



Critical Care of the Obstetric Patient Policy

1. Background

The need for critical care in obstetric patients is relatively infrequent. The reported United Kingdom (UK) evidence shows:

- An incidence of intensive care unit (ICU) admission for obstetrics varies between 0.17- 2.6 per 1000 births
- a decrease in the number of ICU admissions, following the increased availability of high dependency care for mothers in the delivery suite

Principles of critical care for Obstetric women

- Critical care is a level of required care, not a place of care, therefore it can be provided wherever the appropriately qualified staff and equipment are located
- Critical care should start as soon as it is required and not wait for admission to a dedicated unit for critical care i.e. ICU or High Dependency Unit (HDU)
- Critical care of obstetric women requires holistic care from Midwives, Obstetricians, +/- Anaesthetists, +/- Intensivists, +/- Physicians and +/-Registered Nurses (RN) while retaining the early newborn bonding for critically ill mothers
- Obstetric critical care requires a higher level of midwifery care than the usual midwifery hours per patient day for maternity wards
- Maternity and critical care services need to design pathways at a local level which ensure that a critically ill obstetric woman has access to all required specialties needed to deliver her care in the most appropriate location
- Care pathways should facilitate mother and baby remaining together, unless precluded by a clinical reason (i.e. maternal ventilation).
- **The location for the provision for critical obstetric care should not be determined on the basis of available (or lack of):**
 - **either midwives or critical care nursing staff**
 - **beds on either maternity or in critical care units.**

2. Policy Statement

This policy applies only to Obstetric patients in maternity hospitals with onsite HDU or ICU services (and excludes care relating to the newborn /neonate).

To ensure women requiring obstetric critical care receive that care in the right place from the right clinicians with the right expertise and with the right scope of practice.

2.1 Local critical care pathways must be developed to ensure the most appropriate setting / location for care in consideration of:

- combined requirements for obstetric, midwifery and critical care
- the needs of the fetus for pregnant women
- the multi-disciplinary assessment (obstetric, medical – critical care, midwifery and anaesthetic) of the individual woman's needs

- The level of care required by the woman (Level 1, 2 or 3 **see Appendix 1**) and the multidisciplinary care plan
- The required scope of midwifery and/or nursing practice
- The local clinical service framework

2.2 Critical care pathways can include:

- Care provision in the maternity unit either in a birth-suite **or** single room with:
 - one to one care by a Midwife,
 - the necessary additional equipment,
 - medical input from obstetricians +/-intensivists, anaesthetists, and physicians
 - a documented escalation plan for HDU/ICU care.
- The required scope of midwifery /nursing practice and may include
 - Midwife allocated to provide one to one care on the maternity ward
 - RN to be outreached from the Critical Care Unit to maternity under the supervision of a Midwife
 - RN in the Critical Care Unit allocated to provide one to one care with support from the maternity midwife allocated for outreach assessment
 - Midwife to be outreached to the Critical Care Unit under supervision of the RN to provide critical care to the woman and newborn.

3. Definitions

HDU	High Dependency Unit
ICU	Intensive Care Unit
M-ORC	Maternal Observation Response Chart
RFDS	Royal Flying Doctor Service
RRAD	Recognition and Response Acute Deterioration

4. Roles and Responsibilities

All staff are required to work within policies and guidelines to make sure that WACHS is a safe, equitable and positive place to be.

The obstetric and medical team/s should

- conduct a multidisciplinary review at a minimum of twice daily to assess the woman's level of critical care required
- The Obstetric team must be available by phone immediately and available to attend the hospital within a reasonable timeframe for assessment PRN

HDU/ICU clinicians should familiarise themselves with **Appendix 2** which sets out the physiologic impacts of pregnancy particularly relevant to resuscitation

5. Compliance

Failure to comply with this policy may constitute a breach of the WA Health Code of Conduct (Code). The Code is part of the [Employment Policy Framework](#) issued pursuant to section 26 of the [Health Services Act 2016](#) (HSA) and is binding on all WACHS staff which for this purpose includes trainees, students, volunteers, researchers, contractors for service (including all visiting health professionals and agency staff) and persons delivering training or education within WACHS.

Staff are reminded that compliance with all policies is mandatory.

6. Evaluation

Evaluation of this policy is to be carried out by the maternity manager by monitoring, investigating and escalating all

- cases requiring transfer from the maternity ward for critical care (HDU or ICU)
- clinical incidents where:
 - maternal deterioration is a contributing factor
 - Inadequate staffing or bed availability is a contributing factor to inability to provide the required level of critical care for the obstetric woman.

7. Standards

[National Safety and Quality Healthcare Standards](#) (Second edition 2017) - 1.1b/c, 1.7a, 1.27a, 6.1, 6, 11, 8.8, 8.10

8. Appendices

[Appendix 1: Level of obstetric critical care required](#)

[Appendix 2 - Physiological changes specific to pregnancy](#)

9. References

[UK, Health Service Executive \(2014\) Guidelines-for-the-Critically-Ill-Woman-in-Obstetrics](#)

Baskett, T. F. Epidemiology of obstetric critical care. Best practice & research. Clinical Obstetrics & Gynaecology 2008, 22, 763–74.

Pollock, W. et al, Intensive Care Medicine, 2010;36:1465-1474

Ryan M, Hamilton V, Bowen M, McKenna P. The role of high-dependency unit in a regional obstetric hospital. Anaesthesia 2000; 55: 1155–8.

Say L, Pattinson RC, Gülmezoglu AM. WHO systematic review of maternal morbidity and mortality: the prevalence of severe acute maternal morbidity (near miss). *Reprod Health* 2004;1:3. List source documents (hyperlinked to associated web pages where applicable).

