Release of this data brief coincides with publication in November 2018 of the fourth annual report incorporating Irish data in the long-established UK Confidential Enquiry into Maternal Deaths (CEMD) (Knight et al, 2018). It covers the same timeframe as the latter and includes surveillance data on maternal deaths occurring in Ireland for the years 2014 to 2016.

It is recommended that this data brief is read in conjunction with the MBRRACE-UK 2018 report, which specifically discusses the care of women who died from psychiatric causes, thrombosis and thromboembolism, malignancy and, in addition, morbidity from major obstetric haemorrhage.

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: 2014-2016

Definitions of maternal deaths are outlined in Table 1. For the years 2014 – 2016, a total of 12 maternal deaths, occurring during or within 42 days of pregnancy end, were identified by MDE Ireland among 193,833 maternities. All 12 deaths were classified as direct or indirect, giving a maternal mortality rate (MMR) of 6.2 per 100,000 maternities (95% CI 3.2 – 10.8).

A further 3 deaths were attributed to coincidental causes.

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.

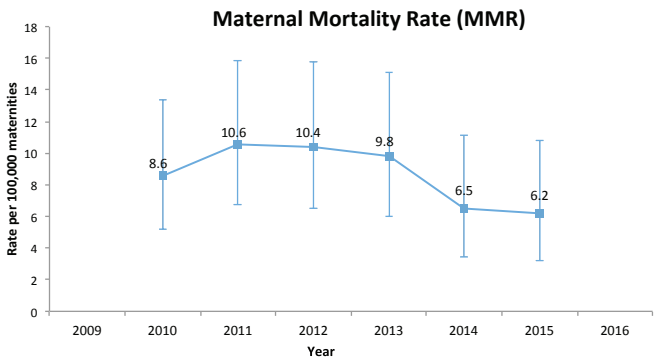
* Includes giving birth, ectopic pregnancy, miscarriage or termination of pregnancy.
‡ Termed "Fortuitous" in the International Classification of Diseases (ICD)

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.

Four (33.3%) of the twelve women who died from direct and indirect causes were still pregnant at time of death.

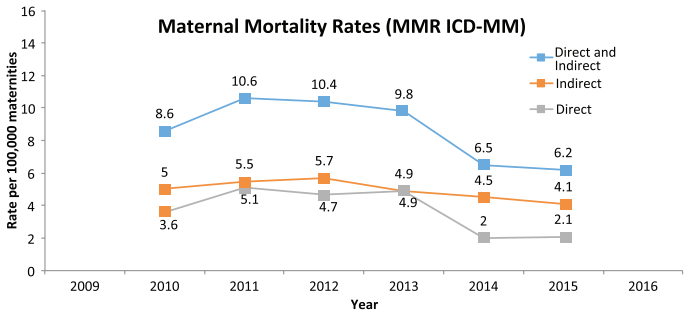
There has been no statistically significant decrease in MMR in Ireland since data collection by MDE Ireland commenced in 2009 (p = 0.208).

Figure 1. MMR per 100,000 maternities (95% CI) Ireland: rolling three year average 2009-2016



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 2009-2016 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 2014-2016

For the triennium 2014 – 2016, the Irish MMR was 6.2 per 100,000 maternities (95% CI 3.2 – 10.8) and the UK MMR was 9.78 per 100,000 maternities (95% CI 8.54 – 11.14). This does not represent a statistically significant difference in MMR between countries (Risk ratio = 0.63, CI = 0.35 to 1.13; p = 0.123).

LATE MATERNAL DEATHS: IRELAND 2014-2016

Nine late maternal deaths were reported to MDE Ireland in the triennium 2014-2016. Two direct deaths were attributed to suicide. Five indirect deaths were attributed to: psychiatric causes (drug and alcohol related) (2), neurological disease (1), sepsis not directly related to the pregnancy (1). In one case the cause of death remained unascertained despite postmortem examination.

The remaining 2 deaths were due to malignant disease coincidental to the pregnancy.

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[1] (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 33% and 67% respectively for the reporting years 2014-2016 (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 2014-16, it is the leading cause of direct maternal death in the UK. There were two late maternal deaths due to suicide in Ireland 2014-2016, and it continues to feature prominently in the UK report, both up to 42 days and one year postpartum.[2]

Table 2. Causes of Maternal Deaths in Ireland 2009 – 2016 (Maternal deaths by suicide classified as direct)

Cause of Maternal Death	2014-2016	2009-2016
Direct Maternal Deaths	**4**	**21**
Thrombosis and thromboembolism	0	5
Pre-eclampsia and eclampsia*	0	2
Genital Tract Sepsis	0	1
Amniotic fluid embolism	2	4
Early pregnancy deaths	2	2
Haemorrhage	0	2
Anaesthesia	0	0
Psychiatric causes - suicide	0	5
Indirect Maternal Deaths	**8**	**25**
Cardiac Disease	5	14
Other Indirect causes		5
Indirect neurological conditions	3	6
Indirect malignancies	-	0
Coincidental Maternal Deaths	**3**	**10**

Note: Deaths from genital tract sepsis includes early pregnancy deaths. Deaths from sepsis not directly related to pregnancy are classified as indirect dauses.

Table 3. Maternal Deaths in Ireland by cause using the ICD-MM classification, 2009 – 2016

Cause of Maternal Death	2014-2016	2009-2016
Direct Maternal Deaths	**4**	**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	2	14
Group 6: Unanticipated complication of pregnancy	0	0
Indirect Maternal Deaths	**8**	**25**
Group 7: Non obstetric complications	8	25
Group 8: Unknown/undetermined	-	-
Coincidental Maternal Deaths	**3**	**10**

KEY POINTS FROM THE 2018 UK AND IRELAND REPORT[2]

Maternal death rates from direct causes are unchanged, with no statistically significant change in rates between 2011-13 and 2014-16.

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

Suicide continues to feature prominently as a cause of direct maternal deaths occurring during or within 42 days of the end of pregnancy. It also remains the leading cause of direct deaths occurring within a year after the end of pregnancy.

There is an urgent need to establish pathways for release of mental health records to the Maternal Death Enquiry.

There is clear evidence that doctors and midwives find existing scoring systems for thromboembolic risk difficult to apply in practice. There is an urgent need for development of a tool to make the current risk assessment system simpler and more reproducible.

The themes of 'too much, too soon' and 'too little too late' represent the extremes of maternity care at which we need to focus to improve maternal health globally, and 'too little, too late' is clearly represented amongst the messages to improve care, particularly in the area of mental health.

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