

Patient information from the BMJ Group

Gallstones

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Gallstones

Gallstones are small stones that form in your gallbladder. They can hurt a lot. And they can make your gallbladder swell up. The usual treatment is an operation to take out your gallbladder.

We've brought together the best research about gallstones and weighed up the evidence about how to treat them. You can use this information to talk to your doctor and decide which treatment is right for you.

What are gallstones?

Gallstones are small stones that form in your gallbladder. This is a little pouch that sits under your liver. It stores digestive juices that help your body break down food. Lots of people have gallstones.

In most people, gallstones don't cause any problems. But sometimes, they block the tubes that carry digestive juices. This can give you pain in your abdomen. And it can cause more serious problems too, like swelling of your gallbladder.

The good news is that the usual treatment for gallstones works. That treatment is an operation to take out your gallbladder.

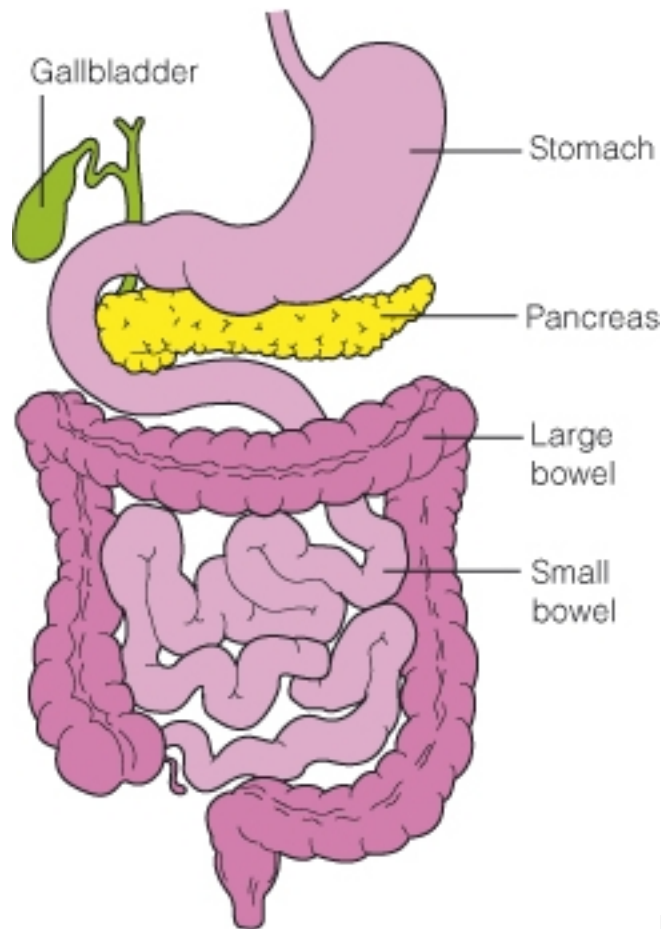
Key points for people with gallstones

- Gallstones are very common. By the age of 75, about 1 in 3 women and 1 in 5 men have them. ^[1]
- In most people, these stones don't cause any problems and don't need any treatment. ^[2]
- If your gallstones do cause problems, the most likely symptom is pain in your abdomen. But you may have weeks or even years between pain attacks.
- Other conditions can cause the same symptoms as gallstones. So doctors use tests to help work out your diagnosis.

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- If your gallstones cause problems, the usual treatment is an operation to take out your gallbladder. ^[1]
- There are different ways to do the operation. Most people have what is called keyhole surgery, which uses small cuts.

How your gallbladder works



Your gallbladder is part of your digestive system.

Your digestive system breaks down the food you eat so your body can use the nutrients.

Your gallbladder's job is to store bile. Bile is one of the digestive juices. Gall is the old name for bile.

Bile is a yellow-green liquid. It is made by your **liver**. It flows through tubes, also known as ducts, into your bowel. That's where it goes to work, helping to break down food.

Bile has lots of chemicals in it. One chemical is **cholesterol**. This is a fatty substance. Another chemical is called bile acid. It helps break down fat in the food you eat.

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Your liver makes bile all the time. But it only goes into your bowel when you eat or drink. The rest of the time, it is stored in your gallbladder. This is a small, stretchy pouch that sits under your liver. Normally, your gallbladder holds about six teaspoons of bile.

When you eat or drink, your gallbladder squeezes bile out into a tube called the **cystic duct**. The bile flows down this tube into another one. That second tube is called the **bile duct**. It takes the bile to your bowel.

When your liver makes bile that is not needed straight away, the bile flows through your cystic duct and into your gallbladder, for storage.

What happens when you have gallstones

Sometimes, when bile is stored in your gallbladder, it gets very thick. Then it can get crystals in it. Usually, the crystals are made of cholesterol from the bile. They can grow into gallstones.

Gallstones can be as small as a grain of sand or as big as a golf ball. And you may have just one big gallstone or hundreds of small ones.

You may hear gallstones called **cholelithiasis**.

Lots of people have gallstones but don't know it. The stones don't cause any symptoms. In this case, doctors say you have **silent gallstones**.

But sometimes the stones block the tubes that carry bile. This can cause symptoms such as pain in your abdomen and fever. If this happens, doctors say you have **symptomatic gallstones**.

The symptoms and problems gallstones cause depend on where they get stuck and how long they stay stuck.

Gallstones can hurt a lot when they block tubes. Usually, this isn't serious. But sometimes the blockage does cause serious problems like inflammation (swelling) in your gallbladder.

Gallstones: why me?

Things that increase your chances of getting a disease are called risk factors. We've listed the main risk factors for gallstones below. The biggest ones relate to your age, your sex, and your background. ^[3]

Having a risk factor doesn't mean you'll get gallstones for sure. It just means you are more likely to get them than someone without the risk factor.

You may be able to do some things to lower your chances of getting gallstones. For more, see [What can I do to lower my risk of gallstones?](#)

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Age

Gallstones get more common as you grow older. ^[4] They hardly ever show up before the age of 20. But by the age of 90, more than 4 in 10 people either have gallstones or have had their gallbladder taken out because of them. ^[5]

Sex

Women are almost twice as likely as men to have gallstones. This is because the female sex hormone (called oestrogen) makes it easier for the stones to form.

Your background

The risk of gallstones differs for people from different backgrounds. In the United States, for example, black people have a lower risk than white people. ^[6]

Obesity

Being **obese** (very overweight) increases your risk of getting gallstones, especially if you are a woman. ^[6]

To work out if you are obese, doctors measure your height and weight. The numbers go into a maths formula that gives a single number. This is called your body mass index (BMI for short). You can [work out your own BMI](#) . A BMI of more than 30 means you are obese.

The more extra weight you carry, the higher your chances of getting gallstones.

Women with a BMI of 45 have seven times the risk of gallstones as women with a BMI of less than 25.

In men, obesity is not so clearly linked to gallstones. But having a lot of fat around your middle does increase your risk.

If you are obese, your bile may have more cholesterol in it. This makes it easier for gallstones to form.

Pregnancy

Being pregnant increases your chances of getting gallstones. About 2 in 100 women who are pregnant get these stones during pregnancy. But the stones don't usually cause any problems.

Pregnancy makes your bile thicker, so it's easier for gallstones to form. This gets back to normal after your baby is born. ^[4] But the stones that formed don't go away. So the more times you are pregnant, the more likely you are to get problems from gallstones.

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Losing weight quickly

If you are obese, slimming down quickly increases your risk of getting gallstones.^[6] ^[7] This is especially true if you eat a diet that has hardly any fat in it or if you lose more than 1.5 kilograms (about 3 pounds) each week.

Having surgery to treat obesity (called weight-loss surgery) greatly increases your risk of gallstones.^[5] ^[8] If you have this surgery, your gallbladder may be taken out at the same time. Or you may be given medicines that can lower your chances of getting gallstones.

What you eat

There is not much good evidence about how the food you eat affects your risk of gallstones.^[9] But eating foods that have lots of certain fats (called unsaturated and polyunsaturated fats) and not much of other ones (called saturated fats) seems to lower your risk. The unsaturated and polyunsaturated kinds are found in vegetable oils, like sunflower oil. Saturated fats are found in meat and dairy products.

Other medical conditions

You are more likely to get gallstones if you have **cystic fibrosis**, **diabetes**, **Crohn's disease** or other diseases affecting your bowel, or an injury to your **spinal cord**.^[4]

Some medicines

You are more likely to get gallstones if you use any of these medicines:^[4]

- Oestrogen, a hormone found in **hormone replacement therapy** and in contraceptive pills (but contraceptive pills today don't increase your risk because they don't have as much oestrogen as the old ones did)
- Octreotide (brand name Sandostatin), a treatment for a condition called acromegaly
- Ceftriaxone (brand name Rocephin), an **antibiotic**.

What are the symptoms of gallstones?

Most people don't get any symptoms from their gallstones. But some people get pain in their abdomen and feel sick.

If you don't have symptoms, you might only find out that you have gallstones by accident. These stones can show up in tests done for other reasons. For example, if you have an **ultrasound** scan for some other reason, it may show gallstones.

Gallstones cause symptoms when they block off the tubes that carry bile. If you do get symptoms, the most common one is pain in your abdomen. Your abdomen is the area

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below your ribs and above your hips. The two other common symptoms are feeling sick and throwing up.

More rarely, you may have an attack of pain that doesn't go away. With this attack, you may also get a **fever**. And your skin and eyes may turn yellow.

You may have gallstones for a long time before they start to bother you. And if you get symptoms, it may be weeks, months, or even years before you get them again. Or you may get them quite often, especially after you eat fatty foods.

You may have different symptoms at different times. It depends on where a gallstone gets stuck and how long it stays stuck.

Pain from gallstones

You get pain in your abdomen when a gallstone gets stuck in one of the tubes that carry bile. This pain is steady and bad. You usually feel it in the upper right side of your abdomen. It feels like cramping. Doctors call it **biliary pain** or **biliary colic**.

