sure you are getting enough calories, protein and vitamins.

Some people may also need monthly injections of fat-soluble vitamins A, D and K.

### **Coping with acidity**

Some people with PBC may experience an unpleasant acid taste in the mouth or they may get heartburn – a severe burning sensation in the chest. Stomach acids escaping into your food pipe (oesophagus) are the usual cause of this discomfort.

If this happens to you, then try eating little and often to reduce stomach acid. It is a good idea to get into the habit of carrying food around with you, in case you need to eat. Foods that contain carbohydrates, such as crackers, plain biscuits or breadsticks, are the best.

It can also be helpful to:

- avoid big meals at night, but include a snack if you have been advised to do so
- take an antacid before bed and after meals
- raise the head of your bed by four or five inches.

If symptoms persist discuss this with your specialist, who may recommend other treatments.

## Cirrhosis and advanced liver disease

If your condition has progressed to cirrhosis, there are additional considerations you will need to make in your diet to support your liver, and asking to be referred for dietary advice is recommended.

The damage present in cirrhosis stops the liver working properly and affects its ability to store and release glycogen, a chemical which is used to provide energy when you need it. When this happens, the body uses its own muscle tissue to provide energy between meals. This can lead to malnutrition, muscle wasting and weakness. Around two in ten (20%) people with compensated cirrhosis and six to nine people out of ten (60 - 90%) with decompensated cirrhosis, will become malnourished as their disease progresses.

### Compensated cirrhosis

If you have **compensated** cirrhosis – where your liver is severely scarred but there are enough healthy cells in your liver to perform all of its functions adequately – you may feel quite well.

It is important to have a well-balanced diet to ensure you are getting enough carbohydrate, protein, fat, vitamins and minerals. Most people with cirrhosis need to take in more energy (kcal) and protein than healthy people of the same weight. You should aim to have a protein and a starch food with every meal, particularly breakfast and evening meals, and to eat 25-35kcal and 1-1.2g of protein for every kg of your body weight per day.

If you are underweight then you will need to increase your energy and protein intake further. Snacking between meals can top up your calories and protein, as can the addition of a variety of supplements that your dietitian will recommend. A bedtime snack is especially effective.

Try to eat regularly, say every two to three hours. Suitable snacks include:

- teacake
- toast
- crackers
- cereal
- fruit
- milky drinks.

Some people with cirrhosis may develop bone thinning (osteopaenia / osteoporosis). This is diagnosed by bone density scanning (DXA scan). If the scan shows you have this condition, it is likely that your doctor will provide you with supplements of vitamin D and /or calcium to reduce the risk of bone fracture.

## **Decompensated cirrhosis**

Cirrhosis may progress to become **decompensated** – where the liver is not capable of performing all of its normal functions resulting in a number of complications including, fluid retention and mental confusion (encephalopathy).

If you have decompensated cirrhosis you will need expert dietary advice. A high energy, high protein diet is likely to be recommended to help your liver function (35-40kcal and 1.5g of protein for every kg of your body weight per day). You may need supplemental drinks and some specific dietary measures to manage some of the complications of your cirrhosis. It is very important that you have a good diet; your doctors and dietitian are unlikely to suggest any dietary restrictions without careful assessment.

### **Fluid retention**

Some people with cirrhosis get a build-up of fluid in the stomach area (ascites) and swelling of the feet and legs (oedema). These symptoms may be treated with drugs called diuretics (also known as water pills). Sometimes the excess fluid in the abdomen will be drained away using a tube, particularly if you are very uncomfortable.

Although you may feel bloated, it is important that you continue to drink enough fluids so that you don't dehydrate.

You can help to control fluid retention by reducing the amount of common salt (sodium chloride) in your food. However, while it is a good idea to cut out foods with a very high salt content, it can be harmful to change to a diet that is too low in salt without guidance from a dietitian.

