Safer Care Victoria

November 2022

Anaphylaxis clinical care standard

Improving how we manage adults with anaphylaxis in Victoria

OFFICIAL

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Introduction

Since 1 November 2018, Victorian public and private hospitals have been required to notify the Department of Health of anaphylaxis presentations. Between 2017-2018 to 2021-2022, there were 13,948 emergency presentations coded for anaphylaxis. Over this four year period the incidence of adult anaphylaxis presentations to Victorian public hospitals has incrementally increased by 7%.

Definition

There is no universally accepted definition of anaphylaxis. In this standard, we define anaphylaxis as a severe, potentially life-threatening systemic hypersensitivity reaction.

Symptoms

Anaphylaxis is characterised by:

- rapid onset of a life-threatening airway, breathing or circulatory problems
- (usually, but not always) skin and mucosal changes. [6]

Note: Vomiting and abdominal pain are symptoms of anaphylaxis to insect venom and systemically administered allergens.

Clinical case reviews of anaphylaxis have revealed a large variance in the way anaphylaxis is managed during and after the acute event, and inpatient discharge planning and follow up.

The aim of this standard is to bring some consistency to how adult patients (16 years of age and over) with anaphylaxis are managed, treated, and cared for in Victorian hospitals. Part of this is raising awareness of the possibility of anaphylaxis when people present with specific symptoms.

This standard is based on evidence-based information and clinical experiences. It was developed with a panel of experts (**Appendix 1**) including clinicians who actively manage anaphylaxis, as well as peak bodies and consumers.

How to use this standard

This standard applies to managing anaphylaxis in adults presenting to the emergency department or experiencing anaphylaxis as an inpatient or outpatient in the health service. For managing anaphylaxis in children, please see the Royal Children's Hospital guideline.

There are three parts to this standard:

1. Recognition
2. Response
3. Review.

This standard is to be used in conjunction with online education and in-situ simulation of anaphylaxis scenarios.

We have also developed management cards (**Appendix 2 and 3**) to be placed on resuscitation trolleys to be used during resuscitation, and in treatment areas. These are intended to be used to manage anaphylaxis after reading this standard and undertaking in-situ training.

Epidemiology

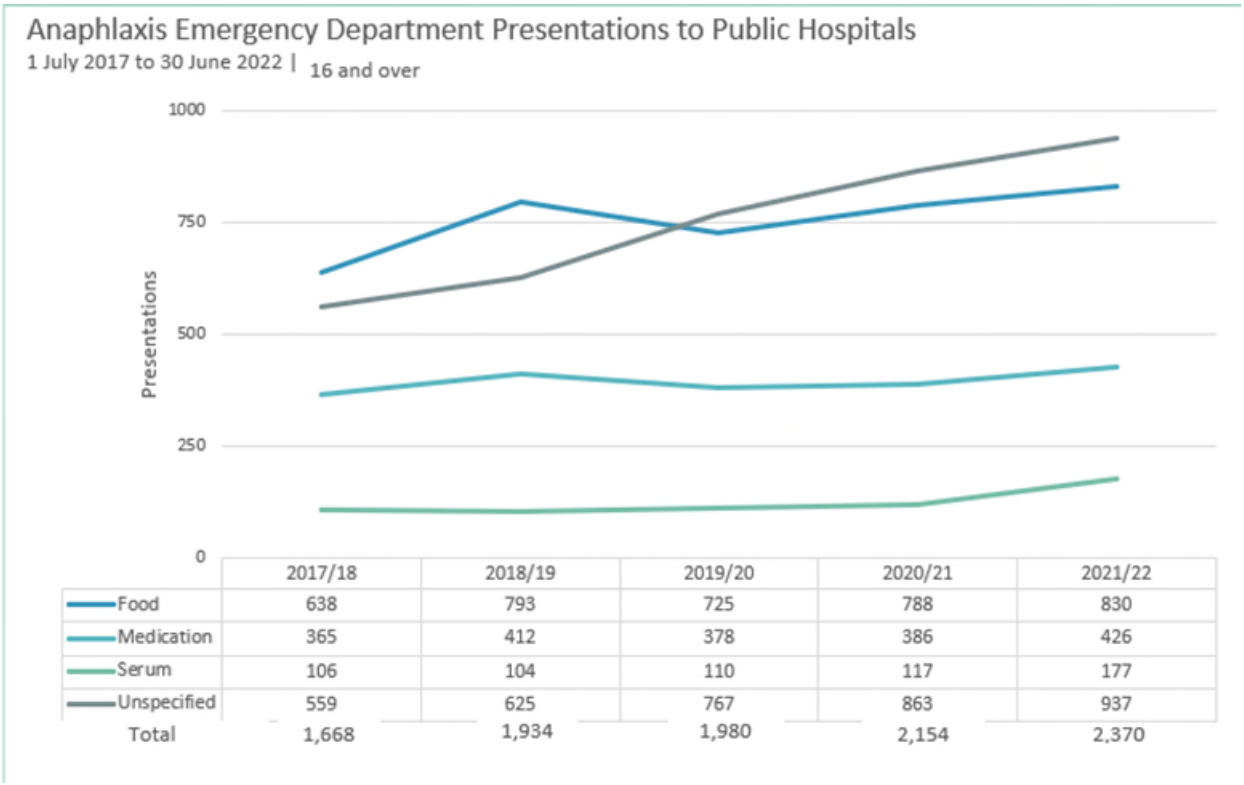
Safer Care Victoria accessed the Victorian Emergency Minimum Dataset (VEMD) for all public emergency department presentations pertaining to anaphylaxis for the financial years 2017-2018 to 2021–2022. This was analysed for trends in volume, age, geographic location, and inciting agent.

