Anaphylaxis: Symptoms, triggers, and what to do

Anaphylaxis: The facts

Anaphylaxis (pronounced ana-fil-ax-is) is a serious whole-body allergic reaction. It happens when someone is exposed to something they are allergic to (known as an allergen). Reactions usually begin within minutes and rapidly progress but can occur up to 2-3 hours later.

Anaphylaxis is potentially life threatening and always requires immediate treatment with a medicine called adrenaline (also known as epinephrine).

Anaphylaxis can happen to anyone, even if they have never had a serious allergic reaction before, which is why it is crucial to understand the symptoms, how to respond in an emergency, and how to manage the risks.

If you or your child have allergies, this factsheet will help you understand more about anaphylaxis, including what it is, what can trigger it, who may be most at risk and what to do in an emergency.

If you or your child have experienced an allergic reaction in the past, you may be at risk of anaphylaxis in the future, even if it has not happened before. We recommend speaking to your GP, who can refer you to an allergy clinic if needed.

What causes anaphylaxis?

An allergic reaction (including anaphylaxis) happens when the body's immune system wrongly identifies something that is normally harmless (an allergen) as a threat. When this happens, the body releases histamine, and many other chemicals, in response. It is the release of these chemicals that causes the allergic symptoms or anaphylaxis.

- You are exposed to an allergen (for example a food, sting or medicine).
- The immune system recognises it as harmful and reacts.
- Chemicals are released into the body and cause the symptoms of anaphylaxis.

Food allergens

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Food is one of the most common causes, particularly in children. Some of the most common foods to cause anaphylaxis include peanuts, tree nuts, milk, eggs, shellfish, fish and sesame seeds, but reactions can occur to any food. Even very small or "trace" amounts — for example from cross-contamination — can trigger a serious reaction in some people. Always check labels and be aware of hidden ingredients.

Non-food allergens

Other common triggers include wasp and bee stings, natural rubber latex, and some medicines (for example, certain antibiotics). For some people, exercise by itself can cause anaphylaxis. For others, exercise makes a serious reaction more likely, but only when combined with other factors such as certain foods, medicines (for example, aspirin), alcohol, or infections. These added factors are called **co-factors** because they lower the reaction threshold, meaning a smaller amount of allergen can cause a reaction. **For example, someone might tolerate a food on its own but have a serious reaction if they eat it shortly before exercising.**

Sometimes the cause of the reaction is not found. This is called "idiopathic anaphylaxis" (cause unknown).

What are the symptoms of anaphylaxis?

Most healthcare professionals consider an allergic reaction to be anaphylaxis when it involves **airway, breathing** or **circulatory** symptoms. Any one or more of the following symptoms may be present – these are often referred to as the **ABC** symptoms:

Airway	**B**reathing	**C**irculation/**C**onsciousness
• swelling in the throat, tongue or upper airways • hoarse voice • difficulty swallowing	• sudden onset wheezing • breathing difficulty • noisy breathing • persistent cough	• dizziness or feeling faint • sudden sleepiness • confusion • pale clammy skin • loss of consciousness or collapse

A significant drop in blood pressure may cause weakness, sudden limpness, or a feeling of impending doom. This can lead to collapse, unconsciousness, and, in rare cases, death. When anaphylaxis results in a serious drop in blood pressure, it is sometimes referred to as **anaphylactic shock.**

Any of the **ABC** symptoms could lead to anaphylactic shock if they are not treated quickly.

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Other symptoms

Frequently, along with the more serious **ABC** symptoms, people may also have milder symptoms, such as:

- 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

These symptoms can also happen on their own. If you don't have the **ABC** symptoms, the reaction is likely to be less serious and is not the same as anaphylaxis, but watch carefully in case ABC symptoms develop.

Antihistamines can be taken to help relieve these milder allergic symptoms. However, they do **not** treat anaphylaxis and must never be used instead of adrenaline if **ABC** symptoms are present. Furthermore, taking antihistamines regularly does **not** prevent anaphylaxis.

Important: *In about 1 in 5 cases of anaphylaxis, anaphylaxis can happen without any milder signs like rash or swelling.*

What is the treatment for anaphylaxis?

If you have mild allergic symptoms, you may be prescribed antihistamine medicine that you take by mouth. But if you are at risk of 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 (AAIs)** – 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.

If you see signs of anaphylaxis, adrenaline should be given straight away. If in doubt, it is safer to give adrenaline.

For more information, read our factsheet about adrenaline.

What should I do in an emergency?

In the event of a serious allergic reaction, time is critical. Here's what you need to do:

- **Get in position:**
  - If the person is conscious, **lie them flat with their legs raised** to assist in blood flow to the heart, brain and vital organs.
  - If they're having **difficulty breathing**, they can be propped up with legs stretched out straight.

