

## Food poisoning

Food poisoning is an illness caused by eating and drinking food or drink which is contaminated by germs or toxins. Gastroenteritis is a gut infection with diarrhoea, tummy ache and sometimes being sick (vomiting).

Diarrhoea is defined as 'loose or watery stools (faeces), usually at least three times in 24 hours'.

### What is food poisoning?

Food poisoning means getting sick from eating food with poisonous stuff in it. But not usually the kind of poisons used by the killer in an Agatha Christie story. Usually the poison comes from some type of germ.

Many types of germs can cause food poisoning, including bacteria, viruses and parasites. Common culprits include:

- [Campylobacter](#).
- [Salmonella](#).
- [Norovirus](#).
- [Rotavirus](#).

You are more likely to pick up food poisoning if you are not careful about how you store and handle food, and about what and where you eat or drink.

### Food poisoning symptoms

- [The main symptom is](#) , often with being sick (vomiting) as well. Diarrhoea is defined as "loose or watery stools (faeces), usually at least three times in 24 hours". Blood or mucus can appear in the stools with some infections.

- **Crampy pains in your tummy** (abdomen) are common. Pains may ease for a while each time you pass some diarrhoea.
- **You may feel hot one minute and cold and shivery the next**, and achy all over. These are symptoms of a high temperature (fever) which sometimes develops along with the tummy symptoms.

If vomiting occurs, it often lasts only a day or so but sometimes longer. Diarrhoea often continues after the vomiting stops and commonly lasts for several days or more. Slightly loose stools may persist for a week or so further before a normal pattern returns. Sometimes the symptoms last longer.

The vomiting and diarrhoea usually start hours or a very few days after eating the infected food. Afterwards, you often feel drained and washed out for a few days, while you regain your appetite and 'oomph'.

### **Symptoms of lack of fluid in the body**

Diarrhoea and vomiting may cause lack of fluid in the body (dehydration). Consult a doctor quickly if you suspect you are becoming dehydrated. Mild dehydration is common and is usually easily reversed by drinking lots of fluids. Severe dehydration can be fatal unless quickly treated because the organs of your body need a certain amount of fluid to function.

### **Symptoms of dehydration in adults include:**

- Tiredness.
- Dizziness or light-headedness.
- Headache.
- Muscle cramps.
- Sunken eyes.
- Passing less urine.
- A dry mouth and tongue.
- Weakness.
- Becoming irritable.

### **Symptoms of severe dehydration in adults include:**

- Profound loss of energy or enthusiasm (apathy).
- Weakness.
- Confusion.
- A fast heart rate.
- Producing very little urine.
- Coma - may occur.

Severe dehydration is a medical emergency and immediate medical attention is needed.

### **Dehydration in adults is more likely to occur in:**

- Elderly or frail people.
- Pregnant women.
- People with severe diarrhoea and vomiting. In particular, if you are not able to replace the fluid lost with enough drinks.

## **When do I need to seek medical advice for food poisoning?**

You should seek medical advice if:

- You think that you are becoming dehydrated.
- You are vomiting a lot and can't keep fluids down at all.
- You have blood in your stools (poo) or you vomit up blood.
- You have severe tummy pain.
- You have severe symptoms, or if you feel that your condition is becoming worse.
- You have a high temperature (fever), which doesn't settle with medicines such as paracetamol, or which hangs about for three days or more.
- Your symptoms are not settling; for example, vomiting for more than a few days, or diarrhoea that does not start to settle after 3-4 days.

- Your infection was caught abroad.
- You are elderly or have an underlying health problem such as diabetes, epilepsy, inflammatory bowel disease, kidney disease.
- You have a weakened immune system because of, for example, chemotherapy treatment, long-term steroid treatment or HIV infection which is not well controlled.
- You are pregnant.
- You suspect that you may have contracted food poisoning from eating restaurant or takeaway food.
- There are any other symptoms that you are concerned about.

## What causes food poisoning?

Food poisoning is common and most of us will recognise the scenario. You ate something that looked (or smelled) a little odd, or you were abroad in a country where it isn't safe to drink the water, and you had a salad which had been washed in the water you know you shouldn't drink. A few hours later you get tummy ache, and you are being sick (vomiting) and running backwards and forwards to the toilet. You can pick up a germ causing food poisoning pretty much anywhere, including your own home.

