

Patient information from the BMJ Group

Obesity

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Obesity

Obesity is very common in the UK. If someone is obese, they weigh much more than is healthy. Obesity can cause serious health problems, so it's important to see a doctor.

We've brought together the best research about obesity and looked carefully at the evidence about how to treat it. You can use our information to talk to your doctor and decide which treatments are best for you.

The information here is about obesity in adults. To find out more about helping children keep to a healthy weight, see [Weight problems in children](#) .

What is obesity?

If you're obese, it means you weigh much more than is healthy for you. It happens because you eat more calories than your body uses. The extra calories are stored as fat.



Obesity is more than being just a few kilograms or pounds overweight. It can cause serious health problems.

Being obese is more than being just a few kilograms or pounds overweight. Obesity can cause health problems such as [diabetes](#) , [high blood pressure](#) , [arthritis](#) , and [heart disease](#) . And it makes some people feel bad about themselves.

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To find out more, see [How obesity affects your life](#) .

Losing weight isn't easy. You'll need to change the way you eat and the amount of exercise you take. But if you make these changes, you'll be healthier.

The information here is about obesity in adults. To find out more about helping children keep to a healthy weight, see [Weight problems in children](#) .

Key points about obesity

- Obesity is a serious medical condition.
- Losing even a small amount of weight can lower the risk to your health.
- Cutting down on calories, getting more exercise, and learning good eating habits can help you lose weight.
- Medical treatments may also help.
- You're more likely to lose weight if you get help from a health professional. Most people start with their GP.
- If you're very obese, surgery can help you lose a lot of weight. But there are risks with surgery so doctors usually only recommend it if your health is in danger.

What's a healthy weight?

When doctors talk about a 'healthy' or 'ideal' weight, they mean a weight that lowers your risk of getting serious health problems, such as heart disease or high blood pressure. It's not based on how thin you would like to look. ^[1]

Most doctors use the **body mass index** (BMI for short) to work out whether you're at a healthy weight. Your BMI is a single number that's worked out by dividing your weight in kilograms by your height in metres, then dividing that number again by your height in metres. Or you can divide your height in inches by your weight in pounds, and multiply that number by 703. You can [work out your own BMI by using our calculator](#) .

This table shows what the different BMI scores mean. ^[2] ^[3]

BMI	What it means
Less than 18.5	Underweight
18.5 to 24.9	Healthy weight
25 to 29.9	Overweight
30 or greater	Obese

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There are problems with using someone's BMI to find out if they're overweight.^[4] For example, an athlete who's very muscular may have a BMI that suggests they're overweight, even though they're healthy. That's because muscle is heavier than fat. However, for most people, working out their BMI is a quick and simple way of finding whether their weight is healthy. To read more, see [How do doctors diagnose obesity?](#)

How your body uses food

Food gives you energy. The amount of energy in food is measured in **calories** (short for kilocalories, or kcal).

Your body needs energy all the time, especially for moving and keeping warm. Different people need different amounts of energy. The amount of energy you need depends mainly on how active you are, and partly on your **metabolic rate**. And the more active you are, the more energy you use.

Your brain helps you stay a healthy weight. It helps to balance how much you eat with how much energy you burn.^[5] Your brain sends out 'hungry' or 'full' signals that make you want to eat or stop eating.^[6]

To learn more, see [Why do I feel hungry or full?](#)

What happens in obesity?

Being obese is not the same as being a few kilograms or pounds overweight. Doctors say someone is obese if their BMI is 30 or higher (see the table above). For most people, having a BMI greater than 30 means they're at least 13 kilograms (29 pounds, or 2 stone) overweight.^[2]

If you're obese, it means you're eating more calories than your body is using up as energy.^[7] Your body stores the extra calories as fat.

Doctors aren't sure why some people eat more food than they need. There are probably lots of reasons.

One theory is that early humans probably had to go for long periods without food, so our bodies needed to be able to store fat easily in order to survive. These days we can get food without difficulty. Some scientists think that our bodies haven't had enough time to evolve and adapt to a plentiful supply of food. So, our bodies still work as if we might have to face a famine.^[8]

For some people who are obese, their 'full' and 'hungry' signals may not work properly. For some people, this happens because of a [medical condition](#), or because of side effects of [medicines](#). Medical conditions that can cause obesity include underactive thyroid. Medicines that can make you put on weight include some antidepressants and corticosteroids.

To read more, see [Why do some people gain weight more easily than others?](#)

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"It must be my hormones"

Like many people who are overweight, you may feel that you don't eat a lot. You may think that your weight problems must be caused by something else, such as a slow metabolism or your hormones. ^[6]

Some medical conditions can make you more likely to put on weight. But you can only become obese by eating more calories than your body uses.

[Medical conditions](#) such as hypothyroidism and [medicines](#) such as steroids can make you more hungry, or slow down your metabolic rate, so your body uses fewer calories. And some of these conditions affect your hormones.

If you have one of these conditions, you may find it more difficult to keep your weight down. It's important to get medical help.

"But I don't eat that much"

The bad news is that you only have to eat slightly more calories than you use for the weight to add up. If you ate just 100 extra calories (one-and-a-half biscuits) a day, you would put on 4 kilograms (nearly 9 pounds) in a year. ^[9]

If the amount of fat in your body increases gradually, your body doesn't seem to notice that you're putting on weight. Your appetite may stay the same.

Obesity and our lifestyle

There are some things about our Western lifestyle that are linked to more and more people becoming obese: ^[10]

- [Modern fast-food culture](#)
- [Lack of physical activity](#) .

Because we're less active than people were in the past, and because fatty and sugary foods are so widely available, it's very easy to put on weight. Some doctors think it would make a difference if unhealthy foods were more clearly labelled. Others think that fast-food adverts aimed at children should be banned. These things may make it easier for people to eat a healthy diet and avoid being overweight. But you'd still need to make sure you didn't eat more calories than you needed.

Obesity: why me?

Anybody can become obese if they eat more calories than they use. But there are certain things that make this more likely. These are called **risk factors**. Some of these you can control, others you can't.

Here are some of the things that increase your chances of becoming obese. It's probably a combination of these that lead to obesity in most people. ^{[17] [19] [20]}

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Your parents and your genes

You're at risk of obesity if one or both of your parents is overweight or obese. This may be because you share the same **genes** as your parents. Or it could be because family members tend to eat the same things and have a similar lifestyle. ^[6]

The ob gene

Genes are in every cell in your body. They tell cells how to grow and what to do. The ob gene tells the cells in your body that store fat to make a chemical called **leptin**. Leptin tells the brain how hungry or how full you feel. It also helps your body burn the food you eat to keep you warm.

Researchers think that some obese people have a faulty ob gene. These people don't make enough leptin, so they don't get a sense of feeling hungry or full. It is harder for them to control how much they eat and this makes them more likely to be obese. ^[11]

But this problem is rare. Most people with obesity have a normal ob gene.

Comfort eating

You may eat too much as a way of dealing with painful or difficult emotions. Perhaps you eat when you feel unhappy or bored, even when you don't feel hungry. This is often called comfort eating. It can be hard to break this habit.

You may also eat too much if you have a mental health condition, such as **depression** or **anxiety disorder**, or if you feel bad about yourself (have low self-esteem).

Other risk factors

Many things increase your risk of putting on weight. If you're overweight, there's a risk you may get obese.

- **Your sex:** Women are slightly more likely to be overweight than men are.
- **Your ethnic group:** South Asian and African-Caribbean people are particularly at risk. ^[21] ^[22]
- **Age:** Men and women are most likely to put on weight between the ages of 20 and 40 years.
- **The menopause:** The changes in levels of **hormones** during the **menopause** can make it easier to put on weight.
- **Drinking too much alcohol:** Alcoholic drinks are high in calories.
- **Stopping smoking:** Stopping smoking is good for your health, but you may put on weight afterwards. ^[11]

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- **Being married:** Married people are more likely to be overweight than single people.
- **Having children:** Women are likely to put on about a kilogram (2 pounds) each time they have a baby.
- **Poor education:** People who do less well at school are more likely to get obese later in life.

Some [medical conditions](#) and [drugs](#) can also increase your chances of being obese.

What are the symptoms of obesity?

If you're obese, it's more serious than being a few kilograms or pounds overweight.

You're carrying a lot of fat on your body. ^[11]

- Most of the extra fat will lie either around your waist and chest (making you 'apple-shaped') or on your hips and buttocks (making you 'pear-shaped').
- Men who are obese tend to have big waists.
- Women tend to carry extra weight on their hips.
- Some women become apple-shaped, especially after the [menopause](#). ^[23]

How obesity affects you

Having a heavy body can be uncomfortable. And it can also cause other problems. ^[24]

Being short of breath

If you're very large, moving around may be a struggle. So you may get out of breath. If you have a lot of fat around your neck and chest, you may need to take short, shallow breaths. The extra fat makes it difficult for air to flow easily in and out of your lungs. ^[25]

Feeling tired

If you find it hard to breathe, you may not be getting enough oxygen into your blood. This can make you feel tired. Carrying extra weight can be tiring too. Some people find that everyday activities become a struggle. It may take a lot of effort to walk upstairs or carry shopping.

Sore joints or muscles

As you put on weight, your ankles and knees need to work harder. These joints and the muscles in your legs and lower back may become sore and stiff. Your posture may suffer too. You may hunch and fold in on yourself.

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Skin problems

If you have folds of fat, the skin underneath the folds can stay moist from perspiration. This makes it more likely that you'll get a skin infection. The skin under large breasts and buttocks can also rub and become sore.

Varicose veins

[Varicose veins](#) are swollen, twisted blood vessels. They often look lumpy and blue. They aren't dangerous but they can look unattractive. And they may make your legs ache. They're partly caused by the strain of carrying extra weight.

Irregular periods

Some larger women find that their periods become irregular and may stop altogether. This is because the extra fat can upset the balance of **hormones** in your body.

Your feelings about food

You may feel you can't control how much you eat and can't stop eating when you feel full. You may have cravings for sweet or fatty foods. Some people go on a diet and then eat large amounts of food. This is called [binge eating disorder](#) .

Your daily life

Being obese can also affect the quality of your life and how you feel about yourself. Your self-esteem may be affected and you may feel ashamed and guilty.

To read more, see [How obesity affects your life](#) .

How do doctors diagnose obesity?

To find out if you are obese, your doctor will probably work out your **body mass index** (BMI for short) and may take your **waist and hip measurements**.^{[40] [55] [56]} These figures can help him or her decide whether your weight is likely to seriously affect your health.^[40] Your GP will also ask about your general health and any other conditions you have.

To read more about what to expect, see [Questions your doctor may ask](#) .

Your BMI

Most doctors will work out your BMI. It tells the doctor whether your weight is healthy. It's worked out according to both your height and weight.

Your doctor will weigh and measure you. These numbers go into a mathematical formula that gives a single number. This is your BMI.^{[40] [57]} You can [work out your own BMI](#) . This table shows what different BMI scores mean.

BMI	What it means
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Obesity

Less than 18.5	Underweight
18.5 to 24.9	Healthy weight
25 to 29.9	Overweight
30 or greater	Obese

Working out someone's BMI isn't a perfect way of telling if they are overweight.^[4] For example, an athlete who's very muscular may have a BMI that suggests they're overweight, even though they're healthy. That's because muscle is heavier than fat.

However, for most people, working out their BMI is a quick and simple way of finding whether their weight is healthy.

One study comparing BMI with electrical measuring of people's body fat found that, if anything, BMI measures underestimate how many people are overweight or obese.^[58]

If your doctor thinks your BMI may be misleading, he or she can take your waist measurement to work out if you're overweight.^[55] Your doctor will also use his or her judgement to decide if your weight is a health risk for you.^[55]

Your waist and hip measurements

It's not only how much fat you have that matters. Your risk of getting conditions such as [heart disease](#) and [diabetes](#) also depends on where you carry this fat.

People who are 'apple-shaped', with a lot of fat around their waist and chest, are more likely to get these conditions than people who are 'pear-shaped' and carry weight on their hips and buttocks.

The table below shows how your waist measurement can affect your chance of getting health problems.^[40] ^[57] ^[59] ^[60] The numbers we give are for a measurement taken just above the top of your hips, roughly at the level of your belly button. It may not be the same as your clothes size.

Waist measurement	Slightly higher chance of getting health problems	Much higher chance of getting health problems
Men	94 centimetres (37 inches)	102 centimetres (40 inches)
Women	80 centimetres (31 inches)	88 centimetres (35 inches)

Waist-hip ratio

Your doctor may want to work out your waist-hip ratio. It's your waist measurement divided by your hip measurement.

For example, If your waist is 85 centimetres (33.5 inches) and your hips are 100 centimetres (39.5 inches), your waist-hip ratio is 0.85.

If you're a man, you're at high risk of health problems if:^[59]

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- Your waist-hip ratio is more than 1.0.

If you're a woman, you're at high risk of health problems if: ^[59]

- You are 'apple-shaped', and
- Your waist-hip ratio is more than 0.9.

Other medical conditions

Your doctor may check whether you have a medical condition that is causing you to put on weight. For example, you may have a problem with your **thyroid gland**. This gland makes **hormones** that change the way your body uses energy.

Women may have a condition called **polycystic ovary syndrome**. This can cause women to gain weight.

To read more, see [Conditions that can cause obesity](#).

Your doctor may also do tests to see if you have conditions that can be made worse by your weight. For example, you may need tests for [high blood pressure](#), [diabetes](#), or [high cholesterol](#).

