

INTRODUCTION

Allergic reactions exist on a continuum from mild urticaria (hives) and/or angio-oedema (swelling of the face, eyelids, lips and tongue) to major pulmonary and/or cardiovascular compromise. The extreme end of the spectrum is anaphylaxis which can affect the cardiovascular, pulmonary, cutaneous, and gastrointestinal systems. It is an acute, life-threatening response in patients previously sensitised to an allergen. In general, the longer it takes for anaphylactic symptoms to develop, the less severe the overall reaction.

Table 1 – Common precipitants

Food-induced anaphylaxis	Food is the most common cause of anaphylaxis, particularly peanuts, tree nuts (e.g. hazel, brazil, walnut), fish and shellfish. Facial oedema, laryngeal oedema and respiratory difficulty usually predominate.
Insect sting-induced anaphylaxis	Insect stings are the second most common cause. Bees may leave a venom sac which should be scraped off (not squeezed). Injected allergens commonly result in cardiovascular compromise, with hypotension and shock predominating.
Drug-induced anaphylaxis	Medications, particularly penicillin, account for a large percentage of anaphylactic reactions. Slow release drugs prolong absorption and exposure to the allergen.
Other causes	Include latex, exercise, and semen.

ASSESSMENT¹⁻⁴

Primary Survey

Assess **ABCD**'s

Examine skin for:

- urticaria
- swelling around or within the mouth.

If the history is compatible, i.e. exposure to a possible precipitant, consider an **acute allergic** reaction when the patient presents with:

- an acute onset of illness (minutes to hours) **and**
- cutaneous findings (e.g. urticaria and/or angio-oedema).

Suspect an **anaphylactic reaction** if, in addition to the above, the patient's condition has deteriorated to include:

- airway compromise (e.g. dyspnoea, hoarseness, stridor, wheeze, throat or chest tightness) **and/or**
- cardiovascular symptoms (e.g. hypotension, syncope, pronounced tachycardia).

NOTE: Urticaria and/or angio-oedema are absent in 10%-15% of anaphylactic reactions but consider the diagnosis in an otherwise typical presentation. Gastrointestinal oedema/ hypermotility can result from an anaphylactic event; patients present with colicky abdominal pain, diarrhoea, nausea and vomiting. Patients may report a 'sense of doom'.

If signs of anaphylaxis are identified, immediately correct A and B problems (administer oxygen (O₂) (*refer to oxygen protocol for administration and information*) and adrenaline (*refer to adrenaline protocol for administration and information*), then pre-alert and transfer to the nearest suitable hospital as an emergency case. Continue management en-route.

Some patients relapse hours after an apparent recovery (**biphasic response**), therefore: **patients who have experienced an anaphylactic reaction should be transferred to hospital for further evaluation.**

Specifically assess:

- airway patency (auscultation, pulse oximetry, and peak expiratory flow (PEF) – if possible)
- cardiovascular status (ECG and BP) a systolic blood pressure <90mmHg indicates hypotension
- if the patient has a history of allergic/ anaphylactic reactions
- if the patient has used their own home auto-injector (Epipen)
- monoamine-oxidase inhibitor (MAOI) or tricyclic antidepressants increase the risk of cardiac arrhythmias, therefore **patients taking MAOI's or tricyclic antidepressants should receive only 50% of the usual dose of adrenaline.**

Anaphylaxis/ Allergic Reactions in Adults

If the patient has taken beta-adrenergic blockers, these may mask the signs of anaphylaxis and diminish the effects of adrenaline.

MANAGEMENT³⁻¹²

Allergic Reaction:

Start correcting:

- **AIRWAY**
- **BREATHING**
- **CIRCULATION**
- determine whether the history and physical findings are compatible with an allergic reaction
- quickly remove the triggering source (if possible)
- consider **chlorphenamine** (IV) (**refer to chlorphenamine protocol for dosages and information**) if the symptoms are causing the patient pain or distress. The balance between relief of symptoms and having to cannulate the patient should be carefully considered.

Anaphylaxis:

Start correcting:

- **AIRWAY**
- **BREATHING**
- **CIRCULATION**
- determine whether the history and physical findings are compatible with anaphylaxis (early diagnosis and management dramatically improves outcome)
- quickly remove the triggering source (if possible)
- administer high concentration oxygen (O₂) (**refer to oxygen guideline**) via a non-re-breathing mask, using the stoma in laryngectomee and other neck breathing patients, to ensure an oxygen saturation (SpO₂) of >95%, except in patients with chronic obstructive pulmonary disease (COPD) (**refer to COPD guideline**)
- administer **adrenaline** (IM) (**refer to adrenaline protocol for dosages and information**)
- where call to hospital time is likely to be over 30 minutes consider hydrocortisone (**refer to hydrocortisone protocol for dosages and information**) Its effect can take 4-6 hours but it may minimise the likelihood and severity of a biphasic response

- if haemodynamically compromised, place the patient in the recumbent position with lower limbs elevated, if tolerated (unhelpful with breathing difficulties)
- obtain IV access if possible but **DO NOT** delay transfer to hospital
- consider nebulised **salbutamol** (**refer to salbutamol protocol for dosages and information**) for bronchospasm resistant to IM epinephrine
- administer **chlorphenamine** IV (**refer to chlorphenamine protocol for dosages and information**)
- consider titrating aliquots of 250 millilitres crystalloid solution if hypotension does not respond rapidly to drug treatment
- monitor and re-assess ABC's including ECG, PEF (if possible), BP and pulse oximetry, en-route.

Key Points – Anaphylaxis/allergic reactions

- Anaphylaxis can occur despite a long history of previously safe exposure to a potential trigger.
- Consider anaphylaxis in the presence of acute cutaneous symptoms **and** airway or cardiovascular compromise.
- Anaphylaxis may be rapid, slow or biphasic.
- Oxygen and adrenaline 1:1,000 are the key drugs for managing anaphylaxis.
- The benefit of using appropriate doses of epinephrine (IM) far exceeds any risk.

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METHODOLOGY

Refer to methodology section; see below for anaphylaxis/allergic reactions search strategy.

Anaphylaxis/allergic reactions search strategy.

Electronic databases searched:

- MEDLINE (Ovid)
- CINAHL (Ovid)
- COCHRANE (Ovid)
- EMBASE (Ovid)
- BRITISH NURSING INDEX (Ovid)

The dates were limited to 2000 onwards. Only articles relevant to pre-hospital care were reviewed.

Search strategy:

1. first aid/ or emergency health service/ or emergency service/
2. exp EMERGENCY CARE/
3. exp EMERGENCY TREATMENT/
4. exp EMERGENCY MEDICAL SERVICES/
5. or/1-4
6. exp HYPERSENSITIVITY/
7. exp ANAPHYLAXIS/
8. (anaphyla\$ or allerg\$).tw.
9. 6 and 8
10. (5 and 7) or (5 and 9)
11. limit 10 to yr=2000-2005
12. limit 11 to English
13. remove duplicates from 12