

MATERNAL COLLAPSE

This LOP is developed to guide clinical practice at the Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this LOP.

1. AIM

- Recognise and manage the deteriorating woman

2. PATIENT

- Antenatal, Intrapartum or Postnatal woman experiencing an acute event involving the cardiorespiratory systems and/or central nervous system, resulting in a reduced or absolute loss of consciousness

3. STAFF

- Medical, nursing and midwifery staff
- Allied health staff

4. EQUIPMENT

- Cardiotocograph (CTG)
- Sphygmomanometer
- Oxygen saturation device
- Resuscitation trolley
- Wedge
- Glucometer
- Ultrasound machine

5. CLINICAL PRACTICE

- Activate an adult code blue by calling '2222' and state exact location
- Tilt the antenatal woman to the left by placing a wedge under her right buttock
- Commence Basic Life Support (BLS) immediately if woman shows no signs of life or her condition deteriorates
- Allocate roles (E.g. airway, circulation, team lead, scribe, timekeeper, runner) make a priority management plan and communicate to the team members
- Document a systematic A-G (assessment as per the Standard Maternity Observations Chart (SMOC) and repeat as required
 - **A**irway
 - **B**reathing
 - **C**irculation
 - **D**isability (E.g. Glasgow coma scale)
 - **E**xposure (E.g. intravenous cannula, sepsis)
 - **F**luids
 - **G**lucose
- Provide oxygen to maintain saturations >95% via nasal prongs, Hudson or Non Rebreather (NRB) mask
- Notify the consultant in charge
- Insert two large bore intravenous cannulas, take bloods for Electrolytes Urea Creatinine (EUC), Full Blood Count (FBC), coagulation profile (including fibrinogen), Group and Hold and Blood Sugar Level (BSL) and commence intravenous (IV) fluids
- Collect additional Blue top blood tube for ROTEM guided management if suspicion of major coagulopathy
- Perform a perimortem Caesarean section INSITU if there is no response to BLS for four minutes at greater than 20 weeks gestation

MATERNAL COLLAPSE cont'd

- Perform continuous electronic fetal monitoring where indicated
- Perform an Electro Cardio Graph (ECG) and arterial blood gas sample where indicated
- Perform bedside ultrasound to assess for concealed haemorrhage (where indicated)
- Diagnose cause of collapse – modify management and consult with other teams as appropriate. See Figure 1 and related LOPs and educational notes for management of specific conditions.
- Activate Critical Bleeding protocol (CBP) if indicated. See table 1. Notify blood bank directly, Consultant in charge of the case responsible for this (e.g. anaesthetist, gynaecologist, obstetrician, haematology) (ext 29145) to activate CBP
- Resuscitate with blood products (where indicated), by ROTEM guided or unguided CBP
- Keep woman warm if haemorrhage is suspected, including the use of warmed fluids
- Record fluid input and urine output
- Ensure the next of kin is kept informed. A staff member may need to be assigned to support the family / baby until Social Worker is available (call social worker if required)
- Escalate to Prince of Wales Hospital (POWH) Code Blue team if extra assistance or support is required or acute stroke is suspected. The POW Code Blue team can be activated by dialling '2222' and requesting the 'POW Adult Code Blue Team' stating the exact location
- Contact POW Emergency Dept. (ext. 28400) to inform of urgent transfer and review, if an acute stroke is suspected. This "acute stroke" call is made by the code blue team. The RHW Code Blue team will escort the patient to POW ED and provide clinical handover.