If you have one of these extra conditions, losing weight may be even more important for your health. ^{[40] [47] [61]}

Deciding to lose weight

You and your doctor may decide that your weight is a problem for your health. If you decide you would like to lose weight, you and your doctor or practice nurse will need to draw up a weight loss programme. This could include: ^{[40] [55] [47] [61] [39]}

- Changing your diet
- Increasing your physical activity
- Having psychotherapy to support these changes
- Considering treatments such as drugs or surgery.

Your doctor should take account of your wishes and your circumstances in helping you draw up a weight loss plan. ^[39] For most people, the plan will include diet and exercise. If you are very obese, or your obesity is causing health problems, your doctor may also consider drugs or surgery. ^[55]

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Seeing a specialist

You should be offered long-term, regular follow-up to help you with your weight loss plan. For most people, this will be with a GP, practice nurse, dietitian, or counsellor. Some people may need to see a specialist. You may need to see a specialist if: ^[55]

- You need tests to find out what is causing your weight problems
- You have a number of health problems that make it difficult to manage your weight
- You've tried and failed to lose weight with diet, exercise, or drugs
- You need a specialist very-low-calorie diet, to lose weight very quickly
- You are considering surgery.

To read more about losing weight, see [What treatments work for obesity?](#)

How common is obesity?

Obesity is common in adults and children.

About half the adults in England and Wales are overweight. About one-quarter are obese ^[34]. The number of obese people in England and Wales has nearly trebled since 1980. ^[35]

Obesity is more common in certain groups of people.

- Obesity is slightly more common in women than in men. ^[35]
- It's especially common in South Asian and African-Caribbean people. ^[36]
- People from all backgrounds can get obese. But obesity is more common in people with lower incomes. ^[35]

Many children also have serious weight problems. ^[35]

Compared with 1990, more children now fall into the category of being overweight or obese. ^[37] About 19 in 100 boys and 18 in 100 girls aged between 2 and 15 years are obese. ^[38]

To find out more about helping children keep to a healthy weight, see [Weight problems in children](#) .

What treatments work for obesity?

If you're obese, you weigh much more than is healthy for you. This is because the food you eat contains more calories than your body uses up. The extra calories are stored as fat.

To lose weight, **you need to take in fewer calories each day than you use**. You can do this by following a weight loss programme that includes a diet and exercise. You may also have behaviour therapy to help you change the way you eat and exercise. Your weight loss programme may also include drugs.

Your weight has probably crept up over many years. **It's best to lose weight the same way you gained it: slowly and steadily**. You should aim to lose 0.5 kilograms to 1 kilogram (1 to 2 pounds) each week. Work with your GP or practice nurse to set short-term goals that you know you can achieve.

Key points about treating obesity

- You have the best chance of losing weight if you combine diet and exercise with behaviour therapy to help change the way you eat and exercise.
- A low-calorie diet and regular exercise can help you lose 5 percent to 10 percent of your weight in about six months. If you weigh 100 kilograms (220 pounds), this means you may lose 5 to 10 kilograms (11 to 22 pounds).
- Losing 5 percent to 10 percent of your weight (and keeping it off) may not sound like a lot, but it lowers your risk of health problems and will help you feel better.
- Diet pills such as orlistat (brand names Xenical and Alli) may help you lose weight. But they have side effects. And you will still need to stay on a diet and exercise programme.
- Once you've lost weight it can be difficult to keep it off. You still need to be in a weight loss programme, with regular support from a health professional.
- If you're very overweight or your weight is an immediate threat to your health, you may need weight loss surgery to help you lose weight quickly. This type of surgery is called bariatric surgery. There are several different operations.
- People who have surgery usually lose about 27 kilograms (about 60 pounds) in the two years after their operation, although the amount varies depending on the type of surgery. And most people keep their weight off. But there are serious risks with surgery. There are several different types of operation.

The National Institute for Health and Care Excellence (NICE), the body that decides which treatments should be available on the NHS, has published guidance for doctors and the general public on the diagnosis, care, and treatment of people with obesity. ^[62]

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This includes information about people who may need weight loss surgery. To find out more, read [Who has weight loss surgery for obesity?](#)

To find out more about helping children keep to a healthy weight, see [Weight problems in children](#).

Treatment Group 1

Treatments for obesity

Which treatments work best? We've looked at the best research and given a rating for each treatment according to how well it works.

For help in deciding which treatment is best for you, see [How to make the best decisions about treatment](#).

Treatments that work

- [Diet, exercise, and behaviour therapy](#) : By following a diet, getting more exercise, and taking advice from a health professional, you'll lose weight. [More...](#)

Treatments that are likely to work

- [Weight loss \(bariatric\) surgery](#) : These are operations that reduce how much food your stomach can hold, so that you eat less and lose weight. Types of bariatric surgery include gastric bypass, gastroplasty, gastric banding, biliopancreatic diversion, and sleeve gastrectomy. [More...](#)

Treatments that work, but whose harms may outweigh benefits

- [Orlistat](#) : This drug reduces the amount of fat you absorb from food. Its brand name is Xenical. There's also an over-the-counter version that contains a lower dose, called Alli. [More...](#)

Other treatments

- [Other diet pills](#) : These pills are either not available in the UK or are not recommended for use. But we've included them in case you have questions about them. They include fenfluramine, dexfenfluramine, phenylpropanolamine, phentermine, amfepramone, mazindol, and ephedra. [More...](#)

What will happen to me?

If you're obese, the extra fat on your body won't go away by itself. Losing weight and keeping the weight off can be difficult. But it will probably be easier if you get help from your GP and follow a weight loss programme.

If you follow a weight loss programme, you'll:

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- Eat fewer calories
- Do more physical activity
- Get help from a professional, such as a GP, practice nurse, dietitian, or counsellor.

Drugs and surgery can help some people too.

Start by making an appointment with your GP. He or she may suggest you see a hospital specialist, but most people can get all the help they need from their GP and other health professionals working in the community.

If you follow a weight loss programme

Here's what we know happens to most people who follow a weight loss programme:^[26]

- Most people lose about 5 percent to 10 percent of their weight within six months if they follow a weight loss programme that includes a [low-calorie diet](#) and [exercise](#).
- After six months, you won't lose weight as quickly and you may stop losing weight.
- Keeping the weight off can be a struggle. Most people put back on at least some of the weight they lose.
- You are most likely to keep the weight off (or at least not put much back on) if you stay in a weight loss programme, with regular support from a health professional.

If you don't lose weight

If you stay obese, you have a high chance of getting one or more of these serious health problems:^{[26] [39]}

- [High blood pressure](#)
- [High cholesterol](#)
- [Heart disease or stroke](#)
- [Diabetes](#)
- [Osteoarthritis](#)
- [Gallstones](#)
- [Sleep apnoea](#) (when you stop breathing for several seconds while asleep)

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- [Cancer](#)
- [Menstrual problems](#) .

Your risk of getting one or more of these conditions begins to rise when you become overweight. The risk gradually increases as you become heavier. Your health will be affected more if you also have other risk factors for health problems, such as smoking or a family history of heart disease. ^[40]

Obesity can shorten your life. For example, men in their 20s who are obese can expect to live about 13 years less than men who aren't obese. ^[41] Each year, about 300,000 people die from conditions related to obesity. ^[42]

The more overweight you are and the more risk factors you have, the more important it is to lose weight. The good news is that losing as little as 5 percent of your weight can cut your risk of getting these conditions. ^[41]

If you get pregnant and you are obese, you have an increased risk of health problems with your pregnancy. These include [pre-eclampsia](#) , a condition where your blood pressure gets very high and you may need to have your baby delivered early. ^[43] But studies have found that following sensible diet and exercise programmes helped reduce the amount of weight women gained when pregnant, without harming their babies. ^[44] ^[45] You should talk with your doctor or midwife first if you're thinking of changing your normal behaviour while pregnant.

How obesity affects you

Being obese can also affect the quality of your life and how you feel about yourself. ^[26] ^[42]

For more, see [How obesity affects your life](#) .

Questions to ask your doctor

If you think your weight is a problem, you may want to talk to your GP to find out more.

Here are some questions you can ask when you first see your doctor. And we've also listed some questions about diet, exercise, drug treatments, and surgery.

General questions

- Am I overweight? If so, how overweight am I?
- Why do you think I am overweight?
- How much weight should I lose? How long might it take?

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- What will happen if I don't lose weight?
- Has my weight damaged my health? How?
- What is the best way for me to lose weight?
- Can you help me, or will I have to see a specialist?
- Once I have lost weight, how can I keep it off?
- Why do I feel so bad about myself? Am I depressed?

Questions about diet and exercise

- If I start to exercise, how much should I do? And how often?
- What sort of exercise should I do?
- What's wrong with what I eat?
- How should I change what I eat?

Questions about medicine

- Can drug treatment help me to lose weight?
- Which medicine will work best for me?
- What are the side effects?
- How long will I need to take it?

Questions about surgery

- Is surgery an option for me?
- What are the risks and benefits of surgery?
- How much weight will I lose if I have surgery?

Treatments:

Diet, exercise, and behaviour therapy

In this section
[Do they work?](#)

Obesity

[What are they?](#)

[How can they help?](#)

[How do they work?](#)

[Can they be harmful?](#)

[How good is the research on diet, exercise, and behaviour therapy?](#)

This information is for people who have serious weight problems. It tells you about weight loss programmes. It is based on the best and most up-to-date research.

Do they work?

Yes. If you're **obese**, following a low-calorie diet and exercising every day can help you lose weight.

Behaviour therapy can help you make changes to the way you eat and exercise. It gives you a greater chance of losing weight than just dieting.

Losing even a small amount of weight (10 percent of your body weight) reduces your risk of health problems such as [heart disease](#) and [diabetes](#). You're also likely to feel happier and more comfortable.

But it's not easy to keep the weight off. You'll need to carry on eating healthily and exercising to stay at your new weight. Seeing your doctor or another health professional for advice and support may make this easier.

What are they?

There are lots of different weight loss programmes to help people who are obese. But successful programmes usually include these three elements:

- A [low-calorie diet](#): This means you eat fewer calories. It may mean eating smaller portions or choosing foods with fewer **calories**. If you follow a low-calorie diet, you'll probably eat around 600 fewer calories each day.
- An [exercise plan](#): Being active uses up the calories you get from food. The more exercise you do, the more calories you use. If you're obese, you'll probably need to do at least 30 minutes of physical activity on most days of the week. The goal is to use at least 1,000 to 2,000 extra calories a week.
- [Behaviour therapy](#): Behaviour therapy with a specially trained professional can help you change the way you eat and your exercise habits. You learn to think and act differently so that you can stick to your weight loss programme. It can also mean changing things in your life that have stopped you losing weight before.

For more details, see [What works best in a weight loss programme?](#)

You should join a weight loss programme for at least six months.^[28] After that, you'll need a plan to help you keep the weight off.

How can they help?

Losing weight

If you follow a good weight loss programme, you can expect to lose about half a kilogram (1 pound) a week for about six months. You may lose 5 to 9 kilograms (13 to 20 pounds) in total. Most people don't lose much more weight after six months. ^[67]

But many people regain some weight after their weight loss programme. In long-term studies, many people regain about half the weight they lose. ^[87] One long-term study showed people lost an average of 3.5 kilograms (8 pounds) after one to three years. ^[88] One other study showed people kept off about 3 to 6 kilograms (6 to 13 pounds) after four years. Not many people put back all the weight they'd lost. ^[67]

The best programmes include a **calorie-controlled diet and exercise**. One study showed people who did regular exercise and followed a diet lost about 20 percent more weight than those who just followed a diet. After a year, people who did exercise lost on average 6.7 kilograms (14 pounds), compared with 4.5 kilograms (10 pounds) for people who just dieted. ^[87] One other study found that people who exercised but didn't change their diet didn't lose much weight. ^[89] So the best thing is to do both.

Some people try **very-low-calorie diets**, including meal-replacement liquid diets. A very-low-calorie diet is one where you eat less than 800 calories a day. People can lose a lot of weight quite quickly with these diets. But research shows they're no better than normal low-calorie diets in the long term. ^[90]

In studies comparing very-low-calorie diets with normal low-calorie diets, people lost 16 percent of their weight while following the very-low-calorie diet, compared with 10 percent of their weight on the normal low-calorie diet. But after a year, there was no difference between the two groups. Both had lost 5 percent to 6 percent of their starting weight. ^[90]

The aim of a weight loss diet if you're obese is usually to lose about 10 percent of your starting weight. Some people lose less, some more. This may not sound like very much. But it can improve or prevent health problems such as **diabetes**, **high blood pressure**, and **high cholesterol**. Preventing these reduces your risk of **heart disease**. ^[83] ^[91] ^[92]

There are many types of diets, exercise programmes, and therapies. For more details, see [What works best in a weight loss programme?](#)

Some people find that using a **partial meal replacement plan** can help them lose weight. You replace one or two meals a day with a low-calorie alternative. You may have heard of Slim Fast shakes that you can drink instead of a meal. You can also get other meal replacements, like smoothies, soups, and snack bars. These usually contain a limited amount of calories and added vitamins and minerals. You can buy these products from chemists or supermarkets.

