



Release of this data brief coincides with publication in November 2021 of the annual report incorporating Irish data in the long-established UK Confidential Enquiry into Maternal Deaths (CEMD) (Knight et al, 2021). It covers the same timeframe as the latter and includes surveillance data on maternal deaths occurring in Ireland for the years 2017 to 2019.

It is recommended that this data brief is read in conjunction with the MBRRACE-UK 2021 report, which specifically discusses the care of women who died from mental health related causes, venous thromboembolism, homicide and malignancy. The report also includes a Morbidity Confidential Enquiry into the care of women who gave birth aged over 45 years.

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

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Table 1: Definitions of Maternal Deaths (World Health Organisation 2012)

Maternal Death	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.
Direct	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.
Indirect	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.
Late	Deaths occurring between 42 days and 1 year after the pregnancy end* that are the result of Direct or Indirect maternal causes.
Coincidental[‡]	Deaths from unrelated causes which happen to occur in pregnancy or the puerperium.

*Includes giving birth, ectopic pregnancy, miscarriage or termination of pregnancy.
‡Termed 'Fortuitous' in the International Classification of Diseases (ICD).

MATERNAL MORTALITY IN IRELAND: 2017-2019

Definitions of maternal deaths are outlined in Table 1.

For the years 2017 to 2019, a total of 12 maternal deaths, occurring during or within 42 days of pregnancy end, were identified by MDE Ireland among 179,376 maternities. All 12 deaths were classified as direct or indirect, giving a maternal mortality rate (MMR) of 6.7 per 100,000 maternities (95% CI 3.5 - 11.7).

Of the twelve deaths, 3 were attributed to direct causes, and 9 due to indirect causes.

Two further deaths were attributed to coincidental causes.

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 (41.7%) of the twelve women who died from direct and indirect causes were still pregnant at the time of death.

The decrease in the MMR from 8.6 to 6.7 per 100,000 maternities between the triennia 2009-2011 and 2017-2019 was not statistically significant (rate ratio 0.78, p = 0.50, 95% CI 0.38-1.61).

However, in respect of direct causes only, the decrease in MMR from 4.7 (CI 2.7-7.5) to 1.9 (CI 0.8-3.9) per 100,000 maternities between the early years of MDE Ireland, 2009-2013, and 2014-2019 reached statistical significance (rate ratio 0.40, p = 0.040, 95% CI 0.17-0.96). This is the first occasion since its inception that MDE Ireland has reported a statistically significant fall in any parameter relating to maternal mortality.

Figure 1: MMR per 100,000 maternities (95% CI) Ireland: rolling three year average 2009-2019

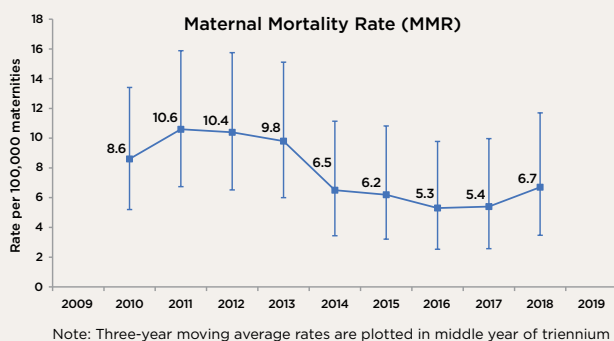
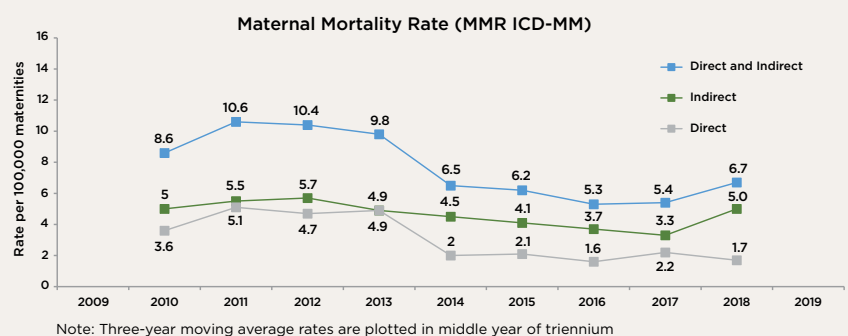


