



# Perioperative anaphylaxis management guideline

## 1. Purpose

The aim of this guideline is to optimise the management of perioperative anaphylaxis. It is presented in a format applicable to crisis management in the perioperative setting.

## 2. Scope

This guideline is intended to apply to anaphylaxis occurring during the perioperative period. It is not intended to apply to anaphylaxis outside the setting of dedicated monitoring and management by an anaesthetist. Alternative guidelines should be utilised outside this setting<sup>1</sup>.

## 3. Background

Anaphylaxis is a life-threatening emergency that requires prompt recognition of signs and symptoms, early administration of adrenaline (epinephrine) in adequate dosage, and aggressive volume replacement.

Due to the paucity of randomised controlled trials of sufficient quality on the management of anaphylaxis the recommendations in this guideline are consensus statements developed by the Australian and New Zealand Anaesthetic Allergy Group (ANZAAG) and the Australian and New Zealand College of Anaesthetists (ANZCA) after a review of the literature.

Management of anaphylaxis consists of prompt diagnosis, immediate treatment, refractory management, and post crisis management. To facilitate the management of each phase, cards have been developed (see Appendices 1 - 6) in a format that is generic and simple.

## 4. Use of the ANZAAG-ANZCA Anaphylaxis management cards

The cards have been designed for use during an anaphylaxis event with one team member assigned to reading the cards and ensuring all the items have been checked off.

The team for anaphylaxis management should have at least three members with specific roles: Team Leader, Card Reader and Adrenaline (epinephrine) preparation. It may be necessary to enlist the assistance of non-anaesthesia staff members.

It is recommended that all members of the anaesthesia team are familiar with the cards and their likely roles during an emergency.

For the immediate and refractory management phases, separate adult and paediatric cards are provided. The differential diagnosis and post crisis cards can be used for either adult or paediatric patients.

## 5. Anaphylaxis box

Institutions are recommended to consider the preparation of an Anaphylaxis Box to assist with the introduction of the Perioperative Anaphylaxis Management Guideline.

The box should include the laminated anaphylaxis management cards, local infusion and dilution protocols for adrenaline, noradrenaline, vasopressin and salbutamol, as well as collection tubes for tryptase.

The box may also contain patient form letters, patient information brochures and ANZAAG referral forms, which can be found on the ANZAAG website at [www.anzaag.com](http://www.anzaag.com).

## **6. Departmental anaphylaxis lead**

All anaesthesia departments should have a departmental lead for perioperative anaphylaxis acting as a point of contact to ensure that all cases are optimally managed, investigated and followed up. ANZCA, in collaboration with ANZAAG, is setting up a network of anaphylaxis leads in ANZCA accredited training hospitals.

### **6.1 Diagnosis of anaphylaxis**

- 6.1.1 Early recognition and prompt management of anaphylaxis is essential.
- 6.1.2 Anaphylaxis should be considered if skin signs co-exist with bronchospasm or hypotension.
- 6.1.3 Hypotension or tachycardia alone, especially where this is unresponsive to vasopressors or is unanticipated, should raise suspicion. Bradycardia may also be a presenting sign of anaphylaxis.
- 6.1.4 Bronchospasm or difficulty with ventilation may be a feature of anaphylaxis or the sole presenting feature in some cases.
- 6.1.5 The absence of skin signs does not rule out the diagnosis, as skin signs may not appear until circulation is restored.

### **6.2 Immediate management - See cards 1 (Adult) and 2 (Paediatric)**

- 6.2.1 Adrenaline (epinephrine) is pivotal in management and, in the recommended doses, causes vasoconstriction, bronchodilation, increased cardiac output, reduced mucosal oedema, and reduced mediator release.
- 6.2.2 The mainstay of the management of moderate to life-threatening anaphylaxis during anaesthesia is carefully titrated intravenous (IV) adrenaline with close monitoring of cardiovascular responses.
- 6.2.3 Because adrenaline has a narrow therapeutic window clinicians need to be aware of the potential for toxicity including accidental overdose, particularly during crisis management.
- 6.2.4 Intramuscular (IM) adrenaline into the lateral thigh should be considered in the initial management of perioperative anaphylaxis where IV access is not yet established or is lost, where haemodynamic monitoring is not in-situ at the start of the reaction, or while awaiting preparation of an adrenaline infusion.
- 6.2.5 After three boluses of adrenaline via either the IV or IM route an adrenaline infusion should be prepared and commenced as early as possible in the clinically appropriate dosage.
- 6.2.6 Adequate fluid resuscitation is a critical step in the management of hypotension. This requires aggressive management, and repeated fluid boluses of 20mL/kg may be required.
- 6.2.7 Large bore IV access should be secured as soon as possible.