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Joining a group such as **Weight Watchers** is also likely to help more than trying to lose weight on your own. ^[93]

Losing weight may help you feel happier and more confident. You may find things like sport and sex become more comfortable and enjoyable. And you may feel more like going out and socialising with friends. ^[24] ^[94]

Keeping the weight off

Once you have lost weight, it's difficult to keep it off over a long time. ^[28] ^[95] You're more likely to be able to do this (or at least put less weight back on) if you're involved in a weight loss programme that includes diet, exercise, and behaviour therapy. ^[28]

There are many different ways to help people stick to a diet and exercise plan and keep their weight off. The most important thing seems to be **regular contact with a health professional**. ^[28] This may be a dietitian or your doctor. Seeing a health professional and being able to talk to them about how things are going seems to work better than getting advice over the telephone or on the Internet. ^[96] ^[97] ^[98]

Here are some other things which may help you keep your weight off: ^[28] ^[99]

- Having support from your family or partner
- Joining a self-help group (so you get support from other people who are losing weight)
- Keeping track of your eating and exercise habits
- Being weight-focused (weighing yourself every day, for example).

We've included more details on our pages on [low-calorie diet](#) , [physical activity](#) , and [behaviour therapy](#) .

One study found that a regular walking programme can help you keep your weight down. ^[100] It doesn't have to be too strenuous. It could be about two or three hours a week of brisk walking.

Long-term support is important. In one study, people who had regular phone or face-to-face meetings with counsellors for six months after they completed a diet and exercise programme were more likely to keep their weight off. In one other study, monthly meetings with counsellors worked better than using computer support to help keep weight off. ^[101] ^[102]

How do they work?

Diets are designed to contain fewer calories than you normally eat each day. Exercise plans help you burn off calories. Combining the two means you burn off more than you take in and lose weight as a result.

But it can be difficult to change the way you eat and get more active. Behaviour therapy helps you learn when and why you overeat. It teaches you how to avoid situations that encourage you to overeat.

Can they be harmful?

Probably not. But some diets are hard to stick to. Some people stop and start their diet, so their weight goes up and down. This is sometimes called 'yo-yo dieting' or weight cycling. We don't know whether this is harmful. Some people who eat in this way get heavier than they were before they started dieting. We don't know if this is because of the diet or if they would have become heavier anyway. ^[103] ^[80]

A few people have died after following older diets with very few calories. But new **very-low-calorie diets** seem to be safe. If you need a very-low-calorie diet, your doctor will probably refer you to a specialist at a hospital. Very-low-calorie diets may cause gallstones, headaches, tiredness, dizziness, constipation, and short-term hair loss. But these side effects are usually mild. Any hair lost grows back after you go back to a normal diet. ^[90]

To read more, see [What works best in a weight loss programme?](#)

Sprains, strains, and injuries are the most likely problems with physical activity. To avoid an injury, start slowly and build up your fitness.

How good is the research on diet, exercise, and behaviour therapy?

There's good evidence that a [low-calorie diet](#) , [exercise](#) , and [behaviour therapy](#) can help people who are **obese** to lose weight and keep some weight off. Doing all three seems to work best. We found three big summaries of the evidence ([systematic reviews](#)) which looked at studies lasting one year or more. The studies showed that diet and exercise can help people lose weight, although many people regained some of the weight they lost. ^[67] ^[87] ^[88]

Two big studies found that getting professional advice helped people lose weight. ^[94] ^[104] This could be advice from your doctor, or a technique called **cognitive behaviour therapy** . ^[105] A summary of the evidence (systematic review) found that people who had counselling or therapy to help them adhere to their diet and exercise plan lost more weight than those who didn't have this help. ^[106]

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Many people find they put weight back on over time. A review of the research found that the best way to keep weight off was to keep on with a low-calorie diet, exercise, and behaviour therapy.^[28]

Other things that helped people stay at a lower weight were:^[28]

- Having long-term contact with a health professional or a therapist
- Going to a self-help group
- Getting support from family or partner
- Being very focused on losing weight and keeping it off. This may mean weighing yourself every day, and following a plan about what you eat and how much exercise you take.

Orlistat

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 orlistat?](#)

This information is for people with serious weight problems. It tells you about orlistat, a medicine used for weight loss. It is based on the best and most up-to-date research.

Does it work?

Yes. If you're very overweight or **obese**, a drug called orlistat could help you to lose a small amount of weight and keep it off. But orlistat has side effects. And it doesn't work by itself. You also need to change the way you eat and [exercise](#).

What is it?

Orlistat is a drug that can help people who are obese lose weight. It stops your body absorbing some of the fat from the food you eat. About one-third of the fat you eat passes straight out of your body in your stools.

You can get orlistat on prescription from your doctor. The brand name is Xenical. You can also buy orlistat from a pharmacist, without a prescription, under the brand name Alli. The pills you can buy yourself contain half the dose of the prescription version.

Orlistat comes as pills that you take at mealtimes, up to three times a day. If you're going to eat a meal that doesn't contain any fat, you should skip the dose of orlistat with that meal.

Your doctor may recommend orlistat if:^[2]

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- Your weight is a risk to your health. This means that your body mass index (BMI) is 30 or more, or your BMI is 28 to 30 and you have medical problems because of your weight
- You have been following a diet and exercise programme for at least one month, and have already lost at least 2.5 kilograms (5.5 pounds)
- You are able to get advice and support from a local dietitian, practice nurse, or GP.

You can buy orlistat from a pharmacist if:

- You're 18 or over
- Your BMI is 28 or more
- You're willing to start a low-calorie, lower-fat diet.

Usually, people lose weight quite quickly when they take orlistat. But it doesn't work for everyone. Talk to your doctor or pharmacist if you haven't lost weight after 12 weeks. Whatever happens, you shouldn't take the over-the-counter version of orlistat for longer than six months. If you want to take it for longer, talk to your doctor.

How can it help?

Taking orlistat can help some people lose weight. It's difficult to say for sure exactly how much weight you'll lose if you take orlistat. Some people lose more weight than others. [\[107\]](#) [\[108\]](#)

After taking orlistat for a year, people lost about 8.1 kilograms (about 18 pounds) on average.

That was about 2.8 kilograms (6 pounds) more than people who took a dummy treatment (a [placebo](#)).

- If you have [high cholesterol](#), orlistat may decrease the level of harmful fats in your blood. Reducing your cholesterol can cut your risk of [heart disease](#) or a [stroke](#). To read more, see [High cholesterol and obesity](#).
- If you have [diabetes](#), losing weight with orlistat may help you to control your blood sugar levels. You may be able to manage your diabetes with less diabetes medicine, or without any medicine.

One summary of the research looked at results of studies comparing orlistat, [sibutramine](#) (no longer available), and [rimonabant](#) (no longer available) with a dummy ([placebo](#)) treatment. It found that, in studies lasting at least one year, orlistat reduced weight by 2.9 kilograms (about 6 pounds) more than placebo, but sibutramine reduced weight by

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4.2 kilograms (about 9 pounds) more than placebo, and rimonabant by 4.7 kilograms (about 10 pounds) more. But the studies didn't compare the drugs directly with each other, so we don't know for sure which works best. ^[109]

How does it work?

Orlistat keeps your body from absorbing fat from the food you eat. Your body needs to break down fat in order to absorb it. It does this by using an enzyme called lipase. Lipase breaks down the fat into smaller parts that the body can absorb.

Orlistat sticks to the lipase and stops it from working. ^[110] So fat passes straight through your intestines and out into your stools. Taking orlistat around mealtimes means you'll absorb about one-third less fat.

If your body absorbs less fat, you're getting fewer calories. So you have a better chance of losing weight.

Can it be harmful?

Most drugs for obesity have drawbacks. Orlistat isn't likely to cause serious problems, but it does have some unpleasant side effects. These are: ^[107] ^[108]

- An oily leakage from your bowels
- Diarrhoea
- Frequent wind
- An urgent need to go to the toilet to open your bowels
- Nausea and vomiting.

These side effects are fairly common. Some studies have found that almost everyone taking orlistat gets diarrhoea at some point. ^[107] But the side effects aren't usually bad enough for people to stop taking the drug. ^[111] For most people, the side effects were mild and went away after a while. ^[108]

The side effects happen because extra fat is travelling straight through your body without being absorbed. You can avoid these side effects by making sure that your meals contain no more than 30 percent fat. Talk to your doctor or a dietitian about how to do this.

Orlistat can also keep you from absorbing some vitamins. ^[108] These include vitamin D, vitamin E, vitamin K, and beta-carotene (vitamin A). Your doctor or pharmacist may recommend that you take vitamin supplements while you're taking orlistat.

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We know that it's safe to take orlistat for two years. But we don't know if it's safe to take it for longer than two years. The research studies haven't lasted long enough to check this.

There have been reports of people developing severe liver damage while taking orlistat. However, a review found no evidence that orlistat caused this damage.^[112] Still, you should stop taking the drug and inform your doctor if you have signs of liver injury, including dark-coloured urine, a yellow colour to your skin or eyes, itching, stomach pain, or liver tenderness (indicated by pain under the front of your rib cage).

How good is the research on orlistat?

There's good evidence that orlistat can help people who are very overweight or obese to lose weight.

We found two summaries of the research ([systematic reviews](#)) that looked at people who took orlistat as well as eating a [low-calorie diet](#) or exercising ([physical activity](#)).^[113] ^[114]

After taking orlistat for a year, people lost about 8.1 kilograms (about 18 pounds) on average.

That was about 2.8 kilograms (6 pounds) more than people who took a dummy treatment (a [placebo](#)).

Other diet pills

In this section

[Fenfluramine and dexfenfluramine](#)

This information is for people with serious weight problems. It tells you about diet pills that are either unavailable in the UK or are not recommended for use.

The drugs described on this page are either unavailable in the UK or are not recommended for use.

Fenfluramine and dexfenfluramine

Fenfluramine is an appetite suppressant. It is no longer available in the UK.

Fenfluramine helped people lose weight by making them feel less hungry. And it made people feel full sooner when they ate. Its brand name was Ponderax. A similar drug, called **dexfenfluramine**, was also withdrawn in the UK. Its brand name was Adifax.

Doctors often used to prescribe fenfluramine together with another weight loss drug called phentermine (Duromine). The combination was known as **fen-phen**. This combination hasn't been available since April 2000.^[115]

Fenfluramine helped some people lose weight.^[116]

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- People who took fenfluramine and followed a [low-calorie diet](#) lost about 5 kilograms (11 pounds).
- People who just followed a diet lost about half this amount.

But there's some evidence that fenfluramine increases the chance that you'll get:

- Problems with the valves in your heart. In one study, about 1 in 10 people with obesity who took dexfenfluramine had this problem. ^[117] Doctors call it aortic regurgitation. The condition can put extra strain on your heart and make it more likely you'll get an infection. About 9 in 100 people in the study got valve problems, even though they hadn't taken the drug for a year. About 4 in 100 people who had never taken the drug had a valve problem.
- **High blood pressure** in your lungs (doctors call this pulmonary arterial hypertension). One study found that people with this problem were **more likely to have taken slimming pills in the past** than people who didn't have lung problems. The drugs that people with lung problems had taken included fenfluramine and dexfenfluramine. ^[118]

These conditions can cause **heart failure**. Some people who took fenfluramine died because of problems with their heart.

Fenfluramine increases the amount of a chemical called **serotonin** in your body. Having more serotonin makes you feel less hungry. But it also makes your blood vessels narrower. This raises your blood pressure and puts extra strain on your heart.

In 2004, a product called Shubao Slimming Capsules was found to contain a chemical similar to fenfluramine. ^[119] The capsules were on sale in some Chinese medicine shops, and were sold as herbal slimming pills. One person got serious liver damage after taking them.

Even products that contain only herbal ingredients can have side effects or react with other medicines you are taking. You should always tell your doctor if you're taking over-the-counter drugs or herbal remedies.

Sibutramine

Sibutramine is a tablet that helps some people who are obese lose a small amount of weight. It's a type of appetite suppressant. This means it makes you feel less hungry, so it helps you eat less and keep to a diet. In studies, people taking sibutramine lost 2 to 4 kilograms more than those taking a dummy (**placebo**) drug. But people often put the weight back on after they'd stopped taking the drug. ^[120]

Sibutramine has been taken off sale in Europe, because one large study found that it increased the risk of having a heart attack or stroke by 16 percent. ^[120] The patients in

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that study either had heart disease or were at high risk of heart disease, so they may not be typical of patients taking sibutramine. But the European Medicines Agency says many overweight people are at risk of heart disease, so the risks are still important.

In January 2010, doctors were told not to write any more prescriptions for sibutramine, and to review all patients taking the drug. Pharmacists were told to stop giving out the drug, and to advise patients to see their doctors. ^[121]

Anyone taking sibutramine was advised to see their doctor and talk about other ways of losing weight, such as [diet and exercise](#) .

Rimonabant

Rimonabant is a tablet that makes you feel less hungry (an appetite suppressant). Because you don't feel as hungry, you should eat less and be better able to keep to a diet.

Rimonabant was launched in 2006. But in October 2008, the European Union said it should no longer be prescribed, because the risks outweighed the benefits. ^[122]

Studies show that taking rimonabant can help some people lose a small amount of weight: around 3.4 kilograms (about 7 pounds) to 6.6 kilograms (about 15 pounds) over a year, depending on the dose. ^[123] But as a side effect, rimonabant can affect your mood. As many as 1 in 10 people taking it have problems sleeping, or feel irritable, anxious, or depressed. ^[124] The effect on your mood can sometimes be severe. About 1 in 100 people taking rimonabant think about committing suicide.

Because of the risk of side effects, the European Medicines Agency, which monitors drug safety in Europe, decided the risks of taking rimonabant were greater than the benefits people were likely to get from it. So it is no longer available.

Phenylpropanolamine

Phenylpropanolamine helped people to lose weight by making them feel less hungry. But it has never been used in this way in the UK. ^[125]

- People who took phenylpropanolamine and followed a diet for two months lost, on average, between 2 kilograms and 3 kilograms (6 pounds).
- People who only followed a diet lost 1 kilogram (2 pounds) less than the people who took the drug.

