Anaphylaxis after vaccination

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

CLINICAL FEATURE VASOVAGAL EPISODE ANAPHYLAXIS

Onset
• Immediate, usually within minutes of, or during, vaccine administration
• Usually within 15 minutes of vaccine administration, but can occur within hours

Respiratory symptoms or signs
• Normal breathing; may be shallow, but not laboured
• Cough
• Wheeze
• Hoarseness
• Stridor
• Signs of respiratory distress, such as abnormally rapid breathing (tachypnoea), cyanosis or rib recession
• Upper airway swelling (eg lip, tongue, throat, uvula, larynx)

Cardiovascular symptoms or signs
• Bradycardia
• Weak/absent peripheral pulse
• Strong cartoid pulse
• Hypotension - usually transient and corrects in supine position
• Loss of consciousness - improves once supine or in head-down position
• Tachycardia
• Weak/absent cartoid pulse
• Hypotension - sustained and no improvement without specific treatment (Note: In infants and young children, limpness and pallor are signs of hypotension)
• Loss of consciousness - no improvement once suppine or in head-down position

Skin symptoms or signs
• Generalised pallor
• Cool, clammy skin
• Pruritus (skin itchiness)
• Generalised skin erythema (redness)
• Urticaria (weals)
• Angioedema (localised or general swelling of the deeper layers of the skin or subcutaneous tissues)

Gastrointestinal symptoms or signs
• Nausea or vomiting
• Abdominal cramps
• Diarrhoea
• Nausea or vomiting

Neurologic symptoms or signs
• Person feels faint or light-headed
• Person has a sense of severe anxiety or distress

Anaphylaxis after vaccination

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:

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.

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.

Further resources:

<table>
<thead>
<tr>
<th>Doses of Adrenaline 1:1000 (one in one thousand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 year (5–10 kg)</td>
</tr>
<tr>
<td>1-2 years (10 kg)</td>
</tr>
<tr>
<td>2-3 years (15 kg)</td>
</tr>
<tr>
<td>4-6 years (20 kg)</td>
</tr>
<tr>
<td>7-10 years (30 kg)</td>
</tr>
<tr>
<td>10-12 years (40 kg)</td>
</tr>
<tr>
<td>13 years &amp; over (50 kg)</td>
</tr>
<tr>
<td>max dose</td>
</tr>
<tr>
<td>0.05–0.1 mL</td>
</tr>
<tr>
<td>0.10 mL</td>
</tr>
<tr>
<td>0.15 mL</td>
</tr>
<tr>
<td>0.20 mL</td>
</tr>
<tr>
<td>0.30 mL</td>
</tr>
<tr>
<td>0.40 mL</td>
</tr>
<tr>
<td>0.50 mL (max dose)</td>
</tr>
</tbody>
</table>