The rising incidence of anaphylaxis in developed countries has attracted much attention in recent years. [2] With increasing incidences comes a need for improved management and a demand for specialty medical services. [3] Lifetime prevalence of anaphylaxis, based on international studies, has been estimated between 0.05–2 per cent. [4]

2017–18 to 2021–22

- There were 13,948 coded emergency presentations for anaphylaxis. Of these, 10,106 (72%) were adults.
- In 4 years, Victoria experienced a 7 per cent increase in coded adult anaphylaxis presentations to emergency departments, from 838 in 2017-2018 to 1054 in 2021–22.
- Food and unspecified were the most common inciting agent (37%) followed by medication (19%) and serum (6%).
- Outer Melbourne suburbs had the highest emergency department presentations

Figure 1: Number of coded adult anaphylaxis presentations to public hospital emergency departments



	2017/18	2018/19	2019/20	2020/21	2021/22
Food	638	793	725	788	830
Medication	365	412	378	386	426
Serum	106	104	110	117	177
Unspecified	559	625	767	863	937
Total	1,668	1,934	1,980	2,154	2,370

1. Recognition

Causes and triggers

There are patterns in the presentations of anaphylaxis that point to specific triggers being more significant at certain ages. For example, foods are the more common trigger for children, teenagers, and young adults. Bronchospasm is a common symptom and there is usually a background of atopy and asthma. [3] Moving into middle age and the elderly, the trigger is more likely to be stings from insects and medication. [4] Venom and medication related anaphylaxis are more common in older adults. [3]

Table 1: Triggers of anaphylaxis (2) (5)

Common triggers	Less common triggers
Insect stings • Bees • Wasps • Jack jumper ants **Food** • Peanuts/tree nuts • Egg • Fish/shellfish • Cow's milk (dairy) products • Soy • Sesame seeds • Wheat **Medications** • Antibiotics • Anaesthetic drugs • Contrast media	**Physical** • Exercise • Cold **Biological** • Transfusions • Antivenoms • Monoclonal therapies • Immunoglobulin • Semen • Latex • Tick bites • Hormonal changes • Idiopathic **Other foods** • Food additives • Other milks **Topical medications** • Chlorhexidine

Risk factors

There are individual risk factors that can alter the likelihood and severity of anaphylaxis presentations.

Table 2: Patient risk factors and elements that augment anaphylaxis (4] (6]

Patient specific	Pre-existing conditions	Medications	Lifestyle
Age-related Infection Hormonal/menstrual cycle Stress	Respiratory disease • Asthma • Chronic respiratory disease Cardiovascular disease Mastocytosis Increased basal tryptase Severe atopic disease	Non-steroidal anti-inflammatories (NSAIDs) Angiotensin-converting enzymes (ACE) Inhibitors Beta blockers	Physical exertion/exercise Quantity of allergen Composition of diet

Differential diagnosis

Common differential diagnoses involve acute asthma, syncope, and anxiety or panic attacks.

Severe asthma has the potential to cause confusion with anaphylaxis by the presence of wheezing, coughing and shortness of breath. It is unlikely that asthma will have associated urticaria, angioedema or abdominal pain.

Table 3: Conditions to consider for differential diagnosis (2] (5-8]

Tissue	Respiratory	Cardiovascular	Other
Idiopathic urticaria Angioedema with no other features ACE inhibitor induced angioedema Flushing syndromes	Asthma Laryngospasm Vocal cord dysfunction Breath holding	Pulmonary embolism Myocardial infarction Cardiac arrhythmia Cardiogenic shock	Septic shock Epileptic seizure Stroke Panic attack

2. Response

Management

- A patient with anaphylaxis or suspected anaphylaxis is administered adrenaline (epinephrine) intramuscularly without delay before any other treatment including asthma medicines.
- Treat the patient according to their physiological response, depending on the body systems involved.
- Patients with known allergies should always have access to their adrenaline injector to facilitate timely administration (Appendix 4).

This section describes the doses and effect of adrenaline. The accompanying management cards (Appendix 2 and 3) provide a systematic format for managing anaphylaxis irrespective of the clinical location.

Adrenaline (Epinephrine) [2] [4] [9]

- Adrenaline is the most important drug in the treatment of anaphylaxis.
- Given intramuscularly into middle third of lateral thigh where possible. The dose must be administered into a muscle.
- To be given to all patients with life threatening features of anaphylaxis without delay and repeated at five-minute intervals if not improving.

