Gallstones

Fighting liver disease
Gallstones

The British Liver Trust works to:

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

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

Contents

The liver................................................................. 4
The gallbladder...................................................... 5
What are gallstones? ............................................ 6
What causes gallstones? ........................................ 7
Who is most likely to get gallstones? .................... 8
What are the effects of gallstones? ......................... 9
What are the symptoms of gallstones? ................. 10
Diagnosis ............................................................... 12
Treatment ............................................................. 16
Looking after yourself .......................................... 22
Prevention ............................................................ 24
Complementary and alternative medicines.......... 25
Useful words .......................................................... 26
Who else can help? ................................................. 28
Further information ............................................. 29

This publication is for adults diagnosed with, or experiencing symptoms of gallstones and those who would like to better understand the condition.

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
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.

The gallbladder

The gallbladder is a small, pear-shaped pouch about three to six inches long. It is tucked just under the liver, below the right rib cage and is connected to the intestine and liver by small tubes called bile ducts.

Bile ducts carry bile, a yellow-green fluid produced by your liver. Bile contains water, cholesterol, phospholipids and chemicals to aid digestion ( bile acids), as well as waste products for excretion via the bowel, such as bilirubin.

Bile is collected and stored in the gallbladder, and released along the bile ducts into the intestine when we eat food. It plays a central role in helping the body digest fat. Bile acts as a detergent, breaking up the fat from food in your gut into very small droplets, so that it can be absorbed. It also makes it possible for your body to take up the fat-soluble vitamins A, D, E and K from the food passing through your gut.
What are gallstones?

Gallstones are lumps of solid material that form in the gallbladder. They usually look like small stones or gravel, but can be as small as sand or as large as pebbles, sometimes filling the gallbladder. They may take years to grow and there may be one or several.

Gallstones are formed from the chemicals in bile and may be:

• pure cholesterol stones – these are the most common type of stone and are made up of cholesterol, which is a type of fat
• pure pigment stones – these consist of calcium and bilirubin (a pigment from broken down red blood cells) which have solidified
• mixed stones – these are a combination of cholesterol and pigment stones.

Most people with gallstones have no symptoms. In some people (between one and four out of 100) the stones begin to cause trouble by blocking the flow of bile and causing inflammation. Gallstones can leave the gallbladder and cause other complications such as blocking the bile duct, causing jaundice, or blocking the opening to the pancreas, causing pancreatic inflammation (pancreatitis).

If complications arise, a surgical procedure may be required to remove the gallbladder. While the gallbladder is useful, it is not essential. You can safely have your gallbladder removed without it interfering with your ability to digest food, as often, by the time gallstones have developed, the gallbladder is no longer functioning properly.

What causes gallstones?

Gallstones are formed when the different elements which make up your bile (see ‘The gallbladder’) become imbalanced. Cholesterol stones form when cholesterol levels in your bile are much greater than your bile acid levels, this causes the cholesterol in your bile to solidify.

There is evidence that dietary factors, such as diets high in cholesterol, saturated fat, refined sugar and low in fibre, increase the risk of developing cholesterol gallstones.

Gallstones are more common in women than in men, especially during women’s fertile years and during pregnancy. This is because cholesterol is a component of oestrogen, and at these times fluctuating levels of oestrogen need to be broken down to cholesterol and excreted in bile.

Pigment stones may form when the amount of bilirubin in bile is excessive. This can occur in conditions such as sickle cell disease.

Gallstones can also form when the flow of bile is reduced. This may occur due to:

• damage to the liver (cirrhosis) or damage to the biliary tract which affects the secretion and flow of bile
• long periods of fasting during which there is less requirement for bile, leading to bile stasis (decreased flow of bile).
Who is most likely to get gallstones?

