Maternal Collapse Guideline

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LOCSSIP Reference:		NATSSIP Standard:	List standard (NATSSIPS Standards)		

Version No:	Date of EqIA:	Approved by:	Date Approved:	Date made active:	Review Date:
2		Obstetric Guideline Group	23.4.2019	30.7.209	23.4.2022
		Obstetric Group - Extended whilst review is undertaken	23.03.2022	23.03.2022	23.09.2022
		Extended whilst review is finalised – Obstetric Group	11.10.2022	12.10.2022	11.04.2023

Brief Summary of Document:	To identify and manage maternal collapse
Scope	All maternity areas within the Health Board. All women in the antenatal, intrapartum and postnatal period. All staff providing clinical care. All clinical staff must have attended Basic Life Support Training Annually. 'The term "woman/women" in the context of this document is used as a biologically based term and is not intended to exclude trans and non-binary people who do not identify as women.'

To be read in conjunction with:	• Prompt (Practical Obstetric Multi-Professional Training) Course manual (2017) • https://www.rcog.org.uk/globalassets/documents/guidelines/gtg_56.pdf • 352 Resuscitation Policy|: http://howis.wales.nhs.uk/sitesplus/documents/862/352-ResuscitationPolicy.pdf
Patient Information:	Include links to Patient Information Library

Owning committee/ group	Obstetric Guideline and Audit Group

Reviews and updates		
Version no:	Summary of Amendments:	Date Approved:
1	New guideline	14.9.2017
2	Update of Guideline	23.4.2019

Glossary of terms

Term	**Definition**
CPR	Cardiopulmonary resuscitation
LSCS	Lower segment caesarean section
MEOWS	Modified early obstetric warning score

Keywords	Maternal collapse, resuscitation

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1. Aim of Guideline

The aim of this guideline is to identify and correctly manage maternal collapse.

2. Objectives

The objectives of this guideline are to summarise and standardise practice with regard to maternal collapse and initiate basic life support in a timely and correct manner therefore facilitating the best possible chances for mother and or fetus

3. Scope

The scope of this guideline is to show evidence of best practice in relation to the identification and management of maternal collapse

4. Introduction

- Maternal collapse is a rare but life-threatening event that can occur in a variety of circumstances. The outcome, primarily for the mother but also the fetus, depends on prompt and effective resuscitation.
- It is defined as an acute event involving the cardiorespiratory systems and/or brain, resulting in a reduced or absent conscious level (and potentially death), at any stage in pregnancy and up to six weeks after delivery.

5. Presentation

- Presentation may range from an isolated and temporary drop in blood pressure to cardiac arrest and death.
- Use of the MEOWs documentation can help identify triggers that may need an emergency response:

Airway	• Obstructed or noisy
Breathing	• Respiratory rate less than 5 or more than 35 breaths/minute
Circulation	• Pulse rate less than 40 or more than 140 beats/minute • Systolic blood pressure less than 80 or more than 180mmhg
Neurology	• Sudden decrease in level of consciousness • Unresponsive or responsive to painful stimuli only • Seizures

6. Possible causes:

HEAD	Eclampsia, epilepsy, cerebrovascular accident, vasovagal response
HEART	Myocardial infarction, arrhythmias, peripartum cardiomyopathy, congenital heart disease, dissection of thoracic aorta
HYPOXIA	Asthma, pulmonary embolism, pulmonary oedema, anaphylaxis
HAEMORRHAGE	Abruption, uterine atony, genital tract trauma, uterine rupture, uterine inversion, ruptured aortic aneurysm
W**H**OLE BODY **H**AZARDS	Hypoglycaemia, amniotic fluid embolism, septicaemia, trauma, complications of anaesthesia
The RCOG Green Top Guideline uses the Resuscitation Council categories of the 4 H's and the 4 T's, with the addition of eclampsia and intracranial haemorrhage in pregnant women	

4 H's:

Hypovolaemia	Bleeding (may be concealed) (obstetric/other) or relative hypovolaemia of dense spinal block; septic or neurogenic shock
Hypoxia	Pregnant women can become hypoxic more quickly Cardiac events: peripartum cardiomyopathy, myocardial infarction, aortic dissection, large-vessel aneurysms
Hypo/hyperkalaemia & other electrolyte disturbances	no more likely in pregnancy
Hypothermia	no more likely in pregnancy

