



**NATIONAL PERINATAL  
EPIDEMIOLOGY CENTRE**

**CONFIDENTIAL AUDIT of**

**Critical Care in Obstetrics in Ireland**

**2014**

**Detailed Case Assessment Form of Level 2 & Level 3  
Critical Care in Obstetrics**

**Please return completed forms to:**

Edel Manning  
Project manager  
National Perinatal Epidemiology Centre  
Department of Obstetrics and Gynaecology  
5<sup>th</sup> Floor, Cork University Maternity Hospital  
Wilton  
Cork

## Rationale for this confidential Audit

As part of the on-going confidential clinical audit on severe maternal morbidity in Ireland, the National Perinatal Epidemiology Centre (NPEC) aims to conduct an audit on pregnant or recently pregnant women (this includes women in the postpartum period and women following early pregnancy loss) requiring Level 2 and Level 3 Critical Care. Please see Table1 on page 8 for definitions.

Objectives of this audit are:

- To identify the number of women requiring Level 2 and Level 3 Care in the Irish maternity services
- To identify the location where critical care is provided
- To identify resources and other issues impacting on access to and provision of Level 3 care
- To evaluate the use of ICU/CCU facilities within the Irish Maternity Services.

Please note obstetric patients who are admitted to ICU will be subject to the Intensive Care National Audit and Research Centre, (ICNARC) audit. The NPEC confidential audit on critical care in obstetrics compliments the ICNARC audit from an obstetric view point. There is no duplication of data collection.

## The NPEC is sincerely grateful for your contribution to this audit

### Inclusion criteria for the audit of Critical Care in Obstetrics:

All pregnant or recently pregnant women (up to and including 42 days following delivery, miscarriage, termination of pregnancy or ectopic pregnancy) who require Level 2 or Level 3 Care.

## Guidelines for completing notification and case assessment forms

- Definitions and examples of levels of care are outlined in Table1 on page 8
- Abbreviations are outlined in Table 2 on page 8
- Please mark the category box on the top of page 1 indicating Level of critical care provided/sequence of care
- 'Not known' codes should be used as sparingly as possible
- **Please ensure that the NPEC Severe Maternal Morbidity Notification Form is completed (either online via the NPEC online database or in hard copy form) along with this form**
- Relevant sections to be completed for Level 2 and Level 3 Care are outlined below:

Women requiring  
Level 2 Care only

- Section 1 & 2 (questions 1- 17)
- Ensure Severe Maternal Morbidity Notification Form has been completed

Women requiring  
Level 3 Care only

- Sections 1 & 3 (questions 1 - 6 and 18 - 33 )
- Ensure Severe Maternal Morbidity Notification Form has been completed

Women requiring  
Level 2 and Level 3  
Care

- Sections 1 & 2 & 3 (questions 1 - 33 )
- Ensure Severe Maternal Morbidity Notification Form has been completed

**Thank you for taking the time to complete this form**

# Critical Care in Obstetrics

## Section 1

Hospital Name: \_\_\_\_\_  
(Please print)

Completed by: \_\_\_\_\_  
(Please print name and staff grade)

NPEC Reference Number:

\_\_\_\_\_  
(As issued from the online database)

### 1. Category of the level of Critical Care required in this clinical event

If applicable please indicate the sequence of critical care provided in this clinical event:

Level 2 Care <u>only</u>	
Level 3 Care <u>only</u>	
Level 2 Care followed by Level 3 Care	
Level 3 Care followed by Level 2 Care	
Level 2 Care followed by Level 3 Care followed by Level 2	

2. Date of Clinical Event:   /   /    
Day Month Year

3. Time of Event:  :  (24 hour clock)

4a. Maternal age:  4b. Parity: (Status prior to delivery)  +

### 5. Did this woman have a medical/surgical or psychiatric disorder that pre-existed this pregnancy?

Yes  No

If yes, please specify disorder(s) \_\_\_\_\_

6. Was this pregnancy identified as 'high risk' during the antenatal period? Yes  No

## Section 2: Level 2 Care

7. Duration of Level 2 Care in days/ part days:  Days  
(e.g.1.5 days)

### 8. Location where Level 2 Care was provided in this clinical event (Please tick all that apply):

Ward  (Please specify type, maternity/gynaecology/general) \_\_\_\_\_

Delivery Suite  Theatre  Dedicated HDU /Maternity Hospital

Dedicated HDU/ General Hospital  ICU  CCU

Other, please specify  \_\_\_\_\_

**9. Location of maternal care prior to Level 2 Care**

Home  Ward  (Please specify type: *maternity/gynaecology/general*) \_\_\_\_\_  
Delivery Suite  Theatre  Dedicated HDU/Maternity Hospital   
Dedicated HDU/General Hospital  ICU  CCU   
Other, please specify  \_\_\_\_\_

