



Release of this data brief coincides with publication in November 2019 of the annual report incorporating Irish data in the long-established UK Confidential Enquiry into Maternal Deaths (CEMD) [Knight et al, 2019].¹ It covers the same timeframe as the latter and includes surveillance data on maternal deaths occurring in Ireland for the years 2015 to 2017.

It is recommended that this data brief is read in conjunction with the MBRRACE-UK 2019 report, which specifically discusses the care of women who died from cardiac causes, deaths from pre-eclampsia and eclampsia and related causes, accidental deaths and deaths in early pregnancy, morbidity from newly diagnosed breast cancer and messages for critical care. Please note that surveillance data on maternal deaths occurring in Ireland is not included in the MBRRACE-UK report.

Dr Michael O'Hare
Chairman, Maternal Death Enquiry (MDE) Ireland

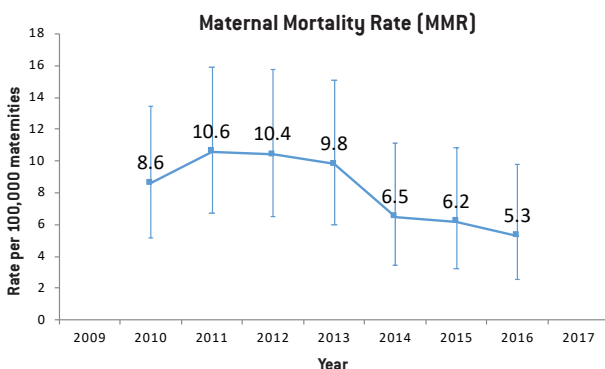
MATERNAL MORTALITY IN IRELAND: 2015-2017

Definitions of maternal deaths are outlined in Table 1.

For the years 2015 – 2017, a total of 10 maternal deaths, occurring during or within 42 days of pregnancy end, were identified by MDE Ireland among 187,449 maternities. All 10 deaths were classified as direct or indirect, giving a maternal mortality rate (MMR) of 5.3 per 100,000 maternities (95% CI 2.6 – 9.8).

Three further deaths were attributed to coincidental causes.

Figure 1. MMR per 100,000 maternities (95% CI) Ireland: rolling three year average 2009-2017



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

Table 1: Definitions of Maternal Deaths: (World Health Organisation 2010)

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.

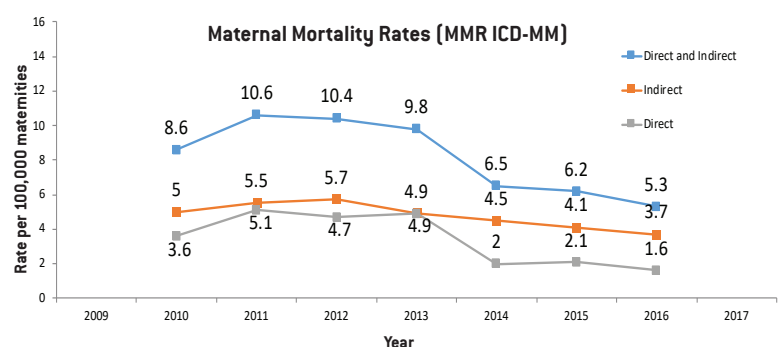
* Includes giving birth, ectopic pregnancy, miscarriage or termination of pregnancy.
‡ Termed "Fortuitous" in the International Classification of Diseases (ICD)

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.

Two (20%) of the ten women who died from direct and indirect causes were still pregnant at time of death.

The decrease in the MMR from 8.6 to 5.3 per 100,000 maternities between the triennia 2009-2011 and 2015-2017 was not statistically significant ($p = 0.227$).

Figure 2. Direct and Indirect MMR per 100,000 maternities in Ireland 2009-2017 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 2015-2017

For the triennium 2015 – 2017, the Irish MMR was 5.3 per 100,000 maternities (95% CI 2.6 – 9.8) and the UK MMR was 9.16 per 100,000 maternities (95% CI 7.96 – 10.50). This does not represent a statistically significant difference in MMR between countries (Risk ratio = 0.58, CI = 0.31 to 1.10; p = 0.095).

