

Anaphylaxis

What is anaphylaxis?

Anaphylaxis is a severe and often sudden and potentially life-threatening allergic reaction. It is triggered when the immune system overreacts to a usually harmless substance (allergen).

How common is anaphylaxis?

It is relatively uncommon – 3 in 1000 people within the general population in Europe may experience anaphylaxis during their lifetime. An estimated 10-20 deaths from anaphylaxis are reported each year in the UK.

Common causes of anaphylaxis include:

- **Foods:** such as peanuts, tree nuts, milk, eggs, shellfish, fish, and sesame seeds. Although many other foods have also been known to trigger anaphylaxis.
- **Non-food causes:** including wasp or bee venom, medications (such as antibiotics) and natural latex (rubber). In some people exercise can trigger a severe reaction – either on its own or in combination with other factors such as food or medicines.

Sometimes the cause of the reaction is not found (this is called idiopathic anaphylaxis).

Anaphylaxis is a medical emergency requiring immediate treatment and urgent hospital A&E attendance. It responds well to the correct treatment with use of adrenaline (see '*How can I manage reactions when I get them?*' section). However, if it is not treated promptly and effectively, it can be fatal.

Who is likely to have anaphylaxis?

Not all people with allergies are at risk of anaphylaxis. You may be more at risk if you suffer from asthma that is poorly controlled, other allergies, or you or a family member have had anaphylaxis in the past.

Other factors can also influence the severity of an allergic reaction. These include exercise, alcohol, emotional distress, certain medications and in food allergies – fatty foods slowing digestion, the amount of the food eaten and how it was prepared.

What are the symptoms of anaphylaxis?

Symptoms typically appear within minutes of exposure to a trigger substance and usually progress rapidly. However, symptoms can occur unusually up to a few hours after exposure.

Symptoms can include:

- **AIRWAY:** persistent cough, hoarse voice, difficulty swallowing, swollen tongue
- **BREATHING:** difficult or noisy breathing, wheeze or persistent cough
- **CONSCIOUSNESS:** persistent dizziness, light-headedness, collapse, or loss of consciousness
- People may also experience the following: Stomach pain, vomiting and diarrhoea.
- Swelling of the face, lips and/or eyes
- Skin hives or welts.

Anaphylaxis can occur in the absence of a rash.

How is anaphylaxis diagnosed?

If you suspect you have anaphylaxis, you need to go to your GP and seek a referral to an allergy clinic for a thorough assessment. In case of a severe allergic reaction, you should be referred to an allergy specialist, who will ask a series of questions to clarify the diagnosis of anaphylaxis and try to find the likely cause of the reaction. Possible causes may be investigated with specialist tests, including specific blood and skin tests.

How can I avoid getting the symptoms?

If you are diagnosed with anaphylaxis to an identifiable trigger, the most important thing to do is to avoid the trigger. Upon diagnosis, you should be provided with information on how to avoid your specific trigger, for example:

- **Food:** how to interpret ingredient labels, manage restaurant dining, avoid hidden food allergens
- **Medications:** know which drugs/treatments to avoid and if appropriate have a list of alternative medications. Medical alert bracelets or pendants should be worn by the patient in case of an anaphylactic reaction.
- **Insects:** Avoid high risk activities; wear long sleeves/trousers when outdoors and make use of insect repellent.

What treatments are available?

Adrenaline auto-injectors (AIs) are prescribed for people believed to be at risk of anaphylaxis. Adrenaline is referred to in some countries as epinephrine, which is the internationally recognised term for adrenaline.

In most cases you should be prescribed 2 adrenaline autoinjectors and taught how and when to use these. The UK's Medicines and Healthcare Products Regulatory Agency (MHRA) and the National Institute for Health and Care Excellence (NICE) recommend that medical professionals prescribe two AIs, which patients should carry at all times in case one is broken or misfires, or a second injection is needed before emergency help arrives. Each device injects a single dose of adrenaline into the muscle to treat anaphylaxis. Adrenaline starts to help within minutes.

Adrenaline auto-injectors may not be required if you have a drug allergy.

There are three brands of adrenaline auto-injector licensed for use in the UK – EpiPen, Jext and Emerade.

You should be trained in using the type you receive. There are 'Trainer devices' available from the medication supplier to help you practise. Patient representative groups advise people to order a free trainer pen from the EpiPen, Jext and Emerade websites, available at <http://www.epipen.co.uk>, <http://www.jext.co.uk> and <https://www.emerade.com/>, respectively.

You should carry 2 in-date adrenaline auto-injectors with you at all times. When your auto-injectors expires, you will need a prescription from hospital or your GP for a replacement. You can register your

auto-injectors on the manufacturer's website to receive expiry alerts. Your doctor will also give you an 'Anaphylaxis Action Plan', which explains how to treat anaphylaxis. You should keep this on you with your adrenaline auto-injectors.

Paediatric allergy action plans can be found on the BSACI website at:

<https://www.bsaci.org/professional-resources/resources/paediatric-allergy-action-plans/>

How can I manage reactions when I get them?

Symptoms of anaphylaxis must be treated immediately, as it is a medical emergency. An adrenaline injection into the muscle is the first line treatment.

If you are having an anaphylactic reaction, you should:

1. Lie flat.
2. Do NOT stand or walk.
3. If breathing is difficult then sit upright.
4. Use an adrenaline autoinjector injection into the outer mid-thigh, as per the instructions on the injector.
5. The ambulance must be called on 999 and state 'Anaphylaxis' immediately following an injection of adrenaline. The emergency service operator must be told the person is suffering from anaphylaxis (pronounced ana-fill-axis).
6. Remove any trigger if possible.
7. Take a further adrenaline dose in the opposite thigh if there is no change after 5 minutes.
8. When taken to the emergency department and treatment of suspected anaphylaxis, observation of adults and young people aged 16 years or older should be observed for 6-12 hours from the onset of symptoms.
9. Do not stand/sit up until told to do so by a suitably qualified professional, even if you feel better after the adrenaline.