Gallstones are very common. About one in four women and one in eight men develop gallstones at some stage in their life. Not everyone with high cholesterol levels in their bile develop gallstones, it is not fully understood why some people have them and others don’t. However, there are known risk factors that are thought to increase the development of gallstones. Research shows that gallstones are more common in the following groups of people:

• overweight women and men
• women who have been pregnant or who are taking an oral contraceptive
• women who are undergoing high-dose oestrogen therapy (which is sometimes used to treat osteoporosis, breast cancer and the menopause)
• people with digestive disorders such as Crohn’s disease or irritable bowel syndrome (IBS), or metabolic syndromes
• people who have recently lost weight either as a result of dieting or weight-loss surgery, such as gastric banding
• people aged 40 years and older
• people with a family history of gallstones
• people with cirrhosis (scarring of the liver)
• people with conditions affecting the flow of bile, such as primary sclerosing cholangitis, primary biliary cirrhosis and obstetric cholestasis
• people who have had a previous upper abdominal operation.

What are the effects of gallstones?

Asymptomatic gallstones
Many people live with gallstones without symptoms and are unaware they have them until the stones show up in tests performed for another reason. This is called asymptomatic gallstones.

Uncomplicated gallstones
The smaller the stone, the more able it is to travel about within the gallbladder. Symptoms may develop because a stone has temporarily blocked the opening to the gallbladder (the cystic duct). This usually leads to sudden (acute) attacks of abdominal pain; it may be several weeks or months in between each attack. This is called uncomplicated gallstones and attacks are often referred to as biliary colic. Over time, this may lead to chronic inflammation and scarring of the cystic duct, known as chronic cholecystitis.

Complicated gallstones
Gallstones can sometimes block the gallbladder exit (cystic duct), causing pain and inflammation of the gallbladder if the blockage lasts for a long time. Gallstones can also leave the gallbladder and cause more severe problems in the bile duct or the pancreas. These are called complicated gallstones and include the following:

• acute cholecystitis (inflammation of the gallbladder) – a blockage in the cystic duct causes the gallbladder to become swollen, irritated and inflamed
• acute cholangitis (inflammation of the bile ducts) – which occurs when the flow of bile from the liver is blocked and the bile becomes infected

• acute pancreatitis (inflammation of the pancreas) – when stones pass from the bile duct into the exit of the pancreatic duct causing a temporary obstruction to the flow of digestive juices from the pancreas, resulting in inflammation

• gallstone ileus (bowel obstruction) – when large gallstones become lodged in the duodenum or other parts of the small bowel.

Complicated gallstones can lead to other long term gallbladder complications such as chronic inflammation and scarring due to frequent and severe attacks, known as chronic cholecystitis.

Chronic inflammation of the bile ducts and gallbladder can increase your risk of bile duct cancer (cholangiocarcinoma) and gallbladder cancer. However, people with a history of gallstones have less than one in 10,000 chance of developing gallbladder cancer. For more information on bile duct cancer, please see our Liver cancer publication.

**What are the symptoms of gallstones?**

The most common symptom of **uncomplicated gallstones** is pain in the abdomen, known as biliary colic. This is a pain that usually lasts between one and five hours (but sometimes up to eight) which can vary from mild indigestion or discomfort, to severe pain. You may feel it:

• in the centre of your abdomen between your breast bone and belly button

• just under your right ribs with a sharp pain spreading to your side or shoulder blade.

Sometimes it may be mistaken for a heart attack or a peptic ulcer. This pain is due to strong contractions as the gallbladder tries to expel a stone. The pain usually begins after eating fatty foods, though it can also wake you up during the night. These attacks are usually infrequent and some people find walking about can relieve the pain.

Other symptoms may include nausea, vomiting or excessive sweating.

Symptoms which indicate a complication has arisen (**complicated gallstone disease**) include:

• a high temperature of 38°C (100.4F) or above

• persistent pain

• a rapid increase in the rate of your heartbeat

• 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’)

• itchy skin

• diarrhoea

• shivering attacks – a sudden chill with severe shivering and a high temperature, similar to ‘flu’, is a sign that infection is building up

• mental confusion

• a loss in appetite.
When should I see a doctor?

