



# Anaphylaxis

Seriousness of complication		Frequency of complication	
Minor complication		Common	
Worrying complication		Occasional	
Moderate complication		Infrequent	
Serious, but not major		Rare	
Major complication	X	Very rare	X

<b>Title</b>	Anaphylaxis		
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# Anaphylaxis

## Definition:

'A severe, life-threatening, generalized or systemic hypersensitivity reaction' (Resuscitation Council, 2010). It is due to the release of inflammatory mediators and cytokines from mast cells and basophils, typically due to an immunologic reaction but sometimes non-immunologic mechanism (Khan, BQ; Kemp, SF, August 2011).

## Introduction:

Anaphylaxis is extremely rare in aesthetic medicine but is potentially fatal and without immediate and appropriate treatment, death can occur rapidly. Before any aesthetic practitioner performs any treatment, they must be able to confidently recognise the symptoms of allergic reactions and anaphylaxis and have the appropriate equipment and medication to deal with it otherwise they should not be carrying out the treatment.

Practitioners must be prepared to diagnose and administer early treatment; not only acknowledging the risk with the majority of topical and injectable aesthetic medical treatments, but also the risk in the general population of environmental allergens, which may be coincidental and unrelated to treatment. The author notes that a history of anaphylaxis, irrespective of the allergen, has long been considered an absolute contraindication to treatment. There is no evidence to support this and treatment can be carried out as long as there has not been any reaction to the product being used or similar product range. Allergies are specific to antigens, though some antigens are related and these relationships are understood. Hence an individual with anaphylaxis to penicillin does not necessarily suffer an increased risk of anaphylaxis to multiple antigens, but ONLY to Penicillin. Caution is advised in any patient with a history of an anaphylactic reaction and to ascertain the allergen that caused it and the severity.

## Incidence:

The exact incidence of anaphylaxis is not known; worldwide, 0.05–2% of the population is estimated to have anaphylaxis at some point in life and rates appear to be increasing (Simmons, FE, 2010). There is no empirical and reliable data base from which to determine the incidence of anaphylaxis for any one cosmetic procedure because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure or device. However, anaphylaxis has been reported for dermal fillers, sclerosants (excluding hypertonic saline), topical anaesthetics and chemical peels.

## Signs and symptoms:

Anaphylaxis typically presents with many different symptoms over minutes or hours (Oswalt, ML; Kemp, SF. May 2007) with an average onset of 5 to 30 minutes if exposure is intravenous and 2 hours for foods (Marx, John, 2010). The most common systems affected

include skin (80–90%), respiratory (70%), gastrointestinal (30–45%), heart and vasculature (10–45%) and central nervous system (10–15%) (Simons FE, 2009).

Symptoms develop rapidly, usually within a few minutes and most occur within an hour of exposure and the symptoms can be life threatening. Skin changes are often the first features and present in over 80% of anaphylactic reactions; they can affect skin, mucosa or both.

#### Airway and/or breathing problems

- Swelling of the throat or tongue
- Difficulty in breathing or swallowing
- Sensation that the throat is 'closing up'
- Hoarse voice
- Stridor
- Shortness of breath
- Increased respiratory rate
- Wheeze
- Angioedema (swelling of the deeper tissues, e.g. eyelids and lips, sometimes in the mouth or throat)
- Patient becoming tired
- Confusion caused by hypoxia
- Cyanosis can be a late sign
- Respiratory arrest

#### Circulation

- Signs of shock (pale, clammy, trophic changes)
- Tachycardia
- Hypotension
- Decreased conscious level
- Angina
- Cardiac arrest

#### Disability

- Sense of 'impending doom'
- Anxiety or panic
- Decreased conscious level caused by hypoxia or circulation problem

#### Skin changes

- Erythema (patchy or generalised red rash)
- Urticaria (also called hives, nettle rash, weals or welts; anywhere on the body)

#### Gastrointestinal problems

- Vomiting
- Abdominal pain
- Incontinence

## **Differential Diagnosis**

- Asthma can present with similar symptoms and signs as anaphylaxis, although asthma does not typically present with itching or gastrointestinal symptoms
- Syncope or a vasovagal episode although this tends to present with pallor rather than a rash
- Panic attacks may cause flushing but hives is not a recognised symptom (Simmons, 2010).
- Idiopathic (non-allergenic) urticaria or angioedema may occur

## **Additional caution advised:**

- History of anaphylaxis, asthma or atopy
- Previous sensitivity reaction to the treatment proposed or excipients

