

Anaphylaxis

Resus Council 2021 suggests that **recognition** is key

Have a low threshold for suspecting anaphylaxis!

What is Anaphylaxis

A rapid, severe, systemic reaction affecting any of these systems:

Airway – swelling, shortness, difficulty, hoarse voice, stridor

Breathing – bronchospasm, tachypnoea, drop in sats, hypoxia, wheeze

Circulation – hypotension, tachy/bradycardia, pale/clammy, dizziness

Gastrointestinal – adbo pains, vomiting, diarrhoea

Skin/mucosal – redness, hives, itching

ANY ABC + one other, or 2x ABCs = treat as anaphylaxis

If in doubt, treat as anaphylaxis (NICE)

What causes anaphylaxis

A massive release of mediators when our antibodies detect a foreign substance that they recognise from prior exposure

Histamine is an example of a mediator (causes vasodilation and bronchospasm)

Different mediators affect different body systems:
hence why we look for a variety of symptoms

Treatment

The **only** effective emergency treatment for anaphylaxis is adrenalin 1:1000

Adrenalin does a lot of things:

Alpha 1 agonist = peripheral vasoconstriction (keeps blood at our core)

Beta 1 agonist = increased heart rate and heart muscle strength (more effective pulse)

Beta 2 agonist = Bronchodilator (bigger airways)

Second Line Treatments

Chlorphenamine – takes 30-60mins to work and treats skin issues more than ABC issues

Hydrocortisone – takes 2-6hrs to work but does suppress inflammation to restore fluid to blood, and thus raise BP

Salbutamol – good additional Beta 2 agonist to help bronchodilation

2021 Resus Council Guidelines

Diagnose FAST any rapid ABC changes, and/or skin changes

Remove any trigger if possible (stings etc.)

I.M. Adrenaline 1:1000 into anterior thigh (dose on next slide)

Maintain airway – give O2 to keep SATS in normal range

If no response or change in 5-minutes:

- Give I.M. Adrenaline again
- Call 999 for time-critical (cat 1) transfer

Adrenalin IM Dosing

Adults: 500 micrograms adrenaline 1: 1000 solution
(= 500 micrograms = 0.5 mL of 1:1000)

NOTE THAT THIS IS HALF A VIAL/HALF A PREDRAWN SYRINGE

Children

The recommended doses are based on what is safe and practical to draw up and inject in an emergency (The equivalent volume of 1:1000 adrenaline is shown in brackets)

- 12 years: 500 micrograms IM (0.5 mL) i.e. same as adult dose
(300 micrograms IM (0.3 mL) if child is small or prepubertal)
 - > 6 – 12 years: 300 micrograms IM (0.3 mL)
 - > 6 months– 6 years: 150 micrograms IM (0.15 mL)
 - < 6 months: 100-150 micrograms IM (0.1- 0.15 mL)

Key Points:

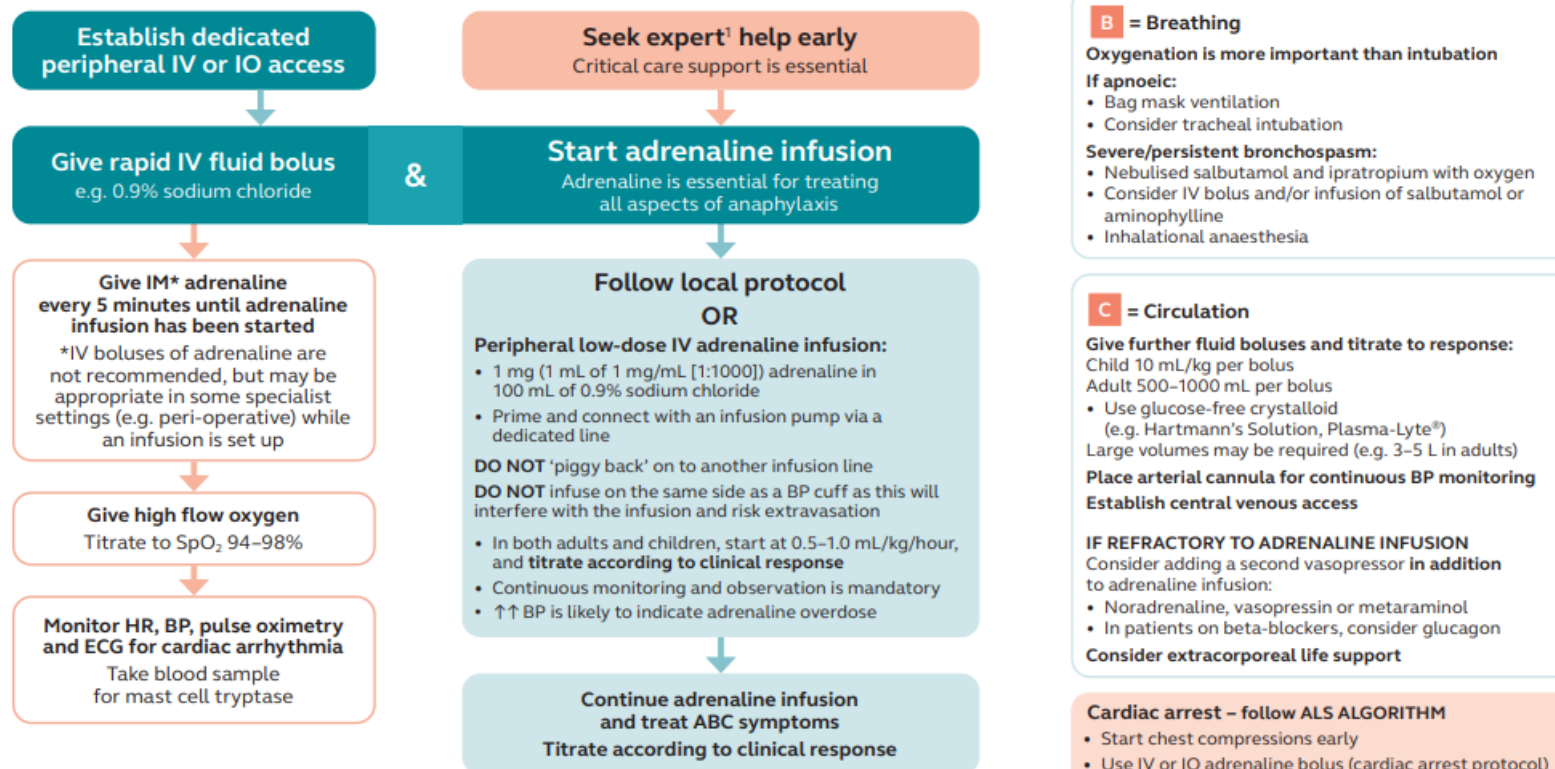
ANYONE can give adrenaline in an emergency

Acute hospital must be considered even if the reaction is reduced quickly

Fluids may be required to support a drop in BP due to fluid leakage into intracellular spaces, which can happen in anaphylaxis

Refractory anaphylaxis

No improvement in respiratory or cardiovascular symptoms despite 2 appropriate doses of intramuscular adrenaline



¹Intravenous adrenaline for anaphylaxis to be given only by experienced specialists in an appropriate setting.

A = Airway

Partial upper airway obstruction/stridor:
Nebulised adrenaline (5mL of 1mg/mL)

Total upper airway obstruction:
Expert help needed, follow difficult airway algorithm

B = Breathing

Oxygenation is more important than intubation

If apnoeic:

- Bag mask ventilation
- Consider tracheal intubation

Severe/persistent bronchospasm:

- Nebulised salbutamol and ipratropium with oxygen
- Consider IV bolus and/or infusion of salbutamol or aminophylline
- Inhalational anaesthesia

C = Circulation

Give further fluid boluses and titrate to response:

Child 10 mL/kg per bolus
Adult 500–1000 mL per bolus

- Use glucose-free crystalloid (e.g. Hartmann's Solution, Plasma-Lyte®)

Large volumes may be required (e.g. 3–5 L in adults)

Place arterial cannula for continuous BP monitoring

Establish central venous access

IF REFRACTORY TO ADRENALINE INFUSION

Consider adding a second vasopressor in addition to adrenaline infusion:

- Noradrenaline, vasopressin or metaraminol
- In patients on beta-blockers, consider glucagon

Consider extracorporeal life support

Cardiac arrest – follow ALS ALGORITHM

- Start chest compressions early
- Use IV or IO adrenaline bolus (cardiac arrest protocol)
- Aggressive fluid resuscitation
- Consider prolonged resuscitation/extracorporeal CPR

More reading

[Anaphylaxis – The Resus Room](#) (podcast – excellent)

[Overview | Anaphylaxis: assessment and referral after emergency treatment | Guidance | NICE](#)

[AllergyWise - Allergic Reaction Training Courses | AllergyWise](#)