2. Give adrenaline immediately

- If you or the person affected has been prescribed adrenaline (such as EpiPen, Jext or EURneffy), **use it straight away** - adrenaline is the first-line treatment for anaphylaxis.
- Make a note of the time you give the first dose of adrenaline. If symptoms don't improve after **five minutes,** or symptoms get worse, **give a second dose.**
- **Always carry two in-date adrenaline devices** with you, as a second dose may be needed.

3. Call 999

- Call emergency services immediately and tell the operator it is "**anaphylaxis**" (ana-fil-ax-is). Give your **exact location** (What3Words can help if you are outside).

5. Do not move

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- **Stay in this position** until help arrives. **Do not** stand up, walk or run, even if you start to feel better.
- Movement can **make symptoms worse** and cause a sudden drop in blood pressure.
- **Stay with them** until emergency services arrive.

What should I do if I'm worried that my allergy may be serious?

If you're concerned about an allergic reaction or think you or your child may be at risk of anaphylaxis, contact your GP as soon as possible. Your GP can arrange a referral to an allergy clinic for a full assessment and any tests that may be needed.

Useful resources for clinics and guidance

- The British Society for Allergy & Clinical Immunology (BSACI) has a "Find a Clinic" tool to locate local allergy services.
- The NICE guideline *Anaphylaxis: assessment and referral after emergency treatment (CG134)* covers assessment and referral pathways.

What will an allergy clinic do?

At an allergy clinic you can expect:

- A detailed history of past reactions, including what happened, how quickly, and how it was treated.
- Questions about other allergic conditions that affect risk, such as asthma, eczema or hay fever.
- Allergy testing where appropriate — usually skin prick tests and/or blood tests (specific IgE). These tests can show sensitisation but **do not** predict how serious a future reaction will be.
- Where needed, an **oral food challenge** (giving small, increasing amounts of a suspected food under strict supervision) — this is the most reliable way to confirm or rule out a food allergy.
- In some cases, a supervised drug challenge may be required because current tests for drug allergy are not always reliable.

The clinic team will use all this information — your history and any test results — to decide whether an adrenaline device should be prescribed and to advise on risk reduction and management.

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What increases the risk of anaphylaxis?

Certain factors can increase the likelihood of a serious allergic reaction or make symptoms worse. These include:

- **Poorly controlled asthma**, which significantly increases the risk of serious breathing problems during a reaction
- **Current or recent infections**, such as colds or chest infections
- **Exercise** just before or soon after exposure to an allergen
- **Emotional stress**, which can affect how the body responds
- **Alcohol**, which can lower the threshold for a reaction and vigilance
- **Certain medicines**, including some painkillers (such as aspirin or other NSAIDs), beta-blockers, and ACE inhibitors

Food related factors

If you have a food allergy, the **amount of allergen eaten** can be important. For many people, consuming a larger amount increases the risk of a severe reaction, although very small (trace) amounts can still cause anaphylaxis in some individuals.

The **way a food is prepared** can also affect risk. For some foods, cooking may reduce the allergenic proteins, while for others cooking can increase the risk of a reaction or make no difference at all.

Understanding these risk factors can help you reduce exposure and plan ahead, but it's important to remember that **anaphylaxis can still happen unexpectedly**, even when precautions are taken.

What can I do to protect myself?

There are several important steps you can take to reduce your risk of anaphylaxis and to be prepared in an emergency:

- **Manage related conditions**
  If you have asthma as well as allergies, it is very important to keep your asthma well controlled. Poorly controlled asthma increases the risk of serious allergic reactions. Regular asthma reviews can help ensure your treatment is effective.

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- **Avoid known triggers where possible**

    - If you have a **food allergy**, always read food labels carefully and be aware of cross-contamination risks. When eating out, tell the staff clearly about your allergy and ask about ingredients and food preparation. Ensure that waiters inform all the catering staff about the allergies
    - If you have reacted to a **medicine** in the past, inform your GP, pharmacist, dentist, and any other healthcare professionals. Always mention this before medical procedures, vaccinations, or being prescribed new medicines.
    - If you have other triggers (such as insect stings or latex), take appropriate precautions and discuss avoidance strategies with your healthcare team.
    - Wear a medic-alert bracelet or equivalent

- **Carry adrenaline at all times**
  If you have been prescribed adrenaline, carry **two doses with you at all times** and make sure they are in date. Adrenaline is a highly effective, life-saving treatment for anaphylaxis and works best when given promptly.

- **Know how and when to use adrenaline**
  Make sure you and those around you know how to recognise the symptoms of anaphylaxis and how to use your adrenaline device. You can practise using a trainer device (available free from the manufacturer's website).