Phenylpropanolamine works in a similar way to fenfluramine. But it also increases the amounts of two other chemicals in the brain: **noradrenaline** and **dopamine** . Having more of these chemicals made people feel less hungry.

Diet pills containing phenylpropanolamine are not available in the UK because they can increase your chances of having a **stroke** . ^[125] Researchers noticed that people who

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were taking slimming pills containing phenylpropanolamine were more likely to have a stroke within a few days of starting the drug.^[126] The risk was higher for women.

Only a very small number of people taking phenylpropanolamine have had strokes. But a stroke is very serious. And doctors can't say who is likely to have a stroke. So taking phenylpropanolamine isn't a safe way of losing weight.^[115]

Some cold and flu remedies used to contain small doses of phenylpropanolamine. There wasn't any strong evidence that these doses could cause strokes, but most products that contained phenylpropanolamine aren't sold any more.^{[127] [128]}

Phentermine and amfepramone

Phentermine and **amfepramone** aim to help people eat less by making them feel less hungry.

But there have been worries that these drugs may cause serious heart and lung problems in some people, although the research doesn't give a clear answer.^[129] Doctors also think there is a possible link between amfepramone and a severe mental illness called psychosis. We found one report of someone becoming psychotic after taking this drug.^[130] People with psychosis lose touch with reality.

There has been a lot of legal action about these two drugs, and they have been taken off the market and made available again several times. In theory, doctors in the UK can prescribe phentermine and amfepramone. But most doctors don't think these drugs work well enough to outweigh the risk of side effects.^[131] Phentermine and amfepramone aren't used by the NHS.

Amfepramone is sometimes called diethylpropion.

Mazindol

Mazindol helped people lose weight by making them feel less hungry. It increases the level of a chemical in your brain called noradrenaline. Scientists think the extra noradrenaline makes you feel full for longer after a meal.

Mazindol is not available in the UK, and the manufacturers have stopped making it. There's some evidence that it may cause heart or lung problems, although we don't know for sure. We found only one reported case of lung problems. A woman took mazindol for 10 weeks and then had serious problems with her breathing a year later.^[132]

A few people with heart disease have fainted or had an irregular heart beat (called **atrial fibrillation**) after taking mazindol.^[133] But we don't know how common these problems are.

Ephedra

Ephedra is a naturally occurring chemical that is included in some herbal remedies that aim to help people lose weight. It is also sometimes included in supplements to boost sports performance and energy. Ephedra is also known as ephedrine and ma huang.

In the UK, there are restrictions on the sale of ephedra to the public.^[134] That's because of worries that ephedra may cause heart problems, including strokes. In the US, ephedra has been banned since April 2004 for these reasons.^[135]

The National Institutes of Health in the US did a study to look at the evidence of the risk and benefits of ephedra.^[136] The study found that there was very little evidence that ephedra helped people lose weight in the short term. But it did find that ephedra can have a range of side effects, and was also associated with heart attacks, strokes, and reports of death.

Weight loss (bariatric) surgery

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 weight loss \(bariatric\) surgery?](#)

This information is for people with serious weight problems. It tells you about operations for weight loss, which are called bariatric surgeries. It is based on the best and most up-to-date research.

Does it work?

Yes. If you're very obese, surgery to make your stomach smaller can help you eat less and lose weight. But there are risks with any kind of surgery for obesity. So, doctors usually only recommend it if your weight is dangerous to your health, and if you've tried other ways of losing weight. You will also need to follow a strict diet after the operation.

The National Institute for Health and Care Excellence (NICE), the body that decides which treatments should be available on the NHS, has published guidance for doctors and the general public about who may need weight loss surgery.^[62] To find out more, read [Who has weight loss surgery for obesity?](#)

What is it?

Weight loss surgery is known as bariatric surgery. It means you have an operation to make your stomach smaller.

There are several types of bariatric surgery.

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- [Gastric bypass](#) : Your surgeon uses a band or staples to make a small pouch in your stomach. The surgeon then attaches this pouch to your small intestine, which has been shortened. The rest of your stomach is closed off. [More...](#)
- [Gastroplasty](#) : Your surgeon uses staples to divide your stomach into two parts, with a small opening between them. The top part, where food comes into your stomach, is smaller than the bottom part. [More...](#)
- [Gastric banding](#) : Your surgeon puts a thin band around your stomach, which divides your stomach into two parts. The top part of your stomach becomes a small pouch, which can only hold a few ounces of food. [More...](#)
- [Biliopancreatic diversion](#) : The bottom part of your stomach is removed, leaving a small pouch. Your surgeon then attaches this pouch to your small intestine, which has been shortened. [More...](#)
- [Sleeve gastrectomy](#) : Your surgeon uses staples to divide your stomach into two parts. The surgeon makes one part into a narrow tube. This will carry the food. The other side of the stomach is no longer used. [More...](#)

These surgeries can often be done either as open surgery through one cut across your abdomen, or as keyhole surgery with several small cuts. These types of surgery work equally well. ^[137] ^[138] ^[139] But you're less likely to get problems with your wound after keyhole surgery. ^[140] You're also likely to need less time in hospital with this type of operation.

Most operations take at least an hour, and some may take several hours. Surgery takes longer if you have a lot of fat on your abdomen, as it takes time to cut through the fat and close it up afterwards. ^[141] ^[142] You'll have a **general anaesthetic**. This means you'll be asleep during surgery.

How can it help?

Weight loss surgery can help you lose a lot of weight, and keep it off. If you are very obese, you will probably lose more weight after surgery than with other treatments for obesity, such as drugs or dieting. Surgery is likely to help with other health problems made worse by obesity, like high blood pressure and high cholesterol.

If you have a condition that was made worse by your obesity, losing a lot of weight should help. ^[137]

People with [type 2 diabetes](#) may have lower blood sugar levels within days of the operation. And about 3 in 4 people completely recover from type 2 diabetes after surgery. ^[148]

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Some studies looked at people with [sleep apnoea](#). This is where you wake repeatedly in the night because you have difficulty breathing. Most people with this condition were cured after weight loss surgery. ^[150]

You may also feel less anxious and depressed after your operation. You may find it easier to move about and do more things. For example, it may be easier to do the housework and go shopping. Sport, social activities, and sex may be more enjoyable. Some people say they feel happier and more confident, and find it easier to form relationships and hold down a job. ^[150]

The amount of weight you lose depends on how obese you are before surgery. And it also depends on what you eat and how much exercise you do after surgery. You might not reach your ideal weight. It's important to know that **surgery doesn't work for everyone**. Some people don't lose any weight. And some people who lose weight put most of it back on.

There hasn't been enough research yet to know for certain whether one type of surgery is better than the others. Here's what studies tell us so far about how well the operations work.

Gastric bypass

People who have a gastric bypass lose about 44 kilograms (96 pounds), on average, within a year of their operation. ^[143]

You may lose more weight after a gastric bypass than after gastroplasty and gastric banding. You may also lose weight faster. People who have a gastric bypass lose, on average, three-quarters of their extra weight within a year or two of their operation. People who have a gastroplasty or gastric banding lose about half their extra weight. ^[137] ^[145] ^[151]

However, some research suggests that people who have gastric bypass may lose less weight within a year of their operation than those who have biliopancreatic diversion or sleeve gastrectomy. But we don't know how these operations compare over the long term. ^[137] ^[152]

Gastric banding

People who have gastric banding lose, on average, 30 kilograms (66 pounds) within a year of having the operation. ^[143] After three years, this increases to 35 kilograms (77 pounds).

Several studies have compared gastric banding with gastroplasty. In one study, people who had gastric banding lost, on average, 43 kilograms (95 pounds) within five years of surgery. ^[137] People who had gastroplasty lost 35 kilograms (77 pounds) within five years.

However, one other study found that people lost more weight in the long term with gastroplasty than with gastric banding. After seven years, people who had gastric banding

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had lost 30 percent of their extra weight on average. In comparison, people who had gastroplasty had lost 53 percent of their excess weight. ^[153]

Gastric banding may not work as well as gastric bypass, but it's a less serious operation, so it may be better for people who have other health problems. There hasn't been enough research to say which operation is better for people with particular health problems. In a summary of evidence, 9 in 100 people had complications shortly after gastric bypass, compared with 5 in 100 people after gastric banding. ^[145]

Gastroplasty

People who have a vertical banded gastroplasty lose about 32 kilograms (70 pounds), on average, in the year after their operation. ^[143]

But you may lose less weight after a gastroplasty than after gastric bypass. ^[137] You may also lose weight more slowly with gastroplasty.

In the long term, gastroplasty may help you lose more weight than gastric banding. But we need more research to be sure. ^[137] ^[153]

Biliopancreatic diversion

Biliopancreatic diversion works at least as well as gastric bypass. In one study, people who had biliopancreatic diversion with duodenal switch lost an average of 75 percent of their extra weight in the year following their surgery. People who had gastric bypass, however, lost 54 percent of their extra weight on average. ^[152]

Another study looked at 735 people who had biliopancreatic diversion. ^[154] One year after surgery, people had lost 52 kilograms (114 pounds) on average. People's weight stayed fairly steady for the next two years. But this study didn't compare biliopancreatic diversion with other treatments for obesity. So it's hard to rely on it.

Sleeve gastrectomy

There haven't been as many studies on sleeve gastrectomy as on the other surgeries. However, some research suggests this operation works at least as well as gastric banding and gastric bypass.

In one study, people had lost nearly 70 percent of their excess weight within a year of having sleeve gastrectomy, compared with 60 percent after gastric bypass. However, this study was quite small, with only 32 people. ^[137]

Another study found that people had lost 29 kilograms (64 pounds) three years after a sleeve gastrectomy, compared with 17 kilograms (37 pounds) after gastric banding. ^[137] But sleeve gastrectomy is a bigger operation and people had more serious complications from the surgery. We need more research to be sure that sleeve gastrectomy is as good as other surgeries for obesity.

How does it work?

Bariatric surgery works by reducing the amount of food your stomach can hold. So you can only eat small amounts of food before you feel full. The idea is that you then stop eating.

Gastric bypass and biliopancreatic diversion also change the way your body absorbs food, by attaching your stomach to a shortened small intestine. This means your body doesn't have as much time to digest the food you eat. Your body can't absorb as many calories and fat from food as it passes through.

Can it be harmful?

Yes. There are risks with all types of weight loss surgery. So doctors usually recommend it only if you've tried other ways of losing weight. Even then, surgery is not suitable for everyone. Your doctor may consider surgery too risky if you have heart or lung problems, for example. Your risk is also slightly higher if you are older.

To reduce your risk of complications, you may be asked to lose some weight before surgery. It's also best to give up smoking at least six weeks before surgery.

Being treated in a hospital where surgeons do lots of operations for obesity reduces the risk of things going wrong.^[155] So does having an experienced surgeon.^[149]

About 1 in 8 people are likely to get problems after weight loss surgery.^[148] This could be bleeding, an infection, or lung problems, such as pneumonia or a collapsed lung. Some people need a second operation to fix problems, such as bleeding.

It is possible to die from weight loss surgery. In studies, between 1 and 2 in 500 people died within a month of weight loss surgery.^[149]

After your surgery, you may have stomach problems, including nausea, diarrhoea, constipation, indigestion, and heartburn.

To read more about the risks and side effects of each surgery, see [Gastric bypass](#) , [Gastroplasty](#) , [Gastric banding](#) , [Biliopancreatic diversion](#) , and [Sleeve gastrectomy](#) .

People who have weight loss surgery often lose a lot of weight very quickly. This can be a problem, because your skin doesn't have a chance to 'shrink' to fit your new body shape. Many people who have weight loss surgery are left with excess skin. Some people find this distressing and think it looks unsightly.

You may be offered plastic surgery to trim away the excess skin. This is sometimes called body contouring surgery. Surgeons often recommend that you wait a year or two before having it, because you need to be sure your body weight has stabilised. Some types of body contouring plastic surgery are available on the NHS.^[156]

How good is the research on weight loss (bariatric) surgery?

There's a lot of research to show that surgery to make the stomach smaller works well for people with obesity. Big summaries of the research ([systematic reviews](#)) showed that weight loss (bariatric) surgery helped people lose a lot of weight, and keep it off. ^[137]
^[143]

Most of the studies have looked at four types of operations: [gastric bypass](#) , [gastroplasty](#) , [gastric banding](#) , and [biliopancreatic diversion](#) . Less research has been done on [sleeve gastrectomy](#). So we can't yet be certain about whether it's as safe and effective as other surgeries for obesity.

Further informations:

Why do I feel hungry or full?

Your brain gathers information from many different parts of your body. It uses some of this information to decide whether you need to eat (or stop eating). So if your brain decides you need extra food or energy, your brain tells you you're hungry. ^[9]

- For instance, your brain gets messages from your stomach about whether it's full or empty. If your stomach is full, you feel less hungry.
- A part of your brain also checks how much sugar there is in your blood. You'll start to feel hungry if the amount of sugar drops too low.
- The cells in your body that store fat make a chemical called **leptin**. Scientists think that leptin tells your brain how much fat you have in your body. ^[11] ^[7] If there's enough fat in the body, leptin tells the brain and you stop eating. A very few obese people have a condition where they do not produce enough leptin, and they may be helped by treatment with leptin. But leptin treatment has no effect on weight loss in most people who are obese. ^[12]
- Researchers also think that another hormone, called **ghrelin** (pronounced 'grellin'), may affect your weight. Ghrelin makes you feel hungry. It's made mainly in your stomach although your brain also makes a small amount. The amount of ghrelin in your blood rises just before you eat and drops after you eat. ^[13] ^[14] ^[15] Researchers are looking to see if blocking ghrelin helps people to eat less and lose weight.

