

Allergy to drugs

There are different types of drug allergy. This factsheet is about drug allergies that happen quickly and can be very serious, sometimes causing a life-threatening reaction called anaphylaxis (ana-fil-ax-is). Side effects, for example headache, nausea, diarrhoea etc, are not due to allergy and are not covered by this factsheet. If you have symptoms that you think have been caused by an allergic reaction to a drug, visit your GP who can refer you to a specialist if needed.

What is a drug allergy?

Drug allergy occurs when the body's immune system thinks a medicine is harmful, even though it isn't. When this happens, the body releases chemicals, such as histamine, in response. It is the release of these chemicals that causes allergic symptoms.

There is more than one type of drug allergy, but here we focus mainly on the reactions that come on very quickly, within minutes of taking the drug, or sometimes after a few hours.

Many people have delayed allergic reactions to drugs which involve a different part of the immune system. Symptoms usually start more than 24 hours after taking the medication but can start as early as two to six hours afterwards.

What are the symptoms?

The symptoms of a drug allergy usually come on quickly, within minutes of taking the medication.

If you have a reaction to a drug, report this to the [Medicines and Healthcare Products Regulatory Agency \(MHRA\)](#) as soon as possible unless your doctor has already reported it.

Mild to moderate symptoms may include:

- a red raised itchy rash (known as hives or urticaria) anywhere on the body
- swelling of the face, lips and/or eyes
- a tingling or itchy feeling in the mouth
- mild throat tightness
- stomach pain, vomiting or diarrhoea

More serious symptoms (anaphylaxis)

More serious symptoms are often referred to as the **ABC** symptoms and can include:

- **AIRWAY** - swelling in the throat, tongue or upper airways, hoarse voice, difficulty swallowing.
- **BREATHING** - sudden onset wheezing, breathing difficulty, noisy breathing, persistent cough.
- **CIRCULATION** - dizziness, feeling faint, sudden sleepiness, confusion, pale clammy skin, loss of consciousness or collapse.

The term for this more serious reaction is **anaphylaxis** and needs immediate treatment with adrenaline.

Most healthcare professionals consider an allergic reaction to be anaphylaxis when it involves difficulty breathing or affects the heart rhythm or blood pressure. Any one or more of the ABC symptoms above may be present and these symptoms are often accompanied by a rash or swelling.

In extreme cases there could be a dramatic fall in blood pressure. The person may become weak and floppy and may have a sense of something terrible happening. Any of the **ABC** symptoms may lead to collapse and loss of unconsciousness and, on rare occasions, can be fatal.

[Read more about anaphylaxis.](#)

[Read more about what to do in an emergency.](#)

Who can have a drug allergy?

- **Anyone:** you do not have to have other allergies (like hay fever or food allergies) to be at risk, anyone can have a drug allergy.
- **Adults and the elderly:** drug allergies are most common in adults, especially older individuals—even if you have taken the drug before without any reaction.
- **Risk factors:** a reaction is more likely to be a true allergy if it occurs during or immediately after taking the drug, or if you've had a similar reaction to that drug or a drug in the same class before. A drug *class* is a group of medicines that are similar.

Is it really a drug allergy?

Drug allergies are often misdiagnosed or mislabelled. Many people who believe they have a drug allergy may not actually be allergic.

- 94% of children thought to have had an allergic reaction to a drug could take it without any problem.
- Less than 10% of people who think they are allergic to penicillin are truly allergic.

When it's less likely to be a drug allergy

A reaction is less likely to be caused by drug allergy if:

- there's a possible non-drug cause for the symptoms.
- you have the same symptoms when not taking the drug.
- the person has gastrointestinal (stomach) symptoms only.

Why does it matter if a drug allergy is not diagnosed correctly?

Misdiagnosed drug allergies can have significant implications:

- **fewer treatment options:** healthcare professionals might avoid giving you the best suited medicine for your illness because they think you're allergic to it.
- **higher medical costs:** the other medicines they use instead might be more expensive or not work as well.
- **antibiotic resistance:** misdiagnosing a penicillin allergy can lead to the use of stronger antibiotics, which contributes to antibiotic resistance and makes infections harder to treat.

Causes of misdiagnosis

Several factors contribute to inaccurate drug allergy labels:

- incomplete or unclear recording of allergic reactions in medical files.
- insufficient details provided by or to patients about their reactions.
- non-allergic side effects may be mistaken for allergic reactions, e.g.:
 - **infections:** symptoms may be caused by the infection itself, not the drug treating it.
 - **side effects of drugs:** drugs can cause many non-allergic symptoms, some of which can appear to be similar symptoms to allergy, such as a skin rash.

