Anaphylaxis Campaign
Supporting people at risk of severe allergies

Adrenaline

Adrenaline is the drug used to treat severe allergic reactions (anaphylaxis) and is available on prescription in a pre-loaded injection device. The following fact sheet has been written to give people with severe allergies basic knowledge on what injectors are available, who should be prescribed adrenaline, how many injectors should be carried, when to use adrenaline and other important pieces of information.

If you are prescribed adrenaline, it should be available at all times – with no exceptions. After an injection has been given, someone should call the emergency services immediately as the person will need observation in case of a secondary reaction and further treatment may be needed.

Adrenaline is also known as epinephrine, which is the international name and the name adopted in the United States. They are one and the same.

This article is for general information only and you should always be guided by your GP or allergist. Throughout the article you will see brief medical references given in brackets. More complete references are published towards the end.

How does adrenaline work?

A severe allergic reaction can affect the breathing and cause the blood pressure to fall. 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.

What adrenaline injectors are available?

The adrenaline injectors prescribed in the UK at present are Emerade®, EpiPen® and Jext®. These injectors are easy to use and designed for self-administration.

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-bausch.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 or your child is prescribed one of the injectors mentioned above, it is vital that you are shown how to use it. We believe it is the responsibility of the prescribing doctor to ensure that training is provided and to check that the information has been understood. In our view, you are entitled to push for training and follow-up training at a later date.

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Note that adrenaline injectors have a use-by date. People who carry them should make sure they go to the doctor for a replacement before this date.

Who should be prescribed adrenaline?

This question has caused some disagreement among medical experts in the past. Whilst most would agree that adrenaline should be prescribed to **anyone** who has previously suffered anaphylaxis, there are less clear-cut cases where the person has had a mild or moderate reaction but may be at risk of more severe reactions in the future.

In 2014, an influential European panel of experts recommended that adrenaline should definitely be prescribed to people in certain circumstances (Muraro et al 2014). These are cases where:

- There has been previous anaphylaxis triggered by food, latex, aeroallergens or exercise; or where the cause is unknown
- The patient has unstable or moderate-to-severe persistent asthma **plus** a food allergy
- The patient has insect sting allergy where allergic reactions have been moderate or severe

In addition, the panel made recommendations on cases where there have been no previous severe reactions but there might be a risk of a severe one in the future. The panel recommended that the treating doctor should **consider** prescribing adrenaline where:

- There has been a mild to moderate reaction in the past to peanut and/or a tree nut
- There has been a reaction to tiny traces of food
- The person with a food allergy is a teenager or young adult
- The patient has suffered a mild-to-moderate reaction and lives remote from medical help.

In our view, the above approaches are sound. We believe the decision to prescribe adrenaline should be part of an approach that includes a thorough assessment of the patient. This can best be done at a specialist allergy clinic or by a GP who has had specialist training in allergy management.

How is adrenaline administered?

The place where the adrenaline is administered is the same for all three injectors. EpiPen, Jext and Emerade are injected into the muscle in the front quarter of the outer thigh. We would advise you to discuss this with your GP or allergist so you are clear on this point. Training should be given to all those who might be required to administer the adrenaline in an emergency, such as family members and friends.

You can also find help on the website relevant to the injector you carry.

When should adrenaline be administered?

This is something that should be discussed with your allergist. As a general rule, you should administer your adrenaline injection without delay if you believe the reaction is severe, or becoming

severe. Call the emergency services immediately or get someone else to call for you. They should state that the person is suffering anaphylaxis (pronounced (ana-fill-axis).

The Resuscitation Council UK highlights the following symptoms as some of those that should help you recognise a potentially life-threatening reaction (Resuscitation Council, 2012).

- **A**irway: swelling in the throat, hoarseness, stridor (a high pitched wheezing sound)
- **B**reathing: rapid breathing, wheeze, fatigue, confusion
- **C**irculation: pale, clammy, faintness, drowsiness

The Resuscitation Council also points to steady deterioration as a warning sign that may mean an injection of adrenaline is vital. However, variations in symptoms do occur and in our view you should be prepared to play safe if you have any suspicion that a reaction is getting worse. Your allergist should help you understand in advance what symptoms provide a signal that a severe reaction is occurring.

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 two adrenaline injector devices immediately available for use (MHRA, 2014). 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.

In June 2015 The European Medicines Agency (EMA) recommended several measures, including the introduction of more effective educational material, to ensure that patients and carers use adrenaline auto-injectors successfully.

