

# Anaphylaxis after vaccination



**Anaphylaxis following vaccination is a rare but serious adverse event that can be fatal.**

Anaphylactic reactions following vaccination are rare and are caused by the vaccine antigen itself or more commonly an ingredient found in the vaccine.

A pre-vaccination screening questionnaire must be used to screen people for contraindications to the vaccine and prevent anaphylactic reactions.

## Signs and Symptoms of Anaphylaxis

Severe anaphylactic reactions usually occur, within 15 minutes of vaccination. Observe all individuals for at least 15 minutes after vaccination to monitor for immediate reactions.

Anaphylaxis is characterised by **sudden respiratory compromise and/or circulatory collapse** and can be difficult to distinguish from a vasovagal episode (fainting) which is more common. Refer to the following table of clinical features that may help differentiate between the two.

CLINICAL FEATURE	VASOVAGAL EPISODE	ANAPHYLAXIS
Onset	<ul style="list-style-type: none"><li>• Immediate, usually within minutes of, or during, vaccine administration</li></ul>	<ul style="list-style-type: none"><li>• Usually within 15 minutes of vaccine administration, but can occur within hours</li></ul>
Respiratory symptoms or signs	<ul style="list-style-type: none"><li>• Normal breathing; may be shallow, but not laboured</li></ul>	<ul style="list-style-type: none"><li>• Cough</li><li>• Wheeze</li><li>• Hoarseness</li><li>• Stridor</li><li>• Signs of respiratory distress, such as abnormally rapid breathing (tachypnoea), cyanosis or rib recession</li><li>• Upper airway swelling (eg lip, tongue, throat, uvula, larynx)</li></ul>
Cardiovascular symptoms or signs	<ul style="list-style-type: none"><li>• Bradycardia</li><li>• Weak/absent peripheral pulse</li><li>• Strong carotid pulse</li><li>• Hypotension - usually transient and corrects in supine position</li><li>• Loss of consciousness - improves once supine or in head-down position</li></ul>	<ul style="list-style-type: none"><li>• Tachycardia</li><li>• Weak/absent carotid pulse</li><li>• Hypotension - sustained and no improvement without specific treatment (Note: In infants and young children, limpness and pallor are signs of hypotension)</li><li>• Loss of consciousness - no improvement once supine or in head-down position</li></ul>
Skin symptoms or signs	<ul style="list-style-type: none"><li>• Generalised pallor</li><li>• Cool, clammy skin</li></ul>	<ul style="list-style-type: none"><li>• Pruritus (skin itchiness)</li><li>• Generalised skin erythema (redness)</li><li>• Urticaria (weals)</li><li>• Angioedema (localised or general swelling of the deeper layers of the skin or subcutaneous tissues)</li></ul>
Gastrointestinal symptoms or signs	<ul style="list-style-type: none"><li>• Nausea or vomiting</li></ul>	<ul style="list-style-type: none"><li>• Abdominal cramps</li><li>• Diarrhoea</li><li>• Nausea or vomiting</li></ul>
Neurologic symptoms or signs	<ul style="list-style-type: none"><li>• Person feels faint or light-headed</li></ul>	<ul style="list-style-type: none"><li>• Person has a sense of severe anxiety or distress</li></ul>

Reference: <https://immunisationhandbook.health.gov.au/resources/handbook-tables/table-clinical-features-that-may-help-differentiate-between-a-vasovagal>

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## Managing Anaphylaxis

Vaccination clinics must have an anaphylaxis response kit to manage anaphylaxis, refer to the Australian Immunisation Handbook.