Your taste buds become more sensitive to salt as you eat less of it. It is quite easy to cut down salt in the food you prepare yourself, but most of the salt we eat is added to foods by the manufacturers. A dietitian can advise you on which foods you can eat and which you should avoid.

It is likely that you will be recommended to reduce the amount of sodium (salt) in your diet to around 5.2g of salt per day.

Foods which you may think are low in salt can surprise you, reading the labels on the food you buy will help you to monitor your intake more carefully.

Fresh foods should be eaten wherever possible as they are generally lower in salt than canned or processed foods. Try to buy foods labelled 'low salt' or 'no added salt'. A quick way to tell if your food is high in salt is to look at the nutritional information on the label. Look for the amount of salt per 100g, if there is more than 1.5g salt per 100g (or 0.6g sodium) then it is high in salt, anything up to 0.3g salt or less per 100g (or 0.1g sodium) is low in salt.

### **Ideas for reducing your salt intake**

- avoid adding salt to meals at the table. A small amount can be added during cooking if need be
- try making your own stock and not adding salt, as stock cubes, bouillon cubes and gravy granules can be high in salt
- avoid packet and tinned soups if possible
- tinned vegetables, including baked beans, can be high in salt. Look for low-salt or no-salt versions. Frozen vegetables are lower in salt
- smoked and tinned fish, including salmon, tuna and pilchards in brine contain a lot of salt. Only have these occasionally or try the ones tinned in oil
- do not eat cured meats – including ham, bacon, sausages, and salami. Use cold cooked fresh meat, poultry or eggs instead
- full-fat hard cheese is an excellent source of protein, so include it in your diet but do not have it every day
- ready meals and sauces are high in salt so try to look for low salt alternatives and have these less often. Pasta and 'cook-in' sauces can be used if no other salt is added to the meal
- Bovril, Marmite and all yeast extracts are high in salt and so should be avoided
- choose unsalted butter
- certain bottled waters are high in sodium – check the labels carefully.



## Medications

It is also important to be aware that some prescription and over the counter medications have a high salt content. If the sodium content on the labelling of your medication is not clear, or you are unsure if it is suitable, then your pharmacist or doctor should be able to advise you.

Salt is not the only way to make your food taste better, instead try:

- freshly ground black pepper
- lemon juice on fish or meat
- redcurrant jelly, apricots, rosemary or garlic for lamb
- apple or gooseberry sauce with pork
- ginger, garlic and spring onions with mixed vegetables
- olive oil and vinegar with salad and vegetables
- mustard powder or nutmeg with mashed potato
- various home-made sauces – such as onion sauce made with milk and garlic – used instead of gravy
- try using different types of onion – brown, red, spring onions, shallots or leeks
- toasted and ground sesame seeds added to pastries, breads and stir-fries
- washed and finely chopped coriander root in soups, stews and stock
- try adding fresh herbs, lime, garlic, chilli and ginger to pasta dishes, vegetables and meat.

### **Mental confusion (hepatic encephalopathy)**

Some people with cirrhosis develop poor memory and concentration. They can become confused and may even lose consciousness. This happens because the damaged liver is unable to break down toxins from the bowel which then enter the bloodstream and are carried to the brain.

It can occur when a person with cirrhosis also has some other problem such as diarrhoea, vomiting, dehydration, constipation, infection or bleeding. The liver cannot cope with the extra stress. Treatment includes tackling the underlying medical problem and paying careful attention to diet, particularly to eating enough protein.

Historically people with hepatic encephalopathy were treated with a low protein diet. It is now recognised that this was the wrong approach and that a high protein diet will help to improve liver function.

Many internet sites still wrongly suggest that those with hepatic encephalopathy should restrict dietary protein and some healthcare professionals working outside the specialist liver units may also not know about this change in management.

You are likely to be advised:

- to spread your protein intake over the waking hours, eating four to six snack meals a day rather than one or two bigger main meals
- to eat a late-evening snack high in carbohydrate to help support your liver during the night
- poultry, fish, eggs and cheese are good sources of protein as an alternative to red meat
- starchy foods such as potatoes, rice, pasta and cereals help to provide energy slowly over a longer period.