### Bacteria

[Campylobacter](#) is the most common germ (bacterium) that causes food poisoning in the UK. Other germs (bacteria) that can cause food poisoning include:

- [Salmonella](#).
- [Escherichia coli](#).
- [Listeria](#).
- [Shigella](#).
- [Clostridium perfringens](#).

### Viruses

Some germs (viruses), such as [norovirus](#) or [rotavirus](#), can contaminate food and cause food poisoning.

## Parasites

These are another type of microbe. Parasites are living things (organisms) that live within, or on, another organism. Examples include [cryptosporidium](#), [Entamoeba histolytica](#) and [giardia](#) parasites. Food poisoning caused by parasites is more common in the developing world.

In the UK, a common cause of food poisoning is *Toxoplasma gondii*. This is a parasite that lives in the bowels of a number of animals, including cats. Food poisoning can occur if food or water is contaminated with the stools (faeces) of infected cats, or if raw or undercooked meat from another animal carrying the parasite is eaten. The infection is known as toxoplasmosis. Symptoms of this type of food poisoning include [swollen lymph glands](#) and sometimes a skin rash.

## Toxins and chemicals

Poisons (toxins) produced by bacteria can also contaminate food, as well as the bacteria themselves. For example, the bacterium *Staphylococcus aureus* can contaminate ice cream and its toxins can lead to food poisoning. The bacterium *Bacillus cereus* can contaminate rice. If contaminated rice is reheated and eaten, the toxins produced can lead to food poisoning.

Certain types of fish (including shark, marlin, swordfish and tuna) contain high levels of the chemical mercury. Eating these types of fish is not normally a problem for most people – it does not cause gastroenteritis or food poisoning. But pregnant women are advised to avoid eating shark, marlin and swordfish and to limit tuna. This is because a high level of mercury can damage the developing nervous system of an unborn baby.

Oily fish may be contaminated by chemicals called polychlorinated biphenyls. Again, this does not usually cause a problem or food poisoning for most people. However, you should limit the amount of oily fish you eat in pregnancy because of possible effects of these chemicals on a developing baby. Public Health England recommends no more than two portions of oily fish a week.

**Note:** this is a general leaflet about food poisoning. There are separate leaflets that give more details about some of the different microbes that cause food poisoning.

## **How does food become contaminated?**

Contamination of food can occur because of problems in food production, storage or cooking. For example:

- Not storing food correctly or at the correct temperature. For example, not refrigerating food. This is particularly a problem for meat and dairy products.
- Inadequate cooking of food (undercooking or not cooking to the correct temperature). Bacteria are often found in raw meat, including poultry. Adequate cooking usually kills the bacteria.
- Contamination by someone preparing the food who has not followed food hygiene rules and has not washed their hands properly.
- Contamination from other foods (cross-contamination). For example, not washing a board used to prepare raw meat before you cut a slice of bread using the same board. Storing raw meat in the fridge above food that is 'ready-to-eat' and so allowing raw meat juices to drip on to the food below.
- Bacteria can also be present in unpasteurised milk and cheese. The pasteurisation process kills the bacteria.

## **How does water become contaminated?**

Water can become contaminated with bacteria or other microbes usually because human or animal stools (faeces) get into the water supply. This is particularly a problem in countries with poor sanitation. In such countries, food may also be washed and prepared using contaminated water. So, for example, in countries with poor sanitation, you should always avoid:

- Drinking tap water.
- Having ice cubes in drinks (as the ice may have been made from tap water).
- Brushing your teeth with tap water.
- Eating salads (as the lettuce, tomatoes, etc, may have been washed in contaminated water).
- Eating uncooked vegetables (as they may have been washed in contaminated water).

## How is food poisoning diagnosed?

Most people will recognise food poisoning from their typical symptoms. If symptoms are mild, you do not usually need to seek medical advice or receive specific medical treatment.

