NATIONAL PERINATAL
EPIDEMIOLOGY CENTRE

SEVERE MATERNAL MORBIDITY in Ireland

Lay Summary 2017

National Perinatal Epidemiology Centre

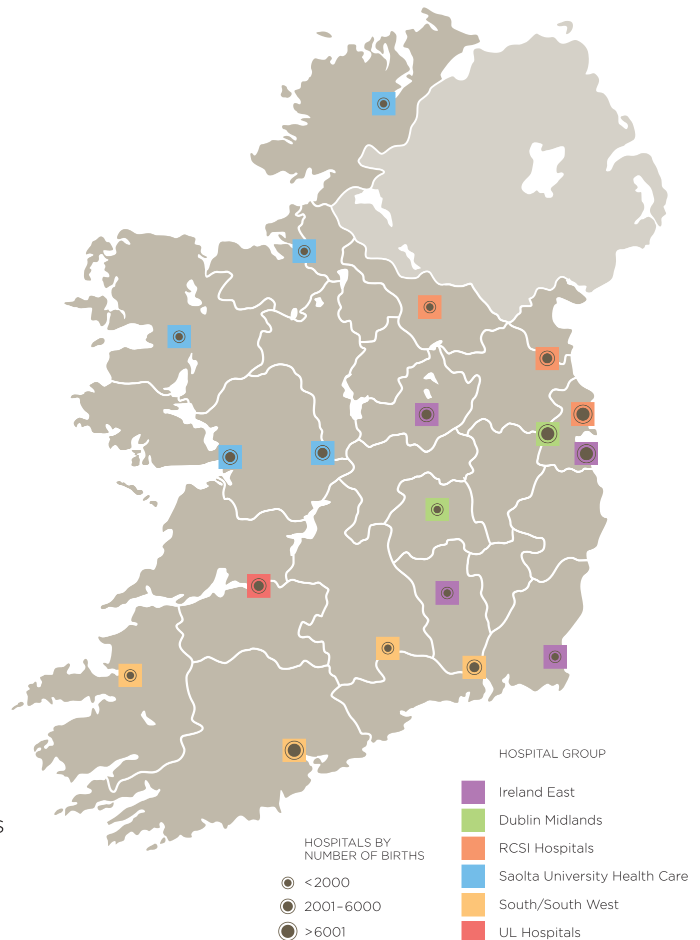
The National Perinatal Epidemiology Centre (NPEC) works with the maternity services in Ireland. The NPEC is directed by Professor Richard A Greene and are a team of midwives, researchers, administrators and clinicians. **Every time a mother gives birth in Ireland, the important interventions, the good outcomes and the complications are recorded and analysed at a national specialist centre.**[1] The NPEC produces annual clinical audit reports on perinatal mortality, maternal morbidity, home births and very low birth weight babies in Ireland. At local hospital level, the NPEC provides customised feedback to individual hospitals on how they compare against the national average. The NPEC is funded by the Health Service Executive (HSE) and is based at Cork University Maternity Hospital in the UCC Department of Obstetrics and Gynaecology. The Centre continues to build on its existing portfolio of audit and quality review.

What is clinical audit?

Clinical audit is a process that seeks to improve patient care and outcomes through systematic review and evaluation of current practice against research based standards.

What is Epidemiology?

Epidemiology is the study (scientific, systematic, and data-driven) of the distribution (frequency, pattern) and determinants (causes, risk factors) of health-related states and events (not just diseases) in specified populations (neighbourhood, school, city, state, country, global).[2]



NPEC report on Severe Maternal Morbidity in Ireland 2017

This is the sixth report of the national clinical audit on severe maternal morbidity in Ireland published by the National Perinatal Epidemiology Centre (NPEC). The fundamental aim of the audit is to provide a national review of women experiencing severe maternal morbidities, to identify quality improvement initiatives and make recommendations for the improvement of maternal care in Ireland. All 19 maternity units provide data to the NPEC on women attending their unit who experienced a severe maternal morbidity.

What is Severe Maternal Morbidity?

The World Health Organization (WHO) defines maternal morbidity as "any health condition attributed to and/or aggravated by pregnancy and childbirth that has a negative impact on the woman's wellbeing". There are a wide range of maternal morbidities and unfortunately there is a lack of international consensus in defining the severity of maternal morbidity.

In order to evaluate the prevalence of severe maternal morbidity among women in Ireland and to make international comparisons, the NPEC adapted a validated international measurement tool using specific definitions.