You often get this pain in the evening or at night. And it typically comes on fast, often after you eat. It may stop after only 15 minutes. But it typically goes away after four hours to six hours. Sometimes it lasts up to 24 hours.

With time, the gallstone may pass. It just goes into your bowel and out in your stool. In that case, your pain goes away.

Your first attack of biliary pain may scare you a lot because it hurts so much. You may think you're having a heart attack. You may have to stop what you are doing. Usually, painkillers such as paracetamol and ibuprofen don't work for this kind of pain. Moving around or passing wind doesn't help either.

During an attack of biliary pain, you may also feel sick and throw up. You may be sweaty and feel restless. And your abdomen may still feel sore even after the attack has passed.

If you get regular attacks of biliary pain from gallstones, you may also:

- Feel full earlier than usual when eating
- Get indigestion
- Belch a lot after eating
- Get wind or indigestion after eating fatty food.

Other conditions can also give you symptoms like these. These conditions include an **ulcer** in your bowel or stomach and **irritable bowel syndrome**. Your doctor will check for these too. [\[15\]](#) [\[16\]](#)

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Inflammation of your gallbladder

Sometimes a gallstone doesn't pass. It keeps on blocking the tube. If this happens, the bile gets trapped in your gallbladder and can't get out.

Then your gallbladder gets irritated and swollen. This is called an **inflamed gallbladder**. You may hear doctors refer to it as **cholecystitis**.

These are the most common symptoms:

- Pain in the upper right part of your abdomen that doesn't go away
- Soreness if someone presses there
- A fever
- Yellow skin and eyes
- Itchy skin
- Pale stools
- Not feeling hungry.

The pain from an inflamed gallbladder is a lot like biliary pain. But it doesn't go away. If you get this pain, you probably need to go to hospital.

You get yellow skin and eyes when the blockage from your gallstones makes waste products build up in your body. Doctors call this **jaundice**. It happens in about 1 in 5 people with an inflamed gallbladder. ^[17]

You are much more likely to get an inflamed gallbladder if you have had attacks of biliary pain from gallstones in the past.

How do doctors diagnose gallstones?

A lot of other conditions can cause symptoms like the ones you get with gallstones. Your doctor will examine you and may do some tests to work out what is causing your symptoms.

Here are some things your doctor will do to help tell if you have gallstones.

First, your doctor will ask you questions about the pain:

- Where does it hurt?
- How bad is it?
- How fast does it come on?

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- How long does it last?
- Does anything bring it on?
- Does anything make it go away?

Your doctor will also want to know if you've felt sick or thrown up, and about any other symptoms you've had during an attack.

Then you will probably have a physical examination. Your GP may:

- Look at your abdomen to see if it's stiff or bloated
- Feel your abdomen to see if it is sore
- Take your temperature to see if you have a fever
- Listen to your abdomen with a stethoscope to see if your bowel is making more or less noise than is normal.

If your GP thinks that gallstones may be causing your symptoms, he or she may send you to hospital for tests. This will probably be a routine appointment. It may take a few weeks to come through. Your GP will call you when the results are back.

Or you may be sent to a hospital specialist. This may be a doctor called a gastroenterologist. The specialist can set up your tests and see you for any care you need afterwards.

If your GP thinks your gallstones are causing inflammation of your gallbladder or another problem, you will probably have to go to hospital straight away.

Tests for gallstones

Ultrasound scan

The best test for gallstones is an ultrasound scan.^{[32] [33]} This test uses sound waves to make a picture of your insides. You have this test in hospital. It doesn't hurt.

Your doctor or a scanning specialist uses a tool that looks a bit like a microphone. He or she puts it on your abdomen. It sends out and picks up sound waves.

The ultrasound machine turns the sound waves into a picture. The picture shows up on a screen.

If you have stones in your gallbladder or in any of the tubes (ducts) that carry bile, the stones will probably show up in the picture. But very small ones may not show up.

Finding gallstones on your scan doesn't always mean they are the cause of your symptoms. But it will help your doctor work out what is the cause.

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Blood tests

For blood tests, a small amount of blood is taken from your arm. Then it is sent to a laboratory.

These tests don't directly tell if you have gallstones. But they can pick up some of the problems that gallstones can cause.

For example, these tests can show if:

- Your **liver** isn't working properly
- You have an **infection**
- You have waste products building up in your body (called jaundice)
- Your **pancreas** isn't working properly.

X-rays

Gallstones don't show up on an **x-ray** of your abdomen. But your doctor may suggest you have one to check for other things that might be causing your symptoms.

You go to hospital for the x-ray. This doesn't hurt. You just lie on your back on a table and hold your breath while the picture is taken. You may need to move or stand up for more pictures.

Special x-rays

Your doctor may suggest a special x-ray called an oral cholecystogram. This is done in hospital. For this test, you take some tablets ahead of time. They make your bile show up on x-rays.

Other tests

If your doctor thinks you might have gallstones that are causing problems, he or she may suggest some extra tests, such as an MRI, a CT scan, or a radiation scan of your bile system. You might also have a test called endoscopic retrograde cholangiopancreatography (ERCP). During this test, a doctor can see whether you have blockages from gallstones and also possibly remove gallstones from your bile duct or drain bile. For more, see [Other tests for gallstones](#) .

How common are gallstones?

Most people who have gallstones don't know it and never get any symptoms.

About 5.5 million people in the UK have gallstones. ^[18] ^[19]

Some people do get symptoms from gallstones. And a lot of people who get symptoms decide to have an operation to take out their gallbladder. Each year more than 50,000

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people in the UK have this operation.^[18] ^[19] This is the usual treatment if you have pain from gallstones or if the gallstones are causing problems, such as **inflammation** of your **gallbladder** .

Gallstones happen more in some people than others. For example, they are generally more common in these groups.

- People over the age of 40. People under 20 hardly ever get them.
- Women. Women are three times more likely than men to get gallstones before the age of 50. After that age, the chances even out to some extent, but women are still more likely to get them.
- People who are obese (very overweight).

To learn more, see [Gallstones: why me?](#)

What treatments work for gallstones?

Gallstones are stones that form in your gallbladder. Usually, they don't bother you at all. But sometimes they block the flow of digestive juices. This can hurt a lot and cause problems. The good news is that the usual treatment for gallstones works. That treatment is an operation to take out your gallbladder.

Your gallstones may not need any treatment at all. But they may give you pain in your abdomen or cause problems such as **inflammation** of your **gallbladder** . In that case, your doctor will probably suggest an operation to take out your gallbladder. This lets your bile and other digestive juices flow properly again. It also stops you getting pain and inflammation.

Key points about treating gallstones

- In most people, gallstones don't cause any symptoms, so they don't need to be treated.
- If they cause pain or inflammation, an operation to take out the gallbladder is the best treatment for most people. This is called a **cholecystectomy**.
- The operation is typically done by **keyhole surgery**. This means your surgeon takes out your gallbladder through small cuts made in your abdomen.
- But you may need **open surgery** instead. With this kind, your surgeon takes out your gallbladder through one larger cut.
- You can live a healthy life without your gallbladder. After your gallbladder is taken out your liver will carry on making bile. But instead of being stored in the gallbladder, the bile will be pumped straight into your bowel.

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- If your gallbladder is inflamed, you may need surgery within a few days, or you may be able to wait for a few weeks. If you're very ill, your doctor may recommend draining your gallbladder to improve your symptoms before you have surgery.
- Some people with an inflamed gallbladder want to wait and see if their symptoms come back before deciding to have an operation. This is called **watchful waiting**.

Which treatments work best? There are good studies on most of the treatments for an inflamed gallbladder. We've carefully weighed up this research and given a rating for each treatment according to how well it works. But there are not many studies on treatments for only painful gallstones. So we haven't weighed up the research in the usual way and rated these treatments (see Our method).

We've looked at treatments for the two groups separately:

- [People who have only painful gallstones, and not an inflamed gallbladder](#) . These treatments include surgery to take out your gallbladder or procedures to break up your gallstones.
- [People who have an inflamed gallbladder](#) . These treatments include different types of surgery and draining the gallbladder before surgery.

For help in deciding which treatment is best for you, see How to use research to support your treatment decisions.

Treatment Group 1

Treatments for painful gallstones

Usual treatment

- [Cholecystectomy for painful gallstones](#) : There are three types of operations to take out your gallbladder. [More...](#)

Other treatments

We haven't looked at the research on these treatments in the same detail we have for most of the treatments we cover. (To read more, see Our method.) But we've included some information because you may be interested in them.

- [Non-surgical treatments for painful gallstones](#) : If you have other medical problems, you may not be able to have an operation to take out your gallbladder. Or you may not want to have surgery. Your doctor may offer you other treatments for your gallstones. [More...](#)

Treatment Group 2

Treatments for an inflamed gallbladder

Treatments that work

- [Keyhole surgery to take out an inflamed gallbladder](#) : Your surgeon takes out your gallbladder through small cuts in your abdomen. This is also called **laparoscopic cholecystectomy**. [More...](#)

Treatments that are likely to work

- [Draining an inflamed gallbladder before surgery to remove it](#) : If you are very ill, your doctor may recommend draining the bile from your gallbladder to improve your symptoms before you have surgery. [More...](#)

Treatments that work, but whose harms may outweigh benefits

- [Open surgery to take out an inflamed gallbladder](#) : Your surgeon takes out your gallbladder through one bigger cut in your abdomen. This is also called **open cholecystectomy**. [More...](#)
- [Watchful waiting for an inflamed gallbladder](#) : When you go to hospital, you are given treatment to calm the swelling in your gallbladder. When the swelling goes down, you go home. You don't plan to have an operation unless your symptoms come back. This is also called **watchful waiting**. [More...](#)

Treatments that need further study

- [Mini-keyhole surgery to take out an inflamed gallbladder](#) : Your surgeon takes out your gallbladder through extra-small cuts in your abdomen. This is also called **minilaparoscopic cholecystectomy**. [More...](#)

Other treatments

We haven't looked at the research on these treatments in the same detail we have for most of the treatments we cover. (To read more, see Our method.) But we've included some information because you may be interested in them.

