

QUICK GUIDE

Anaphylaxis



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GP With Extended Role In Allergy

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Anaphylaxis is a severe, life-threatening, generalised, or systemic hypersensitivity reaction.

Anaphylaxis rates resulting from food allergy, requiring hospital admission, have more than tripled in the past 20 years, with recent NHS data showing that there were 26,000 admissions in 2021–22.^{1,2}

Anaphylaxis occurs as part of a severe allergic response. Reactions occur within minutes to hours and generally resolve within 1–2 hours.

IgE-mediated allergies can cause symptoms which include hives (urticaria), swelling (angioedema), abdominal pain, vomiting, diarrhoea, runny nose, or itchy eyes. They are also responsible for causing anaphylaxis.

Symptoms

Anaphylaxis can present with symptoms involving 'ABC'.

- **Airway:** coughing, voice change, tongue swelling
- **Breathing:** wheezing, difficulty in breathing, noisy breathing
- **Circulation/conscious level:** dizziness, collapse, tachycardia, hypotension.

Causes

In children, food is the most common cause of anaphylaxis (72% of reactions), followed by insect venom (20%) and medication (5%). In adults, the most common cause is insect venom (53%), followed by medications (25%) and food (20%). Spontaneous anaphylaxis can occur in both adults and children.^{3,4}

Co-factors

Significant allergic reactions are more likely to occur if a co-factor is present when the person is exposed to the allergen.

Examples include: intercurrent illness; poorly controlled asthma; exercise immediately before or after exposure to the allergen; taking ibuprofen around the time of exposure; premenstrual state; stress; alcohol; or sleep deprivation.

Important considerations

1. Reactions do not get more severe with each exposure to the allergen.
2. Allergy tests do not predict the severity of a reaction; they simply confirm the allergy in those with a history suggestive of a reaction. The larger the test, the less likely it is that a serious reaction will ensue.
3. There is no such thing as a mild IgE allergy. Anaphylaxis can occur in anyone even if they have only experienced mild symptoms previously.
4. Anaphylaxis can occur in the absence of any skin changes such as hives or swelling.
5. Antihistamines do not treat anaphylaxis or stop the progression of an allergic reaction to anaphylaxis.

Death rates

Whilst cases of anaphylaxis are rising, death rates have remained low, with a case fatality of 0.7% in 1998 and 0.3% in 2018.¹ It is, however, thought that not all deaths from anaphylaxis are recognised so these rates may be falsely low.

Treatment

Adrenaline Auto-Injectors (AAIs)

Adrenaline is the first-line treatment for anyone who has anaphylaxis. The British Society of Allergy and Clinical Immunology (BSACI) has developed guidelines to advise which patients should be prescribed AAIs.⁵ Anyone who has had a significant reaction due to food or venom, or those with asthma and IgE-mediated food allergies, should be given AAIs. People with asthma should be given these even if they have not had anaphylaxis previously. BSACI also encourages prescribing for those at high risk – such as teenagers and young adults, those who have reacted to a trace amount of food and those who are travelling to remote locations, away from hospitals.

MHRA and NICE guidelines recommend the prescription of two AAIs. Two pens are needed in case there is a need for a further dose after 5 minutes (before an ambulance arrives), incorrect administration or device failure (which is rare). A biphasic reaction may occur, but the patient should be monitored in the hospital after an anaphylactic episode. Steroids are no longer recommended after anaphylaxis.

Whilst schools can purchase a spare AAI without a prescription, only around 25% have done this. It does not replace the patient's need for their own prescription.

Key points

It is vital to ensure that patients are trained on how to use AAIs and to be aware of when their devices expire. Each manufacturer's website will have a training video and patients can sign up for an alert to tell them when the pen needs renewing and order a training pen. Every pen has a different technique, and it is *every* healthcare professional's responsibility to train patients, *every* time a pen is prescribed.

Management in the community

During anaphylaxis, movement can exacerbate a reaction as standing can cause a drop in blood pressure. The patient should stay still and sit up if they are having breathing problems or lay flat and elevate their legs if not. The AAI should be given into the mid-antrolateral aspect of the thigh muscle and 999 should be called *after* administering the pen. Health professionals should teach patients and families that if they are in doubt about whether adrenaline is needed, then they should always administer it.