Caution: IV boluses of adrenaline are not recommended as this route of administration is associated with an increased risk of cardiac arrhythmias, myocardial ischemia, and dosing errors, in particular, inadvertent overdosing. [10] Exceptions can be made in the case of critical care specialists.

Table 4: Mechanisms of action of adrenaline

Receptor site	Clinical effect
Alpha 1 adrenergic receptor	Increases blood pressure Prevents or relieves hypotension and shock
Beta 1 adrenergic receptor	Increases cardiac output
Beta 2 adrenergic receptor Decreases urticaria and angioedema	Decreases urticaria and angioedema Decreases upper airway obstruction Decreases wheeze

Table 5: Adrenaline dose for IM and IV administration

Adrenaline IM dose for adults	Adrenaline IV infusion for adults
0.5 mg intramuscular adrenaline (0.5 mg = 0.5 mL of 1 mg/mL)*	6 mg adrenaline in 100 mL (60 mcg/mL) of 0.9% sodium chloride
OR	Commence at 10 mL/hour = 10 mcg/minute
Adrenaline autoinjector (EpiPen® 0.3 mg or Anapen® 300mcg or 500mcg)	

*** Note**: For individuals less than 50 kg the IM dose of adrenaline should be 10 microgram/kg refer to the Royal Children's Hospital guideline.

Management cards

We recommend the use of the Immediate and Ongoing management cards during the anaphylaxis event. The use of cognitive aids, like these management cards, has been shown to improve coordination of team activities during a clinical crisis. [8]

These cards should be used in training scenarios as they would be used in a real anaphylaxis event. This increases familiarisation of staff with the cognitive aid. [11] When managing an anaphylaxis event, assign a reader to the card who will speak up and alert the team to the prompts outlined on the card.

Anaphylaxis immediate management

Refer to **Appendix 2** for the Anaphylaxis Immediate Management card. A printable version can be accessed at http://www.bettersafercare.vic.gov.au/.

Immediate actions (2] (7] (9]

Immediate management of anaphylaxis requires rapid ABC: airway, breathing and circulation assessment.

Administer intramuscular adrenaline (epinephrine) if anaphylaxis is suspected as there are no contraindications to the administration of adrenaline. [12]

- Look for any signs of:
  - acute onset of illness
  - life-threatening airway, breathing or circulatory problems.
- If in cardiac arrest, commence immediate CPR and refer to ALS (Adult) algorithm.
- Call for help relevant to your setting – emergency response team or triple zero (000).
- Stop trigger – such as an infusion of antibiotics.
- Lay patient flat. Do not allow them to stand or walk. Where there are breathing difficulties, allow sitting sufficient to reduce respiratory distress (see **Appendix 2: Immediate management**).
- Administer intramuscular adrenaline dose without delay using either an adrenaline ampoule – 0.5 mg (0.5 mL of 1 mg/mL for individuals over 50 kgs) or adrenaline autoinjector – without delay. Adrenaline must be delivered

intramuscularly using a needle of appropriate length. For individuals, less than 50 kg the intramuscular adrenaline dose should be 10 microgram/kg see Royal Children's Hospital guideline.

- Repeat the initial does of IM adrenaline (0.5mg) IM every five-minutes if not improving.
- Start high flow oxygen.
- Insert large bore IV cannula.
- Reassess ABC, monitor and consider additional therapies:
  - Monitor:
    - pulse oximetry/heart rate
    - blood pressure
    - assess respiratory rate
    - continuous ECG monitoring where possible.

A: **Upper airway swelling or stridor** – Call for airway assistance

B: **Bronchospasm, wheeze** – Add nebulised salbutamol 5 mg

C: **Hypotension** – Add 1 litre of 0.9% sodium chloride IV bolus

- Reassess.
- Where there is no improvement or a non-sustained improvement after two doses of IM adrenaline, continue with IM adrenaline every five minutes but where able, consider commencing an adrenaline infusion. This can be run initially through a peripheral IV line. Continuous ECG monitoring is recommended.
- It is recommended that critical care trained staff prepare the adrenaline infusion:
  - adrenaline infusion 6 mg adrenaline in 100 mL (60 mcg/mL) of 0.9% sodium chloride (dedicated line)
  - commence at 10 mL/hr = 10 mcg/min and titrate according to response.

Ongoing anaphylaxis management [9]

Refer to **Appendix 3** for the Ongoing Anaphylaxis Management card. A printable version can be accessed at www.bettersafercare.vic.gov.au.

- Request further assistance such as anaesthetist, intensivist, emergency physician or paramedic.
- Continue adrenaline infusion and titrate according to response.
- Cardiac or respiratory arrest:
  - commence CPR
  - refer to ALS cardiac arrest algorithm.

A: Persisting airway swelling

- Call for airway management assistance urgently.
- Nebulised adrenaline 5 mg = 5 mL (5 ampoules of 1 mg/mL).

- Bag and mask ventilation with 100 per cent oxygen where conscious state is deteriorating.
- Secure airway: requires appropriately skilled staff.

