

Anaphylaxis

www.resus.org.uk/pages/reaction.pdf

'School have asked for two Epipens, and I need two for home, and I'd better have two for the child minder...so could I have 6 in total?'

I could see where the mother was coming from, surely it was better to be safe than sorry and ensure everyone had easy access to an Epipen (or two!), but I also couldn't stop myself from wondering whether this really was the right thing to do. At around £30 each and a shelf life of a year or less, most Epipens get thrown away when they expire and never actually get used. So was this good use of resources? And is having a liberal quantity of Epipens any safer than having just one? Read on to find out!

In January 2008 the Resuscitation Council produced new guidelines on the treatment of anaphylaxis (www.resus.org.uk/pages/reaction.pdf). Here I have summarised them, including the updates issued in Feb and March 2008. You will be pleased to hear they are much simpler than previous guidance issued in 2005!

How common is anaphylaxis?

- True anaphylaxis is rare: primary care data suggests lifetime prevalence is 1 in 1333.
- Prevalence does seem to be genuinely increasing.
- Rare though it is, anaphylaxis causes considerable anxiety in those affected.

Recognising anaphylaxis

Actually this is harder than it seems – studies suggest many people with genuine anaphylaxis may not be recognised, whilst those with panic attacks or vasovagal faints are misdiagnosed as having anaphylaxis.

Look for 3 of the following criteria as these support the diagnosis of anaphylaxis:

- **Sudden onset and rapid progression of symptoms**
AND
- **Life threatening Airway and/or Breathing and/or Circulatory problems**
AND
- **Skin and/or mucosal changes (flushing, urticaria, angioedema)** (although these may be subtle or absent in up to 20%!)

Also note:

- A trigger may or may not be identified.
- GI symptoms (vomiting, abdominal pain, faecal incontinence) may also occur.
- **Skin or mucosal changes alone (eg. lip swelling without airway/breathing/circulatory problems) are not sufficient to diagnose anaphylaxis.**

What triggers anaphylaxis?

- The commonest triggers are foods, drugs and venoms (eg wasp stings), although it is important to note that in many cases no trigger is identified.
- Nuts are the most common food triggers.
- Antibiotics, NSAIDs, aspirin and muscle relaxants (for all you budding anaesthetists!) are the commonest drug triggers.
- Food reactions are more common in children, drug reactions more common in adults.

Death from anaphylaxis

This is of course what everyone fears, but what are the statistics?

- At least 20 people die/year in the UK from anaphylaxis, but this may be a significant underestimate. However mortality from anaphylaxis is around 1%, so most survive an episode of anaphylaxis.
- Death is more likely in those with poorly controlled asthma or in asthmatics who fail to use adrenaline early when developing anaphylaxis.
- Case studies suggest shock and collapse occur within 10-15mins for stings, whereas for foods it often occurs after 30-35mins. After intravenous administration of drugs death may occur much more quickly, within 5 mins.
- Deaths never occur more than 6hrs after contact with a trigger.

Assessing someone with suspected anaphylaxis

The ABCDE approach is now taught as a tool to assess seriously ill/injured patients in a variety of settings, including anaphylaxis. If you want detailed information on this please refer to Appendix 1 (p39-44) of the Resuscitation Council's Guidance on anaphylaxis.

Here is a brief overview of the features to look for in anaphylaxis:

