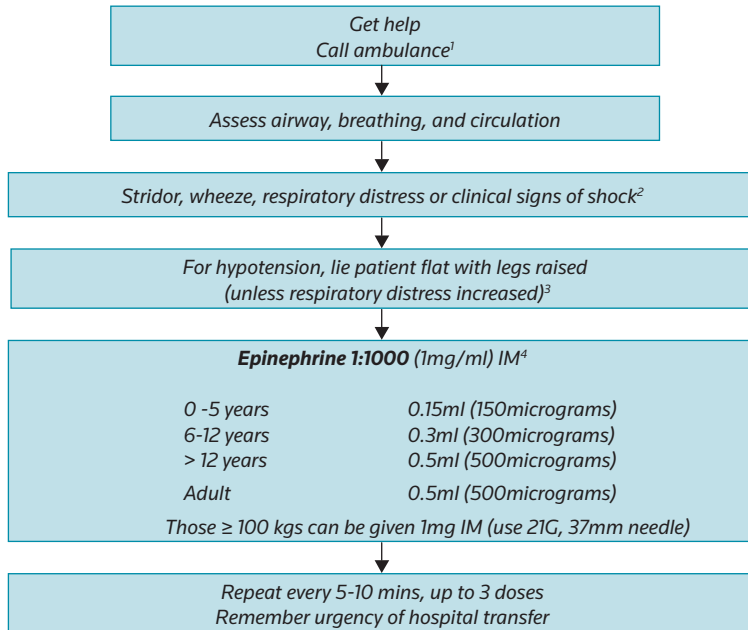


Anaphylaxis: Treatment in the Community

Anaphylaxis is likely if a patient who, within minutes of exposure to a trigger (allergen), develops a sudden illness with rapidly progressing skin changes and life-threatening airway and/or breathing and/or circulation problems.



1. Ambulance will be equipped with oxygen, Salbutamol and fluids.
2. If profound shock judged **immediately** life threatening, give CPR/BLS if necessary.
3. If respiratory distress present, elevate head.
4. Epinephrine maximum effect 10 minutes after IM injection.

Suggested Anaphylaxis Kit

The availability of protocols, equipment and drugs necessary for the management of anaphylaxis should be checked before each vaccination session

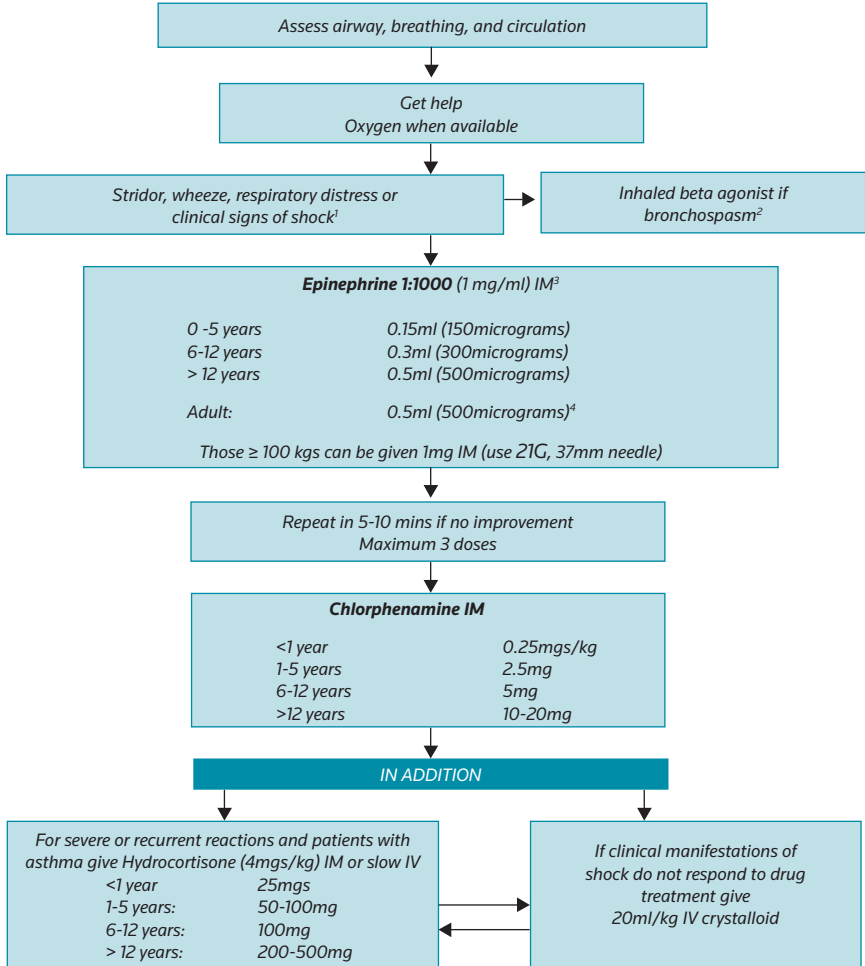
- Copy of "Anaphylaxis: Treatment in the Community" from Immunisation Guidelines for Ireland
- 3 x 1 ml ampoules of epinephrine (1:1000, 1mg/ml)
- 3 x 1 ml syringes
- Needles 3 x 16mm, 3 x 25mm, 3 x 40mm
- 1 pocket mask
- Sphygmomanometer (optional)
- Stethoscope (optional)
- Pen and paper to record time of administration of epinephrine.

The kits should be kept closed to ensure the **drugs are not exposed to light** and stored at room temperature. The kits require regular verification to replace drugs before their expiry date.