B: Resistant bronchospasm or wheeze

- Nebulise salbutamol 5 mg and nebulise ipratropium 0.5 mg.
- Hydrocortisone 100 to 250 mg IV (5 mg/kg up to 250 mg).
- Magnesium sulphate 10 mmol slow IV push.
- Consider securing airway: requires appropriately skilled staff.

C: Resistant hypotension

- Continue adrenaline infusion and titrate according to response.
- Additional fluid bolus 1 litre of 0.9% sodium chloride.
- Glucagon 1-2 mg IV, may be repeated at five minutes (especially for patients on beta blockers or who have heart failure)
- Add second vasopressor – for example:
  - noradrenaline infusion commenced at 10 mcg/min
- Consider central venous catheter (CVC).

Consider other diagnosis

- Hypovolaemia
- Asthma
- Tension pneumothorax
- Myocardial infarction
- Pulmonary embolism
- Cardiac tamponade
- Pregnancy:
  - manual left uterine displacement
  - consider urgent delivery to save the mother.

3. Review

Post event

Monitoring

Post anaphylaxis management should be determined according to the severity of the anaphylaxis and the trigger, where identified.

The minimal time for observing patients is 4 hours after the last dose of adrenaline. This allows you to detect any deterioration or a biphasic reaction. Biphasic reactions are estimated to occur after 3 to 20 per cent of anaphylactic reactions. [9] [13]

Monitoring should include heart rate, blood pressure, respiratory rate, and oxygen saturation. Vital signs should be recorded every 15 minutes for 2 hours, then 30 minutely for 2 hours. A senior clinician should review the patient prior to discharge, who will consider if further treatment is required or the need for a longer observation period.

Create an **allergy alert** in the patient's medical history.

Consider prescribing a two-day course of oral steroids (prednisolone 1 mg/kg, maximum of 50 mg daily) to reduce the risk of recurrence of symptoms following a severe reaction or a reaction that has marked or persistent wheeze. [9]

Consider prescribing an oral antihistamine such as cetirizine 10 mg or fexofenadine 180 mg, especially for a persisting rash.

Patients require overnight observation if they:

- have had a severe or protracted anaphylaxis requiring repeated doses of adrenaline or IV fluid resuscitation or
- have a history of asthma or severe/protracted anaphylaxis or
- have other concomitant illness, such as asthma, chest infection or arrhythmia or
- live alone or are remote from medical care or
- present for medical care late in the evening.

Tests

Mast cell tryptase

Anaphylaxis be confirmed by a blood test to measure mast cell tryptase. Tryptase is a major protein component of mast cell secretory granules. Anaphylaxis leads to mast cell degranulation which results in a rise in tryptase levels in the blood.

Levels increase approximately 30 minutes or more post the onset of symptoms of anaphylaxis and peak at 1 to 2 hours from onset. The half-life of tryptase is 2 hours and levels are normal 6 to 8 hours post event. Consider taking

serial measurements of mast cell tryptase (MCT) concentrations during an anaphylaxis episode. MCT results can be useful for identifying the trigger when reviewed after the event, usually by an immunology specialist

Timing of samples

- Sample 1: as soon after resuscitation as possible.
- Sample 2: 1 to 2 hours post symptoms.
- Sample 3: 24 hours post event or with follow up in allergy clinic to give baseline tryptase.

A recent Australian study from emergency departments, showed an optimal sensitivity of 72 per cent and specificity of 72 per cent when a cut-off of 11.2 ng/mL was used and a delta-tryptase (change in level from baseline) of >2 ng/mL. This suggests the sensitivity and specificity of serum mast cell tryptase are relatively poor, and patients should be referred to an allergy specialist for follow up regardless of the level. [14]

Discharge and follow up

When to prescribe an adrenaline autoinjector

Prescribe an adrenaline autoinjector if the patient is at risk of future exposure to the allergen(s) that triggered their anaphylaxis (such as stings or foods) or if the trigger was unknown.

Prescribing an adrenaline autoinjector requires education and training as to when and how to use the device and correct storage. Provide an ASCIA action plan for anaphylaxis for all patients who are prescribed an adrenaline autoinjector. ASCIA action plans and education can be sourced at www.allergy.org.au/anaphylaxis and https://allergyfacts.org.au/resources/videos-from-a-aa.

Advise patients to keep their adrenaline autoinjector with them always, including when in hospital, see **Appendix 4**.

Patient education

Make sure your patient understands:

- how to recognise early symptoms of anaphylaxis, to call for help immediately and administer their adrenaline autoinjector. Show your patient how to use their adrenaline autoinjector using a training device
- the importance of carrying their adrenaline autoinjector with them always. People close to them should also be trained to use the device
- they should seek urgent medical assistance any time they use their adrenaline autoinjector.
- if they are at high risk of anaphylaxis, they should wear a notification alert such as a bracelet that provides information about their anaphylaxis.

Information for patients, family and carers is available at www.allergy.org.au and www.allergyfacts.org.au. Referral to a specialist and follow up with a general practitioner within 5 days after the anaphylaxis event.