Who is at higher risk of a drug allergy?

Some clues that you might be at higher risk of more serious reactions are:

- you have already had a serious reaction, with any of the **ABC** symptoms.
- you have asthma, especially if it is not well controlled. This could make an allergic reaction worse. Make sure you discuss this with your GP or allergy specialist and take any prescribed medicines.
- you have reacted to a tiny amount of a drug.

How is a drug allergy diagnosed?

See your GP if you think you have a drug allergy. Your GP will ask you about your symptoms and may be able to refer you to a specialist allergy clinic if necessary.

Contacting your GP

Immediate action: if you believe you are allergic to a drug don't take the drug again until you have spoken to your GP about your symptoms. If you cannot get an urgent GP appointment, call **NHS 111** or speak to your **pharmacist** for advice on whether it's safe to stop taking the medicine.

As above, if after taking the drug you develop any ABC symptoms (airway, breathing or circulation) call 999 and state 'anaphylaxis' (ana-fil-ax-is).

First steps: during your appointment, your GP will ask you about your symptoms and medical history to help work out if you might have a drug allergy. Your GP will then document your reaction in your medical records. This documentation should include:

- the generic and brand names of the drug, including its strength and formulation.
- a detailed description of the reaction and medical history (e.g., rash, swelling, breathing difficulties).
- the date and time the reaction occurred.
- the number of doses taken or the duration of use before the reaction began.
- the route of administration (oral, injection, etc.).
- which drugs or drug classes should be avoided in the future.

For healthcare providers, the [NICE Drug Allergy Guideline](#) offers comprehensive, evidence-based recommendations to help assess whether a patient's symptoms are due to a true drug allergy.

Accurate and structured documentation of your drug allergy is critical. It helps prevent misdiagnosis or unnecessary restrictions and improves patient safety.

Referral to a specialist allergy clinic

In serious cases, or if there is no other drug you can take, your GP may refer you to an allergy clinic, where the allergy specialist will discuss your medical history and symptoms with you.

Your GP can find a clinic in your area from the [British Society for Allergy and Clinical Immunology \(BSACI\)](#).

Unfortunately, drug allergy clinics aren't available everywhere, so you might have to wait a long time to be seen.

You may be referred to a specialist clinic if:

- you have experienced a suspected anaphylactic reaction after taking a medicine.
- you have experienced serious delayed skin reactions, such as those seen in Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS), Stevens-Johnson Syndrome (SJS), or Toxic Epidermal Necrolysis (TEN).
- there are concerns about certain drugs that you may need to take in the future, such as:
 - **β-lactam Antibiotics (e.g., penicillin):** especially if you need them to treat an ongoing health condition or if you often get infections (for example, if you have a weak immune system or immunodeficiency disorder).
 - **Non-steroidal anti-inflammatory drugs (NSAIDs) (e.g. aspirin, ibuprofen):** if you've had a serious reaction involving **ABC** anaphylaxis symptoms.
 - **Local anaesthetics:** if you need a medical procedure that usually uses local anaesthetic but have had a serious allergic reaction to a local anaesthetic before.
 - **General anaesthetics:** if you've had a serious allergic reaction during or just after being given one.

NHS allergy clinics usually only accept referrals for suspected anaphylaxis or the situations listed above, as set out in the NICE Drug Allergy Guidelines: [NICE Drug Allergy Guidelines](#).

What happens at the allergy clinic?

The allergy specialist will review your medical history and symptoms and may recommend tests such as:

- skin tests
- blood tests (note: serum-specific IgE tests are not used for diagnosing drug allergies in non-specialist settings (e.g. at your GP)).
- drug challenge tests under controlled conditions: during a drug challenge test, you are given gradually increasing doses of the drug under close medical supervision. This helps doctors find out if you have an allergy when other tests, like skin tests or blood tests, haven't given a clear answer.

Patients can often be left confused and concerned after suspected allergic reactions to drugs.

Healthcare professionals are encouraged to:

- discuss your suspected drug allergy with you and, if needed, your family.
- provide structured written information detailing the diagnosis, tests performed, and safe alternatives.
- record any important details to make sure that your allergy is clearly communicated across all healthcare settings.
- advise the person to check with a pharmacist before taking any over-the-counter preparations.
- include a dedicated section for allergy details on prescription forms and medical records.

How are drug allergies treated?

Once a diagnosis of drug allergy has been confirmed, avoiding that drug is usually straightforward. Tell your GP, pharmacist, dentist and any other medical professional you see about your allergy.

