

Confidential Audit of Severe Maternal Morbidity (SMM) in Ireland



NATIONAL PERINATAL
EPIDEMIOLOGY CENTRE **2020**

INFORMATION FOR THOSE COMPLETING THIS FORM

The National Perinatal Epidemiology Centre (NPEC) is sincerely grateful for your contribution to this audit. If you have questions or difficulties regarding any aspect of the form, please do not hesitate to contact the NPEC team by telephone: **021 4205042** or by email: **e.manning@ucc.ie**

In this audit, a case of severe maternal morbidity (SMM) is defined as a pregnant or recently-pregnant woman (i.e. up to 42 days following the pregnancy end).

Please return completed forms to:

Edel Manning
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National Perinatal Epidemiology Centre
Department of Obstetrics and Gynaecology
5th Floor, Cork University Maternity Hospital
Wilton
Cork

Hospital Name: _____

Completed by: _____

(Please print name and staff grade)

1. SMM - Woman's details	
Date of clinical event (day-month-year)	
Time of onset of clinical event (hour-minute)	
Woman's age	
Was this woman a private or public patient?	<input type="checkbox"/> Private <input type="checkbox"/> Public
Parity: number of births (alive or stillborn with a gestational age of 24 weeks or more)	
Parity: number of pregnancy losses (less than 24 weeks of gestation)	
Height at booking in meters (e.g. 1.8 meters)	
Weight at booking in kilograms	
BMI	
If height and/or weight was missing, but BMI was provided, please enter the value here	
Date of delivery (day-month-year)	
Gestation at delivery/pregnancy ends in completed weeks	
Ethnic group	<input type="checkbox"/> White Irish <input type="checkbox"/> Irish Traveller <input type="checkbox"/> Any other White background <input type="checkbox"/> Asian or Asian Irish <input type="checkbox"/> Black or Black Irish <input type="checkbox"/> Other, including mixed ethnic backgrounds* <input type="checkbox"/> Not recorded
Please specify country of origin if "Any other White background" or "other, including mixed ethnic backgrounds" was selected in the previous question	
Was the care of this woman transferred FROM another hospital?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, please indicate timing of transfer in relation to pregnancy status	<input type="checkbox"/> Woman transferred with fetus in-uteru <input type="checkbox"/> Woman transferred following delivery of baby
Name of referring maternity unit	
Was the care of this woman transferred TO another hospital?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, please indicate timing of transfer in relation to pregnancy status	<input type="checkbox"/> Woman transferred with fetus in-uteru <input type="checkbox"/> Woman transferred following delivery of baby
Name of maternity unit where the woman was transferred to	
Did the woman smoke at booking?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not recorded
If yes, please specify quantity	<input type="checkbox"/> Not recorded
Did she give up smoking during pregnancy?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not recorded
Did the woman drink alcohol at booking?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not recorded
Is there documented history of drug abuse or attendance at a drug rehabilitation unit?	<input type="checkbox"/> None recorded <input type="checkbox"/> Prior to this pregnancy <input type="checkbox"/> During this pregnancy

