

## Acute Management of Anaphylaxis in Pregnancy

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These guidelines are intended to be used in conjunction with the ASCIA Guidelines for Acute Management of Anaphylaxis, available open access on the ASCIA website: [www.allergy.org.au/hp/papers/acute-management-of-anaphylaxis-guidelines](http://www.allergy.org.au/hp/papers/acute-management-of-anaphylaxis-guidelines)

There are limited studies exploring the management of patients with anaphylaxis and in particular anaphylaxis in pregnancy. These guidelines are intended for medical practitioners, midwives and nurses providing first responder emergency care.

These guidelines have been endorsed by the Australasian Society of Clinical Immunology and Allergy (ASCIA), the Australasian College of Emergency Medicine (ACEM), the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG), the College of Intensive Care Medicine of Australia and New Zealand (CICM), and the Australian and New Zealand Anaesthetic Allergy Group (ANZAAG).

The prompt administration of adrenaline (epinephrine) is the cornerstone of anaphylaxis management in both the pregnant and non-pregnant population. A dose of 0.5mg adrenaline intramuscularly (IM) can be given for treatment of anaphylaxis in pregnancy.

### Anaphylaxis definitions<sup>1</sup>

Any acute onset illness with typical skin features (urticarial rash or erythema/flushing, and/or angioedema), PLUS involvement of respiratory and/or cardiovascular and/or persistent severe gastrointestinal symptoms; or

Any acute onset of hypotension or bronchospasm or upper airway obstruction where anaphylaxis is considered possible, even without typical skin features present.

### Signs and symptoms in maternal anaphylaxis

The signs and symptoms of anaphylaxis in pregnant women are the same as for non-pregnant women, though several additional features are possible.

Additional signs and symptoms include:<sup>2,3</sup>

- Persistent hypotension - may be the predominant feature.
- Intense vulvar and vaginal itching (particularly if allergic reaction/IgE-mediated reaction to latex).
- Low back pain.
- Uterine cramps.
- Fetal distress.

Common culprits include antibiotics and anaesthetic medications, such as neuromuscular blocking agents.<sup>4-6</sup> Anaphylaxis to foods and insect venom should also be considered.<sup>3,5</sup>

### Differential diagnosis

- Features of anaphylaxis share overlapping features with various other acute obstetric and non-obstetric complications.
- The following differential diagnoses should be considered<sup>4</sup>:
  - Hypotension - neuraxial block, aortocaval compression, venous thromboembolism, haemorrhage, amniotic fluid embolus, sepsis, magnesium, or local anaesthetic toxicity.
  - Bronchospasm - asthma, pulmonary oedema, pulmonary aspiration, adverse effects of carboprost.

### Management

**Adrenaline (epinephrine) should be the first line treatment for anaphylaxis in pregnancy, and prompt administration of adrenaline is essential.**

Adrenaline should **not** be withheld due to a fear of causing reduced placental perfusion. The benefits of maintaining adequate maternal blood pressure and providing successful maternal resuscitation outweigh the possible risks of the brief reduction in uterine blood flow that can theoretically be caused by uterine vasoconstriction from adrenaline.<sup>2-5</sup>

The key determinant of uteroplacental perfusion (and therefore fetal oxygenation) is maternal blood pressure.<sup>3</sup>

Management for anaphylaxis in pregnant women is the same as for non-pregnant women, with modifications to positioning, and multidisciplinary team consideration of emergent delivery of the baby (including via emergency/perimortem Caesarean section.<sup>3</sup>)

- 1. Cease/remove suspected triggers including all IV/epidural infusions.**
- 2. Call for assistance of critical care trained staff.**
- 3. If in cardiac arrest commence BLS/ALS/CPR, PLUS manual left uterine displacement.** (Refer to ANZCOR CPR guidelines<sup>7</sup> and AHA ALS algorithm: Maternal cardiac arrest.<sup>8</sup>)
  - a. Peri-mortem caesarean delivery (PMCD) should be initiated as early as possible with the aim of incision at 4 minutes, and the goal of delivering the foetus at 5 minutes after arrest. PMCD is performed to facilitate maternal resuscitation.<sup>8-10</sup>
- 4. Positioning**
  - a. **Place the patient in a left lateral position** to prevent the gravid uterus from compressing the inferior vena cava and obstructing venous return to the heart.
  - b. **OR perform manual left uterine displacement.**<sup>3,8-13</sup>
  - c. Elevate the legs if hypotensive.
  - d. If dyspnoeic or vomiting, place in a seated position of comfort.
- 5. Administer adrenaline: Inject 0.5mg IM adrenaline into the mid-outer thigh.**<sup>3,9,13</sup>
  - a. There is no robust evidence of harm from a dose of 0.5mg adrenaline IM for treatment of anaphylaxis in pregnancy.<sup>2,3,9</sup> This dose can be repeated every 5 minutes. If maternal weight is less than 50 kg administer adrenaline 0.01mg/kg IM.
  - b. **If an adrenaline autoinjector is available, an initial dosing of 0.3mg is a reasonable option,** particularly in the community or non-hospital setting to reduce risk of dosing

errors or potential delay in administration of adrenaline. This can be followed by repeat dosing every 5 minutes as required.

- c. Small aliquots of IV (intravenous) adrenaline or an adrenaline infusion may be considered in refractory anaphylaxis in settings where adequate monitoring and critical care trained staff are present (e.g. operating theatre, emergency department, intensive care unit).

**6. Administer high flow oxygen.**

- 7. Obtain IV access if possible, and if patient remains hypotensive after adrenaline, rapidly administer an IV fluid (isotonic crystalloid, e.g. 0.9% NaCl) bolus of 1L (20 mL/kg), aiming for SBP > 90mmHg.**

Recommend repeat dose of 20ml/kg IV crystalloid if repeat adrenaline dosage is required.

- 8. Monitor maternal heart rate, pulse oximetry, blood pressure, respiratory rate and monitor fetal wellbeing continuously using CTG (Cardiotocography) or fetal heart rate every 5 minutes if CTG is unavailable.**

- 9. Plan for hospital transfer and/or alert O&G and anaesthetic staff for possible need for emergency caesarean section.** Caesarean delivery should occur in parallel with resuscitative measures. Caesarean section is recommended if:<sup>2,3,9</sup>

- a. There are signs of fetal distress in a viable pregnancy.
- b. Anaphylaxis is refractory to management e.g. persistent hypotension.

- 10. Restoration of normal maternal blood pressure does not ensure adequate placental perfusion - fetal monitoring is essential to guide decision regarding timing of delivery. **Additional second-line management** may include administration of inhaled salbutamol, oral prednisolone and/or IV glucocorticoids. (See ASCIA Acute Management of Anaphylaxis Guidelines for further details.)<sup>1</sup>**

- 11. Transfer to hospital, and if already in hospital consider HDU/ICU admission for ongoing monitoring.**

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