If you have some of the symptoms listed but they last less than eight hours, you should make an appointment to see your GP.

If you have a **high temperature, persistent pain (lasting longer than two hours)** or **jaundice**, you feel like your condition is worsening or your symptoms are changing, it is important that you are seen by a medical professional. When speaking to your doctor, you may find it helpful to refer to this publication. If your symptoms continue, go to A&E immediately.

### Diagnosis

Asymptomatic gallstones are often found by chance during investigations of unrelated conditions.

If you have symptoms and gallstones are suspected, your GP will ask you about the symptoms you are experiencing and may feel your abdomen to see if your liver or gallbladder is tender or enlarged.

Blood tests are usually the next tests that your GP will carry out. A sample of blood is taken by your doctor or a nurse and sent for analysis. These blood tests will look for signs of infection or inflammation. Additional blood tests known as liver function tests (LFTs) will also be done and will look for indications of inflammation, blockage of the bile ducts and damage to the liver.

The liver produces many chemicals that pass into the bloodstream; these can alter if your liver is inflamed or if bile ducts, carrying bile from the liver, are blocked. In the case of suspected gallstones, high levels of alkaline phosphatase (ALP), gamma-glutamyl transferase (GGT) and serum bilirubin will usually be seen.

If you are found to have an abnormal result, or a strong clinical history (a family history of gallstones, previous gallbladder surgery or you have risk factors for gallstones), then your GP will refer you for further tests, such as an ultrasound scan, to confirm your diagnosis.

### Ultrasound

Most stones, in the gallbladder, can be clearly seen on an ultrasound scanner. An ultrasound scan is a routine procedure; the same technology is used in pregnancy. It is usually performed in the X-ray department of the hospital or in an outpatient’s clinic. The procedure is very safe and should not be painful, but it may take 10 to 15 minutes to complete.

Before the scan, you may be asked not to eat or drink anything for about six hours so that your gallbladder is full of bile, as this helps to view the gallbladder more clearly.

You will be asked to uncover the top of the right half of your abdomen (below your ribs) and lie on your back. Gel will be applied to your skin which may feel slightly cold. A probe will be moved across the surface of your skin. The gel helps to make this movement easier and makes sure that sound waves can be directed through your skin as the probe passes over your liver area.

Anything solid will cause the sound wave to be reflected back via the probe and will be turned into an image that can be seen on a screen. Sometimes you may be asked to move into a different position so that your gallbladder can be clearly seen on the screen.
ERCP (endoscopic retrograde cholangiopancreatography)

If you have developed jaundice and doctors suspect that stones have passed into your pancreas or bile ducts, a procedure known as ERCP may be undertaken.

An ERCP gives a detailed X-ray of your pancreas and bile ducts. You will be given a sedative injection to make you feel sleepy and a little oxygen to help you breathe easily during the test. The test uses a dye (a radiopaque substance) that shows up on X-rays. The dye will either be injected into your bloodstream so that it concentrates in your bile ducts and gallbladder, or inserted into your bile ducts using the endoscope (a long, thin flexible tube with a camera at the end) which is passed through your mouth and into your stomach and intestine.

X-ray images are then taken. These X-rays will show any abnormalities in the flow of your bile (such as a blockage where a gallstone may be present) or in your pancreatic system (such as an inflamed gallbladder or pancreas). The dye passes out of your body harmlessly when you pass water. The whole test may last from 15 to 30 minutes and most people remember nothing about it afterwards because of the sedative injection. If a stone or blockage is found, your doctor may try to remove it at this point to prevent further intrusion (see ‘Treatment’ section).

MRCP (magnetic resonance cholangiopancreatography)

Another scan you may have, if you are suspected of having gallstones in your bile duct, is an MRCP. This uses a strong magnetic field and radio waves to create an image of your liver, bile ducts, gallbladder and pancreas.

