

Anaphylaxis: the facts

What is anaphylaxis? Why does anaphylaxis occur? What are the signs and symptoms of anaphylaxis? If you or your child has suffered anaphylaxis you will need high-quality information to help you manage the condition. This Factsheet aims to provide you with a clear explanation of what anaphylaxis is, what causes it to occur, the symptoms, treatments and other vital facts.

You will also find this information useful if you have suffered an allergic reaction that suggests to your doctor that you are at risk of anaphylaxis, even if you have not had anaphylaxis in the past. If you think or know you are in that category, it is important that your case is thoroughly investigated. **If you believe this Factsheet is relevant to you, we advise that you see your GP and ask for a referral to an allergy clinic.**

A diagnosis of anaphylaxis can be daunting at first but by becoming well-informed, thinking ahead and employing daily coping strategies, people affected find that life can return, almost, to normal.

Throughout the text you will see brief medical references given in brackets. Full references to these documents are listed at the end of the Factsheet. **Areas covered include:**

- **What is anaphylaxis?**
- **What are the causes of anaphylaxis?**
- **What are the symptoms of anaphylaxis?**
- **Why does anaphylaxis occur?**
- **What should I do if I'm worried that my allergy may be severe?**
- **What will an allergy specialist do?**
- **What is the treatment for a severe reaction?**
- **How does adrenaline work?**
- **What injectors are available?**
- **How many injectors should I carry?**
- **What increases the risk of a severe reaction?**
- **What can I do to protect myself?**
- **What should I do if I think I am having a severe reaction?**
- **Does the risk of anaphylaxis recede over time?**
- **What is Mastocytosis**
- **What are the key messages about anaphylaxis?**

What is anaphylaxis?

Anaphylaxis is a severe allergic reaction affecting more than one body system such as lungs, gut and skin. Symptoms can start within seconds or minutes of exposure to the food or substance you are allergic to. On rare occasions there may be a delay of a few hours.

What are the causes of anaphylaxis?

The most common causes of anaphylaxis include foods such as peanuts, tree nuts, milk, eggs, shellfish, fish, sesame seeds and kiwi fruit, although many other foods have been known to trigger anaphylaxis. Non-food causes include wasp or bee stings, natural latex (rubber), and certain drugs such as penicillin. In some people exercise can trigger a severe reaction – either on its own or in combination with other factors such as food or drugs (e.g. aspirin).

Sometimes the cause of the reaction is not found and becomes labelled “idiopathic anaphylaxis” (cause unknown). This does not mean the condition is psychological, though emotional stress can sometimes worsen a reaction.

What are the symptoms of anaphylaxis?

Any of the symptoms below may occur:

- Widespread flushing of the skin
- Swelling in the face, throat and/or mouth
- Difficulty breathing
- Difficulty in swallowing or speaking
- Severe asthma
- Abdominal pain, nausea and vomiting

There may also be a dramatic fall in blood pressure (anaphylactic shock). The person may become weak and floppy and may have a sense of something terrible happening. This may lead to collapse, unconsciousness and – on rare occasions – death.

There may also be nettle rash (otherwise known as hives or urticaria) anywhere on the body but remember that this, on its own, can also occur during a mild reaction.

Why does anaphylaxis occur?

Any allergic reaction (including anaphylaxis) occurs because the body’s immune system reacts inappropriately in response to the presence of a food or substance that it wrongly perceives to be a threat. When this happens, chemicals including histamine are released from cells in the blood and tissues where they

are stored. These can cause swelling in the mouth, throat, skin or elsewhere and there can also be an acute attack of wheezing and coughing.

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

See your GP as soon as possible. Some GPs are well informed about allergy and can make a thorough diagnosis. In most cases, the GP will need to refer you to an NHS allergy clinic.

If your child has reacted and the trigger is a food, your GP should be guided by the NICE (National Institute for Clinical Excellence) clinical guideline on the subject of "Food allergy in children and young people" (CG116). This makes it clear which cases should be referred. Your GP can find information about the nearest children's allergy clinic from the website of the BSACI (British Society for Allergy and Clinical Immunology) www.bsaci.org.

If you are unsure about the potential severity of your allergy, don't let that deter you from seeking your doctor's advice. It's better to be safe than sorry.

What will an allergy specialist do?

There is no perfect way to judge whether someone's allergy is severe, but the doctor can do several things that will provide clues. Most importantly, the specialist will take a detailed history of previous reactions and other allergic conditions you may have, such as Asthma, Eczema or Hay fever.

Valuable information can also be provided by means of skin prick tests and blood tests, which are not perfect because there can be false negatives and false positives but they help form an overall picture. It is important to note that the test results will predict the likelihood that a specific food, or substance, will cause a reaction but they do **not** predict how severe a reaction might be.

Occasionally a "food challenge" may be offered to confirm diagnosis of allergy to a specific food or rule out food allergy. A food challenge is where the person eats small amounts of the suspect allergen, gradually increasing the amount until it is clear that he or she is not allergic, or else a reaction occurs. A "food challenge" must only be done in an allergy clinic under controlled conditions.