If your appetite is poor and you are not able to eat snacks, you may need to take high-protein and high-calorie drinks on the advice of your dietitian or doctor. See the 'Coping with eating difficulties' section.

### **Controlling blood sugar**

If you have too much sugar (glucose) in your blood, it is known as hyperglycaemia. This can occur in some people with cirrhosis. You may be advised by your dietitian to follow a diet similar to the one used by people with diabetes. This means avoiding foods that are high in sugar but otherwise eating a well-balanced diet. It is important to eat enough calories and protein to keep well nourished; the energy lost by cutting down on sugar must be replaced from another source.

## Coping with eating difficulties

Some people find eating a well-balanced diet difficult, especially if they have been seriously ill.

Two common reasons for this are:

- loss of appetite
- feeling sick (nausea).

However, it is important to eat as well as possible. The following tips may help.

### Loss of appetite

- eat small but frequent meals – little and often
- nutritious snacks may be better than one big meal
- try to eat something every two hours, however small
- tempt yourself with foods you like, you don't have to have a 'proper meal'; snacks are often easier to eat
- don't force yourself to eat food you don't like
- try to relax before and after you eat
- take your time over eating – chew well and breathe steadily
- if you don't feel like solid food, try a nourishing drink.

Nourishing drinks include homemade fruit milkshakes or smoothies and oral nutritional supplements. It is a good idea to check with your doctor or dietitian first to see if they are suitable for you.

Milkshakes and smoothies can be made by blending fresh fruits with milk, fruit juice, ice cream or yoghurt. You can also include honey and two to three teaspoons of powder drink supplement (see following page).

Nutritional supplements are also available in sweet or savoury flavoured powder form and can be mixed with milk or water. Your doctor or dietitian may prescribe these. They can be taken in-between meals and before bed – this is especially helpful if you are only eating small amounts.

Non-flavoured high-energy or protein powders can also be prescribed. These powders are virtually tasteless and can be added to drinks, soups, sauces, gravies, casseroles and other foods.

## **Nausea**

- if some smells make you feel sick, try a breath of fresh air before you eat
- keep your mouth fresh by brushing your teeth, using a mouthwash or sucking mints
- don't let yourself get too hungry – hunger makes nausea worse
- try to eat something every two hours, even if it's only a small amount
- cold snacks may be easier to cope with than a hot main meal
- likewise, dry foods can be easier to face, so nibbling on crackers or plain biscuits can help reduce nausea
- it is not essential to have a 'proper meal'; small snacks can be just as nutritious
- is there a pattern? Do you always feel sick at the same time of day? If so, try eating at other times
- avoid eating when you are very tired; rest and relax first
- if cooking makes the problem worse, try using ready-made meals or sandwiches
- try sipping cold drinks slowly through a straw
- high-calorie and protein supplements may be a good idea if you find you are losing weight. If you feel sick for more than a few days, or if you start being sick (vomiting), then talk to your doctor.

## Looking after yourself

### Can I drink alcohol?

If you have liver disease, an effective measure you can take to slow down disease progression is to avoid drinking alcohol. Alcohol can accelerate the rate of liver damage and limit the effectiveness of treatment. Many people with liver disease also find that they cannot tolerate alcohol.

Alcoholic drinks are also often high in calories and if you are overweight, cutting these out will help to reduce your calorie intake.

To reduce your chance of developing liver disease, it is important to follow the 2016 Department of Health's guidelines on drinking alcohol which says:

- men and women are advised not to drink more than 14 units a week
- to spread the 14 units evenly throughout the week
- not to drink alcohol if you are pregnant or trying to conceive.

The British Liver Trust also recommends that you should:

- not save up several days' 'allowance' and drink it all at once
- enjoy 2 to 3 consecutive alcohol free days every week; as this will give your liver a chance to rejuvenate and repair any damaged liver cells, providing your liver is healthy with no underlying conditions.