- [Having your gallbladder drained or having a tube fitted](#) : If you have other medical problems, you may not be able to have an operation to take out your gallbladder. Or you may not want to have surgery. Your doctor may offer you other treatments for your gallstones. [More...](#)

What will happen to me?

You may worry about how gallstones will affect you in the future. It depends on how bad your stones are and whether you have treatment.

If your gallstones cause symptoms, such as bouts of pain in your abdomen or inflammation of your gallbladder, the usual treatment is an operation to take out your gallbladder. With this treatment, there's a good chance you won't have any more symptoms. For example, more than 9 in 10 people who have this surgery because of painful gallstones stop getting the pain. ^[20] ^[21]

It is very unlikely that you will die from gallstones. This can happen only if you get serious problems and you don't get treatment quickly. Such problems are rare. Also, people almost never die from gallstones in countries like the UK because you can get good treatment. ^[22]

You may worry about gallstones causing cancer. Cancer of your gallbladder is also rare. Eight in 10 people who have this kind of cancer also have gallstones. But we don't know if the stones caused the cancer. Most people with gallstones don't get gallbladder cancer. ^[23]

If your gallstones don't cause any symptoms

If your gallstones have not caused you any symptoms, doctors say you have **silent gallstones**. In this case, you probably won't get any problems in the future. So you probably won't need treatment.

In one study, only 2 in 100 people with silent gallstones started getting pain from them over the course of a year. ^[24] In another study, just 3 in 100 people got problems from their stones over the course of 10 years. ^[24]

If you get pain from gallstones

The pain you get in your abdomen from your gallstones is called **biliary pain**. If you have had an attack of this pain, you may get more. And you might need an operation to take out your gallbladder. This should stop you getting more attacks. ^[20] ^[21]

But other symptoms, like feeling sick and getting indigestion, might not go away after your operation. This may be because gallstones were not the cause of these symptoms. ^[20] ^[25]

Researchers have looked at what happens to people who get attacks of biliary pain if they don't have treatment. Here is what studies show: ^[26]

- About half of people who get an attack of this pain get another within one year.

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- Some people have one or two attacks of biliary pain and then don't have any symptoms for many years. About 1 in 3 people who have an attack don't have another one for 10 years.
- In a year, 1 or 2 in 100 people who get attacks of biliary pain get a problem such as inflammation of their gallbladder.
- If you get attacks of biliary pain often, you will probably keep getting them often. If you only get attacks rarely, you will probably keep getting them rarely.

If you get problems from gallstones

If your gallstones give you an inflamed gallbladder or other problems, you will probably need to go to hospital. Between 1 in 100 and 3 in 100 people with painful gallstones get an inflamed gallbladder. ^[27]

Your doctor will probably suggest an operation to take out your gallbladder. This should stop symptoms such as pain in your abdomen and fever. It should also stop you getting more pain attacks. ^{[20] [21]}

Most people who have an inflamed gallbladder find the pain either doesn't go away or comes back soon if they don't have treatment. About 1 in 3 people who don't have treatment for an inflamed gallbladder get the same problem, or another gallstone problem, within three months. ^[26]

Inflammation of your gallbladder can lead to serious problems. In about 1 in 10 people with this, the gallbladder bursts or starts to die (called gangrene). ^[28] If this happens, you need emergency surgery. Without treatment, about 1 in 5 people die. ^[29]

Here are some other serious problems you can get from gallstones. ^[28]

Infection of your bile duct

If a stone stops bile flowing properly, the bile can get infected. ^[24] When this infection happens in the tube that carries bile to your bowel (your bile duct), it is called **cholangitis**.

This is serious. It causes pain in your abdomen, yellow skin and eyes (called jaundice), and a fever. The infection can also spread. If it gets into your bloodstream, this can cause a very serious condition called sepsis.

But getting an infection of your bile duct is rare. ^[28]

Inflammation of your pancreas

This happens when a stone blocks lower down in your bile duct. The blockage can stop the flow of digestive juices from your pancreas. So it gets inflamed. Doctors call this **pancreatitis**.

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About 1 in 20 people with painful gallstones get an inflamed pancreas.^[28] If this happens, you might need surgery.^[28]

A hole in your bowel

Your gallbladder sits near your bowel. So if your gallbladder gets very inflamed, it may stick to part of your bowel. This could make a hole in your bowel. Doctors call this a **fistula**.

You will probably need an operation to take out your gallbladder and fix the hole. But getting a hole in your bowel is rare.^[28]

Don't I need my gallbladder?

Fortunately not. You can live quite healthily without your gallbladder.

After your gallbladder is taken out your liver will carry on making bile. Bile is the digestive juice that is usually stored in the gallbladder until it's needed. When you eat, the bile is pumped into your bowel to help digest the food. If you don't have a gallbladder, the bile flows straight into your bowel more often.

Having more bile in the bowel can cause diarrhoea. Between 1 and 5 in 100 people who have their gallbladder removed get diarrhoea.^[30] ^[31]

Questions to ask your doctor

If you've been told that you have gallstones or you are thinking about having gallbladder surgery, you may want to ask your doctor these questions.

Questions about gallstones

If you've been told you have gallstones, you may want to talk to your doctor to find out more. Here are some questions that you might want to ask.

- Are you sure that gallstones are causing my symptoms?
- What are the chances that my symptoms will get better without treatment?
- Are my gallstones causing any blockages or problems?
- What can I do to stop the attacks of pain I get in my abdomen?
- Is there anything I can do to lower my chances of having another attack?
- How will I know if I get problems from my gallstones?
- What should I do if that happens?

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Questions about surgery

If you are thinking about having an operation to take out your gallbladder, you should talk to your doctor and your surgeon to find out more. Here are some questions you might want to ask.

- Will taking out my gallbladder make my symptoms go away?
- What kind of operation will I have?
- Where will I need to go for my surgery?
- How much experience with this type of surgery does my surgeon have? Has he or she done 50 or more of these types of operations?
- What are the chances that I will have problems during the operation?
- How long will I have to wait for the operation?
- How long will I need to stay in hospital?
- How much time will I need to take off work afterwards?
- While I'm waiting for surgery, should I eat in any special way?
- Is there anything else I should do, or not do, while I'm waiting for surgery?
- What can I expect after having the operation? Are there any side effects?

Treatments:

Cholecystectomy for painful gallstones

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[Can it be harmful?](#)

This information is for people who have painful gallstones but who don't have an inflamed gallbladder. It tells you about surgery to take out your gallbladder, a treatment used for painful gallstones.

Does it work?

There hasn't been much research on having your gallbladder taken out if your only problem is painful gallstones. But here is what we know.

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- An operation to take out your gallbladder is recommended as the best treatment if you have painful gallstones. ^[45]
- There are three different ways to do the operation. The one that works best is called **keyhole surgery**. ^[46] ^[47]
- About 8 in 10 operations to take out gallbladders are done the keyhole way. ^[46] ^[47]

What is it?

Sometimes, gallstones block the tubes that carry bile and other digestive juices. When this happens, you get pain in your abdomen. Doctors call this **biliary pain**.

The usual treatment for this pain is an operation to take out your gallbladder. You can lead a healthy life without your gallbladder. In the UK each year, surgeons do about 50,000 operations to take out gallbladders. ^[46] ^[48]

Most people who have surgery to take out their gallbladder only get attacks of pain from their gallstones. They don't have serious problems from the stones, such as **inflammation** of their gallbladder.

What types of surgery are there?

The usual treatment for painful gallstones is an operation to take out your gallbladder. There are three types of surgery:

- **Keyhole surgery** (called laparoscopic cholecystectomy)
- **Open surgery** (called open cholecystectomy)
- **Mini-keyhole surgery** (called minilaparoscopic cholecystectomy).

For all of these operations, you have a **general anaesthetic**. That means you are asleep and you won't feel anything.

You can learn more about each type of surgery below.

Keyhole surgery

Here is what we know about keyhole surgery to take out your gallbladder.

The operation usually takes an hour and a half. ^[49] But it can last more than two hours. ^[50]

In studies, people died in less than 1 in 1,000 keyhole operations. ^[51] A study of people who had keyhole operations found that five years after the operation one person in every

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five said they still felt some pain from their gallstones. But four in every five people said they were happy with the results of the operation. ^[52]

Usually, for keyhole surgery, your surgeon makes four small cuts in your abdomen. ^[53] But some surgeons use just three cuts, and others use five.

One cut is made close to your belly button. This one is about 2 centimetres to 3 centimetres (about 1 inch) long. The other cuts are smaller. They are usually 0.5 centimetre to 1 centimetre (about one-quarter inch to one-half inch) long.

Your surgeon puts a tube inside each cut to hold it open, so he or she can pass tiny tools into your abdomen. Gas is pumped in to make your abdomen blow up like a balloon. This makes more space around your organs inside, so your surgeon has more room to work.

Your surgeon puts a thin tube with a camera on the end through one of the cuts. This tube is called a **laparoscope**. The camera lets your surgeon see and work inside your abdomen. Then your surgeon uses the tiny tools to pull your gallbladder away from your other organs and take it out.

Usually, you need to stay in hospital for only one night. You may even be able to go home the same day. If you don't do heavy work, you can typically go back to work after one week to 10 days. ^[46] ^[47]

In up to 1 in 4 keyhole operations, the surgeon has to switch to a bigger kind of operation, the open kind, part-way through. Having to switch is more likely if your gallstones are causing problems. ^[54] Your surgeon may switch because it is too hard to do the operation the keyhole way without harming your organs.