All patients who have experienced anaphylaxis require a specialist review. Where possible this appointment should be made prior to discharge. The patient should also see their local general practitioner within 5 days after the anaphylaxis event.

Education for clinical staff

Follow up with the allergy specialist will:

- identify or confirm the cause
- educate the patient in relation to prevention and management strategies
- provide an ASCIA action plan for anaphylaxis if one has not been provided on discharge
- initiate allergen immunotherapy where applicable. [9]

Referral and discharge summary should include documentation of the episode of anaphylaxis with identification of the trigger, where known. A detailed description of the treatment should be provided to the patient as well as a prescription for an adrenaline autoinjector and an ASCIA action plan for anaphylaxis.

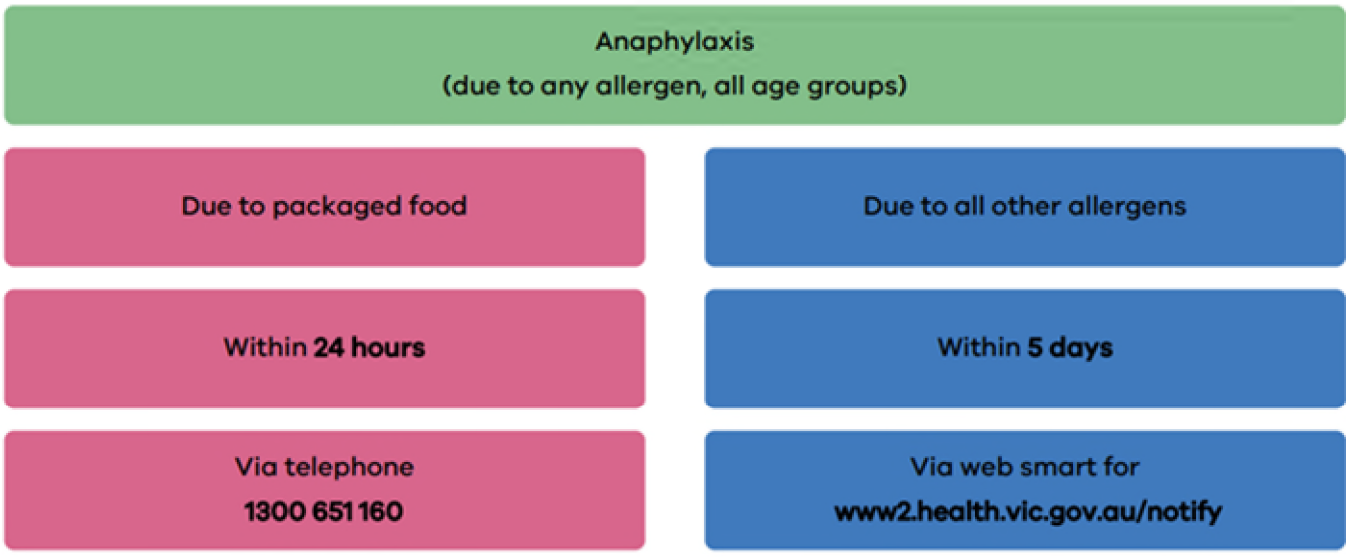
Reporting of reaction to the Department of Health and Human Services

Since 1 November 2018, Victorian public and private hospitals are required by law to notify the Department of Health and Human Services of anaphylaxis presentations.

Where the trigger for the anaphylaxis is packaged food, the episode must be reported immediately by calling 1300 651 160 (24/7).

Where the cause of anaphylaxis is not packaged food, the episode should be reported online within 5 days of diagnosis via the link www2.health.vic.gov.au/public-health/anaphylaxis-notifications.

Figure 2: Anaphylaxis notification process



Health services are accredited against the National Safety and Quality Health Service Standards (NSQHS) (second edition). The intention of Standard 8, Recognising and Responding to Acute Deterioration, is to ensure that a person's acute deterioration is recognised promptly, and appropriate action is taken.

It is important that a local risk assessment is undertaken to identify the clinical staff for whom anaphylaxis education is relevant. Based on this assessment, the different elements of training and the frequency of the training should be determined. This training, according to the risk assessment can include:

1. Theoretical training via the ASCIA website: www.allergy.org.au/hp/hp-e-training
2. In-situ simulated scenario training using the management cards provided in this clinical standard
3. Practice with an autoinjector training device (these can be purchased from a range of sources and are commonly accessed at allergyfacts.org.au/shop/training-accessories)

There are several elements of this standard that can be applied, and provide evidence to improving the recognition and response to anaphylaxis. They include:

- having a protocol for the management of anaphylaxis
- ensuring clinical staff have the skills and competency to evaluate and respond to acute physiological deterioration of anaphylaxis
- evidence of clinician competency assessment
- training documents about emergency interventions in the event of acute deterioration, including specialist training for responders, such as members of medical emergency teams
- records indicating that clinicians have met the ongoing professional development requirement of a specialist college in relation to responding to acute deterioration
- education is targeted to all clinical staff, particularly staff who work in high risk areas.

