

Obstetric Cardiac Arrest



Alterations in maternal physiology and exacerbations of pregnancy related pathologies must be considered. Priorities include calling the appropriate team members, relieving aortocaval compression, effective cardiopulmonary resuscitation (CPR), consideration of causes and performing a timely emergency hysterotomy (perimortem caesarean section) when ≥ 20 weeks.

START

- 1 **Confirm cardiac arrest and call for help. Declare 'Obstetric cardiac arrest'**
 - ▶ Team for mother and team for neonate if > 20 weeks
- 2 **Lie flat, apply manual uterine displacement to the left**
 - ▶ Or left lateral tilt (from head to toe at an angle of $15-30^\circ$ on a firm surface)
- 3 **Commence CPR and request cardiac arrest trolley**
 - ▶ Standard CPR ratios and hand position apply
 - ▶ **Evaluate potential causes (Box A)**
- 4 **Identify team leader, allocate roles including scribe**
 - ▶ Note time
- 5 **Apply defibrillation pads and check cardiac rhythm** (defibrillation is safe in pregnancy and no changes to standard shock energies are required)
 - ▶ if VF / pulseless VT \rightarrow defibrillation and first adrenaline and amiodarone after 3rd shock
 - ▶ If PEA / asystole \rightarrow resume CPR and give first adrenaline immediately
 - ▶ Check rhythm and pulse every 2 minutes
 - ▶ Repeat adrenaline every 3-5 minutes
- 6 **Maintain airway and ventilation**
 - ▶ Give 100% oxygen using bag-valve-mask device
 - ▶ Insert supraglottic airway with drain port –or– tracheal tube if trained to do so (intubation may be difficult, and airway pressures may be higher)
 - ▶ Apply waveform capnography monitoring to airway
 - ▶ If expired CO_2 is absent, presume oesophageal intubation until absolutely excluded
- 7 **Circulation**
 - ▶ I.V. access above the diaphragm, if fails or impossible use upper limb intraosseous (IO)
 - ▶ See **Box B** for reminders about drugs
 - ▶ Consider extracorporeal CPR (ECPR) if available
- 8 **Emergency hysterotomy (perimortem caesarean section)**
 - ▶ Perform if ≥ 20 weeks gestation, to improve maternal outcome
 - ▶ Perform immediately if maternal fatal injuries or prolonged pre-hospital arrest
 - ▶ Perform by 5 minutes if no return of spontaneous circulation
- 9 **Post resuscitation from haemorrhage - activate Massive Haemorrhage Protocol**
Consider uterotonic drugs, fibrinogen and tranexamic acid
Uterine tamponade / sutures, aortic compression, hysterectomy

Box A: POTENTIAL CAUSES 4H's and 4T's (specific to obstetrics)

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|----------------------|--|
| Hypoxia | Respiratory – Pulmonary embolus (PE), Failed intubation, aspiration Heart failure Anaphylaxis Eclampsia / PET – pulmonary oedema, seizure |
| Hypovolaemia | Haemorrhage – obstetric (remember concealed), abnormal placentation, uterine rupture, atony, splenic artery/hepatic rupture, aneurysm rupture Cardiac – arrhythmia, myocardial infarction (MI) Distributive – sepsis, high regional block, anaphylaxis |
| Hypo/hyperkalaemia | Also consider blood sugar, sodium, calcium and magnesium levels |
| Hypothermia | |
| Tamponade | Aortic dissection, peripartum cardiomyopathy, trauma |
| Thrombosis | Amniotic fluid embolus, PE, MI, air embolism |
| Toxins | Local anaesthetic, magnesium, illicit drugs |
| Tension pneumothorax | Entonox in pre-existing pneumothorax, trauma |

Box B: IV DRUGS FOR USE DURING CARDIAC ARREST

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|------------------|---|
| Fluids | 500 mL IV crystalloid bolus |
| Adrenaline | 1 mg IV every 3-5 minutes in non-shockable or after 3 rd shock |
| Amiodarone | 300 mg IV after 3 rd shock |
| Atropine | 0.5-1 mg IV up to 3 mg if vagal tone likely cause |
| Calcium chloride | 10% 10 mL IV for Mg overdose, low calcium or hyperkalaemia |
| Magnesium | 2 g IV for polymorphic VT / hypomagnesaemia, 4 g IV for eclampsia |
| Thrombolysis/PCI | For suspected massive pulmonary embolus / MI |
| Tranexamic acid | 1 g if haemorrhage |
| Intralipid | 1.5 mL kg⁻¹ IV bolus and 15 mL kg⁻¹ hr⁻¹ IV infusion |