Medical conditions that can cause obesity

It's important to tell your doctor if you have other symptoms besides difficulty controlling your weight. Your weight problem may be part of another medical condition. ^[16]

Tell your doctor if you feel:

- Very tired
- Cold
- Short of breath.

If you're a woman, tell your doctor if:

- Your periods become irregular
- You get lots of hair on your body, or hair on your face. These things can be a sign of a condition called polycystic ovary syndrome .

Cushing's syndrome

A condition called Cushing's syndrome can make you gain weight, especially on your face and around your waist. It means your body is making too many **corticosteroids**. These are chemicals that control how your body uses fat and sugar. If you have too many corticosteroids, you can feel tired, hungry, and bloated.

It may happen when a lump grows in your adrenal glands . These glands lie on the surface of your kidney . Your adrenal glands make corticosteroids. The lump makes your body produce extra corticosteroids. Cushing's syndrome can also happen when lumps grow on your pituitary gland or another part of your body.

Hypothyroidism

This means that your thyroid gland is not working properly. Your thyroid gland is a small gland at the front of your neck. It makes a chemical that helps to control how much energy your body uses (it changes your **metabolic rate**).

If you have hypothyroidism, your thyroid gland doesn't make enough of this chemical. This means that your metabolic rate slows down. So you burn fewer calories, and you're more likely to put on weight.

To read more, see our information on [Underactive thyroid](#) .

Obesity

Polycystic ovary syndrome

Only women can get this condition. It's often called PCOS for short. It means that small cysts (little bags of fluid, like blisters) may grow in the ovaries. Women who have PCOS don't release eggs regularly (ovulate). It happens because of an upset in the balance of certain hormones.

About half the women with PCOS are obese. But we don't know which comes first, the condition or the obesity. If your periods stop or become irregular and you put on weight at the same time, it's important to tell your doctor. Lots of unwanted hair on your body or face can also be a sign of polycystic ovary syndrome.

Insulinoma

This condition is caused by a lump (tumour) in your pancreas. The tumour makes your pancreas produce extra insulin, a chemical your body uses to control the amount of sugar in your blood.

The extra insulin changes sugar into fat. And you may not have enough sugar left in your blood. So your brain tells you that you feel hungry and you may eat more.

Brain tumour

If a tumour grows in the parts of your brain that control appetite and the amount of energy your body uses, your brain won't do its job very well. So you may put on weight. But, if you had a tumour, it's unlikely that putting on weight would be the only symptom.

Medicines that can cause obesity

Some drugs can make you put on weight as a side effect.

Corticosteroids

You may take drugs called corticosteroids to reduce swelling in the body. They can make you feel hungry and bloated. Both these effects may cause you to put on weight.

Neuroleptics

Neuroleptics are drugs used to treat mental illnesses, such as schizophrenia. These drugs can make you feel sleepy or lethargic. So you're less likely to use energy and more likely to put on weight.

Antidepressants

Antidepressants are usually used to treat people who are depressed. Some of the older antidepressants can make you put on weight. This is most likely to happen with a drug called amitriptyline. People taking this drug often crave high-energy, sugary foods.

Epilepsy drugs

If you're taking drugs for [epilepsy](#), especially drugs called valproate (brand name Epilin) or carbamazepine (Tegretol, Tegretol Retard), you may put on weight.

Why do some people gain weight more easily than others?

Here are some of the theories why some people eat more [calories](#) than their body uses up.

- It's easy for us to overeat if we don't get strong messages to stop eating. People who are obese may not have the right balance of chemicals in parts of their brain. So their brain can't pass on the right messages about how hungry or full they feel.
- People who are overweight may be eating when they don't feel hungry. For example, they may eat to comfort themselves when they're sad. It's also easy to eat when we're not hungry because we associate a situation with eating. For example, when we visit family or friends, or go to the cinema.
- A very small number of people who are obese don't produce enough of a chemical called **leptin**. Leptin is made by the cells in your body that store fat. It tells your brain how much fat you have stored. ^[11] ^[7] If you aren't making enough leptin, you may still feel hungry, even though you're putting on weight.
- Some [medical conditions](#) and [medicines](#) increase appetite and increase weight. This can make it hard to keep your weight down. It's important to get medical help if your weight is a problem.
- People use calories at different rates. Some people find it easier to gain weight and lose weight than others. This may be because of differences in our [genes](#).

Modern fast-food culture

People often blame modern fast-food culture for obesity. These days, it's easy to overeat or eat too much fatty or sugary food. The sight of food and advertising for high-calorie foods can make us want to eat. So we eat because we are constantly reminded that food is there and tastes good, not because we feel hungry. And when we eat in this way, we put on weight. ^[17] ^[6]

- **Fast-food outlets** are everywhere. So it's easy to eat even if you aren't particularly hungry. Fast food often has a lot of fat or sugar. Even healthy-looking options like salads may come with dressings that are high in fat.

Obesity

- **Processed food** also contains a lot of fat or sugar. Fat and sugar have a lot of calories . So if you eat this kind of food, you're more likely to put on weight. Even a small portion, such as a biscuit, is likely to have a lot of calories.
- Most of us don't **count the calories** we eat.
- We're also eating more processed foods and snacks at home. These often have a lot of calories.

Physical activity and obesity

If you don't get enough exercise, you may put on weight. This can lead to obesity. To keep your weight under control you should be getting **at least 30 minutes of physical activity** on most days of the week. ^[18]

- Our modern lifestyle makes it harder to burn calories. We tend to travel in cars rather than walk, and watch sport on television rather than playing it ourselves. And we spend more time sitting at computer screens.
- It may seem as though we're rushing around doing a great deal. But it's no longer that common for people to carry heavy shopping, cycle or walk to work, do heavy housework, or dig the garden.
- We have to make a special effort to take any exercise at all. It can be difficult to find the time. Many people work long hours and can't fit exercise into their daily routine.

How obesity affects your life

Being obese can affect your daily life and how you feel about yourself. ^[26] ^[24]

Many people who are obese say they aren't happy with their bodies and feel life is harder because of their size. These negative feelings make it harder to summon up the will to lose weight. Eating is comforting, so feeling this way can lead to eating even more. ^[26]

- Life can be difficult in practical ways. It can be hard to find clothes that fit, and seats are often not designed for larger body sizes.
- You may also find it uncomfortable or even painful to do everyday things such as driving, walking, climbing stairs, or carrying shopping.
- Many people with obesity say they feel bad about themselves. They don't like the way they look. They may not give themselves credit for the good things they've done.

Obesity

Or they may feel worthless. This is called low self-esteem. Other people feel ashamed or guilty.

- You may be more likely to suffer from mental health problems such as depression or anxiety disorder . You may also have a condition called [binge eating disorder](#) , when you eat more at one time than most people would.
- Feeling bad can affect your social life or your work. For example, you may not feel able to make friends, go to work or take part in education, or even go shopping. Perhaps you don't apply for jobs because you don't think you'll be good enough to get one.
- Other people can make life harder. In a perfect world, nobody would be judged by how they look. But people often have set ideas about what overweight people are like and why they put on so much weight. Other people may think you are greedy, sloppy, or lazy.

Binge eating disorder

If you regularly eat very large amounts of food at once, you may have **binge eating disorder**.^[27] Up to half of people who are obese have this problem.^[28]

A binge is when you eat a lot of food in a short amount of time. Binge eating disorder is a real illness that can make you feel upset. It's not the same as bulimia , another eating disorder. People who have bulimia binge eat and then try to stop themselves putting on weight by vomiting, taking pills, or exercising too much.^[29]

Some people get up and eat at night even though they don't feel hungry. Doctors call this **night-eating syndrome**. It's more common in women than in men.

What you eat during a binge is less important than the amount you eat and how you feel about it. You may feel:

- A little excited or rebellious when you're planning or preparing a binge
- Frightened of being caught, putting on weight, or being out of control^{[30] [31] [32] [33]}
- Guilty
- Ashamed
- That you dislike yourself
- Disgusted

Obesity

- Numb
- Distanced from bad feelings.

If you're obese and you eat in this way, it's important that you seek professional help. This kind of eating will prevent you losing weight. And it won't make you feel any better about yourself.

High blood pressure and obesity

When doctors measure your **blood pressure**, they describe it using two numbers. If the first number is above 140 or the second number is above 90, your blood pressure is too high.

Doctors sometimes call this condition hypertension. It can lead to **heart disease**, **heart failure**, **kidney disease**, or a **stroke**.

To find out more, see our articles on [high blood pressure](#).

There is a link between obesity and high blood pressure.^[46] ^[47]

- People who are **obese** are twice as likely to have high blood pressure as people who are at a healthy weight.^[48]
- If you lose weight, your blood pressure will usually drop. See [Losing weight](#) in our section on high blood pressure.^[21]
- Doctors aren't sure why obesity causes high blood pressure.^[49]

High cholesterol and obesity

Too much of a fatty substance called cholesterol in your blood can damage your blood vessels and lead to **heart disease** or a **stroke**. But the term 'high cholesterol' is a bit misleading. High levels of some types of cholesterol are actually good for you, and high levels of other types aren't. To learn more, see our articles on [high cholesterol](#).

Here's what we know about the link between obesity and high cholesterol:^[46] ^[50] ^[49]

- If you're **obese**, you're more likely to have high levels of 'bad' cholesterol (**LDL cholesterol**) in your blood than people who aren't obese.

Obesity

- You're more likely to have high levels of cholesterol in your blood if your extra fat is around your waist, rather than your hips and buttocks.
- Eating too many saturated fats can raise the levels of 'bad' cholesterol in your blood. These types of fats are found in dairy products and meat.

Heart disease, stroke and obesity

If you're overweight or obese, you're more likely to have heart disease or a stroke .^[46]
^[26] ^[49] ^[47]

Having high blood pressure and high cholesterol can cause your arteries to become furred up and clogged with fatty deposits. It is more difficult for blood to flow through these narrowed arteries. Sometimes the fatty deposits form a blockage and stop blood getting through. Blockages can cause a heart attack or a stroke.

For more information, see our articles on [high blood pressure](#) , [high cholesterol](#) , [heart attacks](#) , and [strokes](#) .

Diabetes and obesity

Diabetes is a serious illness. It can damage your heart, eyes, kidneys , feet, and other parts of your body. To learn more, see our articles on [type 2 diabetes](#) .

If you have diabetes, your body can't control how much sugar is in your blood.

Here's what we know about the link between obesity and diabetes.^[46] ^[50] ^[49]

- If you're obese , you're **twice as likely to have type 2 diabetes** (also called non-insulin dependent diabetes) as people who aren't overweight.^[51] Most people with type 2 diabetes are overweight or obese.^[52] To read more about the different types of diabetes, see [What is type 2 diabetes?](#)
- Usually, your body makes a hormone called insulin to keep your sugar levels steady. Having too much fat on your body can stop insulin from working normally. So sugar builds up in your blood.
- The more you weigh and the longer you've been overweight, the more likely you are to get diabetes.

Osteoarthritis and obesity

Osteoarthritis is a condition that makes your joints feel stiff and painful. It's a type of arthritis that's caused by wear and tear of the joints. It commonly affects your hands, knees, hips, and back.

To find out more, see our articles on [osteoarthritis](#) .

Here's what we know about the link between osteoarthritis and obesity.^[46] ^[47] ^[49]

- You're more likely to get osteoarthritis if you're obese .^[53]
- Extra weight puts pressure on your joints, especially in your knees, ankles, and lower back. This can wear away the cushioning (cartilage) between the bones in your joints.
- Losing even a small amount of weight can ease the pressure on your joints and help you move around more easily. And you may find that you need less medicine to cope with the pain in your joints.^[47]

Gallstones and obesity

Gallstones are hard lumps that get stuck in your gallbladder . They can be painful and you may need to surgery to remove them.^[53]

People who are obese are two to three times more likely to get gallstones than people who are a healthy weight.^[46] Doctors aren't really sure why people who are overweight get gallstones.

Sleep apnoea and obesity

Sleep apnoea is when you **stop breathing** for 10 seconds or more several times an hour when you're asleep. You may also **snore heavily**.

You may wake up often in the night. This can leave you feeling tired and irritable during the day. It can also lead to high blood pressure and an irregular heart beat. Sleep apnoea may also damage your blood vessels because they don't get enough oxygen when you stop breathing.

To read more, see our information on [Sleep apnoea](#) .

Here's what we know about the link between sleep apnoea and obesity.^[28] ^[46] ^[49]

Obesity

- If you're obese , you're more likely to have sleep apnoea.
- Having too much fat in your neck can cause sleep apnoea. When you sleep, the muscles in and around your windpipe relax, causing the tissues to block your airway and briefly stop you breathing. You wake up each time your breathing stops.
- It's more common in men who are obese than in women who are obese.
- Losing 10 percent of your weight can make sleep apnoea half as severe. ^[28]

Cancer and obesity

Being obese makes it more likely that you'll get certain types of cancer. ^{[46] [54] [49] [9]}

Women who are obese are more likely to get cancer in their breasts, gallbladder , ovaries , colon , womb, or cervix (neck of the womb).

Men who are obese are more likely to get cancer in their colon, rectum , or prostate (a small gland near your bladder).

Doctors aren't sure why some types of cancer are more common in people who are obese.

To read more about the different types of cancer, see our articles on:

- [Breast cancer](#)
- [Colon or rectal cancer](#)
- [Ovarian cancer](#)
- [Prostate cancer](#) .