One study showed that switching to an open operation is more likely if: ^[49]

- You are a man
- You are older
- Your gallstones are large
- Your gallbladder is inflamed and has started to die (called gangrene).

Open surgery

Here is what we know about open surgery to take out your gallbladder.

Open surgery may take a bit longer than keyhole surgery. ^[49]

Your chances of having some kind of problem after your operation are higher with open surgery than with keyhole surgery. ^[51]

Gallstones

This surgery is not quite as safe as keyhole surgery. In studies, people died in 7 in 1,000 open operations, compared with less than 1 in 1,000 keyhole operations. ^[51]

Open surgery is an older way of taking out gallbladders. Today, most people who have their gallbladder taken out have it done the keyhole way. But you may still need to have it done the open way. This might be because you have had surgery on your abdomen before.

For open surgery, your surgeon makes a cut in your abdomen that is about 10 centimetres (4 inches) long. Then he or she pulls your gallbladder away from your other organs and takes it out.

Mini-keyhole surgery

Here is what we know about mini-keyhole surgery to take out your gallbladder.

This operation usually takes an hour and a half. ^[49] But it can last more than two hours. ^[50] It may take a bit longer than regular keyhole surgery.

In up to 1 in 4 mini-keyhole operations, the surgeon has to switch to a bigger kind of operation (open surgery) part-way through.

Mini-keyhole surgery is a lot like the regular keyhole kind. But this one uses even smaller cuts in your abdomen and even smaller tools.

Not many surgeons do mini-keyhole surgery. One study showed it works about as well as regular keyhole surgery. ^[55] But mini-keyhole is so new that there isn't much good research on it yet. That means we can't say for sure how well it works.

Are there other treatments?

You may not be able to have surgery to take out your gallbladder because you have other medical conditions. Or you may not want to have surgery. In either case, your doctor may offer you some other treatments, such as dissolving your gallstones with medicine or smashing them with sound waves. But with these, your gallstones may come back. ^[46] For more, see [Non-surgical treatments for painful gallstones](#) .

How can it help?

If you have your gallbladder taken out, there is a good chance you won't get any more bouts of pain.

More than 9 in 10 people who have their gallbladder taken out find their pain goes away after surgery. ^[56]

But about 15 in 100 people still have some symptoms after the surgery. ^[57] This could be because stones were not the cause of the symptoms in the first place, or because of problems from the operation. ^[46]

How does it work?

Gallstones form in your gallbladder. They cause pain when they get stuck in the tubes that carry bile. If you have painful gallstones, taking out your gallbladder should get rid of the stones and stop you getting new ones.

Can it be harmful?

All surgery has risks. This means something can go wrong. You should talk with your surgeon about these risks. But if you don't have an inflamed gallbladder, the risks of having your gallbladder taken out by keyhole surgery are very low. ^[45]

After you have had your gallbladder taken out, your liver keeps making bile as before. But without your gallbladder, bile goes straight into your bowel. This can affect your digestion.

Most people notice only slight digestive changes that don't cause problems. These changes may include passing stools more often than before and passing loose stools or diarrhoea.

About 5 in 100 people who have had their gallbladder taken out sometimes need to take medicine for diarrhoea. ^[31]

Non-surgical treatments for painful gallstones

In this section

[Do they work?](#)

[What are they?](#)

This information is for people who have painful gallstones but who don't have an inflamed gallbladder. It tells you about treatments used for painful gallstones other than surgery.

Do they work?

We haven't looked at the research on these treatments in the same detail as have for most of the treatments we cover. (To read more, see Our method.) But we've included some information because you may be interested in them.

What are they?

If you have painful gallstones, the usual treatment is [surgery to take out your gallbladder](#).

But you may not be able to have surgery because you have other medical problems. For example, you may have trouble with your heart or your lungs. Or you may simply not want to have surgery.

Your doctor may offer you other treatments, described below, if you can't or don't want to have your gallbladder taken out.

Gallstones

These treatments may suit you if: ^[58]

- Your gallstones are small (less than 2 centimetres or about 1 inch across) and made of cholesterol
- You have fewer than four gallstones
- Your gallbladder is working properly
- You don't have any blockages in the tube that carries bile in and out of your gallbladder (your cystic duct)
- You have had only mild pain from your gallstones.

One problem with these treatments is that you can still get new gallstones.

Dissolving your gallstones with medicine

You can take tablets to try to dissolve your gallstones away. ^[59] These tablets stop cholesterol forming crystals. Gallstones grow from crystals.

The usual medicine is ursodeoxycholic acid (brand names Destolit, Urdox, Ursofalk, and Ursogal).

This treatment takes six months to 18 months. And it can have side effects. Your cholesterol level may go up, and you may get diarrhoea. And even if your gallstones go away, they may come back when you stop taking the medicine.

Smashing your gallstone with sound waves

This treatment uses sound waves to break up your gallstones into small pieces. The pieces just go into your bowel and out in your stools.

Doctors call this treatment **extracorporeal shockwave lithotripsy**. It doesn't hurt.

It may work best when combined with a treatment that dissolves gallstones. It is suitable only for people who have just a few small stones.

Dissolving your gallstones with a chemical

For this treatment, your doctor passes a thin tube through your skin and into your gallbladder.

Then he or she puts a chemical into the tube. The chemical is called methyl-tert-butyl ether (MTBE for short). It goes into your gallbladder. There, it can dissolve away smaller gallstones.

This treatment isn't used much any more. That's because the chemical can cause bad side effects. For example, you can get inflammation of your bowel.

Keyhole surgery to take out an inflamed gallbladder

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on keyhole surgery to take out an inflamed gallbladder?](#)

This information is for people who have an inflamed gallbladder. It tells you about keyhole surgery to take out the gallbladder. It is based on the best and most up-to-date research.

Does it work?

Yes. Having your gallbladder taken out through small cuts, called keyhole surgery, is the best treatment if your gallbladder is inflamed. ^[60] ^[61]

This operation gets rid of the inflammation. And it lets your digestive juices flow properly again. It should stop your pain and also stop you getting new gallstones. ^[62]

With this surgery, you may go home from hospital sooner than if you had a bigger operation called [open surgery](#). ^[63]

Doctors call keyhole surgery to take out your gallbladder **laparoscopic cholecystectomy**.

What is it?

Sometimes, gallstones block the tubes that carry bile from the gallbladder to the bowel. This can make your gallbladder swell up and hurt. You will probably need treatment in hospital.

In keyhole surgery, your surgeon takes out your gallbladder. You can live a healthy life without it.

In the UK each year, surgeons do about 50,000 operations to take out gallbladders. ^[60]
^[64]

There are three ways to do surgery to take out your gallbladder:

- **Keyhole surgery.** With this type, about four small cuts are made in your abdomen.
- **Open surgery.** With this type, one large cut is made in your abdomen.
- **Mini-keyhole surgery.** This type is a lot like keyhole surgery. But it uses even smaller cuts.

Here, we talk about the keyhole type. For more on the other types, see [Open surgery to take out an inflamed gallbladder](#) and [Mini-keyhole surgery to take out an inflamed gallbladder](#).

Gallstones

Most people who have their gallbladder taken out have it done the keyhole way. This is what you can expect if you have keyhole surgery:

- For this kind of surgery, you are given a **general anaesthetic** . This means that you are asleep and you won't feel anything.
- Usually, surgeons make four small cuts in the abdomen and use tiny tools to see inside and do the surgery. But some surgeons use just three cuts, and others use five. ^[65]
- The operation typically takes an hour and a half. ^[66] But it can last more than two hours. ^[67]
- You will need to stay in hospital for three days to four days. ^[66] ^[68]
- In up to 1 in 4 operations, the surgeon has to switch to a bigger operation, the open kind, part-way through. ^[63]

In keyhole surgery, one cut is made close to your belly button. This one is about 2 centimetres to 3 centimetres (about 1 inch) long. The other cuts are smaller. They are usually 0.5 centimetre to 1 centimetre (about one-quarter inch to one-half inch) long.

Your surgeon puts a tube inside each cut to hold it open, so he or she can pass tiny tools into your abdomen. Gas is pumped in to make your abdomen blow up like a balloon. This makes more space around your organs inside. So your surgeon has more room to work.

Your surgeon puts a thin tube with a camera on the end through one of the cuts. This tube is called a **laparoscope**. The camera lets your surgeon see and work inside your abdomen. Then your surgeon uses the tiny tools to pull your gallbladder away from your other organs and take it out.

You may have your operation within a few days of going into hospital. Or you may be able to go home and have it several weeks later, after your symptoms have calmed down. In studies, people who had the operation straight away were able to go home from hospital sooner. ^[69] ^[70] For more, see [When to have surgery for an inflamed gallbladder](#) .

How can it help?

If you have an inflamed gallbladder, having keyhole surgery to take out your gallbladder should: ^[71] ^[52]

- Stop your pain
- Make your **fever** go away, if you have one

Gallstones

- Stop other symptoms, such as yellow skin and eyes (jaundice) and feeling sick
- Stop you getting new gallstones and pain attacks.

But if your abdomen was irritated by your inflamed gallbladder, it may take longer for your symptoms to go away. Also, if you have gallstones outside your gallbladder, they may be left behind. So they could still cause you pain.

Keyhole surgery is better than open surgery in some ways. If you have your gallbladder taken out the keyhole way:

- You may have smaller scars that heal faster. You will probably have four small scars. With an open operation, you will have one big scar. Smaller scars heal faster. And they may look better to you than a bigger scar.
- You may be able to go home sooner.^{[63] [66] [68]} In one study, people who had keyhole surgery went home four days sooner than people who had an open operation.^[66] Also, you're less likely to get an infection or get bed sores from sitting still.
- Your operation may be a bit faster. And you may need fewer painkillers.^[66] But not all studies showed this.