6. DOCUMENTATION

- Medical Record

7. EDUCATIONAL NOTES

- Haemorrhage is the most common serious cause of maternal collapse¹. Other causes include thrombo-embolism, amniotic fluid embolus, cardiac disease, sepsis, drug toxicity, eclampsia, anaphylaxis, hypoglycaemia and cerebral vascular event
- Early recognition of the deteriorating woman and the activation of appropriate clinical emergency response (CERS) systems are essential components of safe quality patient care
- Perimortem Caesarean section at greater than 20 weeks gestation facilitates maternal resuscitation and should be performed regardless of fetal status¹
- A perimortem caesarean kit is available on all resuscitation trolleys across RHW including the Accident and Emergency Department, this should include a fixed blade scalpel and two cord clamps
- All clinical staff must attend yearly mandatory Basic Life Support (BLS) training and 3rd yearly Fetal Safety education (FSE) training
- The commonly used drugs in obstetric practice for therapeutic drug toxicity are¹:
 - Magnesium sulphate toxicity. The antidote to magnesium toxicity is: 1 gram, (10 ml 10%) calcium chloride given by slow intravenous injection over 3 minutes (in arrest trolley)
 - Local anaesthetic (LA) agents. Lipid rescue should be used in cases of collapse secondary to local anaesthetic toxicity. (The protocol and medication is in the arrest trolley)
- The treatment for anaphylaxis is 1:1000 adrenaline 500mcg (0.5mL) intramuscularly. This dose is for IM use only. This dose can be repeated again after 5 minutes if no change in symptoms are evident. Adjuvant therapy consists of hydrocortisone 200mg. Both are given intramuscularly or by slow IV injection. The trigger should also be removed.

The treatment for anaphylaxis is 1:1000 adrenaline 500 micrograms (0.5 ml) intramuscularly.
This dose is for intramuscular use only

MATERNAL COLLAPSE cont'd

8. RELATED POLICIES / PROCEDURES / CLINICAL PRACTICE LOP

- Clinical Emergency Response System (CERS): Management of the deteriorating patient
- NSW Health Policy Directive PD2020_015 Recognition and management of patients who are Deteriorating Management of patients with acute stroke symptoms POWH CLIN045 <http://seslhnweb/powh/documents/cpm/Section14/ManagementofpatientswithAcuteStrokeSymptoms.pdf>
- Basic Life Support <http://www.resus.org.au/policy/guidelines/index.asp>
- Critical Bleeding Protocol
- Eclampsia Management
- Thromboembolism
- Sepsis in Pregnancy and Postpartum guideline
- Intralipid - Management And Treatment Of Severe Local Anaesthetic Toxicity (Adult Only) Adrenaline infusion
- Adult advanced life support (protocol) Cardiopulmonary resuscitation- ARC and NZRC Guideline

