



# CATS Clinical Guideline

## Anaphylaxis/Latex Allergy

### Document Control Information

<b>Author</b>	D Lutman	<b>Author Position</b>	Consultant
<b>Document Owner</b>	E Polke	<b>Document Owner Position</b>	Service Coordinator
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The purpose of this guideline is to provide a structured approach for the treatment of cases of suspected anaphylaxis and suggest precautions to prevent allergic reactions in a patient suspected of latex allergy.

## 1. Assessment

1.1 Anaphylaxis is likely when all of the following 3 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)

1.2 A history of exposure to an allergen supports the diagnosis but is not essential.

1.3 Anaphylaxis should be suspected when:

- Previous history of severe or life-threatening reactions
- Previous history of increasingly severe reactions
- History of asthma
- Current treatment with beta-blockers
- 'Medic-alert' bracelet or carries own adrenaline auto-injector

1.4 Common allergens/triggers include:

- Food: nuts, milk, fish
- Venom: wasp, bee
- Drugs: antibiotics, anaesthetic drugs
- Contrast media
- Latex

1.5 History of latex allergy usually has to be sought unless this is the presenting complaint

1.6 Risk factors for latex allergy:

- Repeated bladder catheterisation
- Neural tube defects: Spina bifida
- Cloacal abnormalities
- Multiple surgical procedures, especially as a neonate
- Atopy and multiple allergies
- Food allergies: fruit and vegetables including bananas, celery, fig, chestnuts, avocados, papaya and passion fruit are most significant. Children with a strong or confirmed allergy to banana should be considered allergic to latex and managed accordingly.

1.7 Reactions are either delayed type IV or immediate type I

1.8 Life-threatening features of anaphylaxis include:

- Airway: swelling, hoarse voice, stridor
- Breathing: shortness of breath, tachypnoea, wheeze, cyanosis, respiratory arrest
- Circulation: pale, clammy, tachycardia, low blood pressure, shock, cardiac arrest
- Confusion, agitation or decreased level of consciousness can occur due to above problems

**Table 1: Frequency of clinical features of anaphylaxis to intravenous induction agents in general anaesthesia**

Clinical feature	Frequency (%)
Cardiovascular collapse	88
Bronchospasm	36
Angioedema (facial, periorbital, perioral)	24
Angioedema (generalised)	7
Erythema	45
Rash	13
Urticaria	8

## 2. Immediate management

2.1 Call for help early.

2.2 Patient positioning: lie flat and elevate legs.

2.3 Remove trigger if possible.

2.4 Primary treatment: **Adrenaline**

- Give IM adrenaline 1 in 1000.
- Further IM doses to be repeated at 5 min intervals according to patient's response.
- If repeated IM doses required, patient may benefit from IV adrenaline 1 in 10 000.
- If patient requires repeated IV adrenaline boluses, start an IV adrenaline infusion.

### **IM Adrenaline (1 in 1000)**

< 6 years. 150 mcg (0.15ml)

6 to 12 yrs. 300mcg (0.3 ml)

> 12 yrs. 500mcg (0.5 ml)

Repeated after 5 minutes if required

### **IV / IO Adrenaline (1 in 10 000)**

1 mcg/kg, maximum 50 mcg

### **IV infusion Adrenaline (0.3mg/kg in 50ml)**

IVI run at 0.05-0.5 mcg/kg/min

## 2.5 Secondary treatments:

- **High-flow oxygen** (>10L/min via mask and reservoir bag; FiO<sub>2</sub> 1.0 when intubated)
- **Establish secure airway** (see Intubation below)
- **Chlorpheniramine**
- **Hydrocortisone**
- **Vascular volume expansion 20ml/kg (0.9% Saline or Hartmann's)** – repeat as required
- Bronchodilators to manage bronchospasm: **Salbutamol nebulisers 2.5mg - 5mg**

AGE	Chlorpheniramine IM or slow IV	Hydrocortisone IM or slow IV
< 6 months	250 micrograms/kg	25 mg
6 months – 6 years	2.5 mg	50 mg
6 – 12 years	5 mg	100 mg
> 12 years	10 mg	200 mg

## 3. Intubation

### 3.1 Indications for intubation

- Airway obstruction
- Cardiorespiratory collapse

### 3.2 Before intubation

- 3.2.1 If the child has evidence of airway obstruction call for *urgent senior* anaesthetic and ENT support for intubation.
- 3.2.2 Give Adrenaline 10 mcg/kg IM and Adrenaline 0.5 ml/kg 1:1000 nebulised (maximum 5 ml) while waiting.

### 3.3 Following intubation

#### 3.3.1 Ventilate as for air trapping/bronchospasm:

- Pressure control (aim PIP <35 cmH<sub>2</sub>O)
- Slow respiratory rate (e.g. rate 10-15 bpm)
- Long expiratory time (e.g. I:E 1:2)
- Permissive hypercapnoea - aim pH ≥ 7.2
- PEEP 5-10 cm H<sub>2</sub>O to overcome intrinsic PEEP
- Consider manual decompression
- Muscle relax

3.3.2 Regular chest physiotherapy and suctioning for mucus plugging.

3.3.3 Bronchospasm should be treated as per **asthma guideline**.

3.3.4 Watch for pneumothoraces.

- 3.3.5 Occasionally an adrenaline infusion will be necessary, for resistant vasodilation +/- bronchospasm. Discuss use with CATS consultant.
- 3.3.6 Consider NaHCO<sub>3</sub> for profound/refractory acidosis.

#### 4. Cardiopulmonary arrest following an anaphylactic reaction

- 4.1 Start CPR immediately and follow current APLS cardiopulmonary resuscitation guidelines.
- 4.2 Use doses of adrenaline recommended in the APLS CPR guidelines.
- 4.3 The IM route for adrenaline is not recommended after cardiac arrest has occurred.

#### 5. Investigations

- 5.1 **Mast cell tryptase** levels help confirm the diagnosis of anaphylactic reaction.
- 5.2 Ideally send three *timed samples* for mast cell tryptase:
  - Immediately after reaction has been treated
  - 1-2 hours after the start of symptoms.
  - At 24 hours or in convalescence (baseline sample) after the reaction
- 5.3 Each sample should be 0.5mL-5mL of serum or clotted blood ('liver function test' bottle).
- 5.4 It is essential to record the times on these samples and in the notes.

#### 6. Reporting of reaction

- 6.1 All adverse drug reactions should be reported to the Medicine and Healthcare products Regulatory Agency (MHRA) using the "Yellow Card" scheme (found in BNF and MIMS).
- 6.2 The patient must be referred to an allergist in a defined Regional Allergy Centre.
- 6.3 All fatal cases of suspected anaphylaxis should be discussed with the coroner.

#### 7. Transport considerations for suspected latex allergy

- 7.1 Use of latex-free anaesthetic masks, ECG electrodes, blood pressure cuffs.
- 7.2 Drugs from bottles with rubber bungs should be avoided or a Chemo Mini Spike Plus used.
- 7.3 Drugs for treatment of allergic reactions should be drawn up in advance for patients with suspected latex allergy.

**Guideline based on the Advanced Life Support Group UK 2017  
NICE Guidance November 2016**