



NATIONAL PERINATAL
EPIDEMIOLOGY CENTRE



**SEVERE
MATERNAL
MORBIDITY**
in Ireland

Lay Summary 2019

National Perinatal Epidemiology Centre

The National Perinatal Epidemiology Centre (NPEC) works with the maternity services in Ireland. Directed by Professor Richard A Greene, the NPEC multidisciplinary team is comprised of midwives, obstetricians, epidemiologists and an administrator. "Every time a mother gives birth in Ireland, the important interventions, the good outcomes and the complications are recorded and analysed at this national specialist centre."¹ The NPEC conducts a series of clinical audits on maternal and infant outcomes in the Irish maternity services including: perinatal mortality, severe maternal morbidity,

home births, very low birth weight babies and, in collaboration with the National Women and Infants Health Programme, an audit on neonatal therapeutic hypothermia. An annual report is produced on the findings of each audit. At local hospital level, the NPEC provides customised feedback to individual hospitals on how they compare against the national average. Funded by the Health Service Executive (HSE), the NPEC is based at Cork University Maternity Hospital in the UCC Department of Obstetrics and Gynaecology. The NPEC continues to build on its existing portfolio of audit, quality review and research.

What is clinical audit?

A clinically led, quality improvement process that seeks to improve patient care and outcomes through the systematic review of care against explicit criteria. Where standards are not met, changes are implemented and re-auditing is used to confirm improvement in patient care.

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

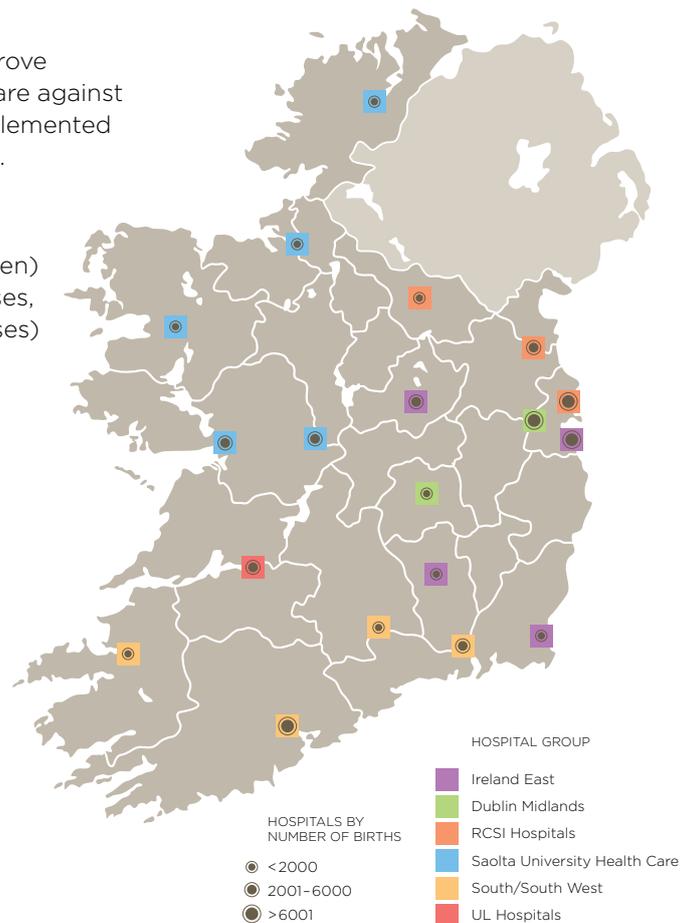
NPEC report on Severe Maternal Morbidity in Ireland 2019

This is the eight 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 Organisation (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 clearly understand and evaluate how much severe maternal morbidity affects women in Ireland, and to make international comparisons, the NPEC adapted a validated international measurement tool using specific definitions used by a comparable national audit in Scotland.³



57,983 MATERNITIES IN IRELAND IN 2019

375 WOMEN EXPERIENCED A SEVERE MATERNAL MORBIDITY DURING OR SHORTLY AFTER PREGNANCY IN 2019

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

³ Scottish Confidential Audit of Severe Maternal Morbidity: 10th Annual Report (2014). Available from: www.healthcareimprovementscotland.org/our_work/reproductive,_maternal__child/programme_resources/scasmm.aspx

