The DH document ‘Comprehensive Critical Care’ recommends that the terms ‘high dependency’ and ‘intensive care’ be replaced by the term ‘critical care’.

Critical Care is a level of care not a place. It can be delivered wherever the facilities and appropriately qualified staff are available. Critical care should start as soon as it is needed and does not need to wait for admission to an intensive care unit. This guideline details the process for ensuring that women receive Maternity critical care in a suitable environment with the appropriate clinical expertise.

Defining the level of critical care required by the mother will be dependent on the number of organs requiring support and the type of support required as determined by the Intensive Care Society’s ‘Level of Care’ document.

The levels of care are detailed in the table below; using standardised terminology helps collect accurate data.

<table>
<thead>
<tr>
<th>Level of care</th>
<th>Examples</th>
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</thead>
</table>
| 1 - At risk of condition deteriorating and needing a higher level of observation or those recently relocated from higher levels of care. | Risk of haemorrhage
Oxytocin infusion
Mild pre-eclampsia on oral anti-hypertensives/fluid restriction etc
Women with medical conditions such as congenital heart disease, diabetic on insulin infusion. |
| 2 - Requiring invasive monitoring/intervention that includes support for a single failing organ system (excluding advanced respiratory support) | • Basic Respiratory Support (BRS)
○ 50% or more O₂ via face-mask to maintain O₂ saturation
○ Continuous Positive Airway Pressure (CPAP), Bi-Level Positive Airway Pressure (BIPAP)

• Basic Cardiovascular Support (BCVS)
○ IV anti-hypertensives, to control blood pressure in pre-eclampsia
○ Arterial line used for pressure monitoring or sampling
○ CVP line used for fluid management and CVP monitoring to guide therapy

• Advanced Cardiovascular Support (ACVS)
○ Simultaneous use of at least two IV, anti-arythmic/antihypertensive/vasoactive drugs, one of which must be a vasoactive drug
○ Need to measure and treat cardiac output

• Neurological Support
○ 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 |
| 3 - Requiring advanced respiratory support (mechanical ventilation) alone or basic respiratory support along with support of at least one additional organ. | Advanced Respiratory Support
○ Invasive mechanical ventilation

Support of two or more organ systems
○ Renal support and BRS
○ BRS/BCVS and an additional organ supported (a BRS and BCVS occurring simultaneously during the episode count as a single organ support) |
Delivery Suite Rooms 1 and 2 are identified as Critical Care rooms within the Sharoe Green Unit. The recovery ward, operating theatre and other labour ward rooms may also be appropriate. Women requiring Critical Care should not remain on the Maternity Ward, however, transfer to Delivery Suite should not delay urgent medical care.

**Agreed criteria for transfer to a Critical Care unit, within or outside of the maternity service**

*Compliance with these criteria will be audited with the High Dependency Care audit tool*

<table>
<thead>
<tr>
<th>Indications that a woman requires referral and possible transfer to the Critical Care Unit in the main hospital (level 3 care)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Requires ventilation</td>
</tr>
<tr>
<td>• Any evidence of vital organ dysfunction following haemorrhage</td>
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<tr>
<td>• Disseminated Intravascular Coagulation</td>
</tr>
<tr>
<td>• Requirement for invasive monitoring and strict fluid balance</td>
</tr>
<tr>
<td>• A continually deteriorating Modified Obstetric Early Warning Score</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indications that a woman should receive Level1/Level 2 Care within the Maternity service</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Modified obstetric early warning score &gt; 6, or an increasing score despite intervention</td>
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<tr>
<td>• Eclampsia or severe pre-eclampsia</td>
</tr>
<tr>
<td>• Obstetric haemorrhage:</td>
</tr>
<tr>
<td>o Massive (all definitions)</td>
</tr>
<tr>
<td>o Resulting in Haemoglobin fall &gt; 4g/dl</td>
</tr>
<tr>
<td>NB: Lower threshold for women with inherited or acquired coagulopathy</td>
</tr>
<tr>
<td>• Sepsis:</td>
</tr>
<tr>
<td>o Overt signs of sepsis with clinical signs of tachycardia and hypotension</td>
</tr>
<tr>
<td>o Complex fluid balance management requiring invasive lines</td>
</tr>
<tr>
<td>o Worsening infection despite antibiotic therapy</td>
</tr>
<tr>
<td>o Immuno-compromised patients</td>
</tr>
<tr>
<td>• Pulmonary Embolism (PE):</td>
</tr>
<tr>
<td>o Causing respiratory compromise (even if PE not confirmed, but suspected)</td>
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<tr>
<td>o With increasing hypoxia despite high flow oxygen</td>
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<tr>
<td>o Increased work of breathing associated with exhaustion/ confusion</td>
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<tr>
<td>o With other co-morbidities e.g. Poor mobility/ obesity/ underlying infection</td>
</tr>
<tr>
<td>o With requirement of frequent arterial blood gases or presence of arterial line</td>
</tr>
</tbody>
</table>

**Responsibilities of relevant staff groups**

- Health Care Professionals should:
  - Undertake observations at the frequency according to guidance for the underlying diagnosis
  - Document observations on the Obstetric Critical Care Observation chart for level 2 or level 3 care;
    the Obstetric Critical Care Observation chart may be used for level 1 care if deemed appropriate.
    Use of the Obstetric Critical Care Pathway should be instead of the Perinatal Institute notes.
  - Calculate a Modified Obstetric Early Warning Score with each set of observations
- Midwives caring for the woman should:
  - Provide one-to-one care if the woman receiving critical care, level 1 or greater, is in labour.