However, in some circumstances, you may need to seek medical advice when you have food poisoning (see below about when to seek medical advice). The doctor may ask you questions about recent travel abroad or any ways that you may have eaten or drunk contaminated food or water. It may be the case that a chat on the phone is enough to reassure the doctor that you can safely stay at home and manage your condition with fluids and rest, or they may want to see you face to face, in which case the doctor or other healthcare professional will usually check you for signs of lack of body fluid (dehydration). They may check your temperature, pulse and blood pressure. They may also examine your tummy (abdomen) to look for any tenderness.

Your doctor may ask you to collect a stool (faeces) sample. This can then be examined in the laboratory to look for the cause of the infection. A stool sample is not always needed. Your doctor is likely to suggest one in certain situations, such as:

- If you have recently been abroad.
- If you are very unwell.
- If you have blood or pus in your stools.
- If your diarrhoea is not settling after a week.
- If you have recently been in hospital or had antibiotic treatment.
- If you have another medical condition, particularly one which affects your immune system.
- If the doctor is not sure you have food poisoning or a gut infection (gastroenteritis).
- If your job involves handling food.

The reason a stool sample is not always needed is that in many cases knowing what germ you have does not make any difference to the treatment you need. Most cases of food poisoning get better on their own even before the stool test result is back.

If you are very unwell, you may need admission to hospital. If this is the case, further investigations may be needed such as blood tests, scans or a lumbar puncture. This is to look for spread of the infection to other parts of your body.

If you think your infection may have come from food at a particular restaurant or shop then inform your local Environmental Health Office. (Find them via the [Food Standards Agency website's Report a food problem page](#).) This is so that the business can be checked out by environmental health officers. Further actions may be taken if there is a problem with their food hygiene practices. This will hopefully help to reduce the chance that other people will get food poisoning. If your doctor suspects or confirms that you have food poisoning, they are also required by law to report this.

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## How to treat food poisoning

Symptoms often settle within a few days or so as your immune system usually clears the infection. Occasionally, admission to hospital is needed if symptoms are severe, or if complications develop (see below).

The following are commonly advised until symptoms ease:

### **Fluids – have lots to drink**

The aim is to prevent lack of body fluid (dehydration), or to treat dehydration if it has developed. (**Note:** if you suspect that you are dehydrated, you should contact a doctor.)

- As a rough guide, drink at least 200 mls after each watery stool (each bout of diarrhoea).
- This extra fluid is in addition to what you would normally drink. For example, an adult will normally drink about two litres a day but more in hot countries. The above '200 mls after each watery stool' is in addition to this usual amount that you would drink.



- If you are sick (vomit), wait 5-10 minutes and then start drinking again but more slowly. For example, a sip every 2-3 minutes but making sure that your total intake is as described above.
- You will need to drink even more if you are dehydrated. A doctor will advise on how much to drink if you are dehydrated.

For most adults, fluids drunk to keep hydrated should mainly be water. Also, ideally, include some fruit juice and soups. It is best not to have drinks that contain a lot of sugar, such as fizzy drinks, as they can sometimes make diarrhoea worse.

Rehydration drinks are recommended for people who are frail, or over the age of 60, or who have underlying health problems. They are made from sachets that you can buy from pharmacies. You add the contents of the sachet to water. Rehydration drinks provide a good balance of water, salts, and sugar. The small amount of sugar and salt helps the water to be absorbed better from the gut (intestines) into the body. They do not stop or reduce diarrhoea. Do not use home-made salt/sugar drinks, as the quantity of salt and sugar has to be exact.

### **Eat as normally as possible**

It used to be advised to 'starve' for a while if you had food poisoning. However, now it is advised to eat small, light meals if you can. Be guided by your appetite. You may not feel like food and most adults can do without food for a few days. Eat as soon as you are able - but don't stop drinking. If you do feel like eating, avoid fatty, spicy or heavy food at first. Plain foods such as wholemeal bread and rice are good foods to try eating first.