**Inter-hospital Transfer**

**10a. Was this woman transferred from another hospital for Level 2 Care?**

Yes  No  (If no, please go to question 11a)

**\*Inter-hospital transfer only:**

**10b. Was the referring hospital within your HSE regional hospital network?** Yes  No

**10c. Please indicate below all health care professionals in attendance during transfer (please specify grade):**

Anaesthetist  \_\_\_\_\_ Obstetrician  \_\_\_\_\_  
Midwife  \_\_\_\_\_ Nurse  \_\_\_\_\_ Other, please specify  \_\_\_\_\_

**11a. Please identify the organ system that required support during Level 2 Care**

(Please refer to page 8 for examples of organ support required in Level 2 Care)

\_\_\_\_\_  
\_\_\_\_\_

**11b. If a Magnesium Sulphate infusion was transfused, what was the primary indication for the transfusion:**

Maternal: treatment for eclamptic seizure  Fetal neuroprotection only

Maternal: prophylaxis of eclampsia in severe pre-eclampsia

**12. Please specify the main clinical diagnosis during Level 2 Care in this clinical event:**

\_\_\_\_\_  
\_\_\_\_\_

**Maternal monitoring prior to commencement of Level 2 Care**

**13a. Was an IMEWS chart used prior to commencement of Level 2 Care?**

Yes  No  (please go to question 13d)

**13b. If yes, on average how often were physiological observations recorded?**

(e.g. every 30 minutes)

Every  hours  minutes

**13c. What was the highest IMEWS score recorded prior to commencement of Level 2 Care?**

\_\_\_\_\_  
\_\_\_\_\_

**13d. If an I-MEWS chart was not used prior to commencement of Level 2 Care, please indicate why not?**

\_\_\_\_\_

**Maternal monitoring during Level 2 Care:**

**14a. Was an IMEWS chart used during Level 2 Care?** Yes  No

**14b. Was the patient monitored using another specific physiological track and trigger system/tool?**  
Yes  No  (please go to question 14d)

**14c. Were patient specific triggers identified using this system/ tool?** Yes  No

**14d. Was invasive monitoring used?** Yes  No

(If yes, please tick all that apply)

CVP line  Arterial line  Other  please specify \_\_\_\_\_

**Specialist review:**

**15. Was the woman reviewed by a non-obstetric medical specialist?** Yes  No

(If yes, please tick all that apply)

Anaesthetist  Critical Care Intensivist  Haematologist  General surgeon

Physician  \_\_\_\_\_ Neurosurgeon  Cardiologist  Psychiatrist

(Please specify speciality)

**Neonatal Care:**

**16a. Location of neonate during maternal Level 2 Care**

Not applicable/not delivered or early pregnancy loss  With mother  (go to question 17a)

Not with mother  please specify location \_\_\_\_\_

**16b If neonatal care was transferred to SBCU/NICU, was SBCU/NICU care required for the neonate's own clinical condition?** Yes  No

**Discharge from Level 2 Care**

**17a Please indicate the level of care required at discharge from Level 2 Care:**

Level 0  Level 1  Level 3

**17b Please identify the discharge location of this women following Level 2 Care:**

Ward  (Please specify type, maternity/gynaecology/general) \_\_\_\_\_

Delivery Suite  Theatre  Dedicated HDU Maternity Hospital

Dedicated HDU General Hospital  ICU  CCU  Maternal Death

Other, please specify  \_\_\_\_\_

**Please use this space to enter any relevant issues regarding provision of Level 2 Care in this event**

## Section 3: Level 3 Care

18. Duration of Level 3 care in days/part days (e.g. 1.5 days):  Days

19a. Please identify the location where Level 3 Care was provided

ICU       CCU       Other, please specify  \_\_\_\_\_

19b. Where was the ICU/CCU care facilitated?