An MRCP scan is performed in a tunnel about 1.5 metres long, surrounded by a large circular magnet. You will be asked to lie on a couch and may be given an injection of contrast dye (a substance that will help to enhance the images). The couch will then move into the tunnel and a series of images will be taken. The scan will take 15 to 40 minutes and is not painful.

Other tests

There are other types of examination, however, these are not routinely used in the majority of hospitals for the detection of gallstones. These include CT (computerised tomography), endoscopic ultrasound and HIDA (Hydroxyl Iminodiacetic Acid) or TBIDA (Trimethylbromo Iminodiacetic Acid) scans.

In a HIDA or TBIDA scan, an injection of a minute dose of a harmless radioactive material is given which shows up under a special camera, if your gallbladder is working properly. The radiation dose from this type of examination is no different from having an ordinary X-ray. This examination may be used to look for acute cholecystitis.

It is possible for the gallbladder to become inflamed when no gallstones are present. This may be because your gallbladder is not filling with or emptying bile fully, causing a build up of pressure and pain in your abdomen. In order to diagnose this, you may be offered a HIDA or TBIDA scan, as above, but with the addition of either, the hormone cholecystokinin (CCK) or the ingestion of a fatty meal to stimulate your gallbladder to contract. The rate at which your gallbladder is able to expel bile is measured, and if only a small amount is expelled, treatment for a dysfunctional gallbladder may be recommended.
Treatment

If gallstones have been discovered incidentally and are not troublesome, it is often recommended to leave them alone. In this case your doctor may want to adopt a ‘watchful waiting’ policy, which means your symptoms will be monitored to see if they progress before treatment is considered.

Some people may have one mild attack of biliary colic and no further trouble, while others have continuing problems. You may be prescribed painkillers, which you can use to control the symptoms if you experience an attack.

Waiting to see if further symptoms develop is quite common and safe but you should look out for any deterioration in your condition and report any symptoms to your GP. If your symptoms persist, your doctor will recommend that you are referred for treatment.

Acute inflammation of the gallbladder often requires admission to hospital, where you may be administered antibiotics to allow the inflammation to settle. Tests may be carried out to assess if your gallbladder requires removal. Occasionally you may require urgent surgery.

Surgical treatments

The removal of your gallbladder is the most usual treatment for gallstones which are causing frequent and severe symptoms. Your gallbladder is not essential for life and most people notice little difference without it. It actually stops working properly when stones form, so your body has already adjusted to its loss.

Laparoscopic cholecystectomy

 Nowadays the gallbladder is usually removed by a keyhole surgery procedure. A laparoscopic cholecystectomy is performed under a general anaesthetic using a fibre-optic tube with a tiny camera and a light on the end, called a laparoscope.

A small incision in your tummy will be made and your abdomen inflated with carbon dioxide gas. Inflating your abdomen gives the surgeon a better view of your organs and more room in which to work. Instruments are then inserted into the abdominal cavity through three small incisions and controlled very precisely by the doctor, who is able to view your organs via a TV screen. The gallbladder is removed through a small cut in your navel.

Afterwards you will have a stitch or two and may have some pain, but oral painkillers are usually enough to dull this. Most people are allowed home the following day. You should have someone drive you as it is unlikely you will be fit to drive for 10 to 14 days.

When discharged, your surgeon will recommend that you take it easy for a few days. You may feel some soreness or bruising internally for a while. Generally, people are back to normal activities within two or three weeks; although this can depend on the individual and you should allow yourself time to recover.

If you develop severe worsening pain, jaundice or a high temperature, you should seek urgent advice from your GP or the A&E department.
Open cholecystectomy
Sometimes it is not possible to remove the gallbladder by keyhole surgery and a more extensive operation or a conversion to open surgery is required, this may be due to the following:

- you are in the third trimester (the last three months) of your pregnancy
- you are obese
- your gallbladder is severely inflamed and it is deemed unsafe to remove it laparoscopically
- you have an unusual gallbladder or bile duct anatomy that makes continuing with a laparoscopic procedure potentially dangerous.