Managing a reaction

- **Mild reactions:** may be treated with oral antihistamines if there are no **ABC** symptoms.
- **Serious reactions:** if you experience any of the **ABC** symptoms, call **999 immediately** and inform the operator that there is an emergency case of anaphylaxis (ana-fil-ax-is).

- If you have a serious allergic reaction to a drug you're given whilst in a medical setting, you will be treated with adrenaline straight away by a healthcare professional.

If you are at risk of a serious allergic reaction (anaphylaxis), you may be prescribed adrenaline – the emergency medicine used to treat anaphylaxis. It is also known as epinephrine.

Because anaphylaxis can happen very quickly, adrenaline is available in different forms that are designed to be easy to use. It's important to know exactly how and when to use your prescribed adrenaline. Healthcare professionals can show you how to use it, and there are also resources such as practice devices and videos on manufacturer websites.

Options currently available on prescription in the UK include:

- **Adrenaline auto-injectors (AAls)** – such as EpiPen and Jext.
- **Intranasal adrenaline** – EURneffy, a needle-free nasal spray.
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You must carry two in-date forms of prescribed adrenaline at all times as a second dose may be needed if symptoms do not improve after five minutes or get worse.

[Find out more about what to do in an emergency.](#)

[Find out more about adrenaline.](#)

How you take the drug can affect the reaction

Drugs are taken in different ways, depending on their type and what they're used for. This can affect how quickly reactions start and how serious they may be.

Injection

Injections tend to cause the most serious allergic reactions, especially when the medicine is given directly into a vein (this is called an intravenous injection). This is because the drug enters the bloodstream straight away and spreads quickly through the body. For example, with general anaesthetics, signs of an allergic reaction can appear within seconds and usually within three minutes.

Injections given under the skin (subcutaneous) or into a muscle (intramuscular) are more likely to cause milder reactions near where the injection was given (local reaction). Signs tend to appear quite quickly and include redness, swelling and itching but in some cases can lead to more serious allergic reactions.

By mouth

With drugs you take by mouth, such as tablets or capsules, reactions can start within minutes but could be delayed for up to two hours. The reaction may be delayed if the drug is absorbed into the blood slowly. In some 'delayed release' drugs, reactions may start hours after taking the drug.

Through the skin

Antibiotics and other drugs that you apply to burns or inflamed or damaged skin, as a cream, oil or skin patch for example, may cause allergic reactions. Rarely, they can cause anaphylaxis.

Common drugs that can cause allergies

The following drugs are the main ones to be aware of, although there may be others that can cause allergic reactions.

Vaccines

Vaccines are mainly used to prevent infectious diseases. Serious allergic reactions to vaccines are very rare, happening in less than 1 in a million doses for vaccines in the UK.

Some vaccines may contain tiny amounts of substances that can cause allergic reactions in sensitive individuals. If you or your doctor or nurse are concerned that you or your child might react to a vaccine, you should discuss this with your GP and if you are at high risk you may be able to have the vaccine in a hospital setting.

[The Green Book](#), published by the UK Health Security Agency, gives up-to-date advice about vaccines and how they should be given, for vaccine-preventable infectious diseases in the UK. It explains which vaccines are safe for different people, providing detailed guidance on contraindications and precautions for each vaccine. This helps healthcare professionals decide if someone should have a vaccine.

The seasonal flu vaccine and yellow fever vaccine can contain small amounts of egg protein. If you have a very serious allergy to egg, discuss this with your doctor or allergy specialist.

The MMR vaccine has been demonstrated to be safe for children with egg allergy, even though the way it's made uses cells from chick embryos. A 2010 medical paper written by UK experts said:

"All children with egg allergy should receive their normal childhood immunizations, including the MMR vaccination, as a routine procedure performed by their family doctor/nurse..."

Studies on large numbers of egg-allergic children show there is no increased risk of severe allergic reactions to the vaccines. Children who have had documented anaphylaxis to the vaccine itself should be assessed by an allergist."

At the start of the COVID vaccination programme, many people with serious allergies were incorrectly advised that they could only be given some types of vaccines because of their allergies. In the vast majority of cases, people with a history of serious allergies can safely receive any COVID-19 vaccination. You can find out more about the COVID-19 vaccine in [the green book, chapter 14a](#).

Allergen Immunotherapy

Allergy immunotherapy, sometimes referred to as "allergy shots" or "desensitisation," is a long-term treatment designed to reduce sensitivity to allergens such as insect stings, pollen, and house dust mites.

