Anaphylaxis

Anaphylaxis?

A = Airway **B** = Breathing **C** = Circulation **D** = Disability **E** = Exposure

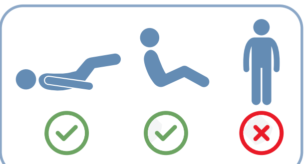
Diagnosis – look for:

- Sudden onset of Airway and/or Breathing and/or Circulation problems[1]
- And usually skin changes (e.g. itchy rash)

Call for HELP

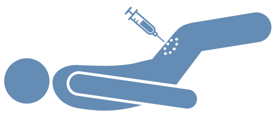
Call resuscitation team or ambulance

- Remove trigger if possible (e.g. stop any infusion)
- Lie patient flat (with or without legs elevated)
  - A sitting position may make breathing easier
  - If pregnant, lie on left side



Give intramuscular (IM) adrenaline[2]

Inject at **anterolateral aspect** – middle third of the thigh



- Establish airway
- Give high flow oxygen
- Apply monitoring: pulse oximetry, ECG, blood pressure

If no response:

- Repeat IM adrenaline after 5 minutes
- IV fluid bolus[3]

If no improvement in Breathing or Circulation problems[1] despite TWO doses of IM adrenaline:

- Confirm resuscitation team or ambulance has been called
- Follow REFRACTORY ANAPHYLAXIS ALGORITHM

1. Life-threatening problems

Airway
Hoarse voice, stridor

Breathing
↑work of breathing, wheeze, fatigue, cyanosis, SpO_2 <94%

Circulation
Low blood pressure, signs of shock, confusion, reduced consciousness

2. Intramuscular (IM) adrenaline

Use adrenaline at 1 mg/mL (1:1000) concentration

Adult and child >12 years:	500 micrograms IM (0.5 mL)
Child 6–12 years:	300 micrograms IM (0.3 mL)
Child 6 months to 6 years:	150 micrograms IM (0.15 mL)
Child <6 months:	100–150 micrograms IM (0.1–0.15 mL)

The above doses are for IM injection **only**.
Intravenous adrenaline for anaphylaxis to be given **only by experienced specialists** in an appropriate setting.

3. IV fluid challenge

Use crystalloid

Adults:	500–1000 mL
Children:	10 mL/kg

Resuscitation Council UK

GUIDELINES 2021

Refractory anaphylaxis

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

Establish dedicated peripheral IV or IO access

Seek expert[1] help early
Critical care support is essential

Give rapid IV fluid bolus
e.g. 0.9% sodium chloride

&

Start adrenaline infusion
Adrenaline is essential for treating all aspects of anaphylaxis

Give IM* adrenaline every 5 minutes until adrenaline infusion has been started

*IV boluses of adrenaline are not recommended, but may be appropriate in some specialist settings (e.g. peri-operative) while an infusion is set up

Give high flow oxygen
Titrate to SpO_2 94–98%

Monitor HR, BP, pulse oximetry and ECG for cardiac arrhythmia
Take blood sample for mast cell tryptase

Follow local protocol
OR

Peripheral low-dose IV adrenaline infusion:

- 1 mg (1 mL of 1 mg/mL [1:1000]) adrenaline in 100 mL of 0.9% sodium chloride
- Prime and connect with an infusion pump via a dedicated line

DO NOT 'piggy back' on to another infusion line

DO NOT infuse on the same side as a BP cuff as this will interfere with the infusion and risk extravasation

- In both adults and children, start at 0.5–1.0 mL/kg/hour, and **titrate according to clinical response**
- Continuous monitoring and observation is mandatory
- ↑↑ BP is likely to indicate adrenaline overdose

Continue adrenaline infusion and treat ABC symptoms
Titrate according to clinical response

[1]Intravenous 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