Menstrual problems and obesity

Women who have too much fat on their body may find that their monthly cycle (menstrual cycle) is disrupted. They may stop having periods altogether. ^{[46] [28] [49]}

Fat seems to increase levels of a hormone called testosterone in the body. This may cause the menstrual problems. It can also mean you grow some coarse hair on your face.

Obesity

Women with a condition called polycystic ovary syndrome tend to put on weight easily. They may also have irregular periods and grow more hair on their body or face.

Questions your doctor may ask

If you go to see your doctor about your weight, these are some of the questions your doctor may ask you. ^[55]

- Do you think you're overweight? If so, why?
- When did you first think you were overweight?
- When did you gain most of your weight?
- Have you tried to lose weight? How many times?
- How did you try to lose weight?
- Are people in your family overweight?
- Has anyone in your family had heart disease or another serious illness?
- Are you worried about your weight?
- How does being overweight make you feel?
- Have you put on weight when taking medications for other conditions?
- What has been your heaviest weight?
- Do you smoke?
- How much exercise do you do?
- Do you have any other medical problems?
- Why do you want to lose weight?
- How much weight would you like to lose?

To find out why you're overweight, your doctor may also ask you about: ^[55] ^[54] ^[28] ^[61]

- Your eating habits and your lifestyle

Obesity

- How you feel about yourself and about food
- Your family and your relationships.

Who has weight loss surgery for obesity?

[Weight loss surgery](#) (also called bariatric surgery) is usually done if your weight is dangerous to your health. Guidelines from the National Institute for Health and Care Excellence (NICE) say that doctors should only suggest surgery if: ^[63]

- You're very obese (your [body mass index](#) [BMI] is 40 or more)
- You're quite obese and your weight is causing you harm (your BMI is between 35 and 40 and you have other health problems, such as [diabetes](#) or [high blood pressure](#))
- You've tried hard to lose weight in other ways (dieting and exercising or taking medicines, for example) for at least six months but none of these treatments have worked
- You've been treated and supported by experts in a hospital obesity clinic but still haven't lost weight and kept it off
- You're generally fit enough to have an operation with a general anaesthetic.

Your doctor will also check how committed you are to changing the way you eat.

One exception to the guidelines above is if your BMI is more than 50 and you are generally fit enough to have an operation. In this instance, your doctor may recommend having surgery without first trying other ways to lose weight. Your GP may prescribe the weight loss drug [orlistat](#) before surgery if the waiting time for the operation is long.

Dieting



Cutting down on fatty foods and sugary foods can help you lose weight.

If you're obese, you'll need to follow a **low-calorie diet** if you want to lose weight. This will mean you eat fewer calories than you have been eating.

These diets mean eating less and choosing foods with fewer calories. The goal is to lose weight by eating fewer calories than your body uses.

How many calories should I eat each day?

The amount of calories you need to cut out depends on how overweight and how active you are.

- In studies, obese people followed diets that allowed between 1,000 and 1,500 calories a day.
- For most obese people, a diet with 1,000 to 1,500 calories means eating 500 to 1,000 fewer calories each day.

Guidelines in the UK recommend that most obese people eat 600 fewer calories each day to lose weight. ^[55] ^[64]

However, some people may need to follow a diet that cuts down their calories even more, so that they lose weight quickly. If you follow a **very-low-calorie diet**, you'll have less than 800 calories a day. It's hard to get enough vitamins and minerals with this diet so

you'll probably need to drink a specially designed liquid food that contains extra nutrients. ^[65] These diets are usually recommended only for people whose weight is an immediate threat to their health (if it's stopping them from breathing properly, for instance). If you need this type of diet your GP will probably refer you to a hospital specialist. You should only go on this type of diet if you are being monitored by a doctor. ^[66]

What kinds of food should I avoid?

The diets used in research varied from study to study. So it's hard to say whether one diet is better than another.

One summary of the research compared studies of lots of different types of diets. It found the types of food in the diet made no difference to the amount of weight people lost. All that mattered was how many calories people ate, and how well they stuck to the diet. ^[67]

Most diets include small amounts of fatty foods (such as dairy products and meat) and larger amounts of carbohydrates (such as bread and rice). Fatty foods have a lot of calories, so reducing the amount of fat you eat can help you lose weight. ^[40] ^[68] One summary of research found that people following a low-fat diet lost around 2 kilograms (4 pounds) more, on average, after six months than people who didn't follow a low-fat diet. ^[69]

Popular diets such as the Atkins diet contain more fat, but much smaller amounts of carbohydrates. You still eat fewer calories overall. They're sometimes called low-carb diets.

A Mediterranean diet includes a moderate amount of unsaturated fat. Unsaturated fat is still high in calories but it is better for your health than saturated fat. Unsaturated fat is found in olive oil, some nuts, and fish. But you still need to eat fewer calories. Some doctors think the Mediterranean diet may be easier to stick to over a longer period.

Another popular diet is the glycaemic index diet, or GI diet. If you follow this diet, you aim to eat foods that release their energy slowly over time. The idea is that these keep you feeling full for longer, so you're less likely to eat snacks. Foods that release their energy fairly slowly include lentils, wholemeal bread, and apples. Foods that release energy quickly include white bread, chips, and most sugary foods.

All these types of diets seem to work, if you stick to them. Bear in mind that your diet will only work if you reduce the total amount of calories you eat. ^[68]

- Eating less fat won't help you lose weight if you keep eating lots of high-calorie sugary foods.
- 'Fat-free' doesn't mean 'calorie-free'. Foods with reduced fat can have as many, or more, calories per helping than ordinary products.
- You need to watch how much fat you eat. But remember that calories count too.

What does the research say?

One study compared three diets: low-fat, low-carb, and Mediterranean.^[70] All three diets worked, but people who followed the low-carb or Mediterranean diets lost about 1 kilogram (2 pounds) more than people on the low-fat diet.

A review of studies (a systematic review) looked at six studies with a total of 2,650 people, comparing a Mediterranean diet with a low-fat diet. The people on the Mediterranean diet lost about 2 kilograms (4.5 pounds) more than the people on the low-fat diet.^[71]

Another systematic review looked at 13 studies comparing low-fat and low-carb diets. It found that people following low-carb diets lost around 4 kilograms more (9 pounds more), on average, after six months than those following low-fat diets. But after a year, the difference between the groups had narrowed. People following low-carb diets were also more likely to stick with their diet.^[72]

Another review of studies found that obese people following a Mediterranean diet lost more weight after one year than those who either were given information on a healthy diet or followed a low-fat diet. However, the review looked at only a small number of studies, so we need more research.^[73]

A review looking at GI diets found that people lost about 1 kilogram (2 pounds) more, compared with other types of diet.^[74]

Physical activity



Running or walking are just two ways of using calories. Doing everyday tasks can also help you lose weight.

There are lots of ways to become more physically active.

In studies, most people followed a set plan of **aerobic exercise** such as brisk walking, jogging, running, riding an exercise bike, or swimming.

These activities make you feel like you're **working hard**. Your heart beats faster, you sweat, and you may feel tired afterwards.

- Some people in the studies did exercises at home. Others went to a leisure centre or a gym.
- How long and how often people exercised varied in the studies. And some people exercised more vigorously than others.

Generally, an exercise programme to help control weight involves doing an activity that uses about **150 calories each day** (or 1,000 calories a week). You don't have to go running to use calories. Doing housework or gardening can also use calories. Below are the sorts of activities that you can do on most days of the week. ^[75]

Common tasks

We've shown how many calories each activity is likely to use up, if you do it for 30 minutes.

- Ironing is **light** activity. It uses about 69 calories.

Obesity

- Cleaning and dusting is **light** activity. It uses about 75 calories.
- Painting and decorating is **moderate** activity. It uses about 90 calories.
- Vacuuming is **moderate** activity. It uses about 105 calories.
- Mowing the lawn is **moderate** activity. It uses about 165 calories.

Exercise

Again, the calorie counts we give are for half an hour of doing the activity.

- Strolling 1 mile in 30 minutes is **light** activity. It uses about 75 calories.
- Walking 1.5 miles in 30 minutes is **moderate** activity. It uses about 99 calories.
- Playing golf is **moderate** activity. It uses about 129 calories.
- Playing doubles tennis is **moderate** activity. It uses about 150 calories.
- Swimming is **vigorous** activity. A slow crawl uses about 240 calories.
- Running is **vigorous** activity. Running at a speed of 6 miles an hour uses about 300 calories.

Advice from the government says all adults should do at least 30 minutes of **moderate** activity most days.^[76] This doesn't have to be all at once. You could do three 10-minute sessions, for example. Your everyday activities can form part of this. So walking briskly to work would count.

If you are doing moderate activity, your breathing will get faster and your heart will go faster. You will feel warmer, and may sweat on hot or humid days.

However, if you're obese, or you've already lost weight and are trying to keep it off, you'll probably need to do more than 30 minutes a day.^[76] ^[55] You should aim for an hour to an hour-and-a-half of moderate activity most days. But, again, ordinary activities like walking can count towards your total.

You may like to try a pedometer, to count the number of steps you take each day. Some experts recommend aiming for 10,000 steps a day. One study found that walking programmes using pedometers helped people to lose on average 0.05 kilograms a week more than if they'd not been using pedometers.^[77]

Behaviour therapy

The way you eat and the amount of exercise you do are difficult habits to change. Behaviour therapy can help you change harmful habits. Your GP or hospital specialist may be able to refer you to someone who is trained to give this kind of help.



Running or walking are just two ways of using calories. Doing everyday tasks can also help you lose weight.

Therapists have many different ways of helping people to change their behaviour. Your therapist will teach you the ones you need. The idea is to give you a set of skills to help you change your eating habits and become more active.

- Therapy often includes talking about your feelings, including feelings about your body shape, weight, and eating.
- If you [binge](#) on food because you're unhappy or stressed, your therapist can help you deal with that, too.
- The changes shouldn't end when you stop going to a therapist. After some time and practice, you can be your own therapist whenever you feel your old eating habits taking over again.

In studies, people often had behaviour therapy as part of a group of about 10 people. They met for one or two hours each week, for three months to five months. They often needed to do homework between sessions.

Below are the types of behaviour therapy that the studies looked at.

Self-monitoring

Self-monitoring means keeping track of behaviour such as eating or exercise. It helps you become more aware of what you eat. ^[78]

- It often means keeping a food diary. Each day you record what you eat, when, where, and how you were feeling at the time. You can do this in different ways. Finding a way you can stick to gives a better chance of changing your behaviour in the long term. ^[79]
- You and your therapist can then talk about the times when you have eaten too much or reached for high-calorie snacks. You can talk about ways of avoiding this in the future.
- You may find that changing your mealtimes helps.

Some people said they stopped eating certain 'bad' foods because they couldn't face writing them down. Your doctor or therapist may be able to give you forms to help you record the information you need.

Stimulus control

This involves learning the cues in your social life or home life that make you want to eat too much. You then learn to avoid or change these cues. For instance, maybe you overeat when you see a certain friend. Meeting the friend in a place where there isn't food removes the cue.

If you pick up food on the way home from work, take a different route home to avoid passing your favourite fast-food restaurant. Other tactics may be to keep snacks out of the house or to move the television out of the kitchen. ^[80]

Reinforcement

This means having a reward for positive changes. For instance, you may set a goal that says for 10 days you mustn't eat just before you go to bed. If you achieve the goal, you buy yourself a new outfit or take an afternoon off work. Your therapist will probably encourage you to choose small goals with small rewards, rather than big rewards that require a lot of effort. ^[54] In your mind, you may also start to enjoy things that aren't associated with food. ^[80]

Social support

This can mean trying to lose weight with a friend or your partner. Or it can mean making sure that other people around you are helping your efforts.

What works best in a weight loss programme?

We've looked at the results of studies of weight loss programmes.

Following a structured weight loss programme probably works best. You're more likely to lose weight and keep the weight off if your programme includes these six things:

- Regular contact with a health professional. A dietitian can be as helpful as a doctor. ^[81]
- Support from other people who are losing weight.
- Weighing yourself regularly. This makes it easier to spot what makes you put on weight.
- A [low-calorie diet](#) that lists the kinds of foods to eat and those to avoid. This makes it easier to stick to the diet. ^[82]
- A personalised exercise plan ([physical activity](#)). Exercise helps you to keep off the weight. It doesn't matter what kind of exercise you do. It's how many calories you burn that counts.
- A plan for how best to keep weight off. ^[83]

When you are following a weight loss programme, bear in mind the following points:

- Exercise alone won't help you to lose much weight. ^[84] You need to cut your calories, too. This is because it takes a lot of exercise to burn off food. For instance, you'd need to run for about an hour to work off a piece of chocolate cake.
- Programmes that don't include direct contact with a health professional don't work as well as programmes that do. You may want to try computer-based programmes, self-help books or DVDs, but they probably won't help as much as having someone you can talk to. ^[85] ^[86]
- To keep your weight down, it's better to lose weight slowly and keep up the changes to your lifestyle. 'Crash diets' or one-time bursts of exercise don't help to control your weight in the long term.
- [Behaviour therapy](#) helps you stick to your low-calorie diet and exercise plan for longer. So it helps you keep off any weight you lose. Ask your GP about this kind of therapy.

- The longer a weight loss programme lasts, the more likely it is that you'll keep weight off. ^[78]

Gastric bypass

What is it?

Gastric bypass is a type of weight loss (bariatric) surgery. It means having an operation to make your stomach smaller and your bowels (intestines) shorter. This means you absorb fewer calories from the food you eat.

There are many types of gastric bypass operation. The most common type is called a **Roux-en-Y gastric bypass**.