LATE MATERNAL DEATHS: IRELAND 2015-2017

Nine late maternal deaths were reported to MDE Ireland in the triennium 2015-2017. None of these were attributed to direct causes.

Six indirect deaths were attributed to: psychiatric causes (drug and alcohol related) (3), neurological disease (1), sepsis not directly related to the pregnancy (1) and peripartum cardiomyopathy (1).

In one case the cause of death remained unascertained despite postmortem examination.

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

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 30% and 70% respectively for the reporting years 2015-2017 (Figure 2).

As in the UK, cardiac disease remains the single most common cause of maternal death in Ireland. Although there were no new cases of thromboembolism in Ireland in 2015-17, it is the leading cause of direct maternal death in the UK. Whilst there were no late maternal deaths due to suicide in Ireland 2015-2017, it continues to feature prominently in the UK report, both up to 42 days and one year postpartum.¹

Table 2. Causes of Maternal Deaths in Ireland 2009 – 2017 (Maternal deaths by suicide classified as direct)

Cause of Maternal Death	2015-2017	2009-2017
Direct Maternal Deaths	3	21
Thrombosis and thromboembolism	0	5
Pre-eclampsia and eclampsia	0	2
Genital Tract Sepsis	0	1
Amniotic fluid embolism	1	4
Early pregnancy deaths	2	2
Haemorrhage	0	2
Anaesthesia	0	0
Deaths due to psychiatric causes*	0	5
Indirect Maternal Deaths	7	28
Cardiac Disease	3	14
Other Indirect causes	2	7
Indirect neurological conditions	2	7
Indirect malignancies	0	0
Coincidental Maternal Deaths	3	11

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

Table 3. Maternal Deaths in Ireland by cause using the ICD-MM classification, 2009 – 2017

Cause of Maternal Death	2015-2017	2009-2017
Direct Maternal Deaths	3	21
Group 1: Pregnancy with abortive outcome	2	2
Group 2: Hypertensive disorders	0	2
Group 3: Obstetric haemorrhage	0	2
Group 4: Pregnancy- related infection	0	1
Group 5: Other obstetric complication	1	14
Group 6: Unanticipated complication of pregnancy	0	0
Indirect Maternal Deaths	7	28
Group 7: Non obstetric complications	7	28
Group 8: Unknown/undetermined	-	-
Coincidental Maternal Deaths	3	11





MDE

Confidential
Maternal Death Enquiry
Ireland

KEY POINTS FROM THE 2019 UK AND IRELAND REPORT¹

There is a five-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 with white women.

Maternal deaths from direct causes are unchanged with no statistically significant change in the rates between 2012-14 and 2015-17.

Thrombosis and thromboembolism remain the leading cause of direct maternal death during or up to six weeks after the end of pregnancy.

Maternal suicide is the second largest cause of direct maternal deaths occurring during or within 42 days of the end of pregnancy and remains the leading cause of direct deaths occurring within a year after the end of pregnancy.

Cardiac disease remains the largest single cause of indirect maternal deaths. Neurological disease is the second most common indirect cause of maternal death.

A persistent maternal sinus tachycardia is a 'red flag' and should always be investigated, particularly when there is associated breathlessness.

There is clear evidence that low dose aspirin for women at risk reduces the incidence of preeclampsia as well as reducing preterm birth, fetal or neonatal death and small for gestational age babies.

REFERENCES

1. Knight M, Bunch K, Tuffnell D, 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 2015-17. Oxford: National Perinatal Epidemiology Unit, University of Oxford 2019. Available at: <https://www.npeu.ox.ac.uk/mbrrace-uk>
2. World Health Organisation. [2012]. The WHO Application of ICD-10 to deaths during pregnancy and the puerperium: ICD-MM. Available at: <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 4. Cork: MDE Ireland, November 2019.

Maternal Death Enquiry Ireland,
5th Floor, Cork University Maternity Hospital,
Wilton, Cork, Ireland.
Tel: +353 (0)21 4205042
Email: mdeireland@ucc.ie
Web: <http://www.ucc.ie/en/mde/>



