

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 CO₂ 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)

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

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