COLLAPSE
(Including amniotic fluid embolism)

Use this guideline for antenatal and postnatal collapse

CAUSES
- Haemorrhage – see Antepartum haemorrhage and Postpartum haemorrhage guidelines
- Pulmonary embolus
- Concealed haemorrhage (e.g. broad ligament haematoma, hepatic rupture)
- Amniotic fluid embolus
- Myocardial infarction
- Aortic dissection
- Peripartum cardiomyopathy
- Rheumatic mitral stenosis
- Sepsis
- Intracranial haemorrhage
- Total spinal block
- Local anaesthetic or magnesium toxicity
- Hypoglycaemia
- Eclampsia (see Eclampsia guideline and Severe pre-eclampsia guideline)
- Anaphylaxis

CARDIAC OR RESPIRATORY ARREST

If a cardiac or respiratory arrest has occurred, call cardiac arrest team and commence cardiopulmonary resuscitation – see Collapse algorithm at end of this guideline

Organise
- Clearly state location of woman
- Crash-bleep resident anaesthetist, obstetric registrar and SHO (as per local practice)
- Inform consultant obstetrician
- If antenatal arrest after 22 weeks’ gestation, call neonatal team
- Ensure arrest team can gain immediate access to maternity unit
- Station someone (e.g. healthcare worker, student etc) at delivery suite door, to open door and direct team to woman
- Collect cardiac arrest trolleys and defibrillator

Woman
- Avoid aortocaval compression after 20 weeks’ gestation
  - Ideally, tilt woman at least 15° using a wedged resuscitation board or a wedge, or manually displace uterus
- Do not consider the baby in this emergency
- If resuscitative attempts to revive >20 week pregnant woman have failed after 4 min, perform an immediate caesarean section to improve the chances of successful maternal resuscitation. Do this wherever the arrest has occurred without further preparation as she will need to deliver within minutes and there will not be time for preparation or transfer to theatre
- Caesarean section is of no benefit to women <20 weeks’ gestation

SUDDEN COLLAPSE

Woman
- Avoid aortocaval compression after 20 weeks’ gestation
  - Ideally tilt the woman at least 15° using a wedged resuscitation board or a wedge, or manually displace uterus
- Check A, B and C and give oxygen at maximum rate via face mask

Organise
- Bleep consultant obstetrician, on-call obstetric anaesthetist, obstetric registrar and SHO (follow local practice)
- Summon as many staff as possible and allocate specific tasks, e.g:
  - Taking observations
Collapse 2013–15
- recording events and their management, with times
- communication
- runner for samples and equipment
- support for family

**Observations**
- Commence HDU chart and observe:
  - pulse
  - blood pressure – at least every 15 min
  - respiratory rate
  - pulse oximetry
  - If possible, transfer woman to room where HDU care can be provided

**Investigations**
- Check capillary blood glucose using BM stick
- Insert at least one large IV cannula
- Take blood for:
  - FBC
  - clotting studies including fibrin degradation products
  - crossmatch 2 units of blood
  - blood cultures
  - U&Es and glucose
  - LFTs
  - Troponin T or Troponin I [(whichever is used locally) (a marker for myocardial infarction)]

<table>
<thead>
<tr>
<th>It is the responsibility of person obtaining sample to complete blood bottles and forms</th>
<th>Send bloods urgently to laboratory with healthcare worker or porter Phone lab to request results urgently</th>
</tr>
</thead>
</table>

- Obtain arterial blood gases and consider arterial line insertion
- Arrange portable chest X-ray, particularly if oxygen saturation reduced or central venous catheter inserted owing to risk of pneumothorax
- 12-lead ECG – particularly important if any form of cardiac disease suspected
- ECG must be reviewed by a doctor competent in ECG interpretation

**History**
- Obtain history from those present before collapse occurred
- Examine woman to try to identify most likely cause of collapse

**IV access and fluids**
- Commence IV fluids
- Unless cardiopulmonary function is rapidly restored, consider a central venous catheter

**FURTHER TREATMENT**
- Further treatment is dependent on diagnosis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulmonary embolism</td>
<td>See VTE – Pulmonary embolism guideline</td>
</tr>
<tr>
<td>Concealed haemorrhage</td>
<td>See Antepartum haemorrhage and Postpartum haemorrhage guidelines</td>
</tr>
<tr>
<td>Amniotic fluid embolism</td>
<td>See overleaf</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>Seek advice from cardiologist</td>
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<td>Sepsis</td>
<td>As ‘surviving sepsis campaign’; broad spectrum IV antibiotics, IV fluids, oxygen and vasopressors and/or inotropes – see Sepsis guideline</td>
</tr>
<tr>
<td>Intracranial haemorrhage</td>
<td>Seek advice from physician</td>
</tr>
<tr>
<td>Total spinal block</td>
<td>Call consultant anaesthetist – See Epidural</td>
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</table>
Collapse 2013–15