60,910 MATERNITIES IN IRELAND IN 2017

391 WOMEN EXPERIENCED A SEVERE MATERNAL MORBIDITY DURING OR SHORTLY AFTER PREGNANCY IN 2017

Full report available at: **www.ucc.ie/en/npec/**

[1] health.gov.ie/blog/press-release/tanaiste-announces-new-national-perinatal-epidemiology-centre-in-cork-university-hospital/
[2] www.cdc.gov/careerpaths/k12teacherroadmap/epidemiology.html

Definitions

Severe maternal morbidity
Severe maternal morbidity (SMM) was defined as a pregnant or recently-pregnant woman (i.e. up to 42 days following the pregnancy end) who experienced any of the following seventeen, clearly defined, maternal morbidities: major obstetric haemorrhage, uterine rupture, eclampsia, renal or liver dysfunction, pulmonary oedema, acute respiratory dysfunction, pulmonary embolism, cardiac arrest, coma, cerebrovascular event, status epilepticus, septicaemic shock, anaesthetic complications and maternities involving peripartum hysterectomy, admission to an intensive care unit (ICU) and interventional radiology. Definitions are available in the full report.

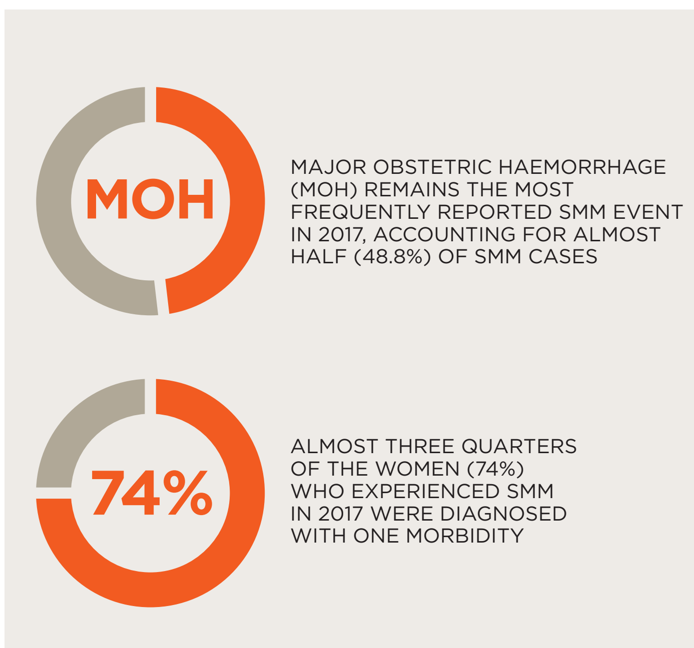
Major obstetric haemorrhage (MOH)
A women experiencing any of the following: a blood loss greater or equal to 2,500 mls; a transfusion of 5 or more units of blood; or received treatment to help the clotting process in order to stop bleeding. Bleeding may be vaginal or less commonly, internal, into the abdominal cavity.

Calculating rates
The incidence rate of SMM and of specific morbidities are calculated per 1,000 maternities resulting in the live birth or stillbirth of a baby weighing at least 500g.

How many women experienced severe maternal morbidity?

The number of women experiencing one or more SMM was 6.42 per 1,000 maternities or one in 156 maternities in 2017.

Almost three quarters of the women (74%) who experienced SMM in 2017 were diagnosed with one morbidity; 21% were diagnosed with two morbidities; 3% with three SMMs; and 2% with four morbidities.



What severe morbidities were experienced by mothers in 2017?

Major obstetric haemorrhage (MOH) remains the most frequently reported SMM event in 2017, accounting for almost half (48.8%) of SMM cases. Increasing rates of MOH have also been reported in the UK and other EU countries. No maternity unit in Ireland had an incidence of MOH that was significantly above the national rate.

Admission to an intensive or coronary care unit (ICU/CCU) was the second most common event, having been reported in over a third (38%) of SMM cases. This rate has decreased over the last two years (Figure 1).

The next most commonly reported SMMs were renal or liver dysfunction (13%), peripartum hysterectomy (8%) and pulmonary embolism, i.e. a clot in the lung (6%). The rate of peripartum hysterectomy (PH) has increased significantly (58%). Abnormal location of the placenta (a condition that can lead to massive bleeding and increased risk of maternal death) was the most commonly reported indication for PH.