Adults may experience more severe reactions due to the following:

- Use of  $\beta$ -blocking agents or angiotensin converting enzyme (ACE) inhibitors which may mask some of the initial symptoms and the patient present with a more a severe initial reaction.
- Existence of comorbid conditions, such as heart disease, which may lead to an acute cardiovascular event precipitated by an anaphylactic reaction.
- Exposure to a variety of therapeutic and diagnostic agents and possible sensitisation

## **Minimising the risk:**

Identify risk factors by taking a medical history including history of allergies and previous sensitivity reactions to cosmetic procedures or local anaesthetics. In the case of previous allergies or sensitivities, treatments should only be carried out by a practitioner experienced and competent to deal with any possible complication that may arise.

Refuse treatment if a patient has known or suspected sensitivity to ingredients in the product. The author notes that some medical history forms ask about egg allergies. There is no evidence that allergy to eggs should be a contra-indication to botulinum toxins with human albumin (Smith, J, 2003). Few medical history forms specifically document the question identifying allergy to bee or wasp stings but patients with an allergy to bees or wasps may be at risk of anaphylaxis to hyaluronidase (Morris, A, 2014) although the risks should be measured against the benefits. Sensitivity declines over time so last incidence should be noted. This particular allergy is only relevant for hyaluronic acid fillers should hyaluronidase be needed.

Some practitioners offer 'patch testing' in patients with sensitivities or who are anxious about sensitivities which may be completely unrelated. There is no evidence supporting screening asymptomatic people for anaphylaxis (Block, B, Brett, P et al, last accessed, 2014).

Latex gloves should be avoided as patients with atopic diseases such as asthma, eczema, or allergic rhinitis are at high risk of anaphylaxis from food, latex and radio contrast, but not from injectable medications or stings (Lee, JK; Vadas, P ,July 2011).

Basic Life Support training, including the management of anaphylaxis, is mandatory and should be undertaken regularly to maintain and evidence competence.

## **Anaphylaxis Clinic Kit:**

An anaphylaxis kit must be present and should include:

- Two ampoules of adrenaline (epinephrine) 1:1000/1ml
- Four 23G x 25-30mm needles
- Four graduated 1 ml syringes
- A Laerdal or equivalent mask suitable for adults.  
(*Department of Health, 2006*)

According to the Resuscitation Council guidelines where skills and equipment are available, the following should also be included as part of the anaphylaxis clinic kit:

- Two ampoules of hydrocortisone 100mg/1ml
- One ampoule of chlorphenamine 10mg/ml

Lone workers MUST have immediate access to a telephone to call emergency services. Packs should be checked regularly to ensure the contents are within their expiry dates.

The Resuscitation Council does not recommend auto injectors for use in healthcare settings, for the following reasons;

‘Auto-injectors are relatively expensive with a limited shelf life compared with the cost of an ampoule of adrenaline and syringe and needle. Anaphylactic reactions are uncommon. Most auto-injectors purchased for the healthcare setting will not be used.

- Auto-injectors come with standard length needle which may not be long enough to give intramuscular adrenaline for some patients.
- Most healthcare staff likely to deal with an anaphylactic reaction in the healthcare setting should have the skills to draw up adrenaline and give an intramuscular injection of adrenaline.

Ultimately it is a local decision whether a healthcare setting opts to use auto-injectors instead of adrenaline ampoules. If there is no other form of adrenaline available it would be appropriate for a healthcare professional to use an adrenaline auto-injector for the treatment of an anaphylactic reaction.’

It is important next of kin contact details are recorded with patient contact details and medical history. In the unlikely event that your patient suffers a severe allergic reaction and must be sent to hospital, you will be able to inform their next of kin on their behalf with their consent.

## **Treatment:**

### As per Resuscitation Council Guidelines

Patients who have suffered anaphylaxis, even if their symptoms are improving, must go to hospital for observation and further treatment if necessary. A period of in-hospital observation for between 2 and 24 hours is recommended for people once they have returned to normal due to concerns of biphasic anaphylaxis.

Biphasic anaphylaxis is the recurrence of symptoms within 1–72 hours with no further exposure to the allergen. Reports of incidence vary with some studies claiming as many as 20% of cases. The recurrence typically occurs within 8 hours and is managed in the same manner as anaphylaxis (Lieberman P, September 2005).

