



Release of this data brief coincides with publication in November 2022 of the annual report incorporating Irish data in the long-established UK Confidential Enquiry into Maternal Deaths (CEMD) (Knight et al, 2022). It covers the same timeframe as the latter and includes surveillance data on maternal deaths occurring in Ireland for the years 2018 to 2020.

It is recommended that this data brief is read in conjunction with the MBRRACE-UK 2022 report, which discusses the care of women who died, with a specific focus on mental health and multiple adversity, cardiovascular disease, hypertensive disorders of pregnancy, early pregnancy disorders, and critical care.

Please note that surveillance data on maternal deaths occurring in Ireland is not included in the MBRRACE-UK report.

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## MATERNAL MORTALITY IN IRELAND: 2018-2020

Definitions of maternal deaths are outlined in Table 1.

For the years 2018–2020, a total of 11 maternal deaths, occurring during or within 42 days of pregnancy end, were identified by MDE Ireland among 174,505 maternities. All 11 deaths were classified as either direct or indirect, giving a maternal mortality rate (MMR) of 6.3 per 100,000 maternities (95% CI 3.2–11.3).

Of the 11 deaths, 4 were attributed to direct causes, and 7 due to indirect causes.

One further death was due to a coincidental cause.

**Table 1: Definitions of Maternal Deaths (World Health Organisation 2012)<sup>2</sup>**

<b>Maternal Death</b>	Deaths of women while pregnant or within 42 days of the end of the pregnancy* from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.
<b>Direct</b>	Deaths resulting from obstetric complications of the pregnant state (pregnancy, labour and puerperium), from interventions, omissions, incorrect treatment or from a chain of events resulting from any of the above.
<b>Indirect</b>	Deaths resulting from previous existing disease, or disease that developed during pregnancy and which was not the result of direct obstetric causes, but which was aggravated by the physiological effects of pregnancy.
<b>Late</b>	Deaths occurring between 42 days and 1 year after the pregnancy end* that are the result of Direct or Indirect maternal causes.
<b>Coincidental<sup>‡</sup></b>	Deaths from unrelated causes which happen to occur in pregnancy or the puerperium.

\*Includes giving birth, ectopic pregnancy, miscarriage or termination of pregnancy.

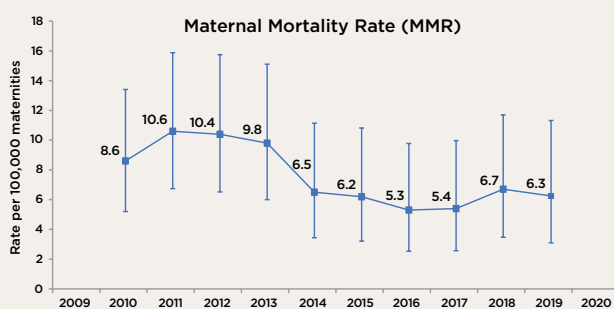
<sup>‡</sup>Termed 'Fortuitous' in the International Classification of Diseases (ICD).

On account of small numbers and to facilitate early identification of trends, all maternal death rates (MMR) are presented as a rolling three-year average. This includes deaths due to direct and indirect causes during pregnancy and up to 42 days postpartum but not deaths due to coincidental causes or late maternal deaths. These rates are plotted in the middle year of the triennium in Figures 1 and 2.

Five (45.5%) of the eleven women who died from direct and indirect causes were still pregnant at the time of death.

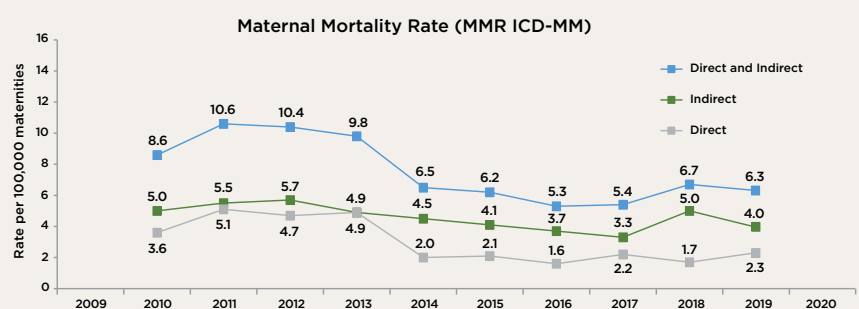
The decrease in the MMR from 9.1 (CI 6.5–12.5) to 5.8 (CI 3.6–8.9) per 100,000 maternities between the early years of MDE Ireland, 2009–2014 and 2015–2020 did not reach statistical significance (rate ratio 0.63, 95% CI = 0.37–1.08, p = 0.092).

**Figure 1: MMR per 100,000 maternities (95% CI) Ireland: rolling three year average 2009-2020**



Note: Three-year moving average rates are plotted in middle year of triennium

**Figure 2: Direct and Indirect MMR per 100,000 maternities in Ireland 2009-2020 using ICD-MM classification on cause of death: rolling three-year average**



Note: Three-year moving average rates are plotted in middle year of triennium

## COMPARISON OF MATERNAL MORTALITY RATE: IRELAND AND UK 2018-2020

For the triennium 2018-2020, the Irish MMR was 6.3 per 100,000 maternities (95% CI 3.2-11.3) and the UK MMR was 10.90 per 100,000 maternities (95% CI 9.53-12.40). This does not represent a statistically significant difference in MMR between countries (rate ratio = 0.58, 95% CI = 0.32-1.06, p = 0.076).

There were nine deaths directly attributable to Covid-19 infection in the UK in 2020. There were no maternal deaths due to Covid-19 in Ireland in 2020. If these nine deaths are excluded, the UK MMR 2018-2020 was 10.47 (95% CI 9.13-11.95) per 100,000 maternities.

