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Maternal Collapse in Pregnancy and the Puerperium

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Maternal Collapse in Pregnancy and the Puerperium

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This is the second edition of this guideline. The first edition was published in 2011 under the same title.

Executive summary

Clinical issues

Can women at risk of impending collapse be identified early?

An obstetric modified early warning score chart should be used for all women undergoing observation, to allow early recognition of the woman who is becoming critically ill. D

What are the causes of maternal collapse?

Maternal collapse can result from a number of causes. A systematic approach should be taken to identify the cause. ***[New 2019]*** B

In cases of collapse assumed to be due to anaphylaxis mast cell tryptase levels can be useful in confirming the diagnosis. ✓

What are the physiological and anatomical changes in pregnancy that affect resuscitation?

It is essential that anyone involved in the resuscitation of pregnant women is aware of the physiological differences. This includes pre-hospital care clinicians, paramedics and emergency medicine department staff. ✓

Aortocaval compression significantly reduces cardiac output from 20 weeks of gestation onwards and the efficacy of chest compressions during resuscitation. ***[New 2019]*** C

Changes in lung function, diaphragmatic splinting and increased oxygen consumption make pregnant women become hypoxic more readily and make ventilation more difficult. ***[New 2019]*** C

Difficult intubation is more likely in pregnancy. ***[New 2019]*** C

Pregnant women are at an increased risk of aspiration. ***[New 2019]*** C

What is the optimal initial management of maternal collapse?

Maternal collapse resuscitation should follow the Resuscitation Council (UK) guidelines using the standard ABCDE approach, with some modifications for maternal physiology, in particular relief of aortocaval compression. D

If maternal cardiac arrest occurs in the community setting, basic life support should be administered and rapid transfer arranged. ✓

Manual displacement of the uterus to the left is effective in relieving aortocaval compression in women above 20 weeks' gestation or where the uterus is palpable at or above the level of the umbilicus. This permits effective chest compressions in the supine position in the event of cardiac arrest. D

A left lateral tilt of the woman from head to toe at an angle of 15–30° on a firm surface will relieve aortocaval compression in the majority of pregnant women and still allow effective chest compressions to be performed in the event of cardiac arrest. C

In cases of major trauma, the spine should be protected with a spinal board before any tilt is applied. In the absence of a spinal board, manual displacement of the uterus should be used. ✓
[New 2019]

Intubation in an unconscious woman with a cuffed endotracheal tube should be performed immediately by an experienced anaesthetist. ✓

Supplemental high flow oxygen should be administered as soon as possible to counteract rapid deoxygenation. ✓

Bag and mask ventilation or insertion of a simple supraglottic airway should be undertaken until intubation can be achieved. ✓

If the airway is clear and there is no breathing, chest compressions should be commenced immediately. B

Two wide-bore cannulae (minimum 16 gauge) should be inserted as soon as possible. If peripheral venous access is not possible, early consideration of central venous access, intraosseous access or venous cutdown should be considered. ✓

There should be an aggressive approach to volume replacement, although caution should be exercised in the context of pre-eclampsia or eclampsia. ✓

Abdominal ultrasound by a skilled operator can assist in the diagnosis of concealed haemorrhage. C

The same defibrillation energy levels should be used as in a nonpregnant woman. B

There should be no alteration in algorithm drugs or doses used in the Resuscitation Council (UK) protocols. ✓

Common, reversible causes of maternal cardiopulmonary arrest should be considered throughout the resuscitation process. D

Resuscitation efforts should be continued until a decision is taken by the consultant obstetrician and consultant anaesthetist to discontinue resuscitation efforts. This decision should be made in consensus with the cardiac arrest team. ✓

When, where and how should perimortem caesarean section (PMCS) be performed?

In women over 20 weeks of gestation, if there is no response to correctly performed CPR within 4 minutes of maternal collapse or if resuscitation is continued beyond this, then PMCS should be undertaken to assist maternal resuscitation. Ideally, this should be achieved within 5 minutes of the collapse. D

PMCS should not be delayed by moving the woman. It should be performed where maternal collapse has occurred and resuscitation is taking place. ✓

The operator should use the incision, which will facilitate the most rapid access. This may be a midline vertical incision or a suprapubic transverse incision. ✓

A scalpel and umbilical cord clamps (or alternative ligatures) should be available on the resuscitation trolley in all areas where maternal collapse may occur, including the accident and emergency department. ✓

What does the ongoing management consist of?

Senior staff with appropriate experience should be involved at an early stage. ✓

Transfer should be supervised by an adequately skilled team with appropriate equipment. ✓

In the case of maternal collapse secondary to antepartum haemorrhage, the fetus and placenta should be delivered promptly to allow control of the haemorrhage. ✓

In the case of massive placental abruption, caesarean section may occasionally be indicated even if the fetus is dead to allow rapid control of the haemorrhage. ✓

Intravenous tranexamic acid significantly reduces mortality due to postpartum haemorrhage. ***[New 2019]*** A

Massive pulmonary embolism should be treated according to RCOG Green-top Guideline No. 37b *Acute Management of Thrombosis and Embolism during Pregnancy and the Puerperium*. *[New 2019]*	D
The management of amniotic fluid embolism (AFE) is supportive rather than specific, as there is no proven effective therapy.	✓
Early involvement of senior experienced staff, including midwives, obstetricians, anaesthetists, haematologists and intensivists, is essential to optimise outcome.	✓
Coagulopathy needs early, aggressive treatment, including the use of fresh frozen plasma.	✓
Recombinant factor VII should only be used if coagulopathy cannot be corrected by massive blood component replacement as it causes poorer outcome in women with AFE. *[New 2019]*	C
After successful resuscitation, cardiac cases should be managed by an expert cardiology team.	✓
Septic shock should be managed in accordance with the Surviving Sepsis Campaign guidelines.	D
The antidote to magnesium toxicity is 10 ml 10% calcium gluconate or 10 ml 10% calcium chloride given by slow intravenous injection.	✓
If local anaesthetic toxicity is suspected, stop injecting immediately.	✓
Lipid rescue should be used in cases of collapse secondary to local anaesthetic toxicity.	C
Intralipid® 20% should be available in all hospitals offering maternity services.	✓
Manage arrhythmias as usual, recognising that they may be very refractory to treatment.	✓
All cases of lipid rescue should be reported to NHS Improvement and the Lipid Rescue site.	✓
Eclampsia should be managed in accordance with the NICE Clinical Guideline 107 *Hypertension in Pregnancy: Diagnosis and Management*. *[New 2019]*	D
Neuroradiologists and neurosurgeons should be involved in the care of pregnant women with intracranial haemorrhage at the earliest opportunity. *[New 2019]*	✓
In cases of anaphylaxis, all potential causative agents should be removed, and the ABCDE approach to assessment and resuscitation followed.	✓