## **Algorithm:**

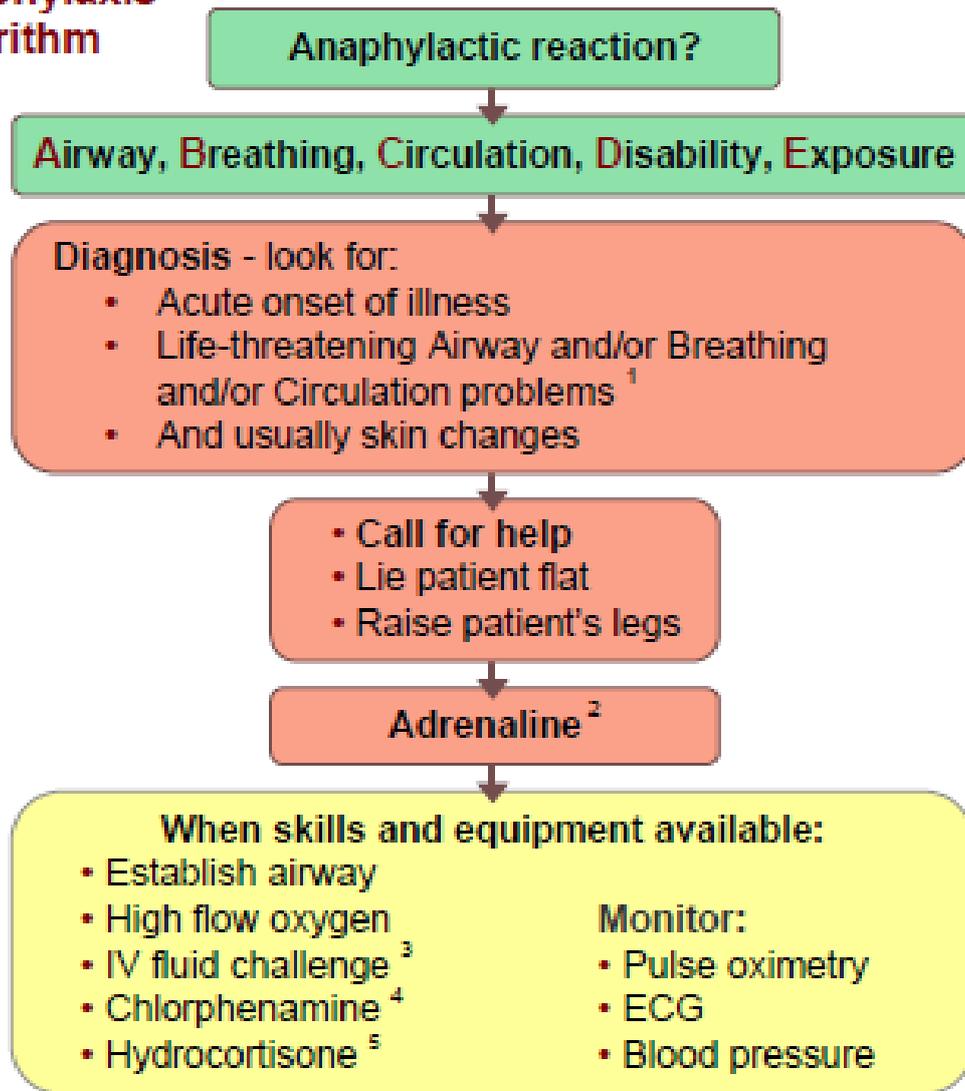
It is recommended practitioners download and print for display and easy referral the Resuscitation Council Algorithm; <https://www.resus.org.uk/pages/anaalgo.pdf> (Appendix 1).

## **Reporting:**

As a life threatening event requiring hospital treatment, anaphylaxis is a reportable event. If related to a prescription only medicine, it should be reported using the MHRA Yellow card scheme, if is to a dermal filler (a medical device) then report to the MHRA on the link below as well as reporting the reaction to the manufacturer:

<http://www.mhra.gov.uk/Safetyinformation/Reportingsafetyproblems/Devices/index.htm>

## Anaphylaxis algorithm



### 1 Life-threatening problems:

**Airway:** swelling, hoarseness, stridor  
**Breathing:** rapid breathing, wheeze, fatigue, cyanosis, SpO<sub>2</sub> < 92%, confusion  
**Circulation:** pale, clammy, low blood pressure, faintness, drowsy/coma

### 2 Adrenaline (give IM unless experienced with IV adrenaline)

IM doses of 1:1000 adrenaline (repeat after 5 min if no better)

- 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)

200 mg  
 100 mg  
 50 mg  
 25 mg

## References:

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# Anaphylaxis

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