2. SMM - Obstetric history/current pregnancy and neonatal outcome

Did the woman have a previous caesarean section?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not recorded
Was this pregnancy the result of infertility treatment?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not recorded
If yes, please specify method of fertility treatment	
Number of fetuses/babies in this delivery (Please select all that apply)	<input type="checkbox"/> One <input type="checkbox"/> Two <input type="checkbox"/> Three <input type="checkbox"/> More than three
Please specify number of fetuses if there were more than 3 fetuses/babies	
Fetus/baby 1	
(Please indicate whether an early pregnancy loss or termination of pregnancy occurred for baby 1)	<input type="checkbox"/> Early pregnancy loss <input type="checkbox"/> Not applicable <input type="checkbox"/> Termination of pregnancy
Please specify the type of early pregnancy loss If early pregnancy loss please go to section 3 (SMM - Location of level of care)	<input type="checkbox"/> Miscarriage (Early pregnancy loss with less than 13 weeks of gestation) <input type="checkbox"/> Ectopic pregnancy
Fetus/baby 2	
(Please indicate whether an early pregnancy loss or termination of pregnancy occurred for baby 2)	<input type="checkbox"/> Early pregnancy loss <input type="checkbox"/> Not applicable <input type="checkbox"/> Termination of pregnancy
Please specify the type of early pregnancy loss	<input type="checkbox"/> Miscarriage (Early pregnancy loss with less than 13 weeks of gestation) <input type="checkbox"/> Ectopic pregnancy
Fetus/baby 3	
(Please indicate whether an early pregnancy loss or termination of pregnancy occurred for baby 3)	<input type="checkbox"/> Early pregnancy loss <input type="checkbox"/> Not applicable <input type="checkbox"/> Termination of pregnancy
Please specify the type of early pregnancy loss	<input type="checkbox"/> Miscarriage (Early pregnancy loss with less than 13 weeks of gestation) <input type="checkbox"/> Ectopic pregnancy
Fetus/baby More than 3	
(Please indicate whether an early pregnancy loss or termination of pregnancy occurred for baby More than 3)	<input type="checkbox"/> Early pregnancy loss <input type="checkbox"/> Termination of pregnancy
Please specify the type of early pregnancy loss	<input type="checkbox"/> Miscarriage (Early pregnancy loss with less than 13 weeks of gestation) <input type="checkbox"/> Ectopic pregnancy
Delivery details	
Onset of labour	<input type="checkbox"/> Spontaneous <input type="checkbox"/> Induced <input type="checkbox"/> Never in labour
Lie of fetus at delivery	<input type="checkbox"/> Longitudinal <input type="checkbox"/> Oblique <input type="checkbox"/> Transverse
Presentation at delivery	<input type="checkbox"/> Cephalic <input type="checkbox"/> Breech <input type="checkbox"/> Other
Mode of delivery baby 1	<input type="checkbox"/> Spontaneous vaginal delivery <input type="checkbox"/> Assisted vaginal breech delivery <input type="checkbox"/> Ventouse vaginal delivery <input type="checkbox"/> Non-rotational forceps vaginal delivery <input type="checkbox"/> Rotational forceps vaginal delivery <input type="checkbox"/> Elective LSCS <input type="checkbox"/> Emergency LSCS <input type="checkbox"/> Classical Caesarean Section
Mode of delivery baby 2	<input type="checkbox"/> Spontaneous vaginal delivery <input type="checkbox"/> Assisted vaginal breech delivery <input type="checkbox"/> Ventouse vaginal delivery <input type="checkbox"/> Non-rotational forceps vaginal delivery <input type="checkbox"/> Rotational forceps vaginal delivery <input type="checkbox"/> Elective LSCS <input type="checkbox"/> Emergency LSCS <input type="checkbox"/> Classical Caesarean Section
Mode of delivery baby 3	<input type="checkbox"/> Spontaneous vaginal delivery <input type="checkbox"/> Assisted vaginal breech delivery <input type="checkbox"/> Ventouse vaginal delivery <input type="checkbox"/> Non-rotational forceps vaginal delivery <input type="checkbox"/> Rotational forceps vaginal delivery <input type="checkbox"/> Elective LSCS <input type="checkbox"/> Emergency LSCS <input type="checkbox"/> Classical Caesarean Section