9. RISK RATING

- Medium

10. NATIONAL STANDARD

- Standard 8 – Recognising and responding to acute deterioration

11. REFERENCES

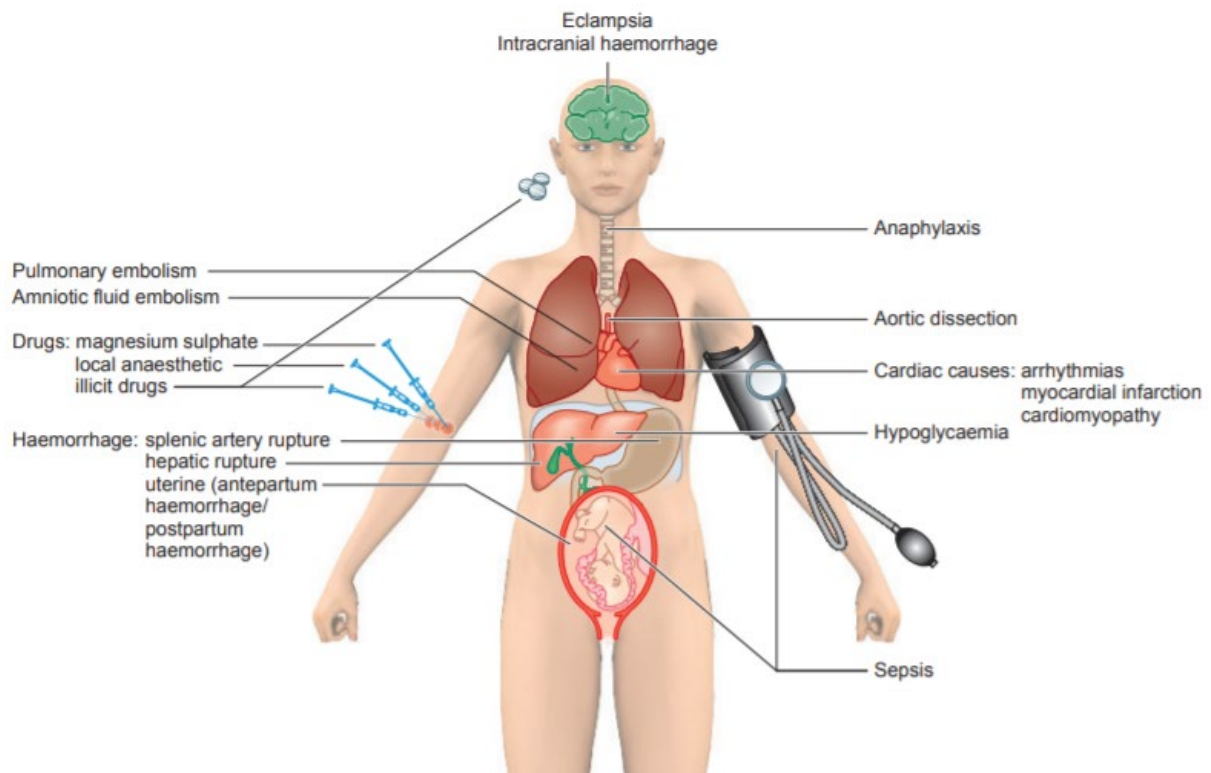
- 1 RCOG (Green-top Guideline No.56) “Maternal Collapse in Pregnancy and the Puerperium” 2019 <http://www.rcog.org.uk/files/rcog-corp/GTG56.pdf>
- 2 NSW Health Policy Directive PD2020_010 Recognition and management of patients who are deteriorating Clinical Handover: Implementation of ISBAR Framework and Key standard Principles 2018 SESLHDPR/303
- 3 NSW Health, Clinical Handover – Standard Key Principles, PD2019_020

REVISION & APPROVAL HISTORY

Reviewed and endorsed Maternity Services LOPs 19/5/20
Amended August 2019 : change PACE to CERS
Approved Quality & Patient Safety Committee 15/12/11
Endorsed Obstetrics LOP Group November 2011

FOR REVIEW : JULY 2023

Figure 1. Causes of maternal collapse



Reversible cause		Cause in pregnancy
4 H's	Hypovolaemia	Bleeding (may be concealed) (obstetric/other) or relative hypovolaemia of dense spinal block; septic or neurogenic shock
	Hypoxia	Pregnant patients can become hypoxic more quickly Cardiac events: peripartum cardiomyopathy, myocardial infarction, aortic dissection, large-vessel aneurysms
	Hypo/hyperkalaemia and other electrolyte disturbances	No more likely
	Hypothermia	No more likely
4 T's	Thromboembolism	Amniotic fluid embolus, pulmonary embolus, air embolus, myocardial infarction
	Toxicity	Local anaesthetic, magnesium, other
	Tension pneumothorax	Following trauma/suicide attempt
	Tamponade (cardiac)	Following trauma/suicide attempt
Eclampsia and pre-eclampsia		Includes intracranial haemorrhage

(figure 1 from RCOG guideline¹)

Table 1. Patients at risk of massive haemorrhage and strategies to reduce risk of damage

Criteria for Identifying Patients at Risk of Massive Haemorrhage (any)

- Patients likely to need replacement of their entire blood volume in 24 hours
- Patients who have at least one (1) of severe thoracic, abdominal or pelvic injury
- Patients who are receiving or have received > 3000mL (40mL/kg) crystalloid/colloid and 4 units of blood and have ongoing fluid resuscitation needs.

Damage Control during Resuscitation during CBP

- Early consultant input to arrest haemorrhage and minimize macrovascular bleeding
- Minimize macrovascular bleeding
- Minimize microvascular bleeding and coagulopathy – aggressive fluid resuscitation; use active warming measures (i.e. thermal control devices) to try and avoid hypothermia and acidosis