The recommendation includes information for patients and for healthcare professionals. The information for healthcare professionals includes a recommendation to prescribe 2 auto-injectors, which patients should carry at all times. Read the EMA recommendation www.ema.europa.eu/ema/index.jsp?curl=pages/news_and_events/news/2015/06/news_detail_002351.jsp&mid=WC0b01ac058004d5c1

Does adrenaline carry any risk?

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, 2011).

Does adrenaline have any important drug interactions?

Anaphylaxis may be made worse by Beta blockers as these drugs decrease the effectiveness of adrenaline. Other drugs may also be contra-indicated. This is a matter for discussion with your GP or allergist.

How useful are adrenaline inhalers?

Inhalation of adrenaline from a pressurised inhaler was once recommended as a non-invasive alternative to an adrenaline injection where the primary symptoms were swelling in the throat and asthma. However they are CFC-propelled and in Europe there is a policy of not using CFCs in medicines. CFCs (chlorofluorocarbons) are compounds that have been implicated in the accelerated depletion of ozone in the Earth's stratosphere. As a consequence adrenaline inhalers are no longer available on prescription in the UK.

In any case, leading allergy experts agree that adrenaline by injection is essential in the treatment of life-threatening anaphylaxis and that adrenaline inhalers are less effective and not to be regarded as a substitute. This view has been supported by the Resuscitation Council UK in its guidance for healthcare providers (Resuscitation Council, 2012).

Key messages

Adrenaline is the front line treatment for anaphylaxis but it will only be effective if it is available at all times, is used correctly and is used promptly. If you have been prescribed an adrenaline injector, you should have it with you everywhere you go. And you should ask the doctor who prescribed your adrenaline to show you how to use it. Follow-up training at various intervals is also important. Dummy injectors are available for training from the websites of the three UK distributors (see web addresses above).

A call for an ambulance must always be made immediately after the adrenaline injector is used. If your condition deteriorates after making the initial 999 call, a second call to the emergency services should be made to ensure that an ambulance has been dispatched.

First aid measures include lying the patient down with their legs raised (Resuscitation Council, 2012), which will help the circulation. If there is loss of consciousness or vomiting he or she should be in the recovery position. It is important that these points relating to first aid measures are discussed during your consultation with an allergist.

References

Medicines and Healthcare Products Regulatory Agency, 2014. Adrenaline auto-injectors: a review of clinical and quality considerations
http://www.mhra.gov.uk/Safetyinformation/Generalsafetyinformationandadvice/Product-specificinformationandadvice/Product-specificinformationandadvice-A-F/Adrenalineauto-injectorsareviewofclinicalandqualityconsiderations/index.htm

Muraro A, Roberts G, Worm M, Bilo MB, Brockow K, Fernandez Rivas M, Santos AF, Zolkipli ZQ, Bellou A, Beyer K, Bindslev-Jensen C, Cardona V, Clark AT, Demoly P, Dubois AE, DunnGalvin A, Eigenmann P, Halken S, Harada L, Lack G, Jutel M, Niggemann B, Rueff F, Timmermans F, Vlieg-Boerstra BJ, Werfel T, Dhami S, Panesar S, Akdis CA, Sheikh A, 2014. Anaphylaxis guidelines from the European Academy of Allergy and Clinical Immunology. Allergy.69(5):590-601

Sheikh A, Shehata YA, Brown SGA, Simons FER. Adrenaline (epinephrine) for the treatment of anaphylaxis with and without shock (review). The Cochrane Collaboration 2011. http://www.update-software.com/pdf/CD006312.pdf

Working Group of the Resuscitation Council UK,2012. Emergency treatment of anaphylactic reactions, guidelines for healthcare providers. http://www.resus.org.uk/pages/reaction.pdf

Reviewers

The content of this fact sheet has been peer-reviewed by Prof John Warner, Professor of Paediatrics and Head of Department, Imperial College (at the time of publication); and Sue Clarke, Health Visitor SEPT, West Essex, and Nurse Adviser to the Anaphylaxis Campaign.

Disclosures

Both reviewers are medical advisers to the Anaphylaxis Campaign.

Prof Warner was an advisor to the Medicines and Healthcare Products Regulatory Agency in producing the advice on adrenaline auto-injectors (June 2014); his department has received a grant from Lincoln Medical to conduct research; he received payment for a lecture given for Meda Pharmaceuticals more than two years ago. Sue Clarke reported on July 24, 2014, that ALK-Abello (the pharmaceutical company that produces the Jext auto-injector) is helping her with the production of a poster presentation for a September 2014 conference held by the British Society for Allergy and Clinical Immunology.

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 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.

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