### **Medication**

Antidiarrhoeal medicines are not usually necessary. Your body is doing its best to get rid of the germ for you, and you will recover more quickly if you let it do so. However, a medicine called [loperamide](#) may be advised in some situations. For example, to help you over a special event such as a wedding, or if you have difficulty reaching the toilet quickly. Loperamide works by slowing down your gut's activity and it can reduce the number of trips that you need to make to the toilet. You can buy loperamide from pharmacies. The adult dose of loperamide is two capsules at first. This is followed by one capsule after each time you pass some diarrhoea, up to a maximum of eight capsules in 24 hours. You should not take loperamide for longer than five days.

**Note:** although loperamide is usually safe, there have been reports of very serious gut problems developing in some people who have taken loperamide. These problems were mainly in people who had severe inflammation of the gut. So, do not use loperamide or any other antidiarrhoeal medicine if you pass blood or mucus with the diarrhoea or if you have a high temperature (fever). Also, people with certain conditions should not take loperamide. Pregnant women should not take loperamide. Therefore, to be safe, read the leaflet that comes with the medicine.

[Paracetamol](#) is useful to ease a high temperature or headache.

In some cases, your doctor may ask for a sample of the diarrhoea. This is sent to the laboratory to look for infecting germs (microbes such as bacteria, parasites, etc). A course of [antibiotic medicine](#) is sometimes needed when the germ is identified. Examples where antibiotics might be needed include:

- If symptoms are very severe
- If the infection is not improving as expected. For example, if symptoms are still persisting after one week.
- If you are older than 50 with confirmed infection with salmonella.
- If you have other medical conditions, such as problems with your heart valves, and have confirmed salmonella infection.
- If you have blood in your diarrhoea and have confirmed shigella infection.
- [If your immune system is not working as well as normal](#) – for example, due to [chemotherapy](#) or if you have an illness such as [AIDS](#).
- Infections with some specific germs, usually those acquired abroad, are usually treated with antibiotics. For example, infection with [giardia](#), or [amoebic infection](#).

# What are the complications of food poisoning?

Complications are uncommon in the UK. Those who are older are more likely to develop complications. Complications are also more likely if you have an ongoing (chronic) condition such as diabetes or if your immune system is not working normally. (For example, if you are taking long-term steroid medication or you are having chemotherapy treatment for cancer.) Possible complications include the following:

- **Salt (electrolyte) imbalance and lack of fluid (dehydration) in your body.** This is the most common complication. It occurs if the salts and water that are lost in your stools (faeces), or when you are sick (vomit), are not replaced by you drinking adequate fluids. If you can manage to drink plenty of fluids then dehydration is unlikely to occur, or is only likely to be mild, and will soon recover as you drink. Severe dehydration can lead to a drop in your blood pressure. This can cause reduced blood flow to your vital organs. If dehydration is not treated, your [kidneys may be damaged](#). Some people who become severely dehydrated need a 'drip' of fluid directly into a vein. This requires admission to hospital. People who are elderly or pregnant are more at risk of dehydration.
- **Reactive complications.** Rarely, other parts of your body can 'react' to an infection that occurs in your bowels. This can cause symptoms such as [joint inflammation \(arthritis\)](#), skin inflammation and eye inflammation (either [conjunctivitis](#) or [uveitis](#)).
- **Spread of infection** to other parts of your body such as your bones, joints, or the meninges that surround your brain and spinal cord. This is rare. If it does occur, it is more likely if diarrhoea is caused by salmonella infection.

- **Persistent diarrhoea syndromes** may rarely develop:
  - [Irritable bowel syndrome](#).
  - [Lactose intolerance](#) for a period of time after food poisoning. This is known as 'secondary' or 'acquired' lactose intolerance. Your bowel (intestinal) lining can be damaged by an episode of bowel infection. This leads to lack of a chemical (enzyme) called lactase that is needed to help your body digest a sugar called lactose that is in milk. Lactose intolerance leads to bloating, tummy (abdominal) pain, wind and watery stools after drinking milk. The condition gets better when the infection is over and the bowel lining heals. It is more common in children than in adults.
- **Haemolytic uraemic syndrome** is another potential complication. It is rare and is usually associated with food poisoning caused by a certain type of *E. coli* infection. It is a serious condition where there is anaemia, a low platelet count in the blood and kidney failure. It is more common in children. If recognised and treated, most people recover well.
- **Guillain-Barré syndrome** may rarely be triggered by campylobacter infection. This is a condition that affects the nerves throughout your body and limbs, causing weakness and sensory problems. [See the separate leaflet called Guillain-Barré syndrome for more details.](#)
- **Reduced effectiveness of some medicines.** During an episode of food poisoning, certain medicines that you may be taking for other conditions or reasons may not be as effective. This is because the diarrhoea and/or vomiting means that reduced amounts of the medicines are taken up (absorbed) into your body. Examples of such medicines are those for epilepsy, diabetes and contraception. Speak with your doctor or practice nurse if you are unsure of what to do if you are taking other medicines and have food poisoning.