- **Have an emergency action plan**
  Write or download a personalised allergy action plan and share it with family members, friends, carers, schools, or workplaces. The British Society for Allergy and Clinical Immunology (BSACI) provides allergy action plans for children, available to download from its website: https://www.bsaci.org/professional-resources/resources/paediatric-allergy-action-plans/

Biphasic anaphylaxis

A **biphasic reaction** is a second "wave" of symptoms that can come back after the initial anaphylactic episode has started to settle. For this reason, people who have had

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anaphylaxis should normally be observed in hospital for several hours after they have been treated.

How often and when it happens

Estimates vary between studies, but biphasic reactions can happen in up to about 20% of people. It usually comes back within 4–12 hours (the typical, or median, time is about 12 hours), but it can occur as late as 72 hours after the first reaction.

A delay in giving the initial dose of adrenaline increases the risk of worse outcomes and of biphasic reactions, and biphasic reactions are less common with food-induced reactions compared to other, non-food triggers.

Who may need longer observation?

Some people are at higher risk of a biphasic reactions and may need extended monitoring, for example:

- children and young people in particular circumstances (local guidance sometimes suggests longer observation in paediatric cases),
- those with a serious initial reaction (for example a serious drop in blood pressure, or needing repeated doses of adrenaline),
- people with a suspected ongoing source of allergen (for example recently eaten food that may continue to be absorbed),
- people with a previous history of biphasic reactions

Practical points (what this means for you)

- Adults and young people who have had emergency treatment for anaphylaxis are usually kept under observation for **about 6–12 hours** from the start of symptoms, depending on how quickly they respond to treatment. Shorter observation may be considered when symptoms resolve promptly and the person has appropriate follow-up arrangements.
- If you are discharged, you should be given clear written advice about what to do if symptoms return (including when to use your adrenaline device and when to call emergency services). Always keep your adrenaline with you and make sure it is in date.
- If symptoms come back after leaving hospital, **seek emergency help immediately** and use your adrenaline device if needed. Recurrent reactions can require further doses of adrenaline and urgent medical treatment.
- Before discharge ensure **replacement supplies of adrenaline** have been issued.

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Do reactions get worse over time? Or does the risk of anaphylaxis reduce over time?

- **There is no rule that reactions always get worse (or always get milder).** The severity of allergic reactions is **unpredictable**: some people have mild reactions one time and a much more serious reaction another time, while others may have less serious reactions on subsequent exposures. A previous mild reaction **does not guarantee** future reactions will also be mild — and a previous serious reaction does not automatically mean every future reaction will be serious.
- **The overall risk does not automatically fall away with time.** There is no evidence that the risk of anaphylaxis reduces over time; however, some people will outgrow their allergies. This is more common in young children, particularly those allergic to cow's milk, egg and wheat. Other allergies (for example, peanuts, tree nuts, fish and shellfish) are less often outgrown and may persist into adulthood. Read more about outgrowing allergies here.
- **Allergy status can change — get checked.** If you think an allergy may have gone away, or if your situation changes (for example a change in symptoms, pregnancy, new medicines, or planned medical procedures), speak to your GP who can refer you to an allergy clinic if needed.

Alpha-Gal

Very rarely, anaphylaxis may be delayed for several hours after exposure to the allergen, rather than happening quickly. One example is alpha-gal allergy, where symptoms are usually delayed, appearing 3–8 hours after eating mammalian meat. This is different from most food allergies, which usually cause symptoms within minutes after eating. Read more about alpha-gal allergy here.

What is mastocytosis?

In most cases of anaphylaxis there is a trigger, such as a food, drug or insect sting. However, anaphylaxis can also occur in people who have a very rare condition called mastocytosis.

Mastocytosis is caused by too many "mast cells" gathering in the tissues of the body. These are the main cells that release histamine and other chemicals that cause the symptoms of

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allergic reactions. If you have this condition, it's important that your doctor identifies mastocytosis as the cause of your symptoms.

For further information visit: Mastocytosis Overview: NHS.

For patient support visit: Mast Cell Action.

Key messages

- If you suspect you have an allergy, see your GP.
- If you are prescribed adrenaline, carry two doses with you at all times.
- Use your adrenaline as soon as you notice any signs of anaphylaxis – make sure you know what the signs are so you can act quickly.
- Make sure you know how to use your adrenaline and get a trainer device from the manufacturer to practice.
- Do your research. If the allergen that affects you is a food, read food labels very carefully every time and ask direct questions wherever food is served.

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Feedback

Please help us to improve our information resources by sending us your feedback at: - https://www.anaphylaxis.org.uk/living-with-serious-allergies/factsheets-2/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, please contact info@anaphylaxis.org.uk and we will gladly supply details.

Reviewer

The content of this factsheet has been peer-reviewed by Emeritus Professor John Warner, Professor of Paediatrics at Imperial College London.

Disclosures

We are not aware of any conflicts of interest in relation to the review of this factsheet.

Disclaimer

The information provided in this factsheet is given in good faith. Every effort is 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 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-

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