Reactions once treated may go away but sometimes symptoms return a few hours later (this is known as a biphasic reaction). It is important to take these steps as soon as an anaphylactic reaction begins and to remain under medical observation for as long as the reaction and symptoms continue.

Remember to ask the hospital for a prescription for replacement adrenaline auto-injectors if yours have been used.

How does this affect my day-to-day activities?

A diagnosis of anaphylaxis means you need to be careful to avoid the trigger. For example, if you have anaphylaxis to a food, you will need to check ingredient lists and inform restaurants when eating out. A diagnosis of being at risk of Anaphylaxis does not affect your general physical health unless an anaphylactic reaction is triggered. It does not prevent you from driving.

As anaphylaxis can be serious and unpredictable, it can place a heavy burden on you and people close to you. It can require constant awareness especially in planning to avoid potential causes and watching out for the start of symptoms. This can cause anxiety regarding many daily activities. Some people can find it difficult to speak up about their allergy for fear of embarrassment.

These worries can be enhanced by lack of good, high-quality information. Understanding the symptoms, how to recognise them and how to treat anaphylaxis can put you in control and reduce this burden.

There are many ways in which you can seek support and information to help manage the stress of the diagnosis, including via your GP, patient support groups, or online such as through the Anaphylaxis Campaign or Allergy UK websites.

Will it affect my future career choices?

The Armed forces, including the Royal Navy, Royal Marines and Royal Air Force, have specific criteria for joining, which addresses allergies. "Severe nut allergy" and "severe allergic reactions or anaphylaxis requiring adrenaline injection" are barriers to recruitment.

Who needs to know?

If you are diagnosed with anaphylaxis, you should ensure your regular doctor or GP is aware, so that they can update your medical records. It is also sensible to inform anyone you live with and your emergency contacts. Setting up mobile phone alerts on a patient's personal device to remind them to carry an adrenaline pen/s may be of assistance. You may be advised to wear a medical bracelet or band for medical professionals to know what could trigger anaphylaxis in case you are unable to communicate this. This is common for drugs you may be given in an emergency.

If you require a medical procedure or operation, the surgeon and anaesthetist performing the procedure

will also need to know if you have a medication or latex allergy.

If you are going on holiday, it is important to inform your travel insurance company, as if you don't, insurance claims may be rejected, leaving you to cover the cost of any medical treatment yourself.

Will I always be allergic or is there a cure?

Once you have had a severe allergic reaction or anaphylaxis, you will likely remain at risk of reactions to that trigger for the rest of your life.

For some severe allergies, specialist treatment exists with the aim of reducing your sensitivity to the trigger. This is called allergen immunotherapy. It is currently available for both bee and wasp venom. Patients who complete the full treatment over several years have a significantly lower risk of further severe allergic reactions to the causative bee or wasp sting. Your treating doctor can then discuss with you if it is advisable for you to continue to carry adrenaline autoinjectors.

Clinical trials are ongoing for allergen immunotherapy for severe food allergies, but there is no routine NHS treatment currently in use in the UK.

Common myths

- **'Anaphylaxis often results in death'**
– anaphylaxis is life-threatening, but it responds well to appropriate treatment, and death is rare, occurring in less than 1 in 10,000 cases of anaphylaxis.
- **'Adrenaline is dangerous'**
– Adrenaline given into the muscle in the outer mid-thigh is very safe and is extremely effective in treating anaphylaxis.
- **'There is no rash or hives so it can't be anaphylaxis'**
– skin symptoms can be absent in up to 1 in 10 cases of anaphylaxis.
- **'The next time you are exposed the reaction will be worse'**
– symptoms are not more severe in subsequent reactions. Factors that can influence the severity of an allergic reaction include exercise, alcohol, certain medications and in food allergies – the amount of the food eaten and how it was prepared.
- **Anaphylaxis to one group of allergens (e.g. foods) does not necessarily incur greater risk of anaphylaxis to other groups (e.g. medications).**

Bibliography

1. NICE anaphylaxis quality standard 2016 QS119 <https://www.nice.org.uk/guidance/qs119/chapter/List-of-quality-statements>
2. NHS website <https://www.nhs.uk/conditions/anaphylaxis/>
3. Anaphylaxis campaign website: <https://www.anaphylaxis.org.uk/>
4. Allergy UK website: <https://www.allergyuk.org/>
5. Panesar SS, Javad S, de Silva D et al (2013) The epidemiology of anaphylaxis in Europe: a systematic review. *Allergy* 68(11):1353–1361 <https://onlinelibrary.wiley.com/doi/full/10.1111/all.12272>
6. Anagnostou K, Turner PJ. Myths, facts and controversies in the diagnosis and management of anaphylaxis. *Archives of Disease in Childhood* 2019;104:83-90. <https://adc.bmj.com/content/104/1/83>
7. Jones CJ, Sommereux LA, Smith HE, 2018. Exploring what motivates and sustains support group engagement amongst young people with allergies: A qualitative study. *Clin Exp Allergy*, 2018 Sep;48(9):1195-1205.

You can find out more information online via the NHS website on anaphylaxis or BSACI patient information webpages.

Key information box

- Anaphylaxis is a serious but treatable condition.
- It is potentially life-threatening, and always requires immediate emergency response.
- Common causes include foods such as nuts, shellfish, fish, milk and eggs; wasp or bee stings; medications such as antibiotics, anti-seizure medication, or drugs given before and during an operation; and latex.
- Treatment of anaphylaxis requires injection of adrenaline into the muscle and calling 999 for an ambulance to go to A&E.