If a person presents with signs and symptoms of anaphylaxis:



**Start CPR at any time if needed**

- 1 Call for help, including an ambulance. Do not leave the person alone.
- 2 Position the patient:
  - a. If the person is conscious, lie the person on their back, or let them sit up if lying down restricts their breathing. Do not allow them to stand or walk.
  - b. If the person is unconscious, lie them on their left side and position them to keep the airway clear.
- 3 Give 1:1000 adrenaline by deep intramuscular injection into the outer mid-thigh. Dose according to the person's weight (0.01mg per kg up to 0.5mg per dose)
- 4 Give oxygen by face mask at a high flow rate, if available.
- 5 Give further doses of adrenaline every 5 minutes until the patient's condition improves or the ambulance arrives.
- 6 Transfer the person to hospital for further observation and treatment.
- 7 Document the incident in the patients notes and incident management system, including total doses of adrenaline given.
- 8 Report the Adverse Event Following Immunisation to your local public health unit on 1300 066 055.

## Further resources

<https://allergy.org.au/hp/anaphylaxis>

<https://immunisationhandbook.health.gov.au/>

## Doses of Adrenaline 1:1000 (one in one thousand)

<1 year	(5-10 kg)	0.05-0.1 mL
1-2 years	(10 kg)	0.10 mL
2-3 years	(15 kg)	0.15 mL
4-6 years	(20 kg)	0.20 mL
7-10 years	(30 kg)	0.30 mL
10-12 years	(40 kg)	0.40 mL
13 years & over	(50 kg)	0.50 ml (max dose)

Management of anaphylaxis in pregnant women is the same as for non-pregnant women. However, pregnant women should be positioned on their left side to maintain adequate cardiac output.

All patients treated for anaphylaxis must be transferred to a hospital for observation for at least 4 hours after the last dose of adrenaline due to the risk of relapse or protracted reactions.

## Risk Factors for fatal anaphylaxis

Anaphylaxis can be fatal if not managed appropriately, the greatest risk factors include:

- Delayed or no administration of adrenaline - **Adrenaline (epinephrine) is the first line treatment for anaphylaxis, if in doubt give adrenaline.**
- Positioning of patient - **Fatality can occur within minutes if a patient stands, walks or sits suddenly.** Lay the patient flat or allow to sit if they are having difficulty breathing.
- Misdiagnosis of asthma exacerbation - **ALWAYS give adrenaline FIRST, then asthma reliever if someone with known asthma and allergy to medication has SUDDEN BREATHING DIFFICULTY (including wheeze, persistent cough or hoarse voice) even if there are no skin symptoms.**
- Atypical presentation - Cardiovascular symptoms (collapse/hypotension) without skin or respiratory symptoms





# Managing anaphylaxis after vaccination

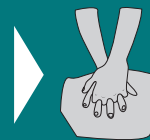


Anaphylaxis is a life-threatening emergency and needs immediate adrenaline administration.

## Symptoms of anaphylaxis after vaccination

Any **one** of:

- ▶ difficult/noisy breathing
- ▶ swelling of tongue
- ▶ swelling/tightness in throat
- ▶ difficulty talking/hoarse voice
- ▶ wheeze or persistent cough
- ▶ persistent dizziness or collapse
- ▶ pale and floppy (young children)



**Start CPR at any time if needed**

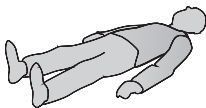
1



**Call for help**, including an ambulance if necessary

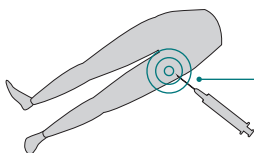
Do **not** leave the person

2



**Lie the person on their back**, or let them sit up if lying down restricts their breathing

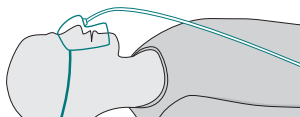
3



1:1000 adrenaline

**Give 1:1000 adrenaline** by intramuscular injection into the anterolateral thigh. Dose according to the person's weight

4



**Give oxygen** by face mask at a high flow rate, if available

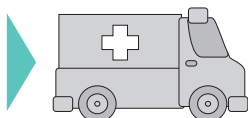
5



5 min

If their condition has not improved after 5 minutes, **give another dose** of 1:1000 adrenaline. Keep giving adrenaline every 5 minutes until the ambulance arrives if their condition does not improve

6



**Transfer** the person to hospital for further observation and treatment

7



**Record the incident**, including doses of adrenaline given

See the Australian Immunisation Handbook for more details.