Here's what happens:

- Your surgeon uses a band or staples to make a small pouch in the top part of your stomach. This divides the stomach into two separate parts.
- Your small intestine, which carries food from your stomach, is cut away from the lower part of your stomach.
- Your small intestine, now a bit shorter, is then attached to the pouch, bypassing the rest of your stomach. The rest of your stomach is closed off.
- The new smaller stomach can carry about 30 grams (1 ounce) of food.

Gastric bypass can be done as open surgery through one cut across your abdomen. Or you can have keyhole surgery with several small cuts. These types of surgery work equally well. ^{[137] [138] [139]} But you're less likely to get problems with your wound after keyhole surgery. You're also likely to need less time in hospital with this type of operation. ^{[137] [138] [139]}

Most operations take at least an hour. Some may take several hours. Surgery takes longer if you have a lot of fat on your abdomen because it takes time to cut through the fat and close it up afterwards. ^[141] You'll have a general anaesthetic. This means you'll be asleep during surgery.

Your doctor may take out your gallbladder during the operation. Your gallbladder stores fluid called bile, which helps your body break down food. If you lose weight quickly then you're likely to get gallstones. These are hard lumps that grow in your gallbladder. They can be very painful. Having your gallbladder removed when you have weight loss surgery is more common in the US than the UK.

How does it work?

Gastric bypass works by reducing the amount of food your stomach can hold. When you eat, the small pouch quickly fills with food. The pouch can hold only about 30 grams (1 ounce) of food, so you feel full after eating only a little. This sends signals to your brain to tell it you're full sooner than usual. The idea is that you then stop eating.

This operation also works by changing the way your body absorbs food. Anything you eat moves straight from the new pouch into the part of small intestine attached to it. And because your small intestine is shorter, your body takes in less of the food as it passes through. This means your body will have less time to absorb calories and fat from food.

What are the risks?

About 19 in 100 people get a complication during a gastric bypass operation or shortly afterwards.^[143] Possible problems include bleeding, an infection, or lung problems.

- Some people need a second operation to fix problems, such as bleeding. In one fairly small study, 14 in 100 people needed a second operation to fix problems after having a gastric bypass.^[137]
- If you get an infection after your operation, it can be treated with antibiotics. However, in some cases, an infection can cause an abscess. This is a pool of pus inside your body. It can happen a few weeks after surgery. It may cause pain, fever, and a cough. An abscess usually needs to be drained. This may mean another operation.
- Lung problems include an infection in the lungs (pneumonia) or a collapsed lung. Both these problems may need to be treated in hospital.
- It is possible to die because of a gastric bypass, although this is uncommon. Between about 1 in 300 and 3 in 300 people die during their operation or in the month afterwards.

Problems after surgery

This is what happened to people in some of the studies we looked at:^[137]

- 1 in 4 people got a painful or bleeding stomach ulcer after their operation. Half of these people needed another operation to fix the problem
- 1 in 4 people couldn't stop vomiting
- 1 in 20 people got an open sore (ulcer) in their intestine
- More than 1 in 10 people got [gallstones](#) . These are hard lumps that grow in your gallbladder. They can be painful and you may need surgery to remove them. If your

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gallbladder is unhealthy before your operation, you may have it removed during surgery.

Some people's bones got thinner after weight loss surgery.^[144] This means they may fracture more easily. Your doctor might recommend supplements to help keep your bones strong.

Stomach problems

Some people get stomach problems after a gastric bypass. About 17 in 100 people get problems like:^[143]

- Feeling sick
- Diarrhoea
- Constipation
- Indigestion
- Heartburn.

Some people get a problem that happens when food moves too fast from the stomach to the intestines. This is called dumping syndrome, or rapid gastric emptying. You might feel sick and dizzy, and get stomach pains or diarrhoea after eating. If you get this problem, it might help to cut down on sugary foods.^[137] If changing your diet doesn't work, your doctor may recommend medicines to slow down your digestion.

Gastric banding

What is it?

Gastric banding is a type of weight loss (bariatric) surgery where you have an operation to make your stomach smaller.

Here's what happens:^[137]

- Your surgeon puts a thin band around your stomach. It divides your stomach into two parts. The top part of your stomach becomes a small pouch. This pouch can only hold a few ounces of food.
- Usually, the band is adjustable. Your surgeon can add or remove fluid through a tube that runs from the band to your chest. The opening to the tube sits under the

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skin in your chest so your surgeon can get to it easily. The opening is called the **access port**.

- Your surgeon can make the band tighter by adding salt water into the band. This means food passes out of the pouch very slowly and you stay full for longer. The band can also be made looser by taking out some of the fluid. This lets food pass more quickly through your digestive system. The band is loose to start with and then tightened as you become used to eating less.

This operation is sometimes called **adjustable gastric banding**. There are other types of gastric banding operations but adjustable gastric banding is the most common. It's often done through a few small cuts in your abdomen. This is called **keyhole surgery** or **laparoscopic surgery**.

Keyhole surgery and open surgery (an operation through a large cut in your abdomen) work equally well.^[137] But you're less likely to get problems with your wound after keyhole surgery. You're also likely to need less time in hospital with this type of operation.^[137]

Unlike other operations for obesity, gastric banding does not involve cutting the stomach or intestines. This means it's a less serious operation. Also, the band can be taken off if there are problems or if you are not losing weight.

Most operations take at least an hour. Some may take several hours.

You'll have a **general anaesthetic**. This means you'll be asleep during surgery.

Your doctor may take out your **gallbladder** during the operation. Your gallbladder stores fluid called bile, which helps your body break down food. If you lose weight quickly you're likely to get **gallstones**. These are hard lumps that grow in your gallbladder. They can be very painful. Having your gallbladder taken out when you have a gastric band is more common in the US than the UK.

How does it work?

Gastric banding works by making your stomach much smaller. This means that you should feel full sooner than usual. The band forms a ring around your stomach so that the top part becomes a small pouch. The pouch can only hold a small amount of food at a time. When the pouch is full, your stomach sends a signal to your brain to tell you that you're full. You will need to stop eating when you feel full.

If you ignore the feeling of fullness and keep on eating, you'll feel unwell and you'll continue to put on weight. It's best to think of surgery as a dramatic way of helping you stick to a diet and exercise programme, rather than as a cure in itself.

What are the risks?

About 13 in 100 people get a problem during or shortly after surgery.^[143] This could be bleeding, an infection, or lung problems. About 8 in 100 people had a problem that was bad enough to need another operation.

Infections are usually treated with antibiotics. But some infections cause an **abscess**. This is a pool of pus around the stomach. It can happen a few weeks after surgery. It may cause pain, fever, and a cough. An abscess usually needs to be drained. You may need another operation.

Lung problems could be an infection in the lungs (pneumonia) or a collapsed lung. Both these problems may need to be treated in hospital.

It is possible to die because of gastric banding, although this is not common. Some studies have found that about 2 in 500 people died during their operation or in the month afterwards.^[143] Other studies have found that the risk was as low as 1 in 5,000.

Some people get stomach problems after gastric banding. About 7 in 100 people get problems like:^[143]

- Feeling sick
- Diarrhoea
- Constipation
- Indigestion
- Heartburn.

Compared with other types of surgery

We don't know if gastric banding is safer than other types of weight loss (bariatric) surgery. There hasn't been enough research to give a clear answer. This is what we know about [gastric banding](#) compared with [gastroplasty](#) :

- You are less likely to get acid in your throat (acid reflux) after a gastric banding operation than after gastroplasty.^[137]
- You're more likely to have problems with your stomach after gastric banding than after gastroplasty. For example, your stomach pouch may stretch or you may get a hole between the pouch and the bottom part of your stomach. You may need another operation to correct these problems.
- You may be more likely to need another operation after gastric banding than with other types of weight loss surgery. As many as 44 in 100 people need a second

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operation after gastric banding.^[137] This usually happens because the band slips out of place or because people are very sick or don't lose enough weight. Sometimes the access port flips over, stopping the surgeon from tightening the band. If this happens, you may need an operation to fix it.

One summary of the evidence found that problems shortly after surgery were more common in people having [gastric bypass](#) , compared with gastric banding. But people who had gastric banding were more likely to need a second operation.^[145]

Biliopancreatic diversion

What is it?

Biliopancreatic diversion is a type of weight loss (bariatric) surgery. It means you have an operation to make your stomach smaller. It also reduces the number of calories your body absorbs from food.

Here's what happens:

First, your surgeon cuts away the bottom part of your stomach. This leaves a small pouch.

Your surgeon then connects your bowel to the new stomach pouch. Your **small intestine** is the top part of your bowel. It's the first part of your bowel that food travels to after it's been in your stomach. Your surgeon makes a cut some way down your small intestine, and attaches this lower section of your small intestine to the stomach pouch. Doing this means that the food you eat doesn't travel through the top section of your small intestine.

Sometimes your surgeon will take out the left half of your stomach rather than the lower part. The right half becomes a new stomach pouch and is already connected to your small intestine. Your surgeon then makes cuts to bypass the lower part of your small intestine. This is called **biliopancreatic diversion with duodenal switch**.

Most operations take at least an hour. Some may take several hours. Surgery takes longer if you have a lot of fat on your abdomen, as it takes time to cut through the fat and close it up afterwards. You'll have a general anaesthetic . This means you'll be asleep during surgery.

Your doctor may take out your **gallbladder** during the operation. Your gallbladder stores fluid called bile, which helps your body break down food. If you lose weight quickly you're likely to get [gallstones](#) . These are hard lumps that grow in your gallbladder. They can be very painful.

How does it work?

Biliopancreatic diversion works by reducing the amount of food your stomach can hold. So you can only eat small amounts of food at a time. This sends signals to your brain to tell it you're full sooner than usual. The idea is that you then stop eating.

It also works by changing the way your body absorbs food. Because the operation bypasses part of your intestines, your body doesn't have as much time to digest the food you eat. Your body can't absorb as many calories and fat from food as it passes through.

What are the risks?

About 6 in 100 people get a problem during or shortly after surgery.^[143] This could be bleeding, an infection or lung problems. About 4 in 100 people had a problem that was bad enough to need another operation.

Infections are usually treated with antibiotics. But some infections cause an **abscess**. This is a pool of pus around the stomach. It can happen a few weeks after surgery. It may cause pain, fever, and a cough. An abscess usually needs to be drained. You may need another operation.

Lung problems could be an infection in the lungs (pneumonia) or a collapsed lung. Both these problems may need to be treated in hospital.

It is possible to die because of biliopancreatic diversion. About 1 in 100 people died during the operation or within a month afterwards.^[143]

Lots of people get stomach problems after biliopancreatic diversion. Nearly 4 in 10 people get problems such as:^[143]

- Feeling sick
- Diarrhoea
- Constipation
- Indigestion
- Heartburn.

Gastroplasty

What is it?

Gastroplasty is a type of weight loss (bariatric) surgery. It means you have an operation to make your stomach smaller. There are two types: **vertical banded gastroplasty** and **horizontal gastroplasty**. Vertical banded gastroplasty is the more common type.

Here's what happens: ^[137]

- Your surgeon uses staples to divide your stomach into two parts, with a small opening between them. The top part, where food comes into your stomach, is smaller than the bottom part. This top part makes a small pouch.
- Sometimes the surgeon puts a band around the lower part of the pouch to stop it stretching.
- When you eat, the food goes into the small pouch, passes slowly through to the rest of your stomach and leaves through your intestine (the tube that takes food away from your stomach) as normal.
- The small pouch can only take a few ounces of food. This means you should feel full sooner than usual. You will need to stop eating once you feel full.

Gastroplasty can be done as **open surgery** through one cut across your abdomen. Or you can have **keyhole surgery** with several small cuts. These types of surgery work equally well. ^[137] ^[146] But you're less likely to get problems with your wound after keyhole surgery. You're also likely to need less time in hospital with this type of operation. ^[137] ^[146]

Most operations take at least an hour. Some may take several hours. Surgery takes longer if you have a lot of fat on your abdomen, as it takes time to cut through the fat and close it up afterwards. ^[142] You'll have a general anaesthetic. This means you'll be asleep during surgery.

Your doctor may take out your **gallbladder** during the operation. Your gallbladder stores fluid called bile, which helps your body break down food. If you lose weight quickly you're likely to get [gallstones](#). These are hard lumps that grow in your gallbladder. They can be very painful. Having your gallbladder removed when you have weight loss surgery is more common in the US than the UK.

How does it work?

Gastroplasty works by reducing the amount of food your stomach can hold. When you eat, the pouch quickly fills with food. So you feel full after eating only a little. This sends

signals to your brain to tell it you're full sooner than usual. The idea is that you then stop eating.

What are the risks?

About one-quarter of people get a problem during or shortly after gastroplasty.^[143] This could be bleeding, an infection, or lung problems. About 1 in 10 people had a problem that was bad enough to need another operation.

Infections are usually treated with antibiotics. But some infections cause an **abscess**. This is a pool of pus around the stomach. It can happen a few weeks after surgery. It may cause pain, fever, and a cough. An abscess usually needs to be drained. You may need another operation.

Lung problems could be an infection in the lungs (pneumonia) or a collapsed lung. Both these problems may need to be treated in hospital.

Some people get stomach problems after gastroplasty. About 18 in 100 people get problems like:^[143]

- Feeling sick
- Diarrhoea
- Constipation
- Indigestion
- Heartburn.