The procedure is performed under a general anaesthetic; the surgeon makes a large incision in your abdomen and removes your gallbladder. After the procedure you will have stitches and may be in some pain. This can usually be controlled with oral painkillers. You may need to spend four to five days in hospital to recover, and take four to six weeks to convalesce.

The gallbladder is usually sent for examination; your surgeon will review the report and arrange to see you accordingly.

Aftercare
For a short while after your surgery you may experience some nausea due to the anaesthetic or painkillers administered to you. You may also feel a little bloated, or have pain in your abdomen or shoulders due to the gas used to inflate your abdomen during surgery; this should usually pass within 48 hours.

On discharge you will normally be given oral painkillers for few days to control any pain and discomfort. Occasionally some people are prescribed oral antibiotics to take for a few days.

Your surgeon may arrange a follow-up outpatient’s appointment for four to six weeks time.

After the removal of your gallbladder, bile is no longer stored and will dribble continuously from the liver, through your common bile duct, into your intestine, rather than only being released after meals. It’s rare that you will have any change in digestive ability after having your gallbladder removed and most people notice little difference without it.

Some people experience an increase in wind (gas passed from your rectum), bloating or increased bowel movements after meals for several weeks following the procedure. In most cases these changes are short term and will get better.

About one out of every ten people who have their gallbladder removed will experience diarrhoea because the continuous release of bile salts irritates their digestive system. This usually improves over time, but if it does not, your doctor may recommend anti-diarrhoea medicines to slow down your bowel movements. Dietary changes may also help (see ‘Looking after yourself’ section).
Non surgical treatments
If you are unable to have your gallbladder removed, or do not wish to, the following may help to manage your symptoms:

- pain control
- life style changes, such as weight loss, increased exercise and decreased calorie intake
- a very strict low fat diet, to help reduce the frequency and severity of symptoms.

Alternative treatments to remove stones are listed below. However, these methods are only effective in a small number of people with gallstones (around one in 10). Methods such as dissolving gallstones with drugs or using shockwave therapy are now rarely used, as they are beneficial in few patients and recurrrence of stones is common. If alternative treatments fail, you may still require surgery.

ERCP (endoscopic retrograde cholangiopancreatography)
Sometimes stones which have passed into the bile duct can be removed during an ERCP examination (see ‘Diagnosis’ section) under sedation. This can be done using a number of techniques.

The first is an endoscopic sphincterotomy, where an incision in the muscle between the common bile duct and the pancreatic duct enables the removal of stones or allows them to pass into your intestine.

Another method which may be used is ‘trawling’ of the common bile duct with a ‘basket’ or ‘balloon’ to remove stones.

Widening the opening to the bile duct with an electrically heated wire (diathermy), which you won’t feel, may be needed to carry out these procedures. Sometimes a short plastic tube called a stent is inserted into the bile duct to help bile drain out. The stent may remain in place permanently or be removed at a later date.

An ERCP is often performed in addition to having your gallbladder removed in circumstances where stones have passed out of your gallbladder.

Ursodeoxycholic acid (URSO or UDCA)
URSO is a naturally occurring bile acid which can be prescribed to treat cholesterol stones in a limited number of circumstances. It works by slowly dissolving the cholesterol stones, but can have side effects such as nausea, vomiting, diarrhoea and itchy skin. It is taken orally in tablet form and a course of treatment can last up to two years. Long term monitoring after finishing the course may be needed as gallstones recur in up to one in four people (25%) within one year.

Extracorporeal shockwave lithotripsy (ESWL)
ESWL treatment has been used in the past to treat cholesterol gallstones, where surgery was not an option and ERCP had failed.