- 6.2.8 Patients should be returned to the supine position as soon as possible where continued resuscitative efforts are required.
- 6.2.9 Ceasing the administration of triggers should be briefly reviewed at the time of diagnosis to ensure possible allergens such as colloid infusion are ceased.
- 6.2.10 Where airway oedema is apparent the consideration of early endotracheal intubation is appropriate.

### **6.3 Refractory management - See cards 3 (Adult) and 4 (Paediatric)**

- 6.3.1 Where the physiological variables do not stabilise with the immediate management therapy, further treatment options should be added.
- 6.3.2 The diagnosis of anaphylaxis should be reviewed to ensure alternative diagnoses with different treatment paths are considered and the most appropriate therapy is administered. Card 5 is the Differential Diagnosis Card. It lists alternate diagnoses, and relevant therapy.
- 6.3.3 Standard monitoring as recommended by ANZCA *PG18(A) Guideline on monitoring during anaesthesia* should be utilised throughout resuscitative efforts.
- 6.3.4 An arterial line is highly recommended where possible to aid cardiovascular monitoring, blood sampling and continuous monitoring of adrenaline effects.
- 6.3.5 Echocardiography (transthoracic (TTE) or transoesophageal (TOE)), where available, helps optimise therapy by providing information on ventricular function, ventricular filling and vasodilation.
- 6.3.6 In the setting of resistant hypotension alternative vasopressors have been used. They should only be used following adequate administration of adrenaline and IV fluids. The adrenaline should be continued when these agents are added.
- 6.3.7 High airway pressure is less likely to be the predominant feature of anaphylaxis. Alternative treatments for resistant bronchospasm may be used where clinically appropriate. Alternative causes of high airway pressure such as oesophageal intubation, airway device or circuit malfunction and tension pneumothorax should be sought and eliminated as the cause.
- 6.3.8 Management of perioperative anaphylaxis in the pregnant patient includes manual left uterine displacement to minimise aortocaval compression. It may also require a perimortem caesarean delivery in order to facilitate resuscitation of the mother.

### **6.4 Post crisis management – See card 6**

- 6.4.1 Steroids have been of benefit in the management of other allergic diseases and they are recommended as part of secondary management. They may be useful in cases where there is a protracted reaction.
- 6.4.2 Oral antihistamines are useful for the symptomatic treatment of urticaria, angioedema and pruritus.
- 6.4.3 The decision to proceed or abandon surgery will be determined by the urgency of the surgery, the grade of anaphylaxis, the response to treatment and the patient's underlying comorbidities.

- 6.4.4 An acute elevation of serum tryptase level is supportive of the diagnosis of perioperative anaphylaxis.
- 6.4.5 Serum tryptase levels are recommended to be collected as soon as possible after the onset of symptoms and then at 1 hour, 4 hours and after 24 hours.
- 6.4.6 Most patients who have had a moderate to life-threatening reaction will require admission to an intensive care unit/high dependency unit for around 24 hours. Where the reaction has been either minor or moderate and settled quickly with treatment, a minimum of six hours close monitoring is recommended.
- 6.4.7 Prior to discharge from hospital patients who have had a suspected anaphylaxis require a letter that contains a description of the reaction and the agents administered prior to the reaction.
- 6.4.8 Referral to an anaesthetic allergy testing centre is required to investigate the reaction. The anaesthetic allergy testing centres in Australia and New Zealand are listed on the ANZAAG website – [www.anzaag.com](http://www.anzaag.com)

### **Appendices (see separate cards)**

- Appendix 1** Adult Immediate Management Card
- Appendix 2** Paediatric Immediate Management Card
- Appendix 3** Adult Refractory Management Card
- Appendix 4** Paediatric Refractory Management Card
- Appendix 5** Differential Diagnosis Card
- Appendix 6** Post Crisis Management Card

### **Related ANZCA documents**

Perioperative anaphylaxis management guideline - Background paper

PG18(A) Guideline on monitoring during anaesthesia

### **References**

1. Australasian Society of Clinical Immunology and Allergy (ASCIA). ASCIA Guidelines: Acute Management Anaphylaxis. 2021. Available from: [https://www.allergy.org.au/images/ASCIA\\_HP\\_Guidelines\\_Acute\\_Management\\_Anaphylaxis\\_2021.pdf](https://www.allergy.org.au/images/ASCIA_HP_Guidelines_Acute_Management_Anaphylaxis_2021.pdf) Accessed 24 January 2022.

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