This involves gradually exposing the individual to increasing doses of the allergen, either through injections or sublingually (under the tongue) in tablet or liquid form. Over time, this reduces the immune response to the allergen, which reduces the severity of symptoms and the need for medication.

Licensed allergen immunotherapy products are regulated by the [Medicines and Healthcare Products Regulatory Agency \(MHRA\)](#) to ensure safety, quality, and efficacy. These include injectable and sublingual treatments for tree and grass pollen allergies, house dust mite allergies and bee and wasp venom allergies. Peanut allergy immunotherapy is also available as a licensed product for children aged 4–17 years but is not widely available.

Allergen immunotherapy, when administered by qualified healthcare professionals, is generally considered safe and effective. However, as with any medical treatment, there are potential side effects to be aware of. These can range from mild local reactions to, rarely, more serious systemic reactions (anaphylaxis). It's important to remember that immunotherapy involves controlled exposure to substances you're allergic to, which is why side effects can occur.

Before starting treatment, your allergy specialist will thoroughly discuss the potential risks and benefits with you.

Food Immunotherapy: currently, food allergen immunotherapy beyond peanut allergy is not available as **licensed** products in the UK. Instead, some private clinics offer oral immunotherapy using small amounts of the actual food allergen (e.g., tree nuts, milk or

egg). While effective for some patients, these treatments are unlicensed and require careful monitoring by specialists.

Research into alternative methods of food immunotherapy is ongoing. Promising approaches include skin patches (epicutaneous immunotherapy) and sublingual treatments using liquid extracts held under the tongue.

You can find out more about allergen immunotherapy here:

<https://www.anaphylaxis.org.uk/fact-sheet/allergen-immunotherapy/>

Insulin

Insulin is a treatment for diabetes that is usually given by daily injection. It has the potential to cause allergic reactions, but this is rare. This may be because, once started, insulin is usually used for life, so people build up a level of tolerance. Insulin-induced local allergy or anaphylaxis may be more common in people whose treatment is interrupted or stops and starts.

Antibiotics (like penicillin)

Antibiotics are used for treating bacterial infections and are among the most likely drugs to cause allergic reactions. However, sometimes people are diagnosed with an allergy to antibiotics when in fact the symptoms, such as a rash, were caused by the infection that the antibiotics were treating.

If you have a rash that comes on very quickly or is widespread, or you have other symptoms such as facial swelling or breathing problems, this is more likely to be an allergic reaction. If you have had these symptoms, your doctor may be able to refer you to an allergy clinic for skin testing. A drug “challenge test” can also be used to confirm a diagnosis, where you are given the antibiotic under supervision to see if you have a reaction.

If you have ‘*allergic to penicillin*’ in your medical records, it’s helpful to try to find out why this label was applied. Sometimes, the label has been applied for non-allergic reactions or because there is a family history of penicillin allergy in which case the label may be removed without testing. Medical records may help to find out more about your allergy history and it is especially helpful to know which penicillin is thought to have caused the reaction.

Occasionally, people who are allergic to one antibiotic may react to another in the same ‘family’ of antibiotics. Speak to your GP or pharmacist about whether you need to avoid

drugs in the same family. Your GP can refer you to a specialist if there are no alternative antibiotics for your infection.

Analgesics (pain killers and anti-inflammatories)

This is a large group of drugs with pain-killing and anti-inflammatory properties. They are known as 'aspirin-like drugs' and 'non-steroidal anti-inflammatory drugs' (NSAIDs) and include aspirin and ibuprofen. If you have any reactions or side effects caused by painkillers and anti-inflammatory drugs, let your GP know.

Anyone who has had a reaction to aspirin or ibuprofen should be considered sensitive to the other drugs in this group, such as diclofenac, unless your GP or an allergy specialist has said they are safe for you.

Paracetamol is not an NSAID and most people who are sensitive to aspirin will be able to take paracetamol without any problems. If you begin reacting to aspirin or ibuprofen and you're not sure whether you can take paracetamol because you haven't taken it for some time, speak to your GP. If you react to paracetamol, your doctor or pharmacist can help you find an alternative painkiller.

GPs can find out more about treating allergy to non-steroidal anti-inflammatory drugs (NSAIDs) in the [NICE guidance for drug allergy](#).

General anaesthetics

When people have a general anaesthetic, the anaesthetist will watch for signs of allergic reactions such as falling blood pressure or breathing problems. Allergy to drugs used in general anaesthetics is very rare, but because they are injected directly into the bloodstream, symptoms may be serious and progress quickly. About 500 people have serious allergic reactions to general anaesthetics in the UK per year, which is roughly one in every 10,000 procedures.