Co-located site       Off maternity hospital site/ within the HSE regional network

Off maternity hospital site/ not within the regional network but within the HSE\*       In another jurisdiction\*

\*If applicable, please specify reason for transfer of care outside your unit's HSE regional network

---

20. Was there a delay in accessing an ICU/CCU bed?      Yes       No

If yes, what was the estimated time delay in hours?

21. Location of care prior to commencement of Level 3 Care:

Ward  (Please specify type, maternity/gynaecology/general) \_\_\_\_\_

Delivery Suite       Theatre       Dedicated HDU Maternity Hospital

Dedicated HDU General Hospital       ICU       CCU

Other, please specify  \_\_\_\_\_

22. What was the highest level of care provided prior to commencement of Level 3 Care?

23a. Was the woman reviewed by an Anaesthetist or Critical Care Intensivist prior to ICU/CCU admission?

Yes  (If yes, please go to question 24a)      No       Unknown

23b. Was there a discussion between the Obstetric Team and the Anaesthetist or Critical Care Intensivist prior to admission?

Yes       No       Unknown

Maternal monitoring prior to commencement of Level 3 Care

24a. Was an IMEWS chart used prior to commencement of Level 3 Care?

Yes       No  (If no, please go to question 24d)

24b. If yes, on average how often were physiological observations recorded?

(e.g. every 30 minutes)

Every  hours  minutes

24c. What was the Highest IMEWS score recorded prior to commencement of Level 3 Care?

---

24d. If an IMEWS chart was not used prior to commencement of Level 3 Care, please indicate why not?

---

**Maternal monitoring during Level 3 Care**

25a. Was the patient monitored using a specific physiological track and trigger system/tool?

Yes  No  Unknown

**Invasive monitoring:**

25b. Was invasive monitoring used during Level 3 Care? Yes  No  Unknown

*(If yes, please tick all that apply)*

CVP line  Arterial line  Other  please specify \_\_\_\_\_

**Communication/ transfer details:**

26. Did a written multidisciplinary care plan accompany the maternal transfer details to location of Level 3 Care?

Yes  No  Unknown

**If yes, which of the following were identified in the care plan?**

*(Please tick all that apply)*

Consultant Obstetrician  Consultant Anaesthetist  ICU/CCU Intensivist  Senior Midwife

Neonatologist  Other, please specify  \_\_\_\_\_

27. Please indicate all healthcare professionals in attendance during transfer to location of Level 3 Care

*(Please specify grade)*

Anaesthetist  \_\_\_\_\_ Obstetrician  \_\_\_\_\_

Midwife  \_\_\_\_\_ Other  \_\_\_\_\_

28. Please specify the main clinical diagnosis prior to commencement of Level 3 Care

---

---

29. Please specify the clinical diagnosis at discharge from Level 3 Care

---

---

**30. Please indicate in the Table below any organ dysfunction identified and organ support required both at commencement of and during Level 3 Care (Please tick all that apply)**

<b>Organ Dysfunction/Support</b>	<b>At commencement of Level 3 Care</b>	<b>During Level 3 Care</b>	<b>Not applicable</b>	<b>Unknown</b>
<b><u>Respiratory Support:</u></b> Basic Respiratory support (Definition page 8)				
Advanced respiratory support (mechanical ventilation)				
<b><u>Neurological Dysfunction/Support:</u></b> Prolonged unconsciousness (lasting ≥ 12 hours).....				
Coma (including metabolic coma).....				
Stroke.....				
Uncontrollable fits/status epilepticus.....				
Total paralysis.....				
<b>Lowest total Glasgow Score</b>				
<b><u>Cardiac Dysfunction/Support:</u></b> Cardiac Arrest.....				
Cardiopulmonary Resuscitation.....				
Use of continuous Cardiac Vasoactive Drugs.....				
Severe hypoperfusion (lactate ≥ 4 mmol/L or severe acidosis (PH <7.1).....				
<b><u>Renal Dysfunction/Support:</u></b> Oligouria, non-responsive to fluids or diuretics				
Dialysis for Acute Renal Failure				
Severe acute azotemia (creatinine ≥ 300 µmol/ml or ≥ 3.5 mg/dL)				
<b><u>Coagulation/Haematological Dysfunction/Support:</u></b> Disseminated Intravascular Coagulopathy (DIC) .....				
Severe thrombocytopenia (< 50, 000 platelets/ml).....				
Transfusion of blood or red cells (≥ 5 units).....				
<b><u>Hepatic Dysfunction:</u></b> Jaundice in the presence of pre-eclampsia, eclampsia				
Severe Acute Hyperbilirubinemia (bilirubin > 100 µmol /L or > 6.0 mg/dL)				
<b><u>Uterine Dysfunction:</u></b> Uterine haemorrhage or infection leading to hysterectomy.....				
<b><u>Sepsis or Severe Systemic infection</u></b>				
<b><u>Multi Organ Failure</u></b>				