Figure 2: Direct and Indirect MMR per 100,000 maternities in Ireland 2009-2019 using ICD-MM classification on cause of death: rolling three year average



COMPARISON OF MATERNAL MORTALITY RATE: IRELAND AND UK 2017-2019

For the triennium 2017 - 2019, the Irish MMR was 6.7 per 100,000 maternities (95% CI 3.5 - 11.7) and the UK MMR was 8.79 per 100,000 maternities (95% CI 7.58 - 10.12). This does not represent a statistically significant difference in MMR between countries (rate ratio = 0.76, 95% CI = 0.42 to 1.36; p = 0.36).

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 25% and 75% respectively for the reporting years 2017-2019 (Table 3).

As in the UK, cardiac disease remains the single most common cause of maternal death in Ireland. Although there was only one new case of thromboembolism in Ireland in 2017-19, it is the leading cause of direct maternal death in the UK. Whilst there were no late maternal deaths due to suicide in Ireland 2017- 2019, it continues to feature prominently in the UK report, both up to 42 days and one year postpartum.

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

Cause of Maternal Death	2017-2019	2009-2019
Direct Maternal Deaths	3	24
Thrombosis and thromboembolism	1	6
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*
Indirect Maternal Deaths	9	34
Cardiac Disease	1	15
Other Indirect causes	5	10
Indirect neurological conditions	3**	9**
Indirect malignancies	0	0
Coincidental Maternal Deaths	2	12

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. **One case subject to outstanding autopsy report.

LATE MATERNAL DEATHS: IRELAND 2017-2019

Five late maternal deaths were reported to MDE Ireland in the triennium 2017-2019. Three were attributed to indirect causes, thus:

- Cardiac (2) - myocardial infarction secondary to coronary artery dissection (1), and cardiac arrhythmia secondary to postpartum cardiomyopathy (1).
- Psychiatric, drug and alcohol related (1).

The remaining 2 deaths were coincidental, due to malignant disease.

KEY POINTS FROM THE 2021 UK AND IRELAND REPORT¹

- There remains a more than four-fold difference in maternal mortality rates amongst women from Black ethnic backgrounds and an almost two-fold difference amongst women from Asian ethnic backgrounds compared to white women.
- Cardiac disease remains the largest single cause of maternal deaths.
- Neurological causes (epilepsy and stroke) are the second most common cause of maternal death.
- Thrombosis and thromboembolism remains the leading cause of direct maternal death during or up to six weeks after the end of pregnancy, and a BMI of 30kg/m² or greater is associated with at least a four-fold increase in the risk of venous thromboembolism.
- Maternal suicide remains the leading cause of direct deaths occurring within a year after the end of pregnancy.
- There is an almost fourfold higher maternal mortality rate amongst women aged 40 or over compared to women aged 20-24 years.

Table 3: Maternal Deaths in Ireland by cause using the ICD-MM classification, 2009-2019

Cause of Maternal Death	2017-2019	2009-2019
Direct Maternal Deaths	3	24
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	2	16
Group 6: Unanticipated complication of pregnancy	0	0
Indirect Maternal Deaths	9	34
Group 7: Non obstetric complications	9	34
Group 8: Unknown/undetermined	0	0
Coincidental Maternal Deaths	2	12

REFERENCES

1. Knight M, Bunch K, Tuffnell D, Patel R, Shakespeare J, Kotnis R, Kenyon S, Kurinczuk JJ (Eds.) on behalf of MBRRACE-UK. Saving Lives, Improving Mothers' Care - Lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2017-19. Oxford: National Perinatal Epidemiology Unit, University of Oxford 2021.
2. 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

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 5. Cork: MDE Ireland, November 2021.