If you think you could be allergic to anaesthetics, make sure you tell your anaesthetist at the pre-assessment stage before surgery.

It's common for several drugs to be given together or in a short time at the start of general anaesthesia. These include:

- induction agents (which make you unconscious)
- neuromuscular blockers (which relax the muscles)
- antibiotics (to prevent infections)

- painkillers
- blood or plasma

Any of these could cause an allergic reaction.

If you have a reaction, the anaesthetist will treat it with adrenaline immediately. They should refer you to a hospital department with experience of anaesthetic-related allergic reactions to find out which drug caused the reaction. This will mean you can have a safe alternative in future. Skin prick tests, intradermal testing and, in some cases, a drug challenge may be done as part of the diagnosis.

The most common causes of allergic reactions during general anaesthesia are antibiotics and neuromuscular blockers. Sometimes, allergic reactions are caused by an allergy to something other than the drugs used. For example, latex gloves or the chemical antiseptic chlorhexidine.

Local anaesthetics

It's very rare for local anaesthetics, such as those used by dentists, to cause anaphylaxis. Sometimes people have symptoms that look like an allergic reaction such as loss of consciousness, a drop in blood pressure, or a change in heart rhythm, but tests done afterwards are almost always negative. This suggests there was another cause, such as a fainting reaction.

Drug excipients (inactive ingredients in medicines)

Excipients are ingredients in medicines that aren't the main active drug, but help with things like stability, preservation or absorption. Most people never have a problem with excipients, but in rare cases, someone can be allergic to one of these ingredients instead of the active drug itself.

You might suspect an excipient allergy if you react to different medicines that don't seem related, or if you have an allergy to certain foods and react to a medicine that contains an ingredient from that food (like peanut oil, soya, or milk protein). Other excipients that can sometimes cause a reaction include [polyethylene glycol \(PEG\)](#), gelatine and certain dyes or preservatives.

Excipient allergy is very rare. If it's suspected, your GP may review the ingredients in your medicines and might arrange for you to see an allergy specialist if necessary. Always check the patient information leaflet for a list of ingredients, and let your doctor or pharmacist know about any food allergies you have.

For more information on PEG allergy, see our [PEG Allergy Factsheet](#).

Key messages

- **Know your allergy:** if you are allergic to a drug, you will need to know which drug caused the reaction and, if possible, which alternatives are safe for you.
- **Keep records updated:** drug allergies need to be recorded in a prominent place in your primary care records and hospital notes.
- **Inform healthcare providers:** make sure you tell any health professionals you see about your drug allergy, such as doctors, nurses, dentists and pharmacists.
- **Carry alert information:** wear a medical alert bracelet or pendant and carry information on your drug allergy on your phone or a letter from a doctor explaining your allergy.
- **Act fast:** serious reactions to a drug should be treated as a medical emergency. If the symptoms are serious or appear to be progressing quickly – you or someone you're with should call 999 straight away.

Feedback

Please help us to improve our information resources by sending us your feedback at: -

<https://www.anaphylaxis.org.uk/information-resources-feedback/>

Sources

All the information we produce is evidence based or follows expert opinion and is checked by our clinical and research reviewers. If you wish to know the sources we used in producing any of our information products or you would like a version of this factsheet with the references included, please contact info@anaphylaxis.org.uk and we will gladly supply details.

Reviewers

The content of this factsheet has been peer-reviewed by Dr Shuaib Nasser, Consultant in Allergy and Asthma at Cambridge University Hospitals NHS Foundation Trust.

Disclosures

Dr Shuaib Nasser is co-author of four of the studies used to develop this factsheet.

Disclaimer

The information provided in this factsheet is given in good faith. Every effort has been taken to ensure accuracy. All patients are different, and specific cases need specific advice. There is no substitute for good medical advice provided by a medical professional.

About Anaphylaxis UK

Anaphylaxis UK is the only UK-wide charity solely focused on supporting people at risk of serious, life-threatening allergic reactions. We provide information and support to people living with allergies through our free national helpline and local support groups. We also raise awareness and fundraise to achieve our ultimate aim, to create a safer environment for all people at risk of serious allergies. Visit our website www.anaphylaxis.org.uk and follow us to keep up-to-date with our latest news. We're on Facebook @anaphylaxisUK, LinkedIn, Instagram @anaphylaxisUK, Twitter @AnaphylaxisUK and you can find our podcast [here](#).