Neonatal Outcomes – Baby 1	
Birth weight in grams	
Intubation following delivery	<input type="checkbox"/> Yes <input type="checkbox"/> No
Transferred to SBCU/NICU	<input type="checkbox"/> Yes <input type="checkbox"/> No
Neonatal outcome	<input type="checkbox"/> Live born (baby born with evidence of life such as breathing movements, presence of a heart beat, pulsation of the cord or definite movement of voluntary muscles) <input type="checkbox"/> Late miscarriage (between 13 weeks and up to 24 weeks of gestation) <input type="checkbox"/> Stillbirth (a baby delivered without signs of life from 24 weeks' gestation and/or with a birth weight of more or equal 500 gramme) <input type="checkbox"/> Early neonatal death (death of a live born baby occurring before 7 completed days after birth) <input type="checkbox"/> Late neonatal death (death of a live born occurring from the 7th day and before 28 completed days after birth)
Neonatal Outcomes – Baby 2	
Birth weight in grams	
Intubation following delivery	<input type="checkbox"/> Yes <input type="checkbox"/> No
Transferred to SBCU/NICU	<input type="checkbox"/> Yes <input type="checkbox"/> No
Neonatal outcome	<input type="checkbox"/> Live born (baby born with evidence of life such as breathing movements, presence of a heart beat, pulsation of the cord or definite movement of voluntary muscles) <input type="checkbox"/> Late miscarriage (between 13 weeks and up to 24 weeks of gestation) <input type="checkbox"/> Stillbirth (a baby delivered without signs of life from 24 weeks' gestation and/or with a birth weight of more or equal 500 gramme) <input type="checkbox"/> Early neonatal death (death of a live born baby occurring before 7 completed days after birth) <input type="checkbox"/> Late neonatal death (death of a live born occurring from the 7th day and before 28 completed days after birth)
Neonatal Outcomes – Baby 3	
Birth weight in grams	
Intubation following delivery	<input type="checkbox"/> Yes <input type="checkbox"/> No
Transferred to SBCU/NICU	<input type="checkbox"/> Yes <input type="checkbox"/> No
Neonatal outcome	<input type="checkbox"/> Live born (baby born with evidence of life such as breathing movements, presence of a heart beat, pulsation of the cord or definite movement of voluntary muscles) <input type="checkbox"/> Late miscarriage (between 13 weeks and up to 24 weeks of gestation) <input type="checkbox"/> Stillbirth (a baby delivered without signs of life from 24 weeks' gestation and/or with a birth weight of more or equal 500 gramme) <input type="checkbox"/> Early neonatal death (death of a live born baby occurring before 7 completed days after birth) <input type="checkbox"/> Late neonatal death (death of a live born occurring from the 7th day and before 28 completed days after birth)

3. SMM - Location and level of care

Please tick all that apply	<input type="checkbox"/> On the ward <input type="checkbox"/> Delivery Suite <input type="checkbox"/> Theatre <input type="checkbox"/> High Dependency Unit <input type="checkbox"/> ICU/CCU
Please indicate the HIGHEST level of care required during the clinical event	<input type="checkbox"/> Level 0: Normal ward care <input type="checkbox"/> Level 1: Additional monitoring or intervention, or step down from higher level of care <input type="checkbox"/> Level 2: Single Organ Support <input type="checkbox"/> Level 3: Advanced respiratory support alone, or support of two or more organ systems

Definitions of level of care are defined in Appendix 1

4. SMM - Maternal Morbidity Category

(Definitions of morbidities are defined in Appendix 2. Please tick all that apply)

Major obstetric haemorrhage (MOH)	
Please specify the criteria met for the MOH in the questions below. More than 1 can apply. Please complete the next section in relation to MOH	
Estimated Blood Loss >= 2500 mls	<input type="checkbox"/> Yes <input type="checkbox"/> No
Transfused with more or equal 5 units of blood	<input type="checkbox"/> Yes <input type="checkbox"/> No
If MOH, did the woman received treatment for coagulopathy?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Uterine Rupture	<input type="checkbox"/> Yes <input type="checkbox"/> No
Peripartum hysterectomy (PH)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Please specify indication for PH in the text box below	
Eclampsia	<input type="checkbox"/> Yes <input type="checkbox"/> No
Renal or liver dysfunction	<input type="checkbox"/> Yes <input type="checkbox"/> No
Pulmonary Oedema	<input type="checkbox"/> Yes <input type="checkbox"/> No
Acute respiratory dysfunction	<input type="checkbox"/> Yes <input type="checkbox"/> No
Pulmonary Embolism	<input type="checkbox"/> Yes <input type="checkbox"/> No
Cardiac arrest	<input type="checkbox"/> Yes <input type="checkbox"/> No
Coma	<input type="checkbox"/> Yes <input type="checkbox"/> No
Cerebro-vascular event	<input type="checkbox"/> Yes <input type="checkbox"/> No
Status epilepticus	<input type="checkbox"/> Yes <input type="checkbox"/> No
Septicaemic shock	<input type="checkbox"/> Yes <input type="checkbox"/> No
Anaesthetic problem	<input type="checkbox"/> Yes <input type="checkbox"/> No
ICU/CCU admission	<input type="checkbox"/> Yes <input type="checkbox"/> No
Please ensure this information matches the information selected in the location of care	
Please specify indication for admission	
Please specify the duration of ICU care in days/part days (e.g. 1.5 days)	
Other severe maternal morbidity (SMM)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Please specify other SMM	
Interventional Radiology (IR) Please select all that apply	<input type="checkbox"/> Unplanned IR <input type="checkbox"/> Planned IR
Please use this space to enter any additional relevant information	