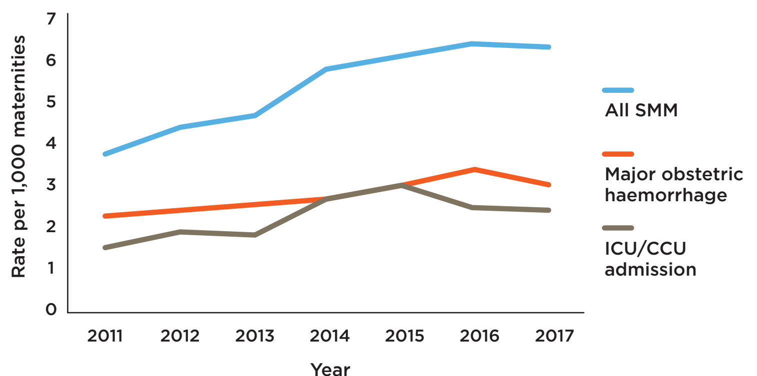


Figure 1. Trend in rate of severe maternal morbidity (SMM), major obstetric haemorrhage and intensive care admission/ coronary care admission (ICU/CCU),2011-2017

Maternal characteristics associated

The report explores a number of maternal characteristics associated with severe maternal morbidity.

SMM was more common in women over 40 years of age. In terms of ethnicity, there was a slight overrepresentation of women experiencing SMM whose ethnicity was described as Black, Asian and Irish traveller.

The report highlighted an association between increased BMI and SMM. The majority (60%) of women who experienced a SMM had a high BMI (32.% overweight and 25.3% obese). It was also observed that all women who experienced two SMMs or three SMMs were overweight or obese.

The perinatal mortality rate in women experiencing SMM was approximately 3.5 times greater than the perinatal mortality rate observed for all births in Ireland.

Multiple pregnancy was associated with almost a fivefold increased risk of a woman experiencing a SMM as defined in this audit.

x5

Virtually all of the women who experienced SMM in 2017 required an increased level of support/critical care.

A message from our public representative

This is my second year on the severe maternal morbidity advisory group with the NPEC. I approached this year's audit report with a greater understanding of the huge benefits of the recording and reporting structure contained within this audit. This not only benefits the healthcare practitioner with improved awareness, it ultimately improves the care afforded to every woman in this country as she sets out or continues on her maternity journey. The data collection is invaluable as maternity care in Ireland moves forward and I look forward to the day the recommendations contained in the NPEC audits are fully and wholly embraced by the HSE.

The continued participation of all 19 maternity units in this audit acknowledges the potential benefit that clinical audit has on our maternity services. The audit report is only as good as the information collected, and this report clearly demonstrates that hospital groups and maternity units have embraced the reporting and recording structure.

Maternity and pregnancy should be a joyful experience but when the outcome is adverse it can be devastating for that women and her family. The work that the NPEC are doing demonstrates how much can be learned from these devastating outcomes. It won't lessen the devastation for that woman and her family but it may aid her and comfort her to know that her pregnancy and outcome is recorded and contributes to the ongoing development of better maternity services in Ireland.

I am on my maternity journey within a participating hospital unit. I am not a medical practitioner but I have greater awareness of, and reassurance in, the maternity services because of my involvement in the NPEC Severe Maternal Morbidity Group. The legacy of these audits and the work Professor Richard Greene and his team are undertaking will be evident for many years to come for the benefit of our daughters and their families.

Claire Jones
Patient representative
NPEC Severe Maternal Morbidity Group

Recommendations

- **A quantitative approach involving volume and weight assessment to estimate blood loss should be considered for use in all maternity units.** Development of a national tool-kit would assist standardisation of such an approach. This is being addressed by the National Women and Infants Health Programme.
- **Robust clinical audit on adverse maternal outcomes requires the protected time of clinical staff.** Funding should be provided by the Health Service Executive (HSE) to facilitate same.
- The implementation of a **case assessment audit of major obstetric audit (MOH) is essential** as it continues to be the leading cause of SMM.
- (a) **A public health education programme on maternal morbidity and modifiable risk factors should be developed.**
  (b) When a pregnant woman is identified as high risk for significant morbidity, specific education should be available to her during antenatal birth preparation. **A national curriculum on antenatal birth preparation for women with high risk pregnancies** would be beneficial.
- Maternal Newborn Clinical Management System **(MN_CMS) data from Irish maternity units should be collated to identify the influence of risk factors for SMM in Ireland** including ethnicity, maternal age, BMI, smoking, employment status and other socio-economic factors. This should overcome the current deficit in the pregnant population data.
- **Research on the incidence of morbidly adherent placenta in Ireland is warranted.**
- The Ten Group Classification System (TGCS) is a method providing a common starting point for further detailed analysis within which all perinatal outcomes can be measured and compared. The **NPEC encourages all units to collect TGCS data in order to facilitate local and national audit.**

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NOCA National Office of Clinical Audit

HSE

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