ESWL treatment uses high-energy sound waves to break gallstones into tiny fragments. A lithotripter sensor (a probe-like instrument) will focus the shock waves on each stone.
After the procedure, medication is needed to help dissolve any fragments of stone and an ERCP may also be required to remove the remaining fragments left in the bile duct. Some pain and discomfort may be felt. A few people may experience other complications such as:

- infection
- blockages in the bile duct due to fragmented stones
- some bruising or blistering of the skin.

ESWL is no longer widely available and cannot be used on gallstones inside the gallbladder.

**Looking after yourself**

**Diet**

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

- eating plenty of fruit and vegetables: aim for 5 portions a day
- avoiding salty foods
- eating plenty of high-fibre foods such as brown rice, wholemeal bread and pasta
- eating a low fat diet to avoid irritating your digestive system
- eating a low cholesterol diet.

If you suffer from diarrhoea, eating plenty of high-fibre foods can help your body absorb excess water and make your bowel movements firmer. Avoiding spicy and fatty foods, dairy products and caffeine, may also help to reduce symptoms.

If your symptoms of diarrhoea persist, or you have any questions about your diet, talk to your GP. You can ask to be referred to a dietician for some personal advice.

**Alcohol and smoking**

There is no specific requirement to avoid alcohol if you have gallbladder disease. As for everyone, it is important to watch your alcohol intake and stay within the recommended guidelines (see ‘Prevention’ section).

Alcohol is processed by your liver, and if your gallstones are a result of a liver condition, it is important to check with your doctor whether it is safe for you to drink any alcohol, and if so, how much.

Smoking is dangerous to everyone’s health and has been shown to increase the risk of gallbladder disease. If you smoke, speak to your doctor about what help is available with cutting down and giving up.

**Exercise**

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

Finding an exercise that you enjoy will help; try walking, swimming, cycling or dancing.

If you are overweight, speak to your doctor about losing weight safely. Avoid crash diets and rapid weight loss as these rarely work and you are unlikely to maintain a healthy weight. They can also be dangerous and increase the risk of malnutrition and gallstones. A safe weekly rate of weight loss is between 0.5kg and 1kg (1 to 2lb).

**Prevention**

Many of the risk factors for gallstones, such as age and gender, are fixed and cannot be prevented. Others such as obesity, smoking, lack of exercise and high levels of cholesterol in your bile can be addressed by making lifestyle changes (see ‘Looking after yourself’ section).

- Review your diet – choose foods low in cholesterol, saturated fats and sugar and opt for those high in fibre (see page 22).
- Lose weight steadily (if you are overweight).
- Avoid rapid weight loss.
- Take more exercise.
- Stop smoking.

URSO (see ‘Treatment’ section) may be prescribed to you as a preventative measure if you are thought to be at a particularly high risk of developing gallstones, for instance, if you have recently had weight loss surgery.

Studies have shown that drinking small amounts of alcohol may reduce cholesterol levels in bile, decreasing the risk of developing gallstones. However, drinking more than the Department of Health’s recommended guidelines for alcohol (21 units for men, 14 units for women) in a week, can lead to liver disease such as fatty liver, cirrhosis and other health problems.

Some research indicates that certain oils (such as olive oil) used as part of a healthy diet may improve gallbladder emptying, and reduce gallstone formation. Garlic oil has been shown to be effective at dissolving cholesterol gallstones in the laboratory. More research needs to be done on the use of these, as dosage and effects are still not clear.

**Complementary and alternative medicines**

There are a few complementary and alternative remedies available that are suggested to ease the symptoms of gallstones. At present, healthcare professionals are not clear on the role and place of these therapies in managing gallstones and gallbladder diseases.