Anaphylaxis

Anaphylaxis: Treatment by First Medical Responders (in GP surgery or hospital)

Anaphylaxis is likely if a patient who, within minutes of exposure to a trigger (allergen) develops a sudden illness with rapidly progressing skin changes and life-threatening airway and/or breathing and/or circulation problems.



1. If profound shock judged **immediately** life threatening, give CPR/ALS if necessary. Consider **slow** IV Epinephrine 1:10,000 solution if severe hypotension. Dose 10 microgram/kg, maximum dose 500 micrograms, over several minutes. This is **hazardous** and is recommended only for hospital setting. Note the different strength for IV use.
2. An inhaled beta₂-agonist such as Salbutamol may be used if bronchospasm is severe and does not respond rapidly to other treatment.
3. Epinephrine maximum effect 10 minutes after IM injection.
4. If a patient on beta-blockers has not improved after 2-3 doses of Epinephrine, consider giving Glucagon, 2-3 micrograms/kg (max.1-2mg) IV over 5 minutes, IV salbutamol and/or IV atropine.

ANAPHYLAXIS

Anaphylaxis is a life-threatening allergic reaction to foreign protein antigens such as food, drugs, vaccines and bee stings. It is a very rare complication of immunisation (0.4-2 per million doses). Most episodes begin within 30 minutes of vaccination. Shorter intervals to onset generally indicate more severe reactions. However due to the unpredictable nature of anaphylaxis it is not possible to define a particular time period over which all individuals should be observed following immunisation. When possible, patients should remain in the vicinity of the place of vaccination for up to 15 minutes as typically onset of anaphylaxis occurs within minutes.

Definition of anaphylaxis*

Anaphylaxis is a clinical syndrome characterised by

- sudden onset
AND
- rapid progression of signs and symptoms
AND
- involving multiple (≥ 2) organ systems, as follows:

Dermatologic or mucosal

- generalized urticaria or erythema
- angioedema, localised or generalised
- generalised pruritus with skin rash

AND

Cardiovascular

- measured hypotension
- uncompensated shock,

OR

Respiratory

- bilateral wheeze (bronchospasm)
- stridor
- upper airway swelling (lip, tongue, throat, uvula or larynx)
- respiratory distress—2 or more of the following:
 - tachypnoea
 - increased use of accessory respiratory muscles
 - recession
 - cyanosis
 - grunting

There can also be gastrointestinal symptoms (e.g. vomiting, severe abdominal pain, diarrhoea)

Anaphylaxis must be distinguished from fainting (vasovagal episode), anxiety breath-holding episodes and idiopathic urticaria or angio-oedema which are more common.

* adapted from the Brighton Collaboration see Bibliography

Anaphylaxis

Table 1 shows features which may assist differentiating fainting from anaphylaxis. Those experiencing **anxiety** may appear fearful, pale and sweaty, and complain of light-headedness, dizziness and numbness or tingling of their hands or feet. Hyperventilation is usually present.

During a **breath-holding episode** the child is suddenly silent and may be agitated. Facial flushing or pallor can occur as breath-holding continues. Some episodes end with resumption of crying, but others can be followed by a brief period of unconsciousness during which breathing resumes.

Swelling and an urticarial rash may appear at the injection site but are not always caused by an allergic reaction and may disappear without additional treatment. However if any other symptoms occur, even if considered mild (sneezing, nasal congestion, coughing, etc.), Epinephrine should be given. There is little risk to the use of Epinephrine especially in children whereas delay in its administration in anaphylaxis may result in death. The features of anaphylaxis include obstructive swelling of the upper airway, marked bronchospasm and hypotension.

A number of drugs may interfere either with the action of Epinephrine or with the compensatory mechanisms which occur in anaphylaxis. These drugs include beta-blockers, tricyclic antidepressants, ACE inhibitors, and Angiotensin 2 receptor blockers. As anaphylaxis is a life-threatening event, the benefits of giving the recommended doses of Epinephrine outweigh potential risks. Epinephrine doses should be titrated according to their effect. If a patient on beta-blockers has not improved after 2-3 doses of Epinephrine, consider giving Glucagon, 2-3 micrograms/ kg (max. 1-2mgs) IV over 5 minutes, IV salbutamol, and/or IV atropine. These should only be used in hospital, preferably under the supervision of an intensivist.

Table 1: Differentiating Vasovagal episode and Anaphylaxis

		Vasovagal episode	Anaphylaxis
Onset		Immediate	Usually within 5 minutes, but can occur within 1-2 hours
Symptoms/signs	Skin	Generalised pallor; cold, clammy skin	Itch, generalised erythema, urticaria or angio-oedema (localised swelling of face, mouth, etc.)
	Respiratory	Normal or shallow, not laboured	Cough, wheeze, stridor, tachypnoea, recession, cyanosis
	Cardiovascular	Bradycardia but strong carotid pulse Hypotension corrected when lying	Tachycardia, weak/absent pulse. Sustained hypotension unless specific treatment
	Neurological	Light-headed Possible loss of consciousness, improves on lying down	Severe anxiety and distress. Loss of consciousness

Bibliography

1. Resuscitation Council (UK) 2008. Emergency treatment of anaphylactic reactions. Guidelines for healthcare providers. Working Group of the Resuscitation Council (UK) Annotated with links to NICE guidance July 2012.
2. Rugeberg J et al (2007) Anaphylaxis: Case definition and guidelines for data collection, analysis, and presentation of immunization safety data. *Vaccine* 25: 5675–5684. (This refers to the Brighton Collaboration definition and management recommendations).