About 8 in 10 people who have their gallbladder taken out have it done the keyhole way.^{[60] [61]}

But keyhole surgery is not right for everyone. Here are some reasons why you might need an open operation instead:

- You have a serious problem, such as a burst gallbladder or a hole in your bowel
- You have had surgery on your abdomen before
- Your internal organs aren't laid out in the usual way
- Your gallbladder is very inflamed.

Ask your surgeon which type of operation is best for you and why.

How does it work?

If your gallbladder is inflamed, taking it out gets rid of what's causing your symptoms. And because gallstones usually form in your gallbladder, taking it out should also stop you getting new stones.

Can it be harmful?

All operations have risks. This means something could go wrong. Talk to your surgeon about these before you have your gallbladder taken out.

With keyhole surgery, there is a small chance that something could go wrong during surgery or that you could have problems afterwards. In general, this surgery seems safer than the open kind. But some studies show there were more problems with the keyhole operations. ^[66] ^[67] ^[68] ^[72]

Having a **general anaesthetic** can have side effects. The most common one is feeling sick when you wake up. Serious problems are rare. Some people have an allergic reaction to the anaesthetic. This is rare too. But be sure to tell your doctors if you have any **allergies** .

Here are some of the problems you can get if you have keyhole surgery to take out your gallbladder. You may hear doctors call these **complications**. Your chances of getting them depend in part on your age and your general health.

Problems you can get straight away

- Switching to an open operation. Your surgeon may have to switch to a bigger operation, the open kind, part-way through. You may need this if your gallbladder is too inflamed to do the surgery safely the keyhole way. This happens in 1 in 4 to 1 in 6 operations. ^[66] ^[68]
- Damage to your bile duct. This is very rare. But it happens in about 4 in every 1,000 keyhole operations. ^[72] Your surgeon will need to fix the damage. You may need an open operation to do this.
- Bleeding. About 1 in 100 people who have gallbladder surgery bleed a lot afterwards. You may need another operation to stop the bleeding. ^[72]
- A gallstone is left in your bile duct. This happens in about 8 in 1,000 operations. ^[72] If a stone is left behind, it can cause problems. You may need another operation to take it out. But sometimes it can be taken out with a procedure that involves putting a flexible tube through your mouth and stomach, and down into your bowel. This is called endoscopic retrograde cholangiopancreatography ([ERCP](#)) .
- Pneumonia. This can usually be treated with **antibiotics** . ^[72]
- Heart attack. This is very rare if your heart is healthy. ^[72]
- Infection. You may get an infection in your wound or inside your abdomen. This can usually be treated with antibiotics. ^[72]

Gallstones

- A hernia. This happens when one of the scars on your abdomen is too weak. Some of your organs push through. It may happen weeks or months after surgery. You will need another operation to fix the hernia. ^[72]
- Blood clots. Having surgery can increase your chances of getting a blood clot in the veins in your legs. These clots can travel to your lungs too. This happens in about 1 in 500 people having a gallbladder operation. ^[72]
- Bile leaking into your abdomen. ^[68] You may need to have a tube put in to fix the leak. This is usually done with ERCP. ^[73]
- Infection in your urinary system. This is quite common after surgery on your abdomen. ^[74] It can be treated with antibiotics.

You are less likely to get problems if your surgeon has done lots of gallbladder operations the keyhole way. ^[66] ^[67] For example, you are less likely to get damage to your bile duct if your surgeon has done at least 50 operations this way. ^[75]

There is a very small chance that you could die after keyhole surgery. This happens in only 1 in 1,000 keyhole operations. ^[72] But it happens in 7 in 1,000 open operations.

Problems you can get later on

After you have had your gallbladder taken out, your liver keeps making bile as before. But without your gallbladder, bile goes straight into your bowel. This can affect your digestion.

Most people notice only slight digestive changes that don't cause problems. These changes may include passing stools more often than before and passing loose stools or diarrhoea.

About 5 in 100 people who have had their gallbladder taken out sometimes need to take medicine for diarrhoea. ^[60]

How good is the research on keyhole surgery to take out an inflamed gallbladder?

We found a lot of evidence that surgery works if your gallbladder is inflamed.

Most of the studies compared different ways of doing the operation. Some studies compared keyhole surgery with a bigger type of operation, called open surgery. The studies showed that people who had keyhole surgery were less likely to die and went home from hospital sooner. Some studies (but not all) showed people who had keyhole surgery had fewer problems. ^[76] ^[77] ^[78] ^[79] ^[80]

Gallstones

We also found three big summaries of the research that looked at when to have surgery. [\[81\]](#) [\[82\]](#) [\[44\]](#) The summaries showed that keyhole surgery worked just as well if people had their operation within a few days or several weeks of getting symptoms.

Draining an inflamed gallbladder before surgery to remove it

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on draining an inflamed gallbladder before surgery to remove it?](#)

This information is for people who have an inflamed gallbladder. It tells you about draining the gallbladder before surgery to remove it. It is based on the best and most up-to-date research.

Does it work?

Probably. If you are very ill (for example, if an [infection of your bile duct](#) has spread to your bloodstream), your doctor may recommend draining the bile from your gallbladder. This may improve your symptoms quickly, allowing you to have surgery soon after.

This combination of treatments should lead to a faster recovery than if you have regular medical treatment for several weeks and then surgery.

What is it?

If a gallstone blocks the tube out of your gallbladder, bile can get trapped inside, making your gallbladder swell up and hurt. This is called an inflamed gallbladder. Most people with an inflamed gallbladder have surgery to remove it. But you may not be able to have surgery straight away if you are very ill, especially if you are elderly or have other health problems that make surgery more risky. Your doctor may instead recommend having your gallbladder drained to improve your symptoms. You may then be able to have surgery soon after.

Here's how your doctor will probably drain your gallbladder:

- You will be given a **local anaesthetic**. This means you will be awake but you won't feel anything.
- Your doctor will make a small cut in your abdomen.
- Your doctor will then pass a thin tube through your **liver** and into your gallbladder. The trapped bile will flow out through the tube.

Doctors call this treatment **percutaneous cystostomy**.

Gallstones

After the tube has been in place for a few days, your doctor may decide you are well enough to have surgery to remove your gallbladder (in one study, people had surgery within four days of having their gallbladder drained).^[83] There are three ways to do this surgery.

- [Keyhole surgery](#) . With this type, about four small cuts are made in your abdomen. Most people have this type of operation.
- [Open surgery](#) . With this type, one large cut is made in your abdomen.
- [Mini-keyhole surgery](#) . This type is a lot like keyhole surgery, but it uses even smaller cuts.

But some people don't have surgery after their gallbladder is drained. They may have other health problems that prevent them from having surgery (for example, problems with their heart or lungs) or they may not want to have an operation. We haven't yet looked at the research on how well people do if they have their gallbladder drained without having surgery.

How can it help?

If you have an inflamed gallbladder and are very ill, having the trapped bile drained from your gallbladder should improve your symptoms quickly, allowing you to have surgery soon after.

One study compared people who had their gallbladder drained before surgery with people who had regular medical treatment with antibiotics and then surgery eight weeks later.

^[83] It found that people who had their gallbladder drained before surgery:

- Felt better faster. On average, their symptoms improved in 15 hours, compared with 55 hours for those having medical treatment.
- Left hospital sooner. They stayed in hospital for around five days, on average, compared with 15 days for those having medical treatment.

How does it work?

If bile is trapped in your gallbladder, this can lead to inflammation and infection. Draining your gallbladder gets rid of any infected bile and helps reduce the inflammation.

Can it be harmful?

Draining bile is usually safe but it does have some risks.^[83]

- Bile might leak into the inside of your abdomen. This can cause a dangerous condition called peritonitis.

Gallstones

- You may get bleeding around where the tube is inserted into your gallbladder
- The tube draining the bile may accidentally come out.

But these problems are rare.

Having surgery to remove your gallbladder also has risks, such as bleeding and damage to your bile duct. You should talk with your surgeon about possible problems. To learn more, see our information on [keyhole surgery](#) , [open surgery](#) , and [mini-keyhole surgery](#) .

How good is the research on draining an inflamed gallbladder before surgery to remove it?

There's fairly good evidence that draining your gallbladder before surgery works if your gallbladder is inflamed and you are very ill.

One good-quality study (a [randomised controlled trial](#)) compared people who had their gallbladder drained before surgery with people who had regular medical treatment with antibiotics and then surgery eight weeks later. ^[83] It found that having a gallbladder drained can help people with an inflamed gallbladder.

Open surgery to take out an inflamed gallbladder

In this section

[Does it work?](#)

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[Can it be harmful?](#)

[How good is the research on open surgery to take out an inflamed gallbladder?](#)

This information is for people who have an inflamed gallbladder. It tells you about open surgery to take out the gallbladder. It is based on the best and most up-to-date research.

Does it work?

Yes. If your gallbladder is inflamed, open surgery to take it out should get rid of your pain.

^[84] It should also stop other symptoms, such as [fever](#) , and stop you getting new stones.

^[85]

But your chances of getting a problem, such as an [infection](#) , are higher than if you have a smaller operation. ^[86] ^[87] ^[88] That smaller operation is called [keyhole surgery](#) .

Doctors call open surgery to take out your gallbladder **open cholecystectomy**.

Gallstones

What is it?

Sometimes, gallstones block the tubes that carry bile from the gallbladder to the bowel. This can make your gallbladder swell up and hurt. You will probably need treatment in hospital.

In open surgery, your surgeon takes out your gallbladder. You can live a healthy life without it.

In the UK each year, surgeons do about 50,000 operations to take out gallbladders. ^[89]
^[90]

There are three types of operations to take out your gallbladder:

- **Keyhole surgery.** With this type, about four small cuts are made in your abdomen.
- **Open surgery.** With this type, one larger cut is made in your abdomen.
- **Mini-keyhole surgery.** This type is a lot like keyhole surgery. But it uses even smaller cuts.