Compared with other types of weight loss surgery

There isn't enough evidence to say whether gastroplasty is more harmful than other types of weight loss surgery. There is less chance that some things will go wrong, but more chance of other problems happening. Here are some of the risks from studies on vertical banded gastroplasty:^[137]

- People who have gastroplasty are **less likely to need a second operation** than people who have [gastric banding](#). One study found that about 44 in 100 people needed another operation after gastric banding. Only about 4 in 100 needed another operation after gastroplasty.
- **Heartburn** is **slightly more common** for people who have gastroplasty than people who have gastric banding.
- One study found that problems soon after surgery **happened less often** for people who had gastroplasty than for people who had a [gastric bypass](#). About 18 in 100

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people got problems after a gastric bypass, such as bleeding in their bowels or an abscess. About 3 in 100 people who had gastroplasty got these problems.

Sleeve gastrectomy

What is it?

Sleeve gastrectomy is an operation to make your stomach smaller.

Here's what happens: ^[147]

- Your surgeon uses staples to divide your stomach into two parts.
- The surgeon makes one part into a narrow tube. This will carry the food.
- The other side of the stomach is no longer used.
- When you eat, the food goes into the narrow tube and leaves through your intestine (the tube that takes food away from your stomach) as normal.
- The tube can only take a few ounces of food. This means you should feel full sooner than usual. You will need to stop eating once you feel full.

Sleeve gastrectomy can be done as **open surgery** through one cut across your abdomen. Or you can have **keyhole surgery** with several small cuts. We don't know which type works best. You may need less time in hospital with keyhole surgery.

Most operations take at least an hour. Some may take several hours. Surgery takes longer if you have a lot of fat on your abdomen because it takes time to cut through the fat and close it up afterwards. ^[142] You'll have a **general anaesthetic**. This means you'll be asleep during surgery.

Your doctor may take out your **gallbladder** during the operation. Your gallbladder stores fluid called bile, which helps your body break down food. If you lose weight quickly you're likely to get **gallstones**. These are hard lumps that grow in your gallbladder. They can be very painful. Surgery to remove your gallbladder when you're having weight loss surgery is more common in the US than the UK.

How does it work?

Sleeve gastrectomy reduces the amount of food your stomach can hold. When you eat, the tube quickly fills with food. So you feel full after eating only a little. This sends signals to your brain to tell it you're full sooner than usual. The idea is that you then stop eating.

What are the risks?

About 1 in 8 people are likely to get problems after weight loss surgery.^[148] This could be bleeding, an infection, or lung problems.

Infections are usually treated with antibiotics. But some infections cause an **abscess**. This is a pool of pus around the stomach. It can happen a few weeks after surgery. It may cause pain, fever, and a cough. An abscess usually needs to be drained. You may need another operation.

Lung problems could be an infection in the lungs (pneumonia) or a collapsed lung. Both these problems may need to be treated in hospital.

There hasn't been as much good research on sleeve gastrectomy as on other types of surgery, so it's hard to know how this operation compares with other weight loss operations. In one study, 2 out of 40 people had complications that needed a second operation. One had bad bleeding and another needed to have their whole stomach removed.^[137]

It is possible to die from weight loss surgery. Nobody died of sleeve gastrectomy in the research we found. But in other studies, between 1 in 500 and 2 in 500 people died within a month of weight loss surgery.^[149]

Some people get stomach problems after surgery. In the study of 40 people:

- Two people got stomach pain
- Five people got frequent vomiting
- Three people were low on important nutrients.

Glossary:

arthritis

Arthritis is when your joints become inflamed, making them stiff and painful. There are different kinds of arthritis. Osteoarthritis is the most common type. It happens when the cartilage at the end of your bones becomes damaged and then starts to grow abnormally. Rheumatoid arthritis happens because your immune system attacks the lining of your joints.

heart disease

You get heart disease when your heart isn't able to pump blood as well as it should. This can happen for a variety of reasons.

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.

polycystic ovary syndrome

Polycystic ovary syndrome (PCOS for short) is a problem that affects a woman's ovaries. Eggs stored in your ovaries grow into small lumps called cysts. This can stop the eggs leaving the ovary and can cause infertility. Women with PCOS also have an imbalance in their hormones.

adrenal glands

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You have two adrenal glands. They are on top of your kidneys. Your adrenal glands make hormones that help control your blood pressure, how fast your heart beats and the way your body uses food.

gland

A gland is any group of cells in the body that makes and releases something for use by another part of the body. For example, the thyroid gland makes a hormone called thyroxine. This acts on receptors within cells. By acting on the receptors it gives the cells a message to speed up their metabolism and work harder.

kidney

Your kidneys are organs that filter your blood to make urine. You have two kidneys, on either side of your body. They are underneath your ribcage, near your back.

thyroid gland

Your thyroid gland is a small organ that sits in your neck, just in front of your windpipe. It sends out a hormone called thyroxine. This acts on receptors within cells. By acting on the receptors it gives the cells a message to speed up their metabolism and work harder.

ovaries

Women have two ovaries, one on each side of their womb. They are small glands that store eggs. Inside the ovaries are hundreds of thousands of pre-eggs, called follicles. Some of these grow into eggs.

ovulation

To get pregnant, a woman needs to release an egg from one of her ovaries. This is called ovulation. It normally happens once every month. During ovulation, the egg leaves the ovary and moves towards the womb.

hormones

Hormones are chemicals that are made in certain parts of the body. They travel through the bloodstream and have an effect on other parts of the body. For example, the female sex hormone oestrogen is made in a woman's ovaries. Oestrogen has many different effects on a woman's body. It makes the breasts grow at puberty and helps control periods. It is also needed to get pregnant.

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.

insulin

Insulin is a hormone that helps your body use glucose. Glucose is a type of sugar that gives you energy. Insulin keeps the levels of glucose in your body steady. Insulin also helps glucose to be carried in your blood, so that the glucose can get into your cells. People who have diabetes do not have enough insulin or do not react to insulin strongly enough. This means they can get too much glucose in their blood.

schizophrenia

Schizophrenia is a mental illness that causes delusions and hallucinations.

antidepressant

Antidepressants are medicines used to treat depression and sometimes other conditions. They work by changing the levels of chemicals in your brain called neurotransmitters. There are three main types of antidepressants, which work in different ways: selective serotonin reuptake inhibitors (SSRIs), monoamine oxidase inhibitors (MAOIs) and tricyclic antidepressants (TCAs).

Epilepsy

Epilepsy is a condition that affects your brain. If you have epilepsy, the normal electrical activity in your brain gets disturbed from time to time. This leads to seizures (also called fits).

genes

Your genes are the parts of your cells that contain instructions for how your body works. Genes are found on chromosomes, structures that sit in the nucleus at the middle of each of your cells. You have 23 pairs of chromosomes in your normal cells, each of which has thousands of genes. You get one set of chromosomes, and all of the genes that are on them, from each of your parents.

depression

Depression is a mental illness in which your mood is low and you feel sad most of the time. It can range from a mild illness through to a severe one in which you lose interest in life and may be suicidal.

generalised anxiety disorder

If you have this psychological illness, you feel anxious and worried most of the time. You may have other symptoms, such as feeling tired or being indecisive. Worrying this much can make you ill and make it hard to live a normal life. There are good treatments for anxiety disorder.

menopause

When a woman stops having periods, it is called the menopause. This usually happens around the age of 50.

bulimia

Obesity

Bulimia is a psychological illness. People who have it tend to eat too much at one time (called bingeing) and then do something to keep from gaining weight. For example, they may make themselves sick or do too much exercise.

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.

blood pressure

Blood pressure is the amount of force that's exerted by your blood on to your blood vessels. You can think of it like the water pressure in your home: the more pressure you have, the faster and more forcefully the water flows out of the shower. Blood pressure is measured in millimetres of mercury (written as mm Hg). When your blood pressure is taken, the measurement is given as two numbers, for example 120/80 mm Hg. The first, higher, number is called the systolic pressure, and the second, lower, number is the diastolic pressure. The systolic number is the highest pressure that occurs while your heart is pushing blood into your arteries. The diastolic number is the lowest pressure that happens when your heart is relaxing and is not pushing your blood.

heart failure

When the heart loses its ability to push enough blood through the blood vessels, it is called heart failure.

kidney disease

Your kidneys are the organs in your body that make urine. Kidney diseases are diseases in which your kidneys have been damaged. Kidney disease can be caused by several things, including high blood pressure (hypertension).

stroke

You have a stroke when the blood supply to a part of your brain is cut off. This damages your brain and can cause symptoms like weakness or numbness on one side of your body. You may also find it hard to speak if you've had a stroke.

LDL cholesterol

Cholesterol is a fatty substance in your blood. You can get it from food and it is also made by your liver. Having a lot of cholesterol in your blood can cause health problems. LDL cholesterol is often called 'bad' cholesterol. It can build up in your arteries and increase your risk of heart disease. LDL stands for low-density lipoprotein.

saturated fats

Fat is one of the three nutrients (along with protein and carbohydrate) that supply calories to your body. Fats that we eat can be saturated or unsaturated. Eating too much saturated fat is one of the major risk factors (things that make you likely to get it) of heart disease because it increases the amount of cholesterol in your blood.

high blood pressure

Your blood pressure is considered to be high when it is above the accepted normal range. The usual limit for normal blood pressure is 140/90. If either the first (systolic) number is above 140 or the lower (diastolic) number is above 90, a person is considered to have high blood pressure. Doctors sometimes call high blood pressure 'hypertension'.

high cholesterol

If you've been told that you have high cholesterol it usually means that your total cholesterol level is 5mmol/l or higher. But doctors also look at the amount of good (HDL) and bad (LDL) cholesterol you have in your blood. Having high levels of bad cholesterol can make it more likely that you'll get certain diseases in your heart and arteries.

cartilage

Cartilage is a rubbery type of tissue that's usually found at the ends of your bones. It acts like a shock absorber to keep the bones from grinding against each other. It also gives shape to certain parts of your body, such as your nose and the outside of your ears.

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.

colon

Your colon is the first 2 metres (6 feet) of your large intestine. During digestion, food travels from your stomach to your small intestine and then to your large intestine. What's not digested then leaves your body as a stool.

cervix

The cervix is a piece of tissue that sits between a woman's womb and her vagina. It has a small opening in it that gets much bigger when a woman is having a baby.

rectum

The rectum is the last 15 to 20 centimetres (six to eight inches) of the large intestine, ending with the anus (where you empty your bowels from).

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prostate

The prostate is a small, solid gland that's about the size of a walnut. Only men have a prostate. The prostate makes the milky fluid that comes out of a man's penis when he has an orgasm. The fluid from the prostate helps keep sperm healthy and also helps them swim freely.

bladder

Your bladder is the hollow organ at the top of your pelvis that stores urine. It is similar to a balloon, only with stronger walls. It fills up with urine until you go to the toilet.

menstrual cycle

The menstrual cycle is the regular monthly process that causes an egg to be released from the ovaries so that a woman can get pregnant. The menstrual cycle causes her period, the bleeding that happens if she does not get pregnant.

testosterone

Testosterone is a sex hormone. When boys go through puberty, testosterone causes the development of male characteristics like a deep voice and a muscular body. Testosterone is also known to affect men's sex drive and mood. Although testosterone is thought of as a 'male hormone', women also make testosterone (although they make much less of it than men).

diabetes

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).

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.

cognitive behaviour therapy

Cognitive behaviour therapy (CBT) is a type of talking treatment (psychotherapy). It is based on the idea that the negative thoughts and beliefs people have play an important role in how they feel and how they act. CBT helps people identify, look at and change unwanted thoughts, feelings and behaviours.

placebo

A placebo is a 'pretend' or dummy treatment that contains no active substances. A placebo is often given to half the people taking part in medical research trials, for comparison with the 'real' treatment. It is made to look and taste identical to the drug treatment being tested, so that people in the studies do not know if they are getting the placebo or the 'real' treatment. Researchers often talk about the 'placebo effect'. This is where patients feel better after having a placebo treatment because they expect to feel better. Tests may indicate that they actually are better. In the same way, people can also get side effects after having a placebo treatment. Drug treatments can also have a 'placebo effect'. This is why, to get a true picture of how well a drug works, it is important to compare it against a placebo treatment.

enzymes

Enzymes are chemicals in your body. They have lots of different functions, including playing a part in helping to digest food and starting other chemical reactions that keep the body working.

serotonin

Serotonin is a neurotransmitter, which is a chemical that helps to send information from a nerve cell to other cells. It is thought to play a role in learning, sleep and control of mood.

noradrenaline

Noradrenaline is a neurotransmitter, which is a chemical that helps to send information between nerve cells. It is similar to adrenaline. Your body produces adrenaline when you're in stressful situations, which increases your blood pressure and heart rate.

dopamine

Dopamine is a neurotransmitter, which is a chemical that helps messages pass between brain cells and other cells. Dopamine plays a role in your mood, and your physical movements.

atrial fibrillation

Atrial fibrillation happens when your heart beats in an uneven or irregular way. Normally the beating of your heart is controlled by electrical signals. The signals make the upper parts of your heart (the atria) squeeze blood into the lower parts, which then squeeze blood out into your blood vessels. If you have atrial fibrillation, the electrical signal doesn't work well, so the upper parts of your heart don't beat at the right time.

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.

pneumonia

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Pneumonia is an infection in your lungs. Anything that causes infections (bacteria, viruses or fungi, for example) can give you pneumonia.

acid reflux

Acid reflux happens when acid from your stomach flows into the tube leading from your throat to your stomach (your oesophagus) or up into your throat. Acid reflux can cause heartburn.

heartburn

Heartburn is a painful, burning sensation in the chest. It happens, often after meals, when the contents of the stomach pass back up into the oesophagus. The oesophagus is the tube that runs from the mouth to the stomach.

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Obesity

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