Definitions

Severe maternal morbidity

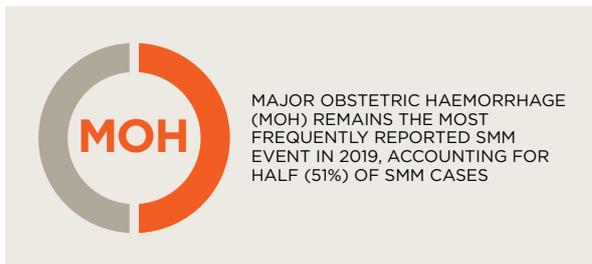
Severe maternal morbidity (SMM) was defined as a pregnant or recently-pregnant woman (i.e. up to 42 days following the pregnancy end) who experienced any of the following sixteen, clearly defined, maternal morbidities: major obstetric haemorrhage, uterine rupture, eclampsia, renal or liver dysfunction, pulmonary oedema, acute respiratory dysfunction, pulmonary embolism, cardiac arrest, coma, cerebrovascular event, status epilepticus, septicæmic shock, anaesthetic complications and maternities involving peripartum hysterectomy, admission to an intensive care unit (ICU) and interventional radiology. Complete explanatory definitions of these morbidities are available in the annual 2019 NPEC SMM report.

Major obstetric haemorrhage (MOH)

A complication where a woman experiences an unexpected antenatal haemorrhage or a blood loss at or following birth greater than or equal to 2,500mls /and or received a blood transfusion of 5 or more units. Bleeding may be vaginal or less commonly, internal, into the abdominal cavity. Obstetric haemorrhage is more likely to occur at or following birth. A point of reference is that a blood loss of less than 500mls at birth is considered to be 'within the normal' expected range of blood loss during birth.

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.



What severe morbidities were experienced by mothers in 2019?

Major obstetric haemorrhage (MOH)

remains the most frequently reported SMM event in 2019, accounting for half (51%) of SMM cases. The incidence of MOH cases in Ireland has increased significantly (44%) since the inception of the audit in 2011. Increasing rates of MOH have also been reported in the UK and other EU countries. There was a variance in the rate of MOH across Irish maternity units. The NPEC are implementing a detailed audit on MOH in January 2021 to identify risk factors associated with this morbidity and evaluate clinical practice in the management of MOH.

Admission to an intensive or coronary care unit (ICU/CCU) was the second most common event, having been reported in over a third (41%) of SMM cases. This rate has stabilised over the last two years (Figure 1). Admission to ICU/CCU impacts on resources within

the maternity services and the maternal experience following birth including bonding with her baby who would most likely be nursed in a separate location.

The next most common reported morbidities were renal or liver dysfunction (abnormal blood tests results indicating renal or liver compromise) 8.8%, peripartum hysterectomy (i.e. surgical removal of the uterus at time of birth or in the early post-natal period) 7.5% and pulmonary embolism, i.e., a clot in the lung (7.2%).

The rate of peripartum hysterectomy (PH) has increased in recent years and in 2017-2019 it was 51% higher than in 2011-2013. This indicates that 1 in 2,000 women in Ireland experience a PH. 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.

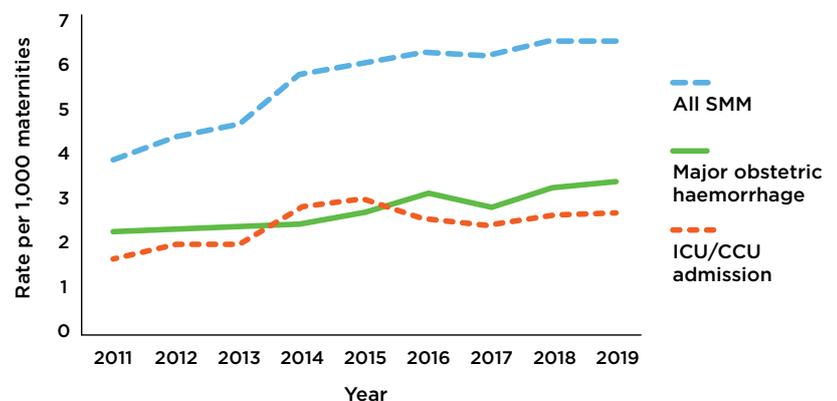


Figure 1. Trend in rate of severe maternal morbidity (SMM), major obstetric haemorrhage and intensive care admission/coronary care admission (ICU/CCU), 2011-2019