**Location of neonate during Level 3 Care**

**31 a. Location of Neonatal Care:**

Not delivered or early pregnancy loss  (please go to question 32)      With mother  (please go to question 32)

Not with mother , please specify location \_\_\_\_\_ (please go to 31b)

**31b. If neonatal care was transferred to SBCU/NICU, was SBCU/NICU care required for the neonate's own clinical condition?**      Yes       No

**32. Discharge details from Level 3 Care**

**Please indicate the level of care required at discharge from Level 3 Care?**

Level 0 Care       Level 1 Care       Level 2 Care       Maternal Death

**Where was the discharge destination of this women following Level 3 Care?**

Ward  (Please specify type, maternity/gynaecology/general) \_\_\_\_\_

Delivery Suite       Dedicated HDU Maternity Hospital       Dedicated HDU General Hospital

Maternal Death       Other, please specify  \_\_\_\_\_

**33a Was a written discharge summary of Level 3 Care received by the referring Obstetric Team/Unit?**

Yes  (Please answer 33b)      No       Unknown

**33b Please indicate all personnel notified of maternal outcome following Level 3 Care:**

Referring Consultant Obstetrician       Consultant Neonatologist       Consultant Anaesthetist

Critical Care Intensivist       Physician  please specify speciality \_\_\_\_\_

Senior Midwife       General Practitioner       Public Health Nurse       Consultant Psychiatrist

Other  please specify \_\_\_\_\_

**Thank you for taking the time to complete this form**

## Definitions of Levels of Care

**Table 1: Definitions of Level of Care**

Level of care	Definition
<b>Level 0: Normal ward care</b>	Care of low risk pregnant women
<b>Level 1: Additional monitoring or intervention, or step down from higher level of care</b>	Patients at risk of their condition deteriorating and needing a higher level of observation or those recently relocated from higher levels of care
<b>Level 2: Single Organ Support**</b>	Patients requiring invasive monitoring */ intervention including support for a single failing organ system (excluding advanced respiratory support).
<b>Level 3: Advanced respiratory support alone, or support of two or more organ systems**</b>	Patients requiring advanced respiratory support (mechanical ventilation) alone or basic respiratory support along with support of at least one additional organ.

\* Invasive monitoring includes the use of arterial and CVP lines

### Examples of Critical Care, Level 2 and Level 3:

#### **Level 2 Care:**

Basic Respiratory Support (BRS): 50% or more oxygen via face-mask to maintain oxygen saturation; Continuous Positive Airway Pressure (CPAP), Bi-Level Positive Airway Pressure (BIPAP)

Basic Cardiovascular Support (BCVS): Intravenous anti-hypertensive, 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 intravenous, anti-arrhythmic/anti-hypertensive/vasoactive drugs, one of which must be a vasoactive drug; Need to measure and treat cardiac output

Neurological Support: Magnesium Sulphate infusion to control seizures / other

Hepatic Support: Management of acute fulminant hepatic failure, e.g. from HELLP syndrome or acute fatty liver, such that transplantation is being considered

#### **Level 3 Care:**

Advanced Respiratory Support: Invasive mechanical ventilation

Support of two or more organ systems: Renal support and BRS;

BRS/BCVS and an additional organ supported (BRS and BCVS occurring simultaneously during the episode count as a single organ support);

Intracranial pressure monitoring

**References:** Saravanakumar K, Davies L, Lewis M, Cooper GM. High dependency care in an obstetric setting in the UK. *Anaesthesia* 2008;63, 1081-6

**Table 2: Abbreviations**

Abbreviation	Definition
<b>CCU</b>	Coronary Care Unit
<b>HDU</b>	High Dependency Unit
<b>ICU</b>	Intensive Care Unit
<b>I-MEWS</b>	Irish Maternity Early Warning System

If you have questions or difficulties regarding any aspect of the form, please do not hesitate to contact Edel Manning at: [e.manning@ucc.ie](mailto:e.manning@ucc.ie), telephone: (021) 4205042