References

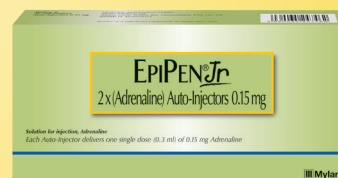
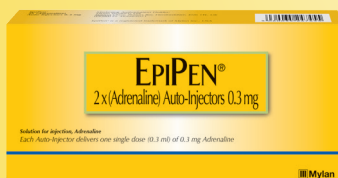
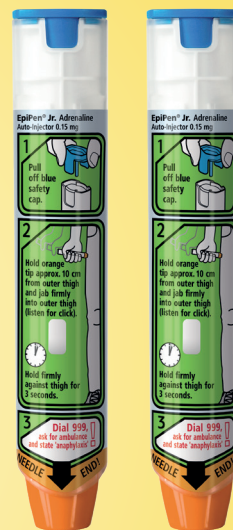
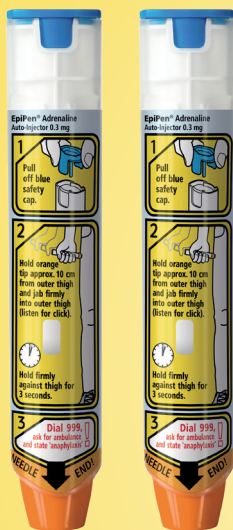
- 1 Baseggio Conrado A et al. *BMJ* 2021;372:n251.
- 2 NHS Digital. Hospital Admitted Patient Care Activity, 2021–22.
- 3 Worm M et al. *Allergy* 2014;69(10):1397–404.
- 4 Grabenhenrich LB et al. *J Allergy Clin Immunol* 2016 Apr;137(4):1128–37.
- 5 Angier E et al. Adrenaline auto-injector prescription for patients at risk of anaphylaxis: BSACI guidance for primary care.

EPIPEN® EPIPEN® Jr

(Adrenaline) Auto-Injectors 0.3 / 0.15mg

THE IDENTICAL TWINS

TWO PENS | ONE PACK



It is important that patients have access to and carry **TWO Adrenaline Auto-Injectors** at all times¹

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PRESCRIBING INFORMATION

EpiPen® and EpiPen® Jr. (adrenaline). Please refer to Summary of Product Characteristics (SmPC) before prescribing. **Indications:** EpiPen® auto injectors are automatic injection devices containing adrenaline for allergic emergencies. The auto injectors should be used only by a person with a history or an acknowledged risk of an anaphylactic reaction. The autoinjectors are indicated in the emergency treatment of allergic anaphylactic reactions. Anaphylaxis may be caused by insect stings or bites, foods, drugs and other allergens as well as idiopathic or exercise-induced anaphylaxis. **Presentation:** EpiPen® delivers a single dose of 0.3mg of adrenaline BP 1:1000 (0.3ml) in a sterile solution. EpiPen® Jr. delivers a single dose of 0.15mg adrenaline BP 1:2000 (0.3ml) in a sterile solution. 1.7ml of adrenaline remains in the auto-injector after activation. **Dosage and administration:** ADULTS: Administration of 0.3mg adrenaline (EpiPen®) intramuscularly. CHILDREN: The appropriate dosage may be 0.15mg (EpiPen® Jr.) for children 7.5-25kg body weight and 0.3mg (EpiPen®) adrenaline for children >25kg body weight, or at the discretion of the physician. EpiPen® should only be injected into the anterolateral aspect of the thigh through clothing if necessary. An initial dose should be administered as soon as symptoms of anaphylaxis are recognised. A second injection with an additional EpiPen® may be administered 5-15 minutes after the first injection, if indicated. It is recommended that patients are prescribed two EpiPen® auto-injectors which they should carry at all times. As EpiPen® is designed for emergency treatment, the patient should always seek medical help immediately. **Contra-indications:** There are no absolute contra-indications to the use of adrenaline during an allergic emergency. **Warning and precautions:** DO NOT INJECT INTO THE BUTTOCKS. Accidental injection into the hands or feet may result in loss of blood flow to the affected areas. If there is an accidental injection into these areas, advise the patient to go immediately to the nearest A & E or hospital casualty department for treatment. All patients who are prescribed EpiPen® should be thoroughly instructed to understand the indications for use and the correct method of administration. It is strongly advised to educate the patient's parents, caregivers, teachers, for the correct usage, in case support is needed in the emergency. In case of injection