## How to prevent food poisoning

The Foods Standards Agency in the UK has identified the '4 Cs' to help prevent food poisoning:

### Cleanliness

- Keep work surfaces and utensils clean.

- Wash and dry your hands regularly but especially after going to the toilet, before preparing food, after handling raw food and before touching 'ready-to-eat' food.
- Don't prepare food for others if you have diarrhoea or are being sick (vomiting).
- Cover any sores or cuts on hands with a waterproof plaster before you touch food.
- Change dishcloths and tea towels regularly.

## **Cooking**

- Make sure that you cook food thoroughly, especially meat. This will kill germs (bacteria). Food should be cooked right through and be piping hot in the middle.
- If you are reheating food, it needs to be cooked right through and be piping hot in the middle.
- Don't reheat food more than once.

## **Chilling**

- Food that needs to be chilled or refrigerated should be. If food is left out of the fridge, bacteria may multiply to levels that can cause food poisoning.
- Your fridge needs to be kept between 0°C and 5°C. Also, don't leave the door open unnecessarily.
- Cool leftover food quickly and then refrigerate. Taking it out of the cooking pot and putting it into a shallow container can speed up the cooling process.

## **Cross-contamination**

This occurs when bacteria pass from foods (commonly, raw foods) to other foods. It can occur if:

- Foods touch directly.
- One food drips on to another.

- Your hands or utensils or equipment such as knives or chopping boards touch one food and then another.

It is important to:

- Wash your hands after touching raw foods.
- Separate raw and cooked or ready-to-eat foods.
- Keep raw meat in a sealable container at the bottom of the fridge.
- Avoid using the same surface or chopping board for preparing raw and ready-to-eat foods.
- Make sure that knives and utensils are cleaned after preparing raw foods.

### **Preventing the spread of food poisoning**

Some infections causing diarrhoea and vomiting are very easily passed on from person to person. If you have diarrhoea, the following are also recommended to prevent the spread of infection to others:

- Wash your hands thoroughly after going to the toilet. Ideally, use liquid soap in warm running water but any soap is better than none. Dry properly after washing.
- Don't share towels and flannels.
- Don't prepare or serve food for others.
- Regularly clean the toilets that you use. Wipe the flush handle, toilet seat, bathroom taps, surfaces and door handles with hot water and detergent at least once a day. Keep a cloth just for cleaning the toilet (or use a disposable one each time).
- Stay off work, college, etc, until at least 48 hours after the last episode of diarrhoea or vomiting.
- Food handlers: if you work with food and develop diarrhoea or vomiting, you must immediately leave the food-handling area. For most, no other measures are needed, other than staying away from work until at least 48 hours after the last episode of diarrhoea or vomiting. Some special situations may arise and sometimes longer time off is needed. If in doubt, seek advice from your employer or GP.

- If the cause of food poisoning is known to be (or suspected to be) a germ called cryptosporidium, you should not swim in swimming pools for two weeks after the last episode of diarrhoea.

## Further reading

- [Food safety](#); Food Standards Agency
- [Facciola A, Riso R, Avventuroso E, et al](#); Campylobacter: from microbiology to prevention. J Prev Med Hyg. 2017 Jun;58(2):E79-E92.
- [Jones AK, Cross P, Burton M, et al](#); Estimating the prevalence of food risk increasing behaviours in UK kitchens. PLoS One. 2017 Jun 28;12(6):e0175816. doi: 10.1371/journal.pone.0175816. eCollection 2017.
- [Gastroenteritis](#); NICE CKS, June 2022 (UK access only)

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