## CAUSES OF DIRECT AND INDIRECT MATERNAL DEATHS: IRELAND

Direct and Indirect maternal deaths up to 42 days following pregnancy end by cause are categorised and detailed in Table 2 using the conventional UK CEMD categories, and Table 3 using the ICD-MM classification (WHO, 2012). On account of the small number of cases per category in Ireland and the limited power of analysis in a small cohort, rates per category are not appropriate and have not been calculated.

Based on the ICD-MM classification, the proportion of direct and indirect maternal deaths was 36.4% and 63.6 % respectively for the reporting years 2018-2020, 41.7% and 58.3% respectively for the years 2009-2020 (Table 3).

**Table 2: Causes of Maternal Deaths in Ireland 2009-2019 (Maternal deaths by suicide classified as direct)**

Cause of Maternal Death	2018-2020	2009-2020
<b>Direct Maternal Deaths</b>	<b>4</b>	<b>25</b>
Thrombosis and thromboembolism	2	7
Pre-eclampsia and eclampsia*	0	2
Genital Tract Sepsis	1	2
Amniotic fluid embolism	0	4
Early pregnancy deaths	0	2
Haemorrhage	0	2
Anaesthesia	0	0
Deaths due to psychiatric causes*	1	6
<b>Indirect Maternal Deaths</b>	<b>7</b>	<b>35</b>
Cardiac Disease	1	15
Other Indirect causes	4	10
Indirect neurological conditions	1	9
Indirect malignancies	0	0
Indirect psychiatric and alcohol related	1	1
<b>Coincidental Maternal Deaths</b>	<b>1</b>	<b>13</b>

**Note:** Deaths from genital tract sepsis includes early pregnancy deaths. Deaths from sepsis not directly related to pregnancy are classified as indirect causes. \*Deaths due to suicide.

## LATE MATERNAL DEATHS: IRELAND 2018-2020

Eight late maternal deaths were reported to MDE Ireland in the triennium 2018-2020.

Two deaths were attributed to direct causes, thus:

- Pulmonary Embolism (1) and
- Suicide (1).

A further two deaths were attributed to indirect causes, thus:

- Cardiac (1) - myocardial infarction secondary to coronary artery dissection.
- Left cerebral haemorrhage (1).

The remaining four deaths were coincidental, three due to malignant disease and one case following an RTA.

## KEY POINTS FROM THE 2022 UK AND IRELAND REPORT<sup>1</sup>

- A total of 247 women (of 2,101,829 maternities) in the UK died in 2018-20 during or within 42 days of the end of pregnancy. Of these 247 women, 229 died from direct or indirect causes, and the deaths of 18 women were classified as coincidental.
- There was a statistically significant increase in maternal death rate in the UK from direct causes between 2015-17 and 2018-20.
- Cardiac disease remains the largest single cause of maternal death.
- Thrombosis and thromboembolism remains the leading cause of direct maternal death during and up to six weeks after the end of pregnancy.
- Deaths from psychiatric causes as a whole account for nearly 40% of deaths occurring within a year after the end of pregnancy with maternal suicide remaining the leading cause of direct deaths in this period. The majority of maternal suicide deaths occur between six weeks and a year after pregnancy.
- Nine of the maternal deaths which occurred between March and December 2020 in the UK were directly attributable to COVID-19 infection. This was at a rate comparable with that due to psychiatric and cardiovascular disorders.
- There is a more than three-fold difference in MMR in the UK amongst women from Black ethnic backgrounds, and an almost two-fold difference amongst women from Asian ethnic backgrounds compared to white women.
- Eleven per cent of the women who died during or up to a year after pregnancy in the UK in 2018-20 were at severe and multiple disadvantage. The main elements of multiple disadvantage were a mental health diagnosis, substance use and domestic abuse.

**Table 3. Maternal Deaths in Ireland by cause using the ICD-MM classification, 2009-2020**

Cause of Maternal Death	2018-2020	2009-2020
<b>Direct Maternal Deaths</b>	<b>4</b>	<b>25</b>
Group 1: Pregnancy with abortive outcome	0	2
Group 2: Hypertensive disorders	0	2
Group 3: Obstetric haemorrhage	0	2
Group 4: Pregnancy-related infection	1	2
Group 5: Other obstetric complication	3	17
Group 6: Unanticipated complication of pregnancy	0	0
<b>Indirect Maternal Deaths</b>	<b>7</b>	<b>35</b>
Group 7: Non obstetric complications	7	35
Group 8: Unknown/undetermined	0	0
<b>Coincidental Maternal Deaths</b>	<b>1</b>	<b>13</b>

### REFERENCES

<sup>1</sup> Knight M, Bunch K, Patel R, Shakespeare J, Kotnis R, Kenyon S, Kurinczuk JJ (Eds.) on behalf of MBRRACE-UK. Saving Lives, Improving Mothers' Care Core Report - Lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2018-20. Oxford: National Perinatal Epidemiology Unit, University of Oxford 2022.

<sup>2</sup> World Health Organisation (2012). The WHO Application of ICD-10 to deaths during pregnancy and the puerperium: ICD-MM. Available at: [www.who.int/reproductivehealth/publications/monitoring/9789241548458/en](http://www.who.int/reproductivehealth/publications/monitoring/9789241548458/en)

### CITATION FOR THIS DATA BRIEF

O'Hare MF, Manning E, Corcoran P, Greene RA on behalf of MDE Ireland. Confidential Maternal Enquiry in Ireland, Data Brief No 6. Cork: MDE Ireland, November 2022.