Rural and regional settings

In rural and regional settings, it is possible that there will not always be a doctor on site. Where patients present with known allergies and their own adrenaline autoinjector, the nursing staff should administer the patient's adrenaline autoinjector then call for help (doctor or Ambulance Victoria, according to local protocol). Refer to www.bettersafercare.vic.gov.au for the Use of patients own adrenaline autoinjector in hospital change package for health services.

Training for clinical staff should follow the same process described on the previous page. The ASCIA online training for clinical staff considers rural and remote settings and the absence of medical staff, www.allergy.org.au/hp/hp-e-training.

In Victoria, **Remote and Isolated Practice Endorsed Registered Nurse** (RIPERN) are authorised to practice according to the protocols set out in The Primary Clinical Care Manual located at publications.qld.gov.au/dataset/primary-clinical-care-manual-9th-edition. Whilst this manual does not replace clinical judgement, the information is provided on the basis that readers will be responsible for making their own assessment. Page 67 of this manual outlines the role of the RIPERN in the management of anaphylaxis.

This endorsement allows RIPERN to administer and supply a range of approved medicines, of which adrenaline is included, where there is no or limited access to general practitioners, nurse practitioners, paramedics, or pharmacists.

Appendix 1 Working party membership

Member	Organisation/memberships
Jo Douglass (Chair) MD FRACP FThorSco	Head, Department of Immunology and Allergy Divisional Director, Neurosciences, Cancer and Infection Medicine Honorary Clinical Professor, The University of Melbourne
David Armstrong MD, FRACP	Head of Respiratory Medicine, Monash Children's Hospital Honorary Associate Professor, Department of Paediatrics, Monash University
Jenny Burke RN, Dip Applied Science (Nursing) Crit. Care Cert. Branch) B. Nursing (Hons)	Deteriorating Patient and Resuscitation Co-ordinator, Melbourne Health Associate of the Australian Resuscitation Council (ARC) (Victorian Branch) Member, Victorian Deteriorating Patient Expert Group (ARC, Victorian
Alan Eade ASM. FPA	Chief Paramedic Officer, Safer Care Victoria Adjunct Associate Professor, Monash University Intensive Care Paramedic
Gerard Fennessy FCICM, RFNZCUC, BHB, MBChB PG Dip Community Emergency Medicine	Specialist Intensive Care Physician, Western Health (Sunshine and Footscray) Specialist Intensive Care Physician, CritCare West, Western Private Hospital Inaugural ANZIC Ramesh Nagappan ICU Education Award (20014) ANZICS SQAO Intensive Care Network Victoria (2012-2016)
Helen Kolawole MBBS, MClinEd, FANZCA	Specialist Anaesthetist, Peninsula Health Chair Anaphylaxis Management Group of ANZAAG, Australian and New Zealand Anaesthetic Allergy Group Allergy Subcommittee ANZCA, Australian and New Zealand College of Anaesthetists Supervisor of Training ANZCA
Stuart Marshall MB. ChB. M. Human Factors MRCA, FRANZCA, PhD	Specialist Anaesthetist, Peninsula Health Lead Human Factors Clinician, Australian Centre for Health Innovation, Alfred Health Senior Research Fellow and NHMRC ECR Practitioner Fellow, Anaesthesia and Perioperative Medicine Curriculum Assessment Lead, Patient Safety, MBBS program, Central Clinical School, Monash University
Shannon Storey RN, Crit. Care Cert MPH, B. Com	Senior Project Officer, Safer Care Victoria

Member	Organisation/memberships
Ian Summers MBBS (Hons), GCHPE Adv. Dip. Bus. Mgt DRANZCOG, FACEM	Emergency Physician and Simulation Educator, St Vincent's Honorary Senior Lecturer, University of Melbourne
Mike Sutherland MBBS, FRACP, PhD	Respiratory Physician and Allergist, Alfred Health (VMO) and the Epworth (VMO) Honorary Senior Lecturer, University of Melbourne Honorary Senior Lecturer, Monash University
Sally Voukelatos B. Science (Nutrition) Grad. Dip Dietetics	Consumer Health Educator, Allergy and Anaphylaxis Australia (A&AA) ASCIA (Associate member), A&AA member

Appendix 2 Immediate management

Anaphylaxis Immediate Management

Adult (16 years and over)

Safer Care Victoria

Clinical features	Severe allergic reaction leading to acute onset: • Stridor, Throat or Tongue swelling OR • 'Asthma', wheeze OR • Low Blood Pressure, Collapse • +/- Rash, Abdominal pain, Vomiting

If in **CARDIAC ARREST**
Immediate CPR and Refer to ALS (Adult) Algorithm

GET HELP	Call Emergency Response or Triple Zero (000)
STOP TRIGGER	Cease Infusion
POSITION	• Lay patient flat OR • Sit if difficulty breathing

Give **IM ADRENALINE** (Epinephrine) (1 mg/mL)
0.5 mg = 0.5 mL IM
REPEAT every 5 minutes if not improving

All cases: High-flow **OXYGEN** Large bore **IV ACCESS**

Assess **ABC,** Monitor and consider other therapies:

