

National Clinical Audit of Severe Maternal Morbidity in Ireland: 2020

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Introduction

Severe Maternal Morbidity (SMM) is internationally recognised as an important quality indicator of obstetric care and maternal welfare, particularly in developed countries where maternal death rates are relatively low. The National Perinatal Epidemiology Centre (NPEC), has conducted annual SMM clinical audits since 2011. These audits allow for international and national comparison across Irish maternity units. The SMM audit aims to provide a national review of clearly defined SMMs, to identify quality improvement initiatives and to make recommendations for the improvement of maternity care in Ireland.

Methods

Data on SMM events, from January to December 2020, were collected from all 19 maternity units. NPEC Audit Coordinators in each unit completed a standardised notification form, based on clinical records, providing information on maternal and delivery characteristics. Seventeen clearly defined SMMs, occurring in pregnant or recently pregnant women (i.e. up to 42 days following the pregnancy end), were reported. Denominator data on the number of maternities, for calculation of national rates, were provided by the Health Care Pricing Office (HPO).

Results

National SMM rate:
6 cases per 1,000
maternities or 1 in 168
maternities.

329 SMM
Among 55,281 maternities in the
19 Irish maternity units in 2020

Of the 329 women experiencing a SMM in 2020:

- over two thirds of the women (67%) were diagnosed with 1 morbidity;
- a quarter (25%) were diagnosed with 2 morbidities;
- 6% with 3 SMMs; 0.7% with 4 or more.



Figure 1. Trend in rates of SMM, MOH and ICU admission 2011-20

Major Obstetric Haemorrhage (MOH) remains the most common SMM, (n=181; 55%) accounting for over half the SMMs recorded. This was followed by admission to an ICU/CCU (n=116; 35.3%) and Renal or Liver Dysfunction (n=34; 10.3%).

Most common morbidities

55%	Major obstetric haemorrhage
10%	Renal or liver dysfunction
8%	Peripartum hysterectomy
6%	Pulmonary embolism
5%	Septicaemic shock
4%	Eclampsia
2%	Acute Respiratory Dysfunction
2%	Uterine rupture

Most common SMM based on Management Criteria

	n (%)
ICU/CCU admission	116 (35.3%)
Interventional radiology	9 (2.7%)

x4.5

Perinatal mortality rate (PMR) was 4.5 times higher in women experiencing SMM

↑ BMI

2 x SMM risk

- Women with obesity had double the risk of SMM
- Women with high BMI had 50% higher risk of MOH or ICU admission

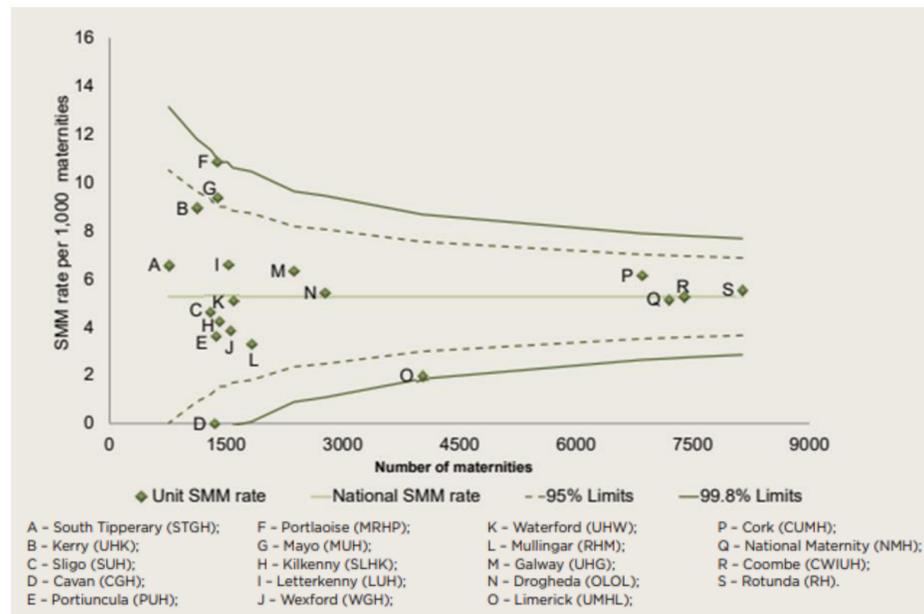


Figure 2. Funnel plot of the adjusted SMM rate by maternity unit 2020 (excluding cases admitted to ICU/CCU with no other SMM as defined in this audit)

- 38 women were admitted to ICU/CCU with no other SMM – most of these in small maternity units. This may reflect resource issues in cases of women who require a higher level of monitoring.
- Variation in SMM rates between units may not reflect care given but rather differences in levels of reporting and/or the risk profile of the women presenting to the units.

Table 2: Incidence of main SMMs in Ireland

SMM	Year	Maternities	n cases	Rate (95% CI)	Rate Ratio 2011-20 (95% CI)	P-value
MOH	2020	55,281	181	3.27 (2.81-3.79)	1.43 (1.15-1.77)	<0.001
ICU/CCU	2020	55,281	116	2.10 (1.73-2.52)	1.25 (0.96-1.62)	0.091
Renal/liver dysfunction	2018-20	172,856	98	0.57 (0.46-0.69)	1.61 (1.19-2.20)	0.002
Peripartum hysterectomy	2018-20	172,856	83	0.48 (0.38-0.60)	1.45 (1.05-2.01)	0.025
Pulmonary embolism	2018-20	172,856	68	0.39 (0.31-0.50)	1.61 (1.11-2.33)	0.012
Septicaemic shock	2018-20	172,856	54	0.31 (0.23-0.41)	2.56 (1.58-4.14)	<0.001

Rate ratios compare the rate for each triennium against the rate for the baseline triennium 2011-13. Rates of most conditions listed above have increased in recent years –except ICU/CCU admission.

Summary

- SMM may reflect the complexity of the Irish pregnant population, but it is also a surrogate measure of quality of care in the maternity services.
- The national rate of SMM continues to increase, particularly the rate of MOH, highlighting the need for ongoing clinical audit to monitor rates of adverse maternal outcomes.
- Clinical audit requires protected time, ideally funded by the HSE.
- The reporting of several less frequent SMMs has increased in recent years (i.e. renal or liver dysfunction, peripartum hysterectomy and pulmonary embolism).
- The risk of SMM according BMI was calculated showing the impact it can have on women's health outcomes.
- A public health education programme on maternal morbidity and modifiable risk factors should be developed.