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<th>Toxicity</th>
<th>Call consultant anaesthetist – See Epidural guideline, Eclampsia guideline or Severe eclampsia guideline</th>
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<tbody>
<tr>
<td>Hypoglycaemia</td>
<td>IV glucose – see Diabetes guidelines</td>
</tr>
<tr>
<td>Eclampsia</td>
<td>See Severe Eclampsia guideline</td>
</tr>
<tr>
<td>Anaphylaxis</td>
<td>Give adrenaline 500 microgram (0.5 mL of 1:1000 solution) IM into midpoint of anterolateral aspect of thigh</td>
</tr>
</tbody>
</table>

Be aware of increase in cardiac causes of collapse

*Risk factors for myocardial infarction*

- Obesity
- Pre-existing hypertension
- Diabetes mellitus
- Family history
- Age >35 yr

**Symptoms and signs prompting investigation**

- Severe chest pain
- Chest pain radiating to neck, jaw or back
- Chest pain associated with other features (e.g. agitation, vomiting or breathlessness, tachycardia, tachypnoea and orthopnoea)

*Aortic dissection is a cause of chest or intrascapular chest pain, particularly in the presence of systolic hypertension. It is commonly associated with Marfan’s syndrome. If suspected, request urgent cardiologist review*

**AMNIOTIC FLUID EMBOLISM**

- Rare and often fatal
- Presentation usually sudden during labour or immediately postpartum
- Acute dyspnoea, cyanosis, shock, cardiac arrest, bleeding from disseminated intravascular coagulation (DIC) and tonic-clonic seizures may all occur
- Sudden change in woman’s behaviour can be an early warning feature

**TREATMENT**

*As above, plus:*

- If necessary, deliver immediately – ideally vaginally. If not possible, by caesarean section under general anaesthetic
- Insert second large bore (16 G) IV cannula and prepare to manage massive obstetric haemorrhage (see Postpartum haemorrhage guideline)
- Consider early insertion of central venous catheter and arterial line
- Woman will require circulatory support, which can include inotropes, with invasive monitoring
- Transfer to ITU
- Discuss need for blood products (including fresh frozen plasma to correct DIC) with consultant haematologist, without waiting for blood results
- Report all cases of suspected or proven amniotic fluid embolism, whether fatal or not to National amniotic fluid embolism register via UKOSS (UK obstetric surveillance system)
Maternal collapse algorithm

Place woman in left lateral position
Call for help if appropriate
Check maternal observations
Assess fetal wellbeing

Unresponsive?
Yes
No

Open airway
Look for signs of life

Wedge/tilt patient

Call obstetric resuscitation team

CPR 30:2
Until defibrillator/monitor attached

Assess rhythm

Shockable (VF/pulseless VT)

Immediate postcardiac arrest treatment
- Use ABCDE approach
- Controlled oxygenation and ventilation
- 12-lead ECG
- Treat precipitating cause
- Temperature control/therapeutic hypothermia

1 shock
150–360 J biphasic or 360 J monophasic

Immediately resume CPR for 2 min
Minimise interruptions

Non-shockable (PEA/asystole)

Return of spontaneous circulation

Immediately resume CPR for 2 min
Minimise interruptions

If >22 weeks’ gestation, call neonatal team

Call consultant obstetrician and anaesthetist

100% supplemental O2
Intubate early
Insert two IV cannulae (wide bore)

During CPR:
- Ensure high-quality CPR: rate, depth, recoil
- Plan actions before interrupting CPR
- Give oxygen
- Consider advanced airway and capnography
- Continuous chest compressions when advanced airway in place
- Vascular access (intravenous, intraosseous)
- Give adrenaline every 3–5 min
- Correct reversible causes

Reversible causes:
- Hypoxia
- Hypovolaemia
- Hypo-/hyperkalaemia/metabolic
- Hypothermia
- Thrombosis – coronary or pulmonary
- Tamponade – cardiac
- Toxins
- Tension pneumothorax
References
Confidential Enquiry into Maternal and Child Health  Why Mothers Die  RCOG Press  London 2004

Confidential Enquiry into Maternal and Child Health  Saving Mothers’ Lives  RCOG Press  London 2007


Clark S  New concepts of amniotic fluid embolism: a review  Obstet Gynaecol Surv 1990; 45;60-68


Resuscitation Council (UK) Resuscitation Guidelines – whichever version is most relevant when we publish

Royal College of Obstetricians and Gynaecologists Maternal collapse in pregnancy and the puerperium Green Top guideline 2011