This information is about the open type. For more on the other types, see [Keyhole surgery to take out an inflamed gallbladder](#) and [Mini-keyhole surgery to take out an inflamed gallbladder](#) .

Here is what you can expect if you have open surgery:

- For this surgery, you have a **general anaesthetic** . That means you are asleep and you won't feel anything.
- Your surgeon makes a cut in your abdomen about 10 centimetres (4 inches) long.
- Then he or she pulls your gallbladder away from your other organs and takes it out.
- You will need to stay in hospital from one week to two weeks. ^[86] ^[87]

You may have your operation within a few days of going into hospital. Or you may be able to go home and have it several weeks later, after your symptoms have calmed down. In studies, people who had the operation straight away were able to go home from hospital sooner. ^[91] ^[92] For more, see [When to have surgery for an inflamed gallbladder](#) .

How can it help?

If you have an inflamed gallbladder, having open surgery to take it out should: ^[85]

- Stop your pain

Gallstones

- Make your fever go away, if you have one
- Stop other symptoms, such as yellow skin and eyes (jaundice) and feeling sick
- Stop you getting new gallstones and pain attacks.

But sometimes, your abdomen has been irritated by your inflamed gallbladder. In that case, it may take time for your symptoms to go away. Also, if you have gallstones outside your gallbladder, they may be left behind. So they could still cause you pain.

Open surgery is not as good as keyhole surgery in some ways. If you have your gallbladder taken out the open way:

- You may have a bigger scar. Larger scars usually take longer to heal. And you may not like how they look.
- You may need more time in hospital. If you have an open operation, you may need to stay longer in hospital, up to two weeks.^[86] ^[87] ^[93] This means you have higher chances of getting an infection or getting bed sores from sitting still.
- You may have a slightly longer operation and need more painkillers.^[94] But not all studies showed this.

About 8 in 10 people who have their gallbladder taken out have it done the keyhole way.^[89] But keyhole surgery is not right for everyone.

Here are some reasons why you might need an open operation instead:

- You have a serious problem, such as a burst gallbladder or a hole in your bowel.
- You have had surgery on your abdomen before.
- Your internal organs aren't laid out in the usual way.
- Your gallbladder is very inflamed.

Ask your surgeon which type of operation is best for you and why.

How does it work?

If your gallbladder is inflamed, taking it out gets rid of what's causing your symptoms. And because gallstones usually form in your gallbladder, taking it out should also stop you from getting new stones.

Can it be harmful?

All operations have risks. That means something could go wrong. Talk to your surgeon about these before you have your gallbladder taken out.

With open surgery, there is a small chance that something could go wrong during surgery or that you could have problems afterwards.

In general, open surgery does not seem to be as safe as the keyhole kind. ^[86] ^[87] ^[88]
^[95]

Having a **general anaesthetic** can have side effects. The most common one is feeling sick when you wake up. Serious problems are rare. Some people have an allergic reaction to the anaesthetic. This is rare too. But be sure to tell your doctors if you have any allergies .

Here are some of the problems you can get if you have open surgery to take out your gallbladder. You may hear doctors call these **complications**. Your chances of getting them depend in part on your age and your general health.

Problems you can get straight away

- Damage to your bile duct. This is very rare. ^[95] Your surgeon will need to fix the damage.
- Bleeding. Some people who have gallbladder surgery bleed a lot afterwards. You may need another operation to stop the bleeding. ^[95]
- A gallstone is left in your bile duct. This happens in about 8 in 1,000 operations. ^[95] If a stone is left behind, it can cause problems. You may need another operation to take it out it. But sometimes it can be taken out with a procedure that involves putting a flexible tube through your mouth and stomach, and down into your bowel. This is called **ERCP** .
- Pneumonia. This can usually be treated with antibiotics. ^[95]
- Heart attack. This is very rare if your heart is healthy. ^[95]
- Infection. You may get an infection in your wound or inside your abdomen. This can usually be treated with **antibiotics** . ^[95]
- A hernia. This happens when the scar on your abdomen is too weak. Some of your organs push through. It may happen weeks or months after surgery. You will need another operation to fix the hernia. ^[95]

Gallstones

- Blood clots. Having surgery can increase your chances of getting a blood clot in the **veins** in your legs. These clots can travel to your lungs too. This happens in about 1 in 500 people having a gallbladder operation. ^[95]
- Bile leaking into your abdomen. ^[95] You may need to have a tube put in to fix the leak. This is usually done with [ERCP](#). ^[96]
- Infection in your urinary system. This is quite common after surgery on your abdomen. ^[97] It can be treated with antibiotics.

There is a very small chance that you could die after open surgery. This happens in 7 in 1,000 open operations. ^[95] But it happens in only 1 in 1,000 keyhole operations.

Problems you can get later on

After you have had your gallbladder taken out, your liver keeps making bile as before. But without your gallbladder, bile goes straight into your bowel. This can affect your digestion.

Most people notice only slight digestive changes that don't cause problems. These changes may include passing stools more often than before and passing loose stools or diarrhoea.

About 5 in 100 people who have had their gallbladder taken out sometimes need to take medicine for diarrhoea. ^[89]

How good is the research on open surgery to take out an inflamed gallbladder?

There is good evidence that surgery works if your gallbladder is inflamed.

Most of the studies we found compared different ways of doing the operation. Some studies compared open surgery with a smaller type of operation, called [keyhole surgery](#). The studies showed that people who had open surgery were more likely to die because of the operation (although this was rare) and needed more time in hospital. Some studies (but not all) showed people who had keyhole surgery had fewer problems.

We also found three summaries of the research that looked at when to have open surgery. ^[98] ^[99] ^[44] The summaries showed that open surgery worked just as well if people had their operation within seven days or several weeks of getting symptoms.

Watchful waiting for an inflamed gallbladder

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

Gallstones

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on watchful waiting for an inflamed gallbladder?](#)

This information is for people who have an inflamed gallbladder. It tells you about watchful waiting, a treatment used for an inflamed gallbladder. It is based on the best and most up-to-date research.

Does it work?

Yes. Waiting and seeing before you have an operation works for many people with an inflamed gallbladder. ^[100]

If you decide not to have surgery, your pain and fever may go away and may not come back. You will need to take medicines.

But there are also risks if you don't have surgery to take your gallbladder out.

When you decide to wait and see what happens, without planning any surgery, doctors call it **watchful waiting**.

What is it?

Sometimes, gallstones block the tubes that carry bile from the gallbladder to the bowel. This can make your gallbladder swell up and hurt. You will probably need treatment in hospital.

In hospital, doctors can calm your symptoms with medicines and a special diet. When you get better, you can go home.

Watchful waiting means that you don't have any plan to have surgery to take out your gallbladder unless your symptoms come back or get worse.

How can it help?

Sometimes, if you take drugs and eat a special way, the symptoms of an inflamed gallbladder go away and don't come back. ^[101]

In this case, you may not need surgery to take out your gallbladder after all. Because all operations have some risks, you might want to see if you can avoid surgery.

One summary of studies found waiting before having a gallbladder removed can help people with an inflamed gallbladder. But on average, people who didn't delay their operation went home four days earlier, and back to work 11 days earlier, than people who waited before having their gallbladder removed. ^[100]

How does it work?

Whether watchful waiting works depends on what caused your inflamed gallbladder and if it goes away or happens again. For example, the gallstone that was causing the

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blockage may pass. Or if you had an **infection** that was adding to the **inflammation**, antibiotics might clear that up.

Can it be harmful?

Yes. If you've had an inflamed gallbladder once, it may come back again within the next few months. ^[102] And the next time, you might also get a more serious problem, such as an infection or a burst gallbladder.

One small study of 64 people who got an inflamed gallbladder found about a third of people who decided not to have an operation did need to have one in the next eight years. ^[101]

One review of studies found people who wait to have their gallbladder removed didn't have any more problems than people who just had their operation, without waiting and seeing. And they didn't have any more problems during or after the operation either. ^[103]

How good is the research on watchful waiting for an inflamed gallbladder?

Most people who have an inflamed gallbladder have it taken out. So there isn't much evidence about what happens if you don't have the operation.

We found one summary of studies (a **systematic review**) that compared having your gallbladder taken out with watchful waiting. ^[103]

The studies involved 488 people who had an inflamed gallbladder. The quality of the studies varied. We need more good-quality studies of watchful waiting to find out if it affects how likely people are to have complications. ^[103]

Mini-keyhole surgery to take out an inflamed gallbladder

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on mini-keyhole surgery to take out an inflamed gallbladder?](#)

This information is for people who have an inflamed gallbladder. It tells you about mini-keyhole surgery to take out the gallbladder. It is based on the best and most up-to-date research.

Does it work?

We don't know yet.

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We do know that the [standard type of keyhole surgery](#) to take out your gallbladder is the best treatment for an inflamed gallbladder. It gets rid of the inflammation that is causing your pain. And it lets your digestive juices flow properly.

But **mini-keyhole surgery** to take out your gallbladder is a newer operation. There is not enough evidence yet to prove that it works as well as the regular keyhole kind.

Doctors call mini-keyhole surgery to take out your gallbladder **minilaparoscopic cholecystectomy**.

What is it?

Sometimes, gallstones block the tubes that carry bile from the gallbladder to the bowel. This can make your gallbladder swell up and hurt. You will probably need treatment in hospital.

In a mini-keyhole operation, your surgeon takes out your gallbladder. You can live a healthy life without it.

In the UK each year, surgeons do about 50,000 operations to take out gallbladders. ^[104]
^[105]

There are three types of operations to take out your gallbladder:

- **Keyhole surgery.** With this type, about four small cuts are made in your abdomen.
- **Open surgery.** With this type, one large cut is made in your abdomen.
- **Mini-keyhole surgery.** This type is a lot like keyhole surgery. But it uses even smaller cuts.