Similarly, a challenge may be needed if you are suspected to be allergic to a prescribed drug. In such cases, the standard allergy tests may not provide enough evidence and that is why a challenge, under very carefully supervised conditions, may be necessary.

In our opinion, any allergy diagnosis using questionable techniques such as those advertised on the Internet should be viewed with caution (see Royal College of Pathologists' report, 2002, and NICE guideline CG116 on the diagnosis and assessment of food allergy in children and young people).

What is the treatment for a severe reaction?

Pre-loaded injector devices (sometimes referred to as 'pens') containing adrenaline are prescribed for people believed to be at risk of a reaction to foods, latex or stings, or when the cause of the reactions is uncertain. Adrenaline is referred to in some countries as epinephrine, which is the internationally recognised term for adrenaline.

Because severe allergic reactions can occur rapidly, the prescribed adrenaline injector must be readily available at all times. The injection must be given as soon as a severe reaction is suspected.

An ambulance must be called immediately following the use of the first device, even if there is immediate improvement or if further devices are available. The emergency service operator must be told the person is suffering from anaphylaxis (pronounced ana-fill-axis).

How does adrenaline work?

Adrenaline acts quickly to open up the airways, stop swelling and raise the blood pressure. To work effectively, it must be administered with the minimum of delay as it is more effective in preventing an allergic reaction from progressing to anaphylaxis than in reversing it once the symptoms have become severe.

It is difficult to prove categorically that adrenaline saves lives. Setting up clinical studies with anaphylaxis patients would be fraught with difficulties because of the speed with which anaphylaxis occurs. This uncertainty was acknowledged in a major review of the medical literature on the use of adrenaline for anaphylaxis (Sheikh et al, Cochrane Collaboration, 2011). Nevertheless, we are aware of a large amount of anecdotal evidence showing that most people dying from anaphylaxis did not receive prompt treatment with adrenaline and further evidence showing that people have recovered quickly when adrenaline was given. In our opinion, this provides strong evidence for the effectiveness of adrenaline.

What injectors are available?

Pre-loaded adrenaline injection devices – Emerade®, EpiPen® or Jext® – are available on prescription for those thought to be at risk of a severe reaction.

Emerade® is the most recent single use adrenaline auto-injector to become available. It has a needle guard to protect against needle stick injury. Visit www.emerade.co.uk

EpiPen® has a spring-loaded concealed needle. The built-in needle protection keeps the needle covered during and after use. Visit www.epipen.co.uk.

Jext® has a locking needle shield which engages after use, designed to protect against needle injury. Visit www.jext.co.uk.

If you carry adrenaline you should check the expiry dates of your injector at regular intervals and in the case of children, you should check whether a growth spurt means the child should move up from a “Junior” device (0.15mg) to an adult one (0.3mg). The adult version is prescribed for people weighing 30kg and above.

How many injectors should I carry?

The UK’s Medicines and Healthcare Products Regulatory Agency (MHRA) advised in June 2014 that anyone who is at risk of suffering anaphylaxis should always have at least two adrenaline injector devices immediately available for use. The MHRA report said: “It is acknowledged that in some cases, a single injection is not sufficient to achieve a response for a number of reasons, including severity of attack as well as the possibility that a dose has not been effectively administered; a second injection may therefore be needed.” The Anaphylaxis Campaign supports this view.

In cases where the risk of anaphylaxis is thought to be low, there is a difference of opinion among members of the medical community. While some doctors agree that two injectors must always be immediately available (in line with the MHRA report), others believe it is sufficient to have one device available, arguing that one injection is likely to be enough to treat the symptoms until emergency medical help arrives.

This is a matter that you should discuss thoroughly with your allergist. Advice from the MHRA which may assist you in making the case for additional devices to be prescribed is available [here](#).

What increases the risk of a severe reaction?

Although it does not necessarily follow that each reaction is worse than the one before, there are times when you may be at increased risk of a severe reaction. **Times when you need to be particularly careful to avoid the culprit allergen include:**

- If you have asthma that is poorly controlled
- If you are suffering from an infection, or have recently had one
- If you exercise just before or just after contact with the allergen
- During festive occasions such as weddings, parties or religious festivals
- When travelling abroad
- During times of emotional stress
- If you come into contact that with aero-allergens that you are allergic to, such as pollens (see Vetander et al, 2011)
- If you have been drinking alcohol

If you are allergic to a food, the amount consumed is also important as the more you consume, the worse the reaction is likely to be.

What can I do to protect myself?

1. **If you have asthma** as well as allergies, make sure your asthma is well managed. If you have poorly controlled asthma, there is a higher likelihood of any allergic reaction becoming severe, (Pumphrey and Gowland, 2007, and Noimark et al, 2012). You can take control of your asthma by knowing what medicines to take, how much to take and when to take them. See your GP or asthma nurse for advice on this crucial point and to obtain an asthma management plan to help you self-manage.
2. **If you have been prescribed adrenaline**, carry it at all times – no exceptions. This is particularly important to remember when you are going to parties, eating out or travelling abroad.