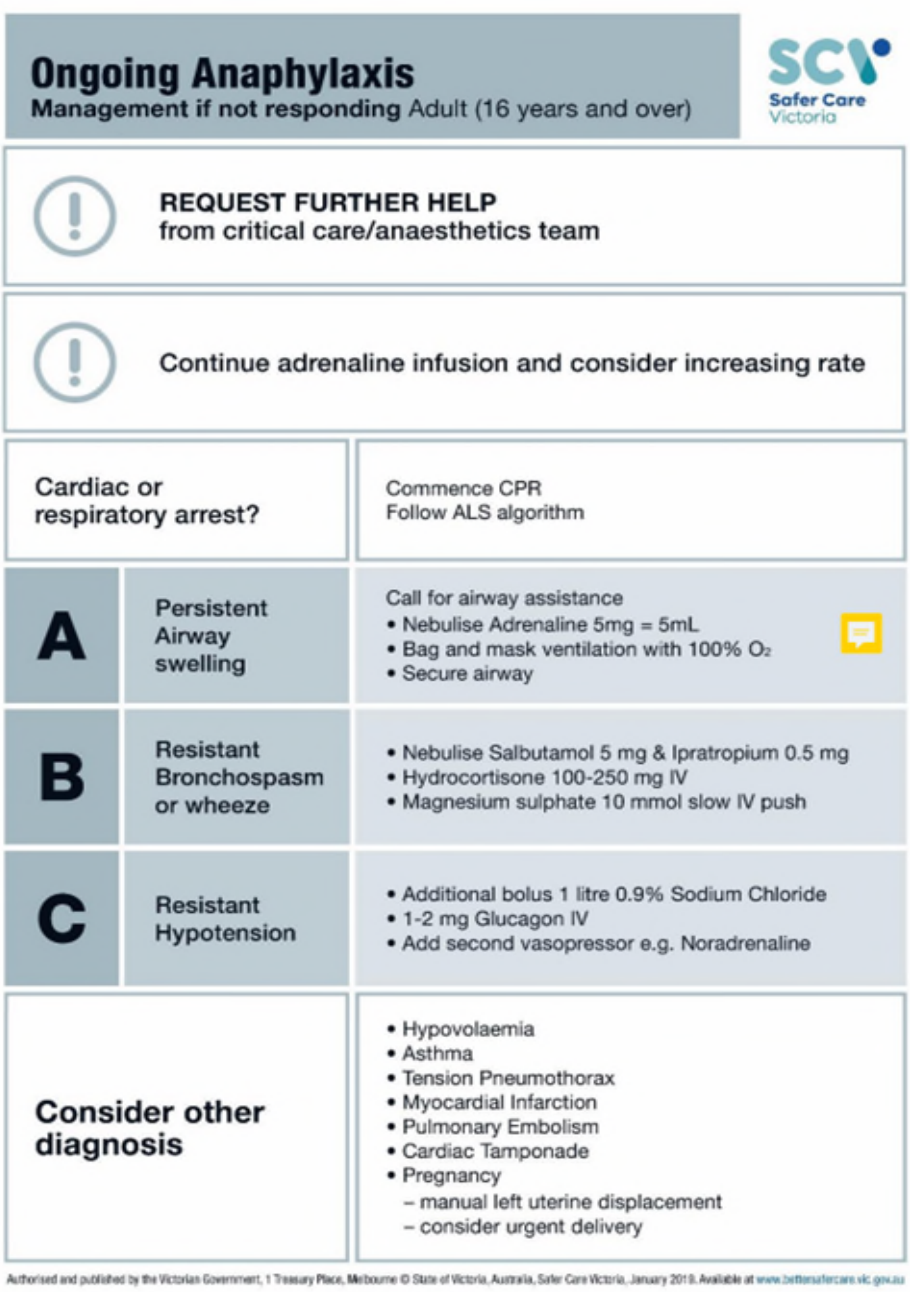
A	**AIRWAY** **swelling or stridor**	• Call for Airway Assistance • Repeat IM Adrenaline every 5 min prn
B	**BRONCHOSPASM** **wheeze**	• Repeat IM Adrenaline every 5 min prn • Nebulise Salbutamol 5 mg
C	**HYPOTENSION**	• 1 litre 0.9% Sodium Chloride IV bolus • Repeat IM Adrenaline every 5 min prn

REASSESS
No improvement after 2 doses IM adrenaline continue IM dosing,
but where able use IV **Adrenaline Infusion**

Critical Care trained staff – Prepare Adrenaline Infusion
6 mg adrenaline in 100 mL 0.9% Sodium Chloride
Commence 10 mL/hr = 10 mcg/min

If not improving see 'Ongoing Anaphylaxis' overleaf

Appendix 3 Ongoing management



Ongoing Anaphylaxis
Management if not responding Adult (16 years and over)