performed by a caregiver, patient's leg should be kept still to reduce risk of injection site injury. The needle should never be reinserted after use. In patients with a thick sub-cutaneous fat layer, there is a risk for adrenaline not reaching the muscle tissue resulting in a suboptimal effect. A second injection with an additional EpiPen® may be needed. Use with extreme caution in patients with heart disease and those taking digitalis, mercurial diuretic or quinidine. Adrenaline should only be prescribed to these patients and the elderly if the potential benefit justifies the potential risk. There is a risk of adverse reactions following adrenaline administration in patients with high intraocular pressure, severe renal impairment, prostatic adenoma leading to residual urine, hypercalcaemia and hypokalaemia. In patients with Parkinson's disease, adrenaline may be associated with a transient worsening of Parkinson's symptoms such as rigidity and tremor. Adrenaline should be used in pregnancy only if the potential benefit justifies any potential risk to the foetus. The patient/carer should be informed about the possibility of biphasic anaphylaxis which is characterised by initial resolution followed by recurrence of symptoms some hours later. Asthmatic patients may be at increased risk of severe anaphylactic reaction. Patients should be warned regarding related allergens and investigated so that their specific allergens can be characterised. **Interaction with other medicinal products:** Caution is indicated in patients receiving drugs that may sensitise the heart to arrhythmias, including digitalis, mercurial diuretics or quinidine. The effects of adrenaline may be enhanced by tricyclic antidepressants and mono amine oxidase inhibitors (MAO-inhibitors) and catechol-O-methyl transferase inhibitors (COMT-inhibitors), thyroid hormones, theophylline, oxytocin, parasympatholytics, certain antihistamines (diphenhydramine, chlorpheniramine), levodopa and alcohol. Pressor effects of adrenaline may be counteracted by rapidly acting vasodilators or alpha-adrenergic blocking drugs. Adrenaline inhibits the secretion of insulin, thus increasing the blood glucose level. It may be necessary for diabetic patients receiving adrenaline to increase their dosage of insulin or oral hypoglycaemic drugs. **Pregnancy and lactation:** Adrenaline should be used during pregnancy only if the potential benefit justifies the potential risk to the foetus. **Effects on ability to drive and use machines:** Ability to drive and use machines may be affected by the anaphylactic reaction, as well

as by possible adverse reactions to adrenaline. **Undesirable effects:** (Rare) Stress cardiomyopathy. (Frequency not known) May include injection site infection, palpitations, tachycardia, hypertension, undesirable effects on the central nervous system, sweating, nausea and vomiting, respiratory difficulty, pallor, dizziness, weakness, tremor, headache, apprehension, nervousness, anxiety and undesirable effects on the CNS. Cardiac arrhythmias may follow administration of adrenaline. Overdoses of adrenaline may cause cerebral haemorrhage or arrhythmias. For a complete list of warnings and adverse reactions, you should consult the Summary of Product Characteristics. **Legal Category:** POM **Marketing Authorisation Number:** EpiPen® Auto-Injector PL 46302/0171, EpiPen® Jr. Auto-Injector PL 46302/0172 **MAH:** Mylan Products Ltd., Station Close, Potters Bar, EN6 1TL, UK **NHS Price:** EpiPen® and EpiPen® Jr. are available as single unit doses at £53.80 each or as a twin pack of 2 Auto-Injectors at £107.60 **Date of Revision of Prescribing Information:** February 2023 **Veeva Reference:** EPI-2023-0065

The SmPC for this product, including adverse reactions, precautions, contra-indications, and method of use can be found at: <http://www.mhra.gov.uk/SafetyInformation/MedicinesInformation/SPCandPL/index.htm> and from Mylan Medical Information, Building 4, Trident Place, Hatfield Business Park, Mosquito Way, Hatfield, Hertfordshire, AL10 9UL, phone no. 01707 853000, Email: info.uk@viatris.com

Please continue to report suspected adverse drug reactions and device failures with any medicine or vaccine to the MHRA through the Yellow Card Scheme. It is easiest and quickest to report adverse drug reactions and device failures online via the Yellow Card Scheme website: <https://yellowcard.mhra.gov.uk/> or search for MHRA Yellow Card in the Google Play or Apple App Store. Alternatively, you can report via some clinical IT systems (EMIS/ SystemOne/Vision/MDatabank) or by calling the Commission on Human Medicines (CHM) free phone line: 0800-731-6789. Adverse reactions/events and device failures should also be reported to MAH at e-mail address: px.uk@viatris.com

Reference: 1. EpiPen® (adrenaline) Auto-Injector 0.3mg SmPC. Available at <https://www.medicines.org.uk/emc/product/4289/smpc/grqf> Last accessed: September 2023.

Intended for UK healthcare professionals. Website contains promotional content.

EPI-2023-0523 Date of preparation: November 2023.