For more information on how alcohol affects your liver and calculating units, please refer to our *Alcohol and liver disease* publication.

### What is a 'fad' diet and should I try one?

Fad diets are usually weight loss diets that promise you can lose weight quickly. These diets often focus on short term solutions and can be bad for your health. Fad diets usually involve one or more of the following:

- ‘crash’ dieting, this can involve reducing your calorie intake considerably and can lead to other health conditions, such as gallstones. You may lose some weight in the short term but side effects often include: feeling very unwell, an inability to function properly, dizziness and eating disorders
- some diets may involve you cutting certain foods or food groups out completely such as wheat, meat, fish, dairy products or carbohydrates this can lead to your body being deficient in certain vitamins and nutrients.

If you need to lose weight, it is better to lose weight steadily, maintain weight loss and to be healthy. Refer to ‘A well-balanced diet’ section for further information.

### **I have read about diets which ‘detox’ your liver – should I try one?**

There are many different suggested diets that recommend certain foods to help your liver ‘detox’ or with ‘liver cleansing’. However, there is no evidence that toxins build up in the liver and some of these diets can be dangerous for people with liver disease. A healthy balanced diet (see page 9 ) is the best way to look after your liver.

### **Will drinking green tea or coffee help my liver?**

There is some evidence that drinking moderate amounts of coffee:

- may prevent liver cancer - the World Health Organisation has recently confirmed this reduced risk after reviewing more than 1,000 studies
- lowers the risk of other liver conditions including fibrosis (scar tissue that builds up within the liver) and cirrhosis in some patients
- slow the progression of liver disease in some patients

A British Liver Trust publication ‘**Coffee and the liver - the potential health benefits**’ reviews the current evidence and is available to download from the website.

Green tea has also been suggested to have beneficial effects on the liver due to its anti-oxidant properties. However, other studies have suggested that drinking large amounts of green tea could have toxic effects on your liver. Further research is therefore needed.

As with everything, it is important to moderate your consumption and vary your fluids.

### **Should I take dietary supplements?**

Dietary supplements are not an alternative to eating a well-balanced diet. Your body needs a wide range of vitamins and minerals to be able to function correctly, and the best way to get these is to eat a variety of foods. You should always consult your doctor or dietitian before considering a supplement.

## Complementary and alternative medicines (CAM)

There is a great deal of information available on diet on the internet with many people offering dietary advice. If you have liver disease, it is important to seek advice from your doctor and ask to be referred to a dietitian. Registered dietitians are regulated, whereas other professionals such as Chinese herbalists are currently not.

Many complementary and alternative medicines are available that are suggested to ease the symptoms of liver disease. 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. At present, healthcare professionals are not clear on the role and place of some therapies in managing liver disease. More research needs to be done on the use of such therapies.

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.**

### **Does milk-thistle help the symptoms of liver disease?**

Milk-thistle (also known as *Silybum marianum*) is an over-the-counter supplement, which some people believe can be beneficial to people with liver disease. Some laboratory studies have shown the herb's active components (silymarin) have a positive effect on liver cells. However, milk-thistle is not licensed as a medicine and so studies into its effectiveness in the body have been limited, with conflicting results. There is not currently enough evidence to prove or disprove any beneficial effects on the liver. Milk-thistle may lower blood sugar levels and people with diabetes or hypoglycaemia (low blood sugar) should use caution. If you are thinking of using milk-thistle, it is a good idea to discuss this with your doctor.

## Your dietary needs

It is important to remember that your diet needs to meet your personal nutritional needs and circumstances. In normal circumstances, it is important to eat a well-balanced diet, with plenty of fruit and vegetables and only a small amount of fat and sugar.

If you are unwell and losing weight then some of the rules change. If you have been ill you may not feel like eating your usual meals. In this case it is important to eat foods that are high in calories, protein and fats to maintain a healthy weight and avoid muscle wasting. You will probably be prescribed nutritional supplements as well. If you are losing weight unintentionally for any reason, then it is essential to seek medical advice.