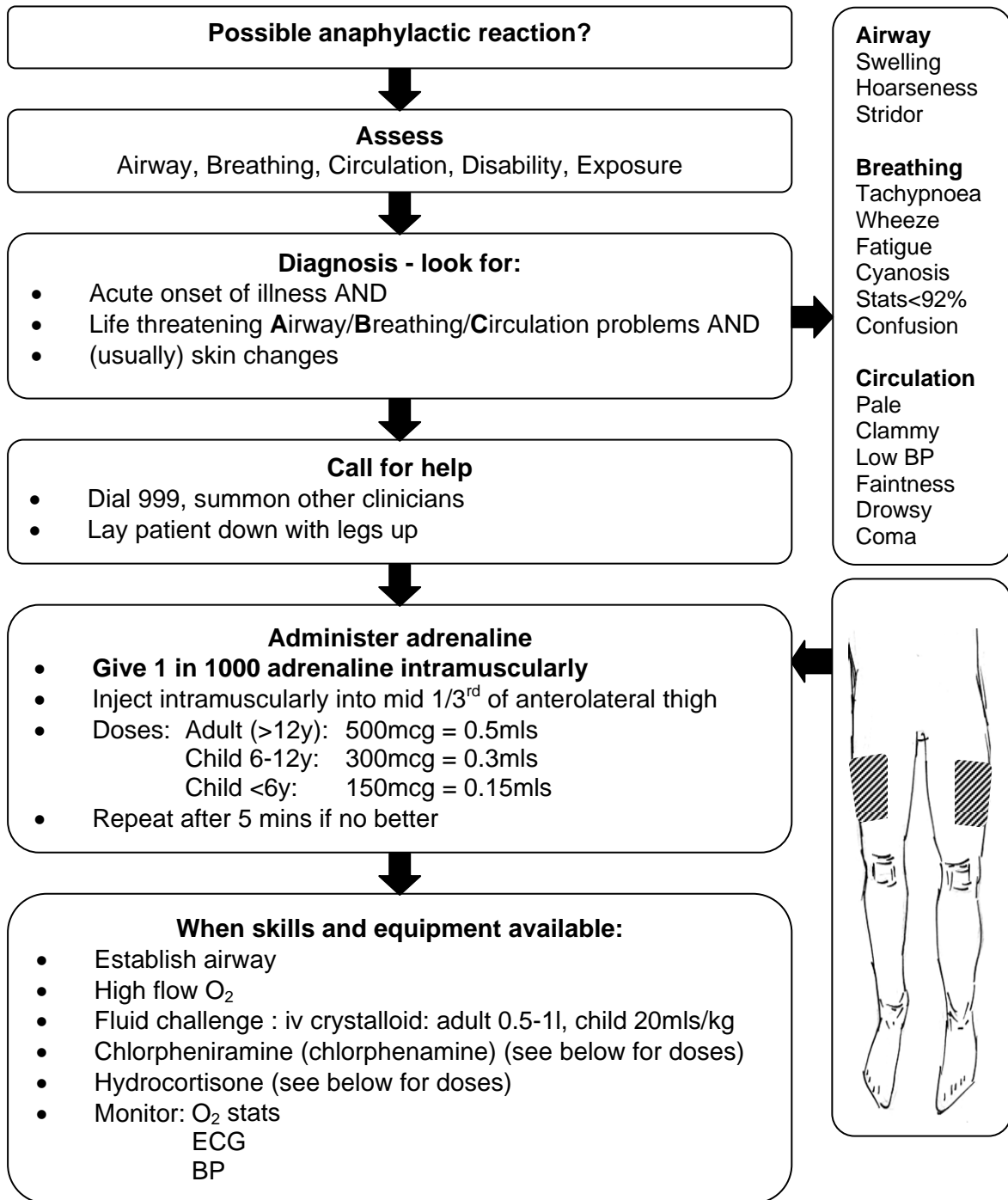
Airway	Breathing	Circulation	Disability (neurological status)	Exposure (Assess skin & mucosa)
Swelling of throat/tongue Difficulty breathing Difficulty swallowing Feels throat closing up Hoarse voice Stridor	Tachypnoea Wheeze Fatigue Hypoxic confusion Cyanosis Respiratory arrest	Pale, clammy Tachycardia Hypotension Reduced consciousness Cardiac arrest	Confusion Agitation Reduced consciousness	Redness Urticaria Angioedema (swelling of deeper tissues)

Important drug related notes from the algorithm overleaf

- **Adrenaline should be given early: do not delay.**
- **Adrenaline should be given intramuscularly** unless you are experienced in administering it iv. **Why? The im route is safer, easier and has a greater margin of error.** The following are recommended to ensure intramuscular delivery
 - **Use a blue needle in all except very small infants (use orange instead).**
 - **Inject at 90 degrees to the skin. Stretch, don't pinch, the skin.**
- **Adrenaline will work less well (and may be ineffective) in those on BBlockers BUT do not give higher doses of adrenaline in those on BBlockers who develop anaphylaxis.** Decision to start a BBlocker in those at risk of allergy should be carefully weighed up. Glucagon (to treat anaphylaxis in those on BBlockers) should be reserved for ITU use only.
- **Antihistamines and steroids should only be given after initial resuscitation.** Use of H₁ antihistamines in anaphylaxis is weak and are unlikely to be life saving if used alone. However they may reduce bronchoconstriction and vasodilatation.

Emergency management of anaphylaxis

(Modified from the Resuscitation Council Guidelines, www.resus.org.uk/pages/reaction.pdf)



Drug doses (for adrenaline doses see box above)

NB these drugs can be delayed until arrival at hospital.	Chlorphenamine Give im or slow iv	Hydrocortisone Give im or slow iv
Adult (>12y)	10mg	200mg
Child 6-12y	5mg	100mg
Child 6m-6y	2.5mg	50mg
Child <6m	250mcg/kg	25mg

FAQs on anaphylaxis

What is the relationship between asthma and anaphylaxis?

In those with asthma, anaphylaxis can present on a spectrum of typical anaphylaxis symptoms to a mixture of anaphylaxis and asthma, through to pure asthma without anaphylaxis symptoms.

- **If pure asthma symptoms are present then manage according to the BTS guidelines for life threatening asthma, otherwise manage as for anaphylaxis.**

Who should have an autoinjector? Who should be referred to an allergy specialist?