[Paxton, J. et al \(2014\) Characteristics of obstetric patients referred to ICU in an Australian tertiary hospital. *Australian and New Zealand Journal of Obstetrics and Gynaecology* Vol 54 \(5\) pp 445-449](#)

10. Policy Framework

[Clinical Governance, Safety and Quality](#)

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Appendix 1: Level of obstetric critical care required

Level of care required	Clinical indications
<p>1 - One to one midwifery care</p> <p>At risk of condition deteriorating and needing a higher level of observation or those recently stepped down from intensive care</p> <p><i>Can be managed in the maternity setting with one-to-one midwifery care (or nursing care under direct supervision of a midwife)</i></p>	<ul style="list-style-type: none"> • Significant post-partum haemorrhage (PPH) with: <ul style="list-style-type: none"> ○ requirement for more frequent than normal observations ○ evidence of maternal compromise ○ therapeutic oxytocin infusion • Pre-eclampsia requiring IV anti-hypertensives and/or MgSo4 infusion • Women with medical conditions such as congenital heart disease, diabetic on insulin infusion • O2 via face-mask (50% or less) to maintain saturations • Stable sepsis • Stable uterine rupture
<p>2 – High dependency unit (HDU)</p> <p>Requiring invasive monitoring/intervention that includes support for a single failing organ system (excluding advanced respiratory support)</p> <p>Minimum twice daily assessments by the obstetric team and a midwife</p> <p>Requires care by a HDU nurse with phone advice provided by the maternity midwife PRN i.e. magnesium infusion policy for obstetrics</p> <p>Maternal observations are to be recorded on the MORC (140B) and additional observations on the 140D.</p>	<p>Respiratory Support (BRS)</p> <ul style="list-style-type: none"> • O2 via face mask (more than 50%) to maintain saturation • Continuous Positive Airway Pressure (CPAP) • Bi-Level Positive Airway Pressure (BIPAP) <p>Cardiovascular Support</p> <ul style="list-style-type: none"> • Invasive monitoring or sampling • CVP line used for fluid management or monitoring <p>Advanced Cardiovascular Support</p> <ul style="list-style-type: none"> • Simultaneous use of at least two IV anti-arrhythmic /antihypertensive /vasoactive drugs - one of which must be a vasoactive drug • Need to measure and treat cardiac output <p>Neurological Support</p> <ul style="list-style-type: none"> • Magnesium infusion to control seizures (not prophylaxis) • Intracranial pressure monitoring • Hepatic support • Management of acute fulminant hepatic failure, e.g. from HELLP syndrome or acute fatty liver, such that transplantation is being considered
<p>3 - Intensive Care Unit (ICU)</p> <p>Requiring advanced respiratory support (mechanical ventilation) alone or basic respiratory support along with support of at least one additional organ.</p> <p>IF WACHS ICU:</p> <p>Minimum twice daily assessments by the obstetric team and a midwife</p> <p>Requires care by an ICU nurse with phone advice provided by the maternity midwife PRN i.e. magnesium infusion policy for obstetrics</p>	<p>Advanced Respiratory Support</p> <ul style="list-style-type: none"> • Invasive mechanical ventilation <p>Support of two or more organ systems</p> <ul style="list-style-type: none"> • Renal and respiratory support • Respiratory and cardiovascular support and an additional organ support <p>Other:</p> <ul style="list-style-type: none"> • Cerebral haemorrhage • Pulmonary Embolism or oedema • Disseminated Intravascular Coagulation • Severe HELLP syndrome • Any continually deteriorating observations /condition

Appendix 2 - Physiological changes specific to pregnancy

These factors (not-exhaustive) must be considered by the critical care team when managing pregnant women in the HDU/ICU setting

	Changes in Pregnancy	Impact
Cardiovascular System		
Plasma volume	Increased by up to 50%	Dilutional anaemia Reduced oxygen-carrying capacity
Heart rate	Increased by 15–20 bpm	Increased CPR demands
Cardiac output	Increased by 40% in pregnancy Significantly reduced (30-40%) when supine due to aortocaval pressure of gravid uterus (>20 weeks) Decreased to 10% during CPR if supine/ aortocaval compression	Increased CPR demands Need to displace gravid uterus to left during ECC After 24 weeks - no response to effective CPR may require peri-mortem caesarean to: <ul style="list-style-type: none"> • ↑ cardiac output • ↑ lung capacity • Improve compression ability IV access needs to be above uterus
Uterine blood flow	Up to 750mls per minute at term	Potential for rapid massive haemorrhage
Systemic vascular resistance	Arterial BP ↓ by 10–15 mmHg	Decreased reserve Sequesters blood during CPR Susceptible to hypotension
Coagulation		Increased risk of VTE associated with specific factors (see MR 80A WACHS Maternity Inpatient Risk Assessment)
Respiratory System		
Respiratory rate	Increased	Decreased buffering capacity, acidosis more likely Vulnerable to rapid hypoxia Need high flow oxygen Early intubation
Oxygen consumption	Increased by 20%	
Residual capacity	Decreased by 25% due to diaphragmatic splinting by gravid uterus	
Arterial PCO2	Decreased	
Congested respiratory mucosa	Increased airway difficulties	Difficult intubation /smaller tube
Gastrointestinal		
Gastric motility	Decreased	Delayed gastric emptying and increased risk of aspiration
Oesophageal sphincter	Relaxed (influence of relaxin)	Increased risk of aspiration
Metabolic requirements	Increased	Extra 300 kcal required daily