Appendix 1: Level of care

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

¹ Invasive monitoring/intervention includes the use of arterial and CVP lines

Examples of level 2 care in the critically ill pregnant or recently pregnant women are outlined below:

² Level 2 examples:

- **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 infusion to control seizures / prophylaxis of eclampsia in severe PET
- **Hepatic Support:** Management of acute fulminant hepatic failure, e.g. from HELLP syndrome or acute fatty liver, such that transplantation is being considered

Examples of level 3 care in the critically ill pregnant or recently pregnant women are outlined below:

³ Level 2 examples:

- Advanced Respiratory Support: Invasive mechanical ventilation
- Support of two or more organ systems: Renal support and BRS; BRS/BCVS and an additional organ supported; Intracranial pressure monitoring

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

Appendix 2: Maternal Morbidity Definitions

1: Major Obstetric Haemorrhage (MOH)	Estimated blood loss \geq 2500ml and/or transfused 5 or more units of blood (please record as well whether treatment for coagulopathy was received). Also includes ectopic pregnancy meeting these criteria.
2: Uterine rupture	A complete separation of the wall of the pregnant uterus, with or without expulsion of the fetus, involving rupture of membranes at the site of the uterine rupture or extension into uterine muscle separate from any previous scar, and endangering the life of the mother or fetus. Excluded: any asymptomatic palpable or visualised defect (e.g. dehiscence noted incidentally at caesarean delivery)
3: Peripartum hysterectomy	Peripartum hysterectomy
4: Eclampsia	Seizure associated with antepartum, intrapartum or postpartum symptoms and signs of pre-eclampsia
5: Renal or liver dysfunction	Acute onset of biochemical disturbance, urea $>$ 15mmol/l, creatinine $>$ 400mmol/l, AST/ALT $>$ 200u/l
6: Pulmonary oedema	Clinically diagnosed pulmonary oedema associated with acute breathlessness and O ₂ saturation $<$ 95%, requiring O ₂ , diuretics or ventilation
7: Acute respiratory dysfunction	Requiring intubation or ventilation for $>$ 60 minutes (not including duration of general anaesthetic)
8: Pulmonary embolism	Increased respiratory rate ($>$ 20/min), tachycardia, hypotension. Diagnosed as "high" probability on V/Q scan or positive spiral chest CT scan. Treated by heparin, thrombolysis or embolectomy
9: Cardiac arrest	No detectable major pulse
10: Coma	Including diabetic coma. Unconscious for $>$ 12 hours
11: Cerebro-vascular event	Stroke, cerebral/cerebellar haemorrhage or infarction, subarachnoid haemorrhage, dural venous sinus thrombosis
12: Status epilepticus	Constant or near constant state of having seizures that last 30mins or more
13: Septicaemic shock	Sepsis induced tissue hypoperfusion or hypotension persisting after resuscitation with 30mls/kg intravenous isotonic crystalloid fluid as evidenced by: <ul style="list-style-type: none"> • Systolic blood pressure $<$ 90 mmHg or MAP $<$ 65 mmHg • Decrease in systolic blood pressure by 40mmHg from baseline and/or • Lactate $>$ 4 mmol/l.
14: Anesthetic problem	Aspiration, failed intubation, high spinal or epidural anaesthetic
15: ICU/CCU admission	Unit equipped to ventilate adults. Admission for one of the above problems or for any other reason. Includes CCU admissions
16: Other severe morbidity	Other severe morbidity, e.g. amniotic fluid embolism
17: Interventional Radiology	Received planned: <ul style="list-style-type: none"> • (a) or unplanned • (b) interventional radiology