This information is about the mini-keyhole type. For more on the other types, see [Keyhole surgery to take out an inflamed gallbladder](#) and [Open surgery to take out an inflamed gallbladder](#).

Most people who have their gallbladder taken out have it done the keyhole way. Only a few surgeons in the UK do mini-keyhole surgery.

Here is what you can expect with mini-keyhole surgery:

- For this surgery, you will probably have a **general anaesthetic**. That means you will be asleep and you won't feel anything.
- Your surgeon will make about four extra-small cuts in your abdomen. And he or she will use extra-tiny tools to see inside and do the surgery.
- The operation usually takes an hour and a half. ^[106] But it can last more than two hours. ^[107] It may take a bit longer than keyhole surgery.

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- You will need to stay in hospital for three or four days. ^[106] ^[108]
- In up to 1 in 4 operations, your surgeon has to switch to the open kind of surgery part-way through.

Mini-keyhole surgery is a lot like keyhole surgery. But it uses even smaller cuts in your abdomen and even smaller tools. There aren't many surgeons who do mini-keyhole surgery.

Some research shows this surgery works about the same as regular keyhole surgery. ^[109] But because it is so new, there isn't much good evidence yet. So we don't know for sure.

You may have your operation within a few days of going into hospital. Or you may be able to go home and have it several weeks later, after your symptoms have calmed down. In studies, people who had the operation straight away were able to go home from hospital sooner. ^[110] ^[111] To read more, see [When to have surgery for an inflamed gallbladder](#)

How can it help?

If you have an inflamed gallbladder, having mini-keyhole surgery to take it out should: ^[112]

- Stop your pain
- Make your fever go away, if you have one
- Stop other symptoms, such as yellow skin and eyes (jaundice) and feeling sick
- Stop you getting new gallstones and pain attacks.

But sometimes, your abdomen has been irritated by your inflamed gallbladder. In that case, it may take time for your symptoms to go away. Also, if you have gallstones outside your gallbladder, they may be left behind. So they could still cause you pain.

We know that the keyhole way is better than the open operation. But we don't know if mini-keyhole works as well as keyhole. In the only study we found, mini-keyhole surgery and keyhole surgery worked about the same. ^[109] But the study was not big enough to be sure.

If you have a mini-keyhole operation, you will have smaller scars than you would have with an open operation. Smaller scars should heal quicker. You may also feel they look better than a larger scar.

How does it work?

If your gallbladder is inflamed, taking it out gets rid of the thing causing your symptoms. And because gallstones usually form in your gallbladder, taking it out should also stop you getting new stones.

Can it be harmful?

All operations have risks. That means something could go wrong. Talk to your surgeon about these before you have your gallbladder taken out.

Regular keyhole surgery seems to be safer than open surgery.^{[113] [114] [115] [116]} But we don't know if mini-keyhole surgery is safer than the open kind because there have not been any good studies on this.

Having a **general anaesthetic** can have side effects. The most common one is feeling sick when you wake up. Serious problems are rare. Some people have an allergic reaction to the anaesthetic. This is rare too. But be sure to tell your doctors if you have any **allergies**.

It is likely that the problems you can get from mini-keyhole surgery are a lot like the ones you can get from keyhole surgery. But we don't know for sure yet. You may hear doctors call these problems **complications**. Your chances of getting them depend in part on your age and your general health. Talk to your surgeon about these.

In between 1 in 4 and 1 in 6 keyhole operations to take out gallbladders, the surgeon has to switch to the open kind of operation part-way through.^{[106] [107] [108]} This is just as likely to happen with a mini-keyhole operation.

After you have had your gallbladder taken out, your liver keeps making bile as before. But without your gallbladder, bile goes straight into your bowel. This can affect your digestion.

Most people notice only slight digestive changes that don't cause problems. These changes may include passing stools more often than before and passing loose stools or diarrhoea.

About 5 in 100 people who have had their gallbladder taken out sometimes need to take medicine for diarrhoea.^[117]

How good is the research on mini-keyhole surgery to take out an inflamed gallbladder?

There isn't much evidence to show how mini-keyhole surgery compares with other types of surgery to take out your inflamed gallbladder. The other types are [keyhole surgery](#) and [open surgery](#).

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We found only one good study (a [randomised controlled trial](#)) that compared mini-keyhole surgery with regular keyhole surgery in people with inflamed gallbladders.^[118] The two types of surgery worked equally well.

But the study had only 69 patients. This means it may have been too small to show some important differences.

We need more research on mini-keyhole surgery before we can say for sure that it works as well as keyhole surgery.^[118]

Having your gallbladder drained or having a tube fitted

In this section

[Do they work?](#)

[What are they?](#)

This information is for people who have an inflamed gallbladder. It tells you about treatments used for an inflamed gallbladder other than surgery .

Do they work?

We haven't looked at the research on these treatments in the same detail we have for most of the treatments we cover. (To read more, see [Our method](#).) But we've included some information because you may be interested in them.

What are they?

Doctors agree that surgery to take out your gallbladder is the best treatment if it is inflamed.

But you may not be able to have surgery because you have other medical problems. For example, you may have trouble with your heart or your lungs. Or you may simply not want to have surgery.

Your doctor may offer you other treatments, described below, if you can't or don't want to have your gallbladder taken out.

Draining your gallbladder

With this treatment, the bile that is trapped in your inflamed gallbladder is drained out. You might have this treatment on its own, or you might have it before surgery to remove your gallbladder (to learn more, see [Draining an inflamed gallbladder before surgery to remove it](#)).

You have a [local anaesthetic](#) first. This means you will be awake but you won't feel anything.

Your doctor makes a small cut in your abdomen. Then he or she passes a thin tube through your [liver](#) and into your gallbladder. The trapped bile flows out through the tube.

Doctors call this treatment **percutaneous cystostomy**.

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A similar treatment uses a needle to suck the bile out instead.^[119] That treatment is called **gallbladder aspiration**.

Having a tube fitted to bypass the blockage

For this treatment, your doctor passes a tube through your mouth, down your throat and into your stomach and bowel. The tube is called an **endoscope**. It has a tiny camera on it. And your doctor can pass tools through it.

Your doctor puts in a special tube to go around the one that is blocked by the gallstone (your bile duct). One end of the tube sits in your gallbladder. The other end sits in your bowel.

This tube lets the trapped bile flow out of your gallbladder without going through your blocked bile duct.

Doctors call this treatment **endoscopic retrograde cannulation of the gallbladder**.

Further informations:

What can I do to lower my risk of gallstones?

If you are more likely than other people to get gallstones because you have certain [risk factors](#) (such as being very overweight), you can take steps to help lower your risk. We can't say for sure that these things will help because there hasn't been much research on them. But most doctors agree they are sensible things to do.

- Try to stay a healthy weight. If you are **obese**, try to lose some weight.^[10] For more, see our articles on [Obesity](#).
- But don't 'crash-diet'. If you need to lose weight, do it slowly. Aim to lose 500 grams to 1 kilogram (about 1 or 2 pounds) each week.^[11] If you have to lose a lot, ask your doctor how to do it safely.
- Don't use a diet that is very low in **calories** and fat. This may increase your risk of gallstones.^[11]
- Take regular exercise. This can help you lose weight. And even half an hour of walking each day can boost your levels of good cholesterol. That's called HDL cholesterol.^{[10] [12] [13]}
- Eat a Mediterranean diet, which is rich in olive oil, grains, fruit, nuts, vegetables, and fish. This kind of diet doesn't have much sugar in it. And it also doesn't have much of a bad kind of fat, called saturated fat.^{[10] [14]} To read more, see our information on a [Mediterranean diet](#) in our articles on high cholesterol.

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- Don't skip breakfast. Going for a long time without eating can make your gallbladder sluggish. This makes it more likely that you will get gallstones. ^[10]
- Eat foods that have a lot of fibre in them. These include fruit, vegetables, and whole-grain foods, such as whole-grain bread and pasta, and brown rice.
- If you drink alcohol, don't drink too much. That can harm your liver and increase your chances of getting gallstones. ^[12]

Other tests for gallstones

The main test for gallstones is an ultrasound scan. But your doctor might suggest other tests if he or she thinks you have gallstones that are causing problems. For example, your doctor may think that a stone is blocking one of the tubes that carry bile.

These tests take a closer look at your bile system. Your bile system includes your liver, your gallbladder, and the tubes (ducts) that carry bile and other digestive juices. Gallstones can cause problems in any of these parts of your body.

ERCP

ERCP is short for **endoscopic retrograde cholangiopancreatography**. ^[34] This test can show whether you have blockages from gallstones.

It can also be used to do other things:

- Take gallstones out of your bile duct (this is the last tube the bile flows through on its way to your bowel)
- Put a tube into your gallbladder to drain the bile, if you can't have surgery to take out your gallbladder
- Fix a leak of bile that happens after an operation.

You have this test in hospital. It's usually done by a specialist called a gastroenterologist.

- You can't eat anything the night before this test. On the day of the test, you are given painkillers and medication to relax you.
- First, your doctor passes a thin, flexible tube through your mouth and stomach, and down into your bowel. The tube is called an **endoscope**.

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- Then your doctor squirts in a dye. Normally, the dye flows into the tubes that carry bile and other digestive juices.
- Next, your doctor takes x-rays. The dye shows up on these. If the dye doesn't show up where it should, you may have a blockage.
- If you have gallstones, they can be taken out at the same time. Your doctor just uses a special tool to pull them out. But only stones that are near the ends of the tubes (almost in your bowel) can be taken out in this way.
- The whole test takes about 30 minutes to 40 minutes. You can go home the same day.
- ERCP can have side effects. You can get inflammation of your pancreas , infection , and bleeding. Talk to your doctor about these.