If you have been told to lose weight, then it is important to do so slowly and safely.

It is important to try and enjoy what you eat and to discuss any problems you may have with your doctor or dietitian.



## Useful words

**Amino acids** – the compounds that make up proteins. Proteins in the human body are made of 20 different amino acids that are either manufactured by the body or absorbed from your diet.

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

**Bile** – a yellow-green fluid produced by your liver, which passes into your intestine. It contains chemicals, as well as waste products, and plays a central role in helping the body to digest fat.

**Bowel** – another name for the intestine or gut, that runs from the stomach to the anus. It is split into two main sections, the small intestine (where food is broken down and absorbed) and the large intestine (which receives the processed food, absorbs water and salt, and forms solid waste).

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

**Compensated cirrhosis** – a stage at which the liver is severely scarred but there are enough healthy cells for the liver to perform all of its functions adequately.

**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 range of food a person eats.

**Carbohydrates** – 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.

**Glucose** – a simple sugar and main source of ‘quick’ energy for the body (it is the sole source of energy for the brain).

**Glycogen** – stored in the liver and the muscles, glycogen is the way that the body stores carbohydrates. It is easily changed back to glucose when the body needs energy quickly.

**Hepatic** – anything to do with the liver.

**Inferior vena cava** – the large vein that carries blood back to the heart from the lower part of the body.

**Intestine** – another name for the gut or bowel (see previous page).

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

## Who else can help?

### **British Dietetic Association**

E-mail: [info@bda.uk.com](mailto:info@bda.uk.com)

Web: [www.bda.uk.com/foodfacts](http://www.bda.uk.com/foodfacts)

For evidence based food fact sheets about various topics

### **Food Standards Agency**

Tel: 020 7276 8829

Email: [helpline@foodstandards.gsi.gov.uk](mailto:helpline@foodstandards.gsi.gov.uk)

Web: [www.food.gov.uk](http://www.food.gov.uk)

### **The Vegetarian Society of the United Kingdom**

Tel: 0161 925 2000 Monday to Friday 9am – 5pm

Email: [info@vegsoc.org](mailto:info@vegsoc.org)

Web: [www.vegsoc.org](http://www.vegsoc.org)

Educational charity who provide information on maintaining a well-balanced diet for vegetarians, including an example of a vegetarian eatwell plate.

### **Finding a dietitian**

You can ask your GP or hospital consultant to refer you to an NHS registered dietitian for a specialist diet consultation which will usually take place at your nearest hospital dietetic department. If you are unable to access a dietitian via the NHS, the British Dietetic Association have a specialist Freelance Dietitians Group of registered dietitians working privately. You can search for a private dietitian at [www.freelancedietitians.org](http://www.freelancedietitians.org) although there will be a cost for a private consultation.

### **Patient organisations and support groups**

Please refer to the Trust website, our guides on specific liver conditions or contact the Trust for details of patient organisations and support groups specialising in specific liver conditions.

## Further information

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

Leaflets that you may find particularly helpful include:

- *Alcohol and liver disease*
- *Autoimmune hepatitis*
- *Non-alcohol related fatty liver disease*
- *Cirrhosis of the liver*
- *Gilbert's syndrome*
- *Haemochromatosis*
- *Hepatitis B*
- *Hepatitis C*
- *Liver cancer*
- *Liver disease tests explained*
- *Living with liver disease*
- *Primary biliary cirrhosis (PBC)*
- *Primary sclerosing cholangitis (PSC)*
- *Wilson's disease.*

### Contact us for more information:

Tel: 01425 481 320

Helpline: 0800 652 7330

Email: [info@britishlivertrust.org.uk](mailto:info@britishlivertrust.org.uk)

Web: [www.britishlivertrust.org.uk](http://www.britishlivertrust.org.uk)

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