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Critical care (Maternity)  
Author: Anna Bewlay
• Ensure that adequate stock levels of appropriate equipment in the room used are maintained.
• Ensure the adult resuscitation equipment is fit for use.

- Obstetric team (obstetrician and anaesthetist) should:
  - Minimum of twice daily (around 09:00 and 21:00), conduct a multidisciplinary review to assess need for ongoing critical care within the Maternity service.
  - Update the Consultant Obstetrician and Anaesthetist of the clinical situation - may be via telephone.

- Anaesthetist and Consultant Obstetrician should review all women receiving level 1 care at least once a day
- Consultant Obstetric Anaesthetist and Consultant Obstetrician should review all women receiving level 2 care at least twice daily, around 09:00 and 21:00. Out of office hours, on call consultant review may need to be by telephone, contactable by switchboard.

Ensuring the availability of medical equipment in line with national guidance

Equipment extra to the basic room stock should be sourced from the delivery suite / theatre as appropriate.

The following equipment should be available, in line with Royal College of Anaesthetists Guidelines for the provision of Anaesthetic Services and Equity in Critical Care Document:

- On the resuscitation trolley:
  - Defibrillator
  - Resuscitation / emergency drugs
  - Drugs for managing sedation and the airway

- In each room:
  - Piped oxygen and masks
  - Suction and accessories (e.g. tubing and Yankuer)
  - Equipment to secure Intravenous access and administer Intravenous fluids
  - Neonatal resuscitation equipment

- Delivery suite / Theatres:
  - Equipment for blood gas analysis, haemocue haemoglobin estimation and blood sugar monitoring.
  - Neonatal resuscitation drugs - kept in the two neonatal resuscitation bays on Delivery Suite.
  - Intravenous pumps and /or syringe drivers
  - Monitoring equipment and accessories (ECG stickers and leads, BP cuffs, SpO₂ probe and invasive monitoring and leads)
  - O negative blood (available in the Hemonine fridge on Delivery Suite).
  - Easy access to Obstetric and Hospital Guidelines
  - Intravenous Fluid Warmer
  - Forced Air warming Device
  - Transfer equipment is readily available from the Main Hospital Critical Care Unit

When to involve clinicians from outside of the maternity service

Compliance with this involvement will be audited with the High Dependency Care audit tool

Individual guidelines for the condition, e.g. massive postpartum haemorrhage, include when to involve clinicians from outside of the maternity service.
Medical/ surgical review should be sought for women receiving Critical care on Delivery Suite for non-obstetric indications or co-existing problems.

Early communication of anticipated problems to a critical care clinician may prevent delay in admission to The Main hospital Critical Care Unit.

Refer to Critical Care Outreach Team - bleep 3388/ Hospital at Night Service after 20:00 - bleep 9090 in the following situations:

- Modified Obstetric Early Warning Score indicates, in accordance with the Modified Obstetric Early Warning Score guideline
- Invasive monitoring is required
- Providing immediate intensive care in an obstetric theatre
- Potential for Intensive Care Unit/High Dependency Unit admission

Level 2 (HDU) or level 3 (Critical Care) in the main hospital may be required.

All involvement of clinicians from outside of the maternity service should be documented in the Maternal records.

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**Requirements of each staff group when transferring women to a high dependency unit/intensive care unit**

*Compliance with these requirements will be audited with the High Dependency Care audit tool*

Transfer to the main hospital Critical Care Unit (CCU) may depend on many factors including the woman’s clinical state/stability; bed state of delivery suite and CCU, together with staffing numbers. The Consultant Obstetrician, with advice from the Anaesthetist, should discuss the need to transfer to CCU with the Consultant for Critical Care. All discussions should be documented.

Portable monitoring with facility for invasive monitoring must be available to facilitate transfer of obstetric women to CCU and is best sourced from CCU or main theatre. It is the responsibility of the anaesthetist caring for the woman to arrange any equipment required for transfer. A basic anaesthetic drug and intubation equipment pack is available in the Sharoe Green theatre.

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**References:**

- RCOA (2009) *Guidelines for the provision of anaesthetic services Chapter 11 - Guidance on the provision of obstetric anaesthesia services*
- Providing equity of critical and maternity care for the critically ill pregnant or recently pregnant woman. July 2011 *Joint Document RCoA, ICS, OAA, RCoG, RCM, BMFMS.*