An MRI scan of your bile system

This type of MRI scan is called **magnetic resonance cholangiography**.^[35] It can show whether you have gallstones and if they are causing blockages.

This scan uses a magnet to make pictures of your bile system. You have it in hospital. A specialist doctor, called a radiologist, or a scanning specialist works the scanner.

- For this scan, you must lie very still inside the scanner for up to 30 minutes. You'll probably be asked to hold your breath for short periods too.
- This scan doesn't hurt. So you don't need any painkillers. And it doesn't use any dyes either.
- But with this scan, doctors can't take out any gallstones they might see. And your hospital may not do this type of scan. So you may need to go to another one further away.

A CT scan of your bile system

This type of CT scan is called **CT cholangiography**.^[36] It can show whether you have gallstones and if they are causing blockages.

- You have this scan done in hospital. A radiologist or a scanning specialist works the scanner.
- You should not eat for several hours before this scan. But you need to drink lots of fluids.

Gallstones

- For this scan, you take tablets with a dye in them. The dye goes into your bile. This helps to show up your gallbladder and the tubes that carry bile.
- During this scan, you lie on a bed in the scanner.

A radiation scan of your bile system

This type of scan is called **cholescintigraphy**. It uses a substance that gives off some radiation to take pictures of your bile system. This scan can show whether you have any blockages or swelling.

This test is done in hospital too. A specialist doctor or a scanning specialist does the test.

- You are given an injection into one of your veins.^[37] The injection has a substance that gives off a small amount of radiation. The substance goes from your bloodstream into your bile.
- A special camera picks up the radiation. This is called a gamma camera. It turns the radiation into pictures.
- You can't eat anything for four hours before this test.
- You may worry about getting some radiation from the injection. But it isn't likely to harm you.

When to have surgery for an inflamed gallbladder

If your gallbladder is inflamed, you will probably stay in hospital for a while.

While you are there:

- You will be given painkillers.
- You will be given antibiotics to cure any infection of your bile.
- You may be put on a special diet that doesn't have much fat in it.

These things should make you feel better.

Then your doctor may give you a choice between two ways of treating your gallstones:

- Have your gallbladder taken out soon, usually within three days of coming to hospital. This is called an **early operation**.

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- Go home and plan to have your gallbladder taken out about six weeks to eight weeks later. This is called a **delayed operation**.

Here are some things to think about if you are given this choice. For these things, it doesn't matter what kind of operation you are going to have ([keyhole surgery](#) , [open surgery](#) , or [mini-keyhole surgery](#)).

- If you have your operation early, you are likely to go home from hospital sooner and you may need fewer painkillers. ^{[38] [39] [40] [41] [42]}
- The chances that you will have problems during surgery are the same, whether you have an early or a delayed operation. ^{[38] [39] [41] [42] [43] [44]}
- Your gallbladder might flare up or get infected while you wait for a delayed operation.
- Between 1 in 5 and 1 in 8 people who decide to wait need to have an operation before they planned it. This is because their pain comes back, or they get problems like an infection. ^{[38] [40]}
- Your symptoms might go away completely while you are waiting for the operation. Then you may not need surgery. This happens to 1 in 10 people. ^[43]

Glossary:

liver

Your liver is on the right side of your body, just below your ribcage. Your liver does several things in your body, including processing and storing nutrients from food, and breaking down chemicals, such as alcohol.

cholesterol

Cholesterol is a fat-like substance made by your liver or absorbed from food. It is used by your body to make bile acids (which help your intestines absorb nutrients) and steroid hormones (like testosterone or oestrogen). Cholesterol is also an important part of cell membranes, which are the structures that surround cells. 'Good cholesterol' is called HDL; 'bad cholesterol' is LDL.

fever

If you have a fever, your body temperature is above 37 degrees Celsius (98.6 degrees Fahrenheit). With a fever you often get other symptoms, such as shivering, headache or sweating. A fever is usually caused by an infection.

inflammation

Inflammation is when your skin or some other part of your body becomes red, swollen, hot, and sore. Inflammation happens because your body is trying to protect you from germs, from something that's in your body and could harm you (like a splinter) or from things that cause allergies (these things are called allergens). Inflammation is one of the ways in which your body heals an infection or an injury.

obesity

If your body stores more energy than you need, this can make you overweight. The excess energy is stored in your fat cells. If your weight goes above a certain level, doctors call this obesity. Obesity is considered a medical condition. The excess weight can be a strain on your bones and joints. And if you are obese, you're more likely to get other diseases. Doctors have developed a scale for telling how much excess weight you have. This measure, called the body mass index (BMI), depends on your height.

cystic fibrosis

Cystic fibrosis is a disease people are born with that gives them problems with their lungs and bowels. The main results are breathing and digestive problems.

diabetes

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Diabetes is a condition that causes too much sugar (glucose) to circulate in the blood. It happens when the body stops making a hormone called insulin (type 1 diabetes) or when insulin stops working (type 2 diabetes).

Crohn's disease

Crohn's disease causes inflammation in your bowel. It usually affects your small intestine, but can happen anywhere in your digestive tract. It causes diarrhoea and bloody stools.

spinal cord

Your spinal cord is a thick bundle of nerves that runs down your backbone (spine). These nerves carry messages between your brain and the rest of your body. The bones (vertebrae) in your neck and back protect your spinal cord. If your spinal cord gets damaged, you may lose feeling in your legs or arms.

hormone replacement therapy

Hormone replacement therapy (also called HRT) is given to women after the menopause to replace the oestrogen (the main female hormone) that is no longer made by their ovaries. It can be given either as oestrogen alone or as a combination of oestrogen and progesterone (another female hormone). It is useful to treat menopausal symptoms such as hot flushes, and to prevent brittle bone disease (osteoporosis). But there are concerns that it may increase the risk of breast cancer, heart attacks and strokes.

antibiotics

These medicines are used to help your immune system fight infection. There are a number of different types of antibiotics that work in different ways to get rid of bacteria, parasites, and other infectious agents. Antibiotics do not work against viruses.

calories

A calorie is a unit that is used to tell how much energy is found in food. But when we talk about how many calories food contains, we actually mean kilocalories, or kcal, which contain 1,000 'small' calories. When your body stores energy instead of using it, you get heavier. This is why you gain weight if you eat foods that are high in calories and the energy is stored instead of used. If your daily calorie intake is the same as the amount of energy your body uses up, your weight will remain the same. If you consume more calories than your body uses, you put on weight. Foods containing fat are high in calories.

gall bladder

The gall bladder is a small organ below the liver on the right side of the abdomen. Its job is to store bile, a chemical made in the liver that helps to break down food in the intestines. The chemicals in the gall bladder can, under certain circumstances, become solid and form small stones. If a stone gets stuck in the tubes that empty the gall bladder, there can be a backup of fluid, causing the gall bladder to swell and possibly become infected. This condition is called gall bladder disease.

fibre

Fibre is all the parts of food that the body can't absorb. This is why foods that are high in fibre make you have more bowel movements. When your body can't absorb something, it leaves your body in your stools. Foods high in fibre include wholemeal bread and cereals, root vegetables and fruits.

ultrasound

Ultrasound is a tool doctors use to create images of the inside of your body. An ultrasound machine sends out high-frequency sound waves, which are directed at an area of your body. The waves reflect off parts of your body to create a picture. Ultrasound is often used to see a developing baby inside a woman's womb.

ulcer

An ulcer is an open sore. Ulcers can happen in many parts of your body, such as in your stomach, and the skin of your legs, mouth, or genitals.

irritable bowel syndrome

Irritable bowel syndrome (IBS) is a common condition that causes symptoms such as stomach pain, bloating, diarrhoea and constipation. Although IBS can cause long-term discomfort, it does not usually lead to serious health problems.

infection

You get an infection when bacteria, a fungus, or a virus get into a part of your body where it shouldn't be. For example, an infection in your nose and airways causes the common cold. An infection in your skin can cause rashes such as athlete's foot. The organisms that cause infections are so tiny that you can't see them without a microscope.

pancreas

Your pancreas is an organ that's behind your stomach. It makes several different chemicals. Some of the chemicals help your body digest food. Your pancreas also makes a chemical called insulin, which helps your body use the sugar in your blood.

X-ray

X-rays are pictures taken of the inside of your body. They are made by passing small amounts of radiation through your body and then onto film.

gastroenterologist

A gastroenterologist is a doctor who specialises in treating people with diseases of the digestive tract. This includes the oesophagus, the stomach, the liver, the pancreas, the small and large intestines, and the anus.

Gallstones

MRI scan

A magnetic resonance imaging (MRI) machine uses a magnetic field to create detailed pictures of the inside of your body.

CT scan

A CT scan is a type of X-ray. It takes several detailed pictures of the inside of your body from different angles. CT stands for computed tomography. It is also called a CAT scan (computed axial tomography).

general anaesthetic

You may have a type of medicine called a general anaesthetic when you have surgery. It is given to make you unconscious so you don't feel pain when you have surgery.

allergy

If you have an allergy to something (such as pollen or a medicine), your body always overreacts to it. The reaction happens because your immune system (your body's system for fighting infection) is too sensitive to it.

veins

Veins are blood vessels that carry blood back to your heart after your blood has delivered oxygen and food to the tissues.

local anaesthetic

A local anaesthetic is a painkiller that's used to numb one part of your body. You usually get local anaesthetics as injections.

randomised controlled trials

Randomised controlled trials are medical studies designed to test whether a treatment works. Patients are split into groups. One group is given the treatment being tested (for example, an antidepressant drug) while another group (called the comparison or control group) is given an alternative treatment. This could be a different type of drug or a dummy treatment (a placebo). Researchers then compare the effects of the different treatments.

systematic reviews

A systematic review is a thorough look through published research on a particular topic. Only studies that have been carried out to a high standard are included. A systematic review may or may not include a meta-analysis, which is when the results from individual studies are put together.

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