Maternal characteristics associated with severe maternal morbidity

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

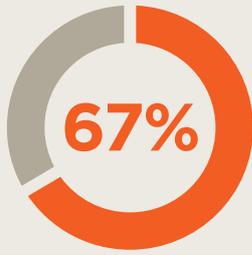
SMM was more common in women aged 40 years or older. In terms of ethnicity, there was a slight overrepresentation of women experiencing severe maternal morbidity whose ethnicity was described as Black, Asian and Irish traveller.

The report highlighted an association between increased BMI and SMM. It was observed that of the total number of women experiencing two SMMs or more in 2019, a higher proportion were classified as obese (60.9% of the women of had two SMMs, 69.6% of the women experiencing three SMMs and 50% of those with four SMMs).

The perinatal mortality rate (rate of stillbirths and live born babies who die within 7 days of delivery) in women experiencing SMM was approximately 4.5 times the perinatal mortality rate observed for all births in Ireland. This finding is similar to findings in previous year reports.

Virtually all of the women who experienced SMM in 2019 required an increased level of clinical support, often outside the normal post-natal ward in a critical care setting.

There is a statistically increased risk of SMM associated with multiple pregnancy; the risk was three times higher than that associated with a singleton pregnancy.



OVER TWO THIRDS OF THE WOMEN (67%) WHO EXPERIENCED SMM IN 2019 WERE DIAGNOSED WITH ONE MORBIDITY

How many women experienced severe maternal morbidity?

The number of women experiencing one or more SMM was 6.47 per 1,000 maternities or one in 155 maternities in 2019.

This represents a 68% increase in the number of women experiencing a SMM in Ireland since 2011.

Over two thirds of the women (67%) who experienced SMM in 2019 were diagnosed with one morbidity; a quarter (25%) were diagnosed with two morbidities; 6% with three SMMs; 0.5% with four morbidities and 0.3% with five morbidities.

A message from our public representative

“Education is the movement from darkness into light”

Allen Bloom

It is clear from the data collected in this 2019 audit, and on review of year-on-year trends, that the rate of severe maternal morbidity has and is increasing in the 19 maternity units across Ireland.

It is also very clear is that pregnant women must be educated on maternal morbidity.

It is the responsibility of the pregnant woman, her General Practitioner and our maternity services to ensure she has an awareness of the complications associated with pregnancy and specifically in relation to maternal morbidity.

The World Health Organisation (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.”*

The continued collection of data and production of recommendations contained in

this report can only lend itself to better outcomes for the pregnant woman. The production of this SMM report and lay summary is the basis of education; educating our medical staff and maternity units but more importantly educating our pregnant women; *the partner, wife, sister, mother, friend.*

I feel compelled to remind the reader that behind *‘the statistics’* in this audit report is the experience of a woman at her most vulnerable: while pregnant.

My hope is that the recommendations contained in this report, and previous SMM audit reports, are wholeheartedly considered and implemented by the HSE to effect change and improvement for the welfare and outcome of our pregnant women.

Claire Jones

Patient Representative
NPEC Severe Maternal Morbidity Group

Recommendations

- 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 the same.
- A **public health education programme on maternal morbidity and modifiable risk factors** should be developed.
- **Research on the incidence of morbidly adherent placenta in Ireland** is warranted.
- **Antenatal education:**
 - (a) Antenatal education/information should be provided by the multidisciplinary team to pregnant women to ensure an understanding of maternal morbidity and complication awareness.
 - (b) When a pregnant woman is identified as high risk for significant morbidity, specific education should be available to her during antenatal birth preparation.
 - (c) The national standards on antenatal education should provide guidance on specific education for maternal morbidity awareness.
- Internationally, **social inequalities** have been shown to impact on risk of SMM. There is a need to establish the evidence in this regard in Ireland. This **requires improved maternity data at national level** and more research in order to establish this evidence.
- 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, body mass index (BMI), smoking, employment status and other socio-economic factors. This should overcome the current deficit in the pregnant population data.

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