Many products are not licensed as a medicine and therefore are not stringently regulated. This means you cannot be sure how much of the active ingredient you are getting and how pure it is. It is wise to be cautious about the claims made for herbal remedies, particularly those advertised on the internet, as they can offer false hope. It is a good idea to discuss the use of these remedies with your doctor.
Useful words

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

**ALP** – alkaline phosphatase, an enzyme found in certain 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).

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

**Bile ducts** – the tubes carrying bile from your liver to your small intestine (duodenum or gut).

**Bilirubin** – a yellow pigment and a waste product normally disposed of by the liver in bile.

**Cholecystitis** – an inflammation of the gallbladder.

**Cholesterol** – a type of fat (lipid) made by the liver from the food you eat. Cholesterol is found in all the cells of your body and is necessary to help them function. However, excess cholesterol from food is circulated in the blood. A high cholesterol level in the blood causes an increased risk of heart disease and stroke.

**Cholangitis** – an inflammation of the bile ducts.

**Cirrhosis** – where inflammation and fibrosis have spread to disrupt the shape and function of the liver. Even with no signs or symptoms of liver disease, the working capacity of liver cells has been badly impaired and they are unable to repair the liver.

This is permanent cell damage and can lead to liver failure or liver cancer.

**ERCP (Endoscopic retrograde cholangiopancreatography)** – a procedure which gives detailed X-rays of the pancreatic and bile ducts, to show any abnormalities in the flow of your bile. Sometimes used to remove stones which have passed into the bile duct.

**Inflammation** – the body’s protective reaction to injury, involving 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.

**Laparoscopic cholecystectomy** – often referred to as ‘keyhole’ surgery, which is used to remove the gallbladder. This technique is performed via small incisions, using cameras to direct the procedure.

**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.

**Open cholecystectomy** – a surgical procedure to remove the gallbladder through a large incision in the abdomen.

**Pancreatitis** – an inflammation of the pancreas caused by an obstruction to the flow of digestive juices.
Phospholipids – an essential component of bile which, along with bile salts, help in the processing of cholesterol by keeping it in solution.

Stent – a small, thin wire-mesh or plastic tube used when treating obstructions in the bile ducts. Where there is a narrowing (stricture) in the bile duct, the doctor will insert a stent to open up the duct to prevent it from collapsing.

Who else can help?

NHS Direct (England)
Tel: 0845 46 47
Web: www.nhsdirect.nhs.uk
24 hour health advice.

NHS Direct (Wales)
Tel: 0845 46 47
Web: www.nhsdirect.wales.nhs.uk
24 hour health advice.

NHS 24 (Scotland)
Tel: 0845 24 24 24
Web: www.nhs24.com
24 hour health advice.

Core (Digestive Disorders Foundation)
Freepost
LON4268
London NW1 0YT
Tel: 020 7486 0341
Email: info@corecharity.org.uk
Web: www.corecharity.org.uk

Further information

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

Leaflets that you may find particularly helpful include:

• Alcohol and liver disease
• Cirrhosis of the liver
• Diet and liver disease
• Fatty liver and NASH
• Liver cancer
• Liver disease tests explained
• Obstetric cholestasis (OC)
• Primary biliary cirrhosis (PBC)
• Primary sclerosing cholangitis (PSC).

Contact us for more information:
Tel: 01425 481 320
Helpline: 0800 652 7330
Email: info@britishlivertrust.org.uk
Web: www.britishlivertrust.org.uk

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

Mr Mohammad Abu Hilal MD FRCS PhD, Consultant, Hepatobiliary-pancreatic and Laparoscopic Surgeon, Honorary Senior Lecturer, School of Medicine, Southampton University Hospital.

Mr Simon Bramhall, Consultant HPB and Liver Transplant Surgeon, University Hospital Birmingham.

Did you find this publication helpful?

The British Liver Trust is always looking for ways to improve the information we provide. Please take a few minutes to let us know your views – we value your feedback.

How helpful did you find this publication? (please circle a number below)

5 Excellent  4 Good  3 OK  2 Little help  1 No help

Were there any aspects of the publication which you found especially useful?