Safer Care Victoria

REQUEST FURTHER HELP
from critical care/anaesthetics team

Continue adrenaline infusion and consider increasing rate

Cardiac or respiratory arrest?	Commence CPR Follow ALS algorithm
A Persistent Airway swelling	Call for airway assistance • Nebulise Adrenaline 5mg = 5mL • Bag and mask ventilation with 100% O_2 • Secure airway
B Resistant Bronchospasm or wheeze	• Nebulise Salbutamol 5 mg & Ipratropium 0.5 mg • Hydrocortisone 100-250 mg IV • Magnesium sulphate 10 mmol slow IV push
C Resistant Hypotension	• Additional bolus 1 litre 0.9% Sodium Chloride • 1-2 mg Glucagon IV • Add second vasopressor e.g. Noradrenaline
Consider other diagnosis	• Hypovolaemia • Asthma • Tension Pneumothorax • Myocardial Infarction • Pulmonary Embolism • Cardiac Tamponade • Pregnancy – manual left uterine displacement – consider urgent delivery

A printable version can be accessed at www.bettersafercare.vic.gov.au

Appendix 4 Use of a patient's own adrenaline autoinjector in hospital

The Safer Care Victoria Use of a patient's own adrenaline autoinjector in hospital change package, helps health services to develop a local policy for the management of a patient's own adrenaline autoinjector when they are in hospital. This can be accessed at www.bettersafercare.vic.gov.au.

What has changed?

Patients in Victorian health services are permitted, and encouraged, to keep their adrenaline autoinjectors with them when in hospital. Treatment can be administered immediately by the patient, their family or carer or clinician. There is no legislation or regulations preventing this occurring. It is the responsibility of the individual health services to ensure safe management of patients own medication with consideration to the best interest of the patient and the safety of other patients in their care.

Why is change necessary?

Early administration of adrenaline during anaphylaxis is associated with improved outcomes. [4] There have been several sentinel events and several allergy and anaphylaxis clinical incidents in Victorian health services in recent years. For adrenaline to be given as soon as possible after the onset of symptoms of anaphylaxis, it is important for the patient (carer, family member or clinician) to be able to immediately administer the patient's own adrenaline autoinjector.

What does the health service need to do?

Using the SCV change package, the health service should develop a local policy to ensure patients can keep their adrenaline autoinjector with them and treatment can be given immediately by the patient, their family or carer or clinician as needed.

This policy should include:

- assessment of the patient's capacity to safely use their adrenaline autoinjector. This assessment should take into consideration the age of the patient as well as their physical and cognitive capacity to safely use the device. (see What do staff need to do?)
- assessment of the patient area to ensure a safe place for the adrenaline autoinjector to be stored that allows ease of access for the patient (carer, family, clinical staff) whilst maximising the safety of others
- the ASCIA action plan for anaphylaxis should be stored with the adrenaline autoinjector
- ensure all relevant staff are notified about and receive training (where required) of the change in practice.

What do staff need to do?

- Identify patients that have been prescribed an adrenaline autoinjector and have ASCIA action plan for anaphylaxis.
- Undertake an assessment of the patient's capacity to manage their anaphylaxis by asking the following questions:
  - Are they aware of signs and symptoms of anaphylaxis?
  - Do they have a copy of their ASCIA action plan for anaphylaxis with them in hospital?
  - Have they been prescribed an adrenaline autoinjector or have purchased one over the counter from the pharmacist?
  - Are they confident in using the adrenaline autoinjector and do they know what to do after using it?
  - Do they have an adrenaline autoinjector with them in the health service? (If not, encourage the patient to ask a friend or family member to bring it in for them.)
  - Is the adrenaline autoinjector within its expiry date? Has it been stored at or below 25°C and is the window clear? (If not organise a replacement.)
- Label the autoinjector with the patient's health service label.
- Ensure the patient (family/carer) knows to notify a staff member immediately after using their adrenaline autoinjector.
- Discuss with the patient (family, carer) the most appropriate place to store the adrenaline autoinjector.
- If the patient administers their own adrenaline autoinjector it will be counted as their first dose of adrenaline and needs to be recorded on the health service medication chart.

Glossary of terms and abbreviations

Term	Definition
Anaphylaxis	Use the decided definition
Adrenaline (epinephrine)	A drug with alpha and beta agonist actions that cause peripheral vasoconstriction, reversing hypotension and mucosal oedema, increased rate, and force of cardiac contractions, improves hypotension and reversal of bronchoconstriction and reduces release of inflammatory mediators
Adrenaline autoinjector	Device containing a metered dose of adrenaline (epinephrine) that is administered intramuscularly and can be done so by a non-clinical person
Biphasic	Biphasic anaphylaxis is a recurrence of anaphylaxis after appropriate treatment and happens with no additional exposure to the allergen
ALS	Advanced life support
ARV	Adult Retrieval Victoria
CPR	Cardiopulmonary resuscitation
CVC	Central Venous Catheter
Hr	Hour
ECG	Electrocardiograph
IM	Intramuscular
IV	Intravenous
Kg	Kilograms
mcg	Micrograms
mL	Millilitres
mmol	Millimole
ng	Nanogram
NSAIDs	Non-steroidal anti-inflammatory drugs
RIPERN	Rural and isolated practice endorsed registered nurse

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