All patients with anaphylaxis should be referred to a specialist allergy clinic (for a list of NHS allergy clinics nationwide see www.bsaci.org). The allergy specialist will decide who would benefit from an autoinjector, but basically, patients with idiopathic anaphylaxis or with a known trigger that is difficult to avoid (venoms, some foods) should have an autoinjector, patients with reactions to drugs do not.

How many autoinjectors should patient have?

'It is important that the device is available at all times and paradoxically a carefree attitude may develop if multiple devices are prescribed.' Resuscitation Council, March 2008.

The Resuscitation Council therefore recommends that:

- Device failure is extremely rare and should not be a reason for prescribing two devices.
- Two devices should be prescribed if:
 - A school child is required to keep one at device at school
 - There is a history of requiring multiple doses.
 - The patient spends prolonged periods in a remote area.

Therefore most patients should be prescribed just one device at a time!

Health professionals are advised to re-administer adrenaline after 5mins if no response, but patients are told to wait 10-15mins, by which time an ambulance should be on scene which is why the recommendation for most patients is to only have one, not two devices.

A few notes about autoinjectors...

- **Auto injectors are available in two strengths: 0.15mg/150mcg and 0.3mg/300mcg. The 0.3mg strength should be used for those aged 6 and over.** Note that the adrenaline strength in the 0.15mg devices is 1 in 2000. This is because the device injects the same fluid volume as the 0.3mg device but uses half strength adrenaline to deliver the correct dose.
- **Epipen and Anapen, the two autoinject devices, are operated differently so make sure the patient knows how to use one, and then always prescribe the same one!**
- **Note that the adrenaline doses suggested for administration by health professionals are higher than those in an autoinjector.**

Should GPs carry autoinjectors or vials of adrenaline?

Some practices, ours included, had swapped over to carrying autoinjectors instead of vials of adrenaline, thinking it was easier to manage in an emergency. **However healthcare professionals are strongly encouraged to draw up adrenaline rather than use autoinjector devices, because higher doses can be administered this way, with better technique** (*Do you know how to use an autoinjector properly?*). However if you only have an autoinjector to hand then you can use it (see Useful Websites for a 3 minute video on how to use both Epipens and Anapens). *So we have now swapped back to adrenaline ampoules.*

Is there a test to confirm a patient has had an anaphylactic reaction?

Mast cell tryptase can be measured after the patient is stabilised if a suspected anaphylactic reaction has taken place. Plasma levels peak at 0.5-1.5hrs and drop rapidly thereafter, returning to normal within 6-8hrs. Three timed samples are needed. The first should be sent as soon as the patient is stable, the second 1-2 hrs after onset and the third 24 hrs after onset. Never delay resuscitation in order to obtain the blood sample!!

Do patients need to be admitted?

Yes, because following an anaphylactic reaction patients need to be observed for at least 6 hours. Those with a slower onset of action may need 24 hours observation. All patients must be warned that there is a theoretical biphasic nature to anaphylaxis and to look out for recurrence of symptoms.

It is recommended that patients take antihistamines and oral steroids for 3 days to reduce urticaria and the risk of relapse. Steroid doses are not specified but consensus seems to be for anywhere between 30 and 60mg of prednisolone daily.

After an episode of anaphylaxis/admission patient/family education is crucial. They must know:

- What they are allergic to
- What that allergen may be found in
- How to avoid the allergen
- How to recognise symptoms early
- How to summon help
- How to use an autoinjector
- To carry their autoinjector with them at all times
- Consider using a Medic-Alert bracelet

Useful Websites	<p>For professionals: <i>For a list of NHS allergy clinics nationwide see www.bsaci.org .</i></p> <p>For patients and professionals: <i>Anaphylaxis Campaign is the charity for people with anaphylaxis. Their website contains advice for children, teenagers and adults. There's a section for health professionals, including a brief video on using autoinjectors www.anaphylaxis.org.uk..</i></p> <p>For schools and school nurses: <i>www.allergyinschools.org.uk is also by Anaphylaxis Campaign and is dedicated to managing anaphylaxis risk in schools. It has information for parents, pupils and staff.</i></p> <p><i>www.medicalconditionsatschool.org.uk Written by leading charities as a resource for school nurses (it covers asthma, epilepsy, cystic fibrosis, diabetes as well as anaphylaxis).</i></p>	Useful Websites
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Take home messages: Anaphylaxis

- Anaphylaxis is rare but a source of significant anxiety to patients and their family.
- Consider the diagnosis if:
 - Sudden onset and rapid progression of symptoms
 - AND
 - Life threatening Airway and/or Breathing and/or Circulatory problems
 - AND
 - Skin and/or mucosal changes (flushing, urticaria, angioedema).
- Foods, drugs and venom are the commonest causes.
- Deaths are rare but are more likely in those with poorly controlled asthma or in those with asthma who fail to use adrenaline early on.
- Assess patients with suspected anaphylaxis using the ABCDE system.
- Get help early.
- Administer adrenaline early.
- Most patients should only be prescribed only 1 autoinjector at a time, but make sure it is always the same make as they are operated differently!

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