☐ No  ☐ Yes

Please comment: .................................................................
...........................................................................................
...........................................................................................

Were there any parts of the publication which you felt were unclear or difficult to understand?

☐ No  ☐ Yes

Please comment: .................................................................
...........................................................................................
...........................................................................................

Are there any topics or issues which you feel are missing from the current publication?

☐ No  ☐ Yes

Please comment: .................................................................
...........................................................................................
...........................................................................................

Could the format of the information be improved e.g. size, layout, images, chapter order, font size, video or audio alternatives?

☐ No  ☐ Yes

Please comment: .................................................................
...........................................................................................
...........................................................................................
The need to do more for people with liver disease is greater than ever before.

The British Liver Trust is Britain’s only national charity for adults with all forms of liver disease. We rely on the generosity of others so that we can continue to improve the lives of people affected by liver disease.

A donation of just £3 a month can help us to plan and maintain our core services with confidence for the future. By filling in your contact details below, and the form on the reverse, you can set up your regular gift to the British Liver Trust.

**Your contact information (BLOCK CAPITALS)**

Title ........ First name ........................................
Surname ..........................................................
Address ..................................................................
...................................................................... Postcode ................................

Email ....................................................................

Telephone ...........................................................

By giving the British Liver Trust your contact details (postal address, email address, phone number) you agree the Trust may contact you periodically with updates about its work.

Please tick the box if you do not wish to receive any further information from the British Liver Trust. □

The British Liver Trust does not give your information to other organisations for marketing purposes.

**Please return this form to:**
Freepost RLZS-RJXB-BYLX, British Liver Trust,
2 Southampton Road, Ringwood, BH24 1HY.
Tel: 01425 481320 Fax: 01425 481335
Email: info@britishlivertrust.org.uk
Yes! I wish to make a monthly donation to reduce the impact of liver disease.

Please fill in your contact details on the reverse of this form

To: The Manager  Bank/ Building society: 

Address: .................................................................

................................................................. Postcode .................................................

Name(s) of account holder(s):

..........................................................................................................................................

..........................................................................................................................................

Account no: ___________ Sort code: ___________

Instruction to your bank or building society:
Please set up this standing order and pay the sum below to CAF Bank Ltd, 25 Kings Hill Avenue, Kings Hill, West Malling, Kent ME19 4JQ. Account name: British Liver Trust Sort code: 405240 Account no: 00017972

Start date: ___________ (Please allow one month from today)

☐ £5  ☐ £3  Other amount £ ___________

By donating £2 or more a month you can become a Friend of the Trust, please tick here if you wish to sign up ☐

By donating £100 or more a month you can become a member of the 100 Club, please tick here if you wish to sign up ☐

Signature(s):  Date: ____________________________

On receipt of this standing order form the British Liver Trust will send it to your bank or building society and the standing order will be set up. You will remain in control of your payments and will be able to alter or cancel your donations at any point. This standing order form cancels any previous standing orders to the Trust.

giftaid it  To qualify for Gift Aid you must pay an amount of Income Tax and/or Capital Gains Tax for this tax year at least equal to the tax that we will claim from HM Revenue & Customs on your Gift Aid donations. This is currently 25p for each £1 that you give.

☐  (Please tick) I authorise the British Liver Trust to treat all gifts of money that I have made in the past 4 years and all future gifts of money that I make from the date of this declaration as Gift Aid donations, until I notify you otherwise.
The British Liver Trust acknowledges the contribution of Sovereign Health Care and The James Tudor Foundation towards the development of this booklet.

The sponsor has no editorial involvement in the publication.

**British Liver Trust**
2 Southampton Road
Ringwood, BH24 1HY

**Helpline:** 0800 652 7330
**Tel:** 01425 481320  **Fax:** 01425 481335
**Email:** info@britishlivertrust.org.uk
**Web:** www.britishlivertrust.org.uk