4 T's:

Thromboembolism	amniotic fluid embolism, 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

7. Initial Management

- Follow Basic Life Support Algorithm: See Appendix 1

- Assess responsiveness of woman by gently shaking her and asking if she is alright – if no response seek immediate help.
- **Pull emergency buzzer, dial 2222 (or 999 if outside the hospital).**
- Turn her on her back and ask an assistant to manually displace the uterus to the left using one or two hands to reduce aortocaval obstruction. A 30-degree tilt can be used if a woman is on a firm surface that can be tilted (e.g. an operating table).
- Open the airway using head tilt and chin lift manoeuvres.
- Assess breathing for up to 10 seconds (look, listen feel). Agonal gasps (isolated or infrequent gasping in the absence of other breathing in an unconscious person) occur commonly in the first few minutes after a cardiac arrest; they are an indication for starting CPR immediately and should not be confused with normal breathing.
- While assessing breathing, observe for other signs of life, such as colour and movement
- If there are no signs of life, commence basic life support (Appendix A) until help arrives (to provide advanced life support) or the woman shows signs of life.
- If the woman has signs of life, place her in recovery position and give high-flow oxygen via a reservoir mask. Obtain IV access, take blood samples (FBC, clotting, U&E's, glucose, LFT's, G&S) and give IV fluids.
- Establish monitoring of vital signs with ECG, respirations, pulse, BP and pulse oximetry.
- Perform a primary obstetric survey.
- **With severe collapse and no cardiac output for more than 4 minutes consider peri-mortem caesarean section (delivery) to aid maternal resuscitation.**
  This is a senior obstetric decision.

7. Primary Obstetric survey

1	• Is fluid resuscitation a priority or is it contraindicated? • If in doubt, fluid is usually beneficial: the exception is when the woman has, or is at great risk of, pulmonary oedema, as may happen in severe pre-eclampsia or renal failure.
2	• Is a laparotomy required for diagnosis or treatment? • Is there evidence of an acute abdominal event? • Does the fetus need delivery to aid resuscitation?
3	• Is sepsis likely and are antibiotics therefore a priority?
4	• Is intensive care needed to provide airway, respiratory or circulatory support?

8. Secondary obstetric survey:

History	• Revisit the history of the collapse and the previous history of the woman • Read the notes and ask the partner or relatives
Examine	• Repeat the examination from 'top to toe'
Investigate	• Take arterial blood gases, troponins, blood glucose, lactate, blood cultures, ECG, chest x-ray, ultrasound of the abdomen and HVS
Monitor	• Continue monitoring of ECG, respirations, pulse, blood pressure and • pulse oximetry • Consider arterial and central venous pressure lines to aid monitoring
Pause & think further	• Consider further investigations such as CT/MRI scans and • echocardiography • Ask relevant experts for their opinions

9. Specific causes of maternal collapse:

- Pulmonary thromboembolism
- Haemorrhagic shock
- Eclamptic seizures and coma
- Cerebrovascular accident
- Septicaemic shock
- Dissmeninated intravascular coagulation
- Hypo- or hyperglycaemia
- Acute heart failure
- Pulmonary aspiration of gastric contents
- Anaphylactic or toxic reaction to drugs or allergens
- Amniotic fluid embolism
- Air embolism

10. Documentation

- The Heatlh Board resuscitation profroma which is kept on the resuscitation trolley must be completed for all cases.
- Datix Incident Reporting form must be completed.

11. Communication

- A scribe should be allocated to ensure that all events are recorded as contemporaneously as possible.
- The mother and her family must be debriefed following the event.
- The mother and the family should be informed that an investigation into the incident will be undertaken and that their views on events will be sought.

12. Auditable standards

- Datix reporting of all incidents of maternal collapse
- Audit completion of proforma in the event of maternal collapse
- Monitor maternal and neonatal outcomes following the event

13. References

- Prompt (Practical Obstetric Multi-Professional Training) Course manual (2017)
- Maternal Collapse in Pregnancy and the Puerperium (2011) Green-top Guideline No 56. https://www.rcog.org.uk/globalassets/documents/guidelines/gtg_56.pdf

Appendix 1. Basic Life Support

Basic Life Support (BLS) Algorithm (based on Resuscitation Council (UK) Guidelines, 2015)