SECTION 16: TREATMENT OF ANAPHYLAXIS

Formulary and Prescribing Guidelines
16.1 Introduction

Anaphylaxis is an allergic response that may be immunologically mediated, a non-immunological response or idiopathic (i.e. no readily identifiable cause). People who have had a mild or moderate allergic reaction in the past are at risk of developing anaphylaxis. Certain groups may be at higher risk because of existing co-morbidity (for example asthma).

Anaphylaxis is most commonly caused by foods, medicines, radiographic contrast media, latex or insect stings\(^1\). Allergic reactions vary in severity from pruritus and urticarial (hives) to bronchospasm, circulatory collapse and death. Irrespective of this variation in presentation, the following points generally apply:

1. The severity of the anaphylaxis is directly related to the speed of onset\(^2\)

2. The majority of mast cells are located in the cardiovascular system, upper and lower respiratory tract, cutaneous and gastro-intestinal system. Thus, the majority of patients will present with symptoms arising in those areas. For example, laryngeal oedema, stridor, wheezing, drops in BP, tachycardia (if not on a beta-blocker), flushing, nausea, vomiting, and abdominal cramping\(^2\)

3. Time of onset depends on the route of administration of the trigger – an intravenous trigger will elicit a reaction faster than a bee sting, which in turn will provoke anaphylaxis more rapidly than an orally ingested trigger\(^2\). Fatal food reactions cause respiratory arrest typically after 30-35 minutes; insect stings cause collapse from shock after 10-15 minutes; and deaths caused by intravenous medication occurs most commonly within 5 minutes.

16.2 Recognition of Anaphylaxis\(^2\)

Anaphylaxis is likely when all of the following three criteria are met:

- Sudden onset and rapid progression of symptoms
- Life-threatening Airway and/or Breathing and/or Circulation problems
- Skin and/or mucosal changes (flushing, urticarial, angioedema

**Onset**

Can be very rapid necessitating rapid assessment of the patient’s status, determination of probable causative agent and determination of whether exposure to precipitating agent can be stopped.

**Presentation**

- Cutaneous: flushed appearance, or urticarial (hives/nettle rash), itchy hands and feet, swelling of the hands, feet, lips, eye-lids and/or tongue.
- Cardiovascular: lowered BP, tachycardia, arrhythmia, and ischemia may be coupled with loss of consciousness
- Upper respiratory tract obstruction: laryngeal oedema (patient complains of a lump in the throat), hoarseness, stridor (inspiratory noise due to upper respiratory obstruction), and ultimately, if not treated, cyanosis and respiratory arrest.
• Lower respiratory tract obstruction: wheeze, shortness of breath, difficulty breathing, confusion due to hypoxia, respiratory arrest.

Symptoms such as respiratory stridor, breathing difficulties, cyanosis, and/or pronounced tachycardia and imminent collapse should alert the healthcare professional to an anaphylactic reaction.

### 16.3 Anaphylaxis Algorithm\(^2\)

![Anaphylaxis Algorithm Diagram](image-url)

1. **Life-threatening problems:**
   - **Airway:** swelling, hoarseness, stridor
   - **Breathing:** rapid breathing, wheeze, fatigue, cyanosis, $\text{SpO}_2 < 92\%$, confusion
   - **Circulation:** pale, clammy, low blood pressure, faintness, drowsy/coma

2. **Adrenaline** (give IM unless experienced with IV adrenaline)
   - Adult: 500 micrograms IM (0.5 mL)
   - Child more than 12 years: 500 micrograms IM (0.5 mL)
   - Child 6-12 years: 300 micrograms IM (0.3 mL)
   - Child less than 6 years: 150 micrograms IM (0.15 mL)
   - Adrenaline IV to be given only by experienced specialists
   - Titrate: Adults 50 micrograms, Children: 1 microgram/kg

3. **IV fluid challenge:**
   - Adult: 500 – 1000 mL
   - Child: crystalloid 20 mL/kg
   - Stop IV colloid if this might be the cause of anaphylaxis

4. **Chlorphenamine** (IM or slow IV)
   - Adult or child more than 12 years: 10 mg
   - Child 6 - 12 years: 5 mg
   - Child 6 months to 6 years: 2.5 mg
   - Child less than 6 months: 250 micrograms/kg

5. **Hydrocortisone** (IM or slow IV)
   - Adult: 100 mg
   - Child: 50 mg
16.4 Management

- Summon urgent medical assistance: if hospital-based, medical emergency to be called and emergency ambulance requested; if community-based, emergency ambulance to be called.

- **NEVER LEAVE THE PATIENT ALONE.** Monitor heart rate and respiration rate continuously. Check BP every 1-2 minutes and commence cardio-pulmonary resuscitation if cardiac or respiratory function ceases (refer to CLPG/). Lie patient flat with legs raised. If the patient feels faint – they must not sit or stand up (can cause cardiac arrest). However, if the patient has breathing difficulties or respiratory distress sit in an upright position as this will make breathing easier. Patients who are breathing and unconscious should be placed in the recovery position.

- Adrenaline to be administered intramuscularly – medical staff to determine the volume of adrenaline (1 in 1,000) (depending on age of patient, see table above). All nursing staff who administer adrenaline must have been trained on the Intermediate Life support course (MERT). Alternatively, an adrenaline auto-injector may be used if this has previously been prescribed for the patient, if this is the only available adrenaline. The dose can be repeated if necessary at 5 minute intervals according to BP, heart rate and respiratory function.

- Secure airway by tilting chin and ensuring that the tongue is not blocking the airway. If condition deteriorates, then guedal airway to be inserted (by staff member trained in this procedure). Administer oxygen if available (at the highest concentration possible) at high flow rates (usually greater than 10 Litres/minute).

- All patients who have experienced an anaphylactic reaction must be transferred to hospital for observation and follow-up treatment, even though they may appear to have made a full recovery.

*Previous guidelines recommended adrenaline half dose adjustments in certain circumstances (e.g., in patients taking tricyclic antidepressants, monoamine oxidase inhibitors or beta blockers). The Working Group considered it unhelpful to have caveats such as this in the setting of an acute anaphylactic reaction. There is large inter-individual variability in the response to adrenaline. In clinical practice, it is important to monitor the response; start with a safe dose and give further doses if a greater response is needed, i.e., *titrate the dose according to effect*.). The BNF does still stipulate that patients taking beta-blockers may not respond (respiratory–wise) to adrenaline and may require intravenous salbutamol. Additionally, adrenaline can cause severe hypertension and bradycardia in those taking non-selective beta-blockers.*

16.5 NICE Clinical Guidelines

NICE CG 134, December 2011. Anaphylaxis: assessment to confirm an anaphylactic episode and the decision to refer after emergency treatment for a suspected anaphylactic episode

References