Whatever you are allergic to, think ahead and write out an emergency care plan. Make sure those around you know how and when to administer the adrenaline. Practise regularly with a trainer device. Our website (www.anaphylaxis.org.uk) has an example of a Care Plan in the section for the Newly Diagnosed and has information about adrenaline and how to get hold of a training device.

What should I do if I think I am having a severe reaction?

Use your adrenaline device without delay if you believe the reaction is severe, or becoming severe. Dial 999 immediately or get someone else to do it.

The Resuscitation Council (UK) highlights the following symptoms as some of those that should help you recognise a potentially life-threatening reaction (Resuscitation Council, 2008):

Airway: swelling, hoarseness, stridor (a high pitched wheezing sound)

Breathing: rapid breathing, wheeze, fatigue, confusion

Circulation: pale, clammy, faintness, drowsiness

The Resuscitation Council (UK) also points to steady deterioration as a warning sign that may mean an injection of adrenaline is vital. However, variations in symptoms do occur. Your allergist should help you understand in advance what symptoms provide a signal that a severe reaction is occurring. Some people worry that adrenaline may be harmful, but evidence supports the relative safety of prescribed adrenaline devices so long as they are used correctly (Sheikh et al, Cochrane Collaboration, 2011).

Does the risk of anaphylaxis recede over time?

The chances of outgrowing your allergy will depend on many factors including the food or substance you are allergic to. A specialist at an allergy clinic should be able to advise on your particular case.

What is Mastocytosis?

In most cases of anaphylaxis there is a trigger such as a food, drug, insect sting or some other agent, but anaphylaxis can also occur in people who have a rare condition called Mastocytosis which is caused by too many 'mast cells' gathering in the tissues of the body. These are the cells that release histamine and other chemicals involved in allergic reactions, causing symptoms such as a skin rash, itchy skin and anaphylaxis. If you have this rare condition, it's important that your doctor identifies Mastocytosis as the cause of your symptoms. Further information: <http://www.nhs.uk/conditions/Mastocytosis/Pages/Introduction.aspx>

Anaphylaxis: the key messages

Anaphylaxis is serious but, in our view it is manageable. With a calm but committed attitude, you will certainly cope. **Remember these main points:**

- If you are at risk, see your GP and ask for a referral to an allergy clinic. For children, guidelines exist showing what should be expected from your doctor. Go to www.rcpch.ac.uk/allergy
- If you are prescribed an adrenaline injector, learn how to use it and carry it everywhere at all times.
- Do your research. If the allergen that affects you is a food, read food labels scrupulously and ask direct questions wherever food is served.

References

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NICE guidelines

NICE (2011). Diagnosis and assessment of food allergy in children and young people in primary care and community settings (CG116).

<http://guidance.nice.org.uk/CG116>

Reviewers

The content of this Factsheet has been peer-reviewed by Dr Richard Pumphrey, Honorary Consultant Immunologist, Central Manchester University Hospitals; and Prof John Warner, Professor of Paediatrics and Head of Department, Imperial College.

The paragraph entitled "How many injectors should I carry?" was revised and has been peer reviewed (June 2014) by Dr. Andrew Clark, Consultant in Paediatric Allergy, Cambridge University Hospital Trust, Dr. Adam Fox, Consultant Paediatric Allergist at Guy's and St. Thomas's Hospitals and Prof. John Warner.

Disclosures

Dr Pumphrey is a medical advisor to MEDA; has received previous financial support from Lincoln Medical to attend a European allergy meeting; has received previous financial support from ALK Abelló to attend scientific meetings; and is a medical adviser to the Anaphylaxis Campaign.

Prof Warner sits on the scientific advisory boards for Danone, Airsonette, Allergy Therapeutics, Novartis and Mead Johnson; is a paid lecturer for all of the above and Merck, Meda Pharmaceuticals and Astra-Zeneca; has received research grants from Danone, Airsonette, Allergy Therapeutics and Lincoln Medical; is medical advisor to the Anaphylaxis Campaign; is a member of the ACNFP (FSA), RCPCH council and trustee; and is President of the Academic Paediatric Association.

Dr. Andrew Clark has received support from Meda Pharmaceuticals and ALK-Abelló to attend conferences, with speaker fees (disclosure made June 2014). Dr. Adam Fox receives research funding from ALK-Abelló and

has received conference and lecture fees from Meda Pharmaceuticals. Both companies are sponsors of the Allergy Academy, of which Dr. Fox is the Director (June 2014). Prof. John Warner acted as an advisor to the MHRA in producing the advice on adrenaline auto-injectors (June 2014).

Disclaimer – The information provided above 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 the Anaphylaxis Campaign – “supporting people with severe allergies”

The Anaphylaxis Campaign is the only UK wide charity to exclusively meet the needs of the growing numbers of people at risk from severe allergic reactions (anaphylaxis) by providing information and support relating to foods and other triggers such as latex, drugs and insect stings. Our focus is on medical facts, food labelling, risk reduction and allergen management. The Campaign offers tailored services for individual, clinical professional and corporate members.

Visit our website www.anaphylaxis.org.uk and follow us on Twitter [@Anaphylaxiscoms](https://twitter.com/Anaphylaxiscoms)