The findings of the MBRRACE-UK confidential enquiry into Maternal Deaths and Morbidity

Marian Knight

Abstract

Reports from the UK Confidential Enquiries into Maternal Deaths and Morbidity are now published annually. In 2013–15, the maternal mortality rate was 8.8 per 100,000 maternities. Over two thirds of women died from medical and mental health causes and less than one third from obstetric causes. Cardiac disease remained the leading cause of maternal death in the UK. With the majority of women dying from pre-existing conditions, there remain multiple opportunities to reduce women's risk of complications in pregnancy through early and forward planning of the care of women with known pre-existing medical and mental health problems. Provision of appropriate advice and optimisation of medication prior to pregnancy, referral early in pregnancy for the appropriate specialist advice and planning of antenatal, intrapartum and postnatal care and effective postnatal provision of advice concerning risks and planning for future pregnancies are the key improvements needed to prevent women dying in the future.

Keywords confidential enquiry; maternal mortality; pre-pregnancy care; surveillance

Introduction

The UK Confidential Enquiry into Maternal Deaths (CEMD) has been in existence since 1952. Initially reporting once every three years, since 2014, under the auspices of the Mothers and Babies Reducing Risk through Audits and Confidential Enquiry in the United Kingdom (MBRRACE-UK) collaboration, reports have been published annually. Each report contains surveillance data for a three year period, with topic-based confidential enquiry chapters. All maternal deaths from each cause are reviewed to identify lessons learned to improve care, and a topic-based chapter included in a report once every three years. In addition, the programme now includes reviews of the care of women with specific severe morbidities - Confidential Enquiry into Maternal Morbidity (CEMM). The morbidity topics for inclusion in the programme are chosen by an Independent Advisory Group after an open call for proposals.

The reports published in 2015, 2016 and 2017 include the following contents:

Marian Knight *MA MBChB MPH DPhil FFPH FRCPE FRCOG National Perinatal Epidemiology Unit, Nuffield Department of Population Health, University of Oxford, Oxford, UK. Conflicts of interest: none declared.*

2015 report: Surveillance data on maternal deaths from 2011–13. Confidential Enquiry reports on deaths from psychiatric causes, deaths due to thrombosis and thromboembolism, malignancy, homicides and late deaths.

2016 report: Surveillance data on maternal deaths from 2012–14. Confidential Enquiry reports on deaths and severe morbidity from cardiac causes, deaths from pre-eclampsia and eclampsia and related causes and deaths in early pregnancy, messages for critical care.

2017 report: Surveillance data on maternal deaths from 2013–15. Confidential Enquiry reports on severe morbidity from and deaths from epilepsy, deaths from haemorrhage, amniotic fluid embolism (AFE), anaesthesia, stroke, respiratory, endocrine and other indirect causes, severe morbidity from psychosis.

The women who died

In 2013–15, the period covered by the 2017 report, 202 women died in the UK during or up to six weeks after the end of pregnancy from direct or indirect causes, representing a maternal mortality rate of 8.8 per 100,000 maternities (95% CI 7.6–10.1). More than two thirds of women died from medical and mental health causes and less than one third from obstetric causes. Cardiac disease remains the leading cause of maternal death in the UK, and thrombosis and thromboembolism the leading direct cause of death. There is a potentially concerning, although non-significant, 99% increase in maternal deaths from haemorrhage (95% CI 4% decrease - 392% increase). This is due to a small increase in the number of deaths of women with abnormal placentation. Maternal suicide is the third largest cause of direct maternal deaths occurring during or within 42 days of the end of pregnancy. However, it remains the leading cause of direct deaths occurring during pregnancy or up to a year after the end of pregnancy, with 1 in 7 women who died in the period between 6 weeks and one year after pregnancy dying by suicide.

General messages for care

It is striking that across disparate medical and mental health complications, including epilepsy, cardiac disease, mental health problems and amongst both women who died and those who survive but have severe morbidity, one recurring dominant theme emerges. With the majority of women dying from pre-existing conditions exacerbated by pregnancy, there remain multiple opportunities to reduce women's risk of complications in pregnancy through early and forward planning of the care of women with known pre-existing medical and mental health problems. Provision of appropriate advice and optimisation of medication prior to pregnancy, referral early in pregnancy for the appropriate specialist advice and planning of antenatal, intrapartum and postnatal care and effective postnatal provision of advice concerning risks and planning for future pregnancies are the key improvements needed to prevent women dying or having severe complications in the future.

Pre-pregnancy care

Thirteen women died from epilepsy during or in the year after pregnancy in 2013–15, the majority from sudden unexpected

death in epilepsy. Examination of their care showed that few had effective pre-conception counselling and many did not have ready access to specialist care during their pregnancy. They all (bar one on whom we had no pre-pregnancy epilepsy information) had uncontrolled seizures pre-pregnancy and could thus easily have been identified. Similar issues were identified in the care of women with severe uncontrolled epilepsy who survived. Five women who died had stopped taking their medication, two on the basis of incorrect medical advice and three made their own decision. Appropriate pre-pregnancy advice will prevent women from dying in the future and should be robustly offered in all care settings on an opportunistic basis.

During pregnancy

In 2013–15, 54 women died during or up to six weeks after pregnancy from cardiac disease (2.3 per 100,000 maternities). It was evident that a number of women with known cardiac disease had never received pre-pregnancy counselling about the risk of their condition. Additionally, during pregnancy a number of women had clear symptoms of cardiovascular compromise which were not recognised and were assumed to be normal symptoms of pregnancy. On a number of occasions women were investigated for presumed pulmonary embolism (PE), and when the diagnosis of PE was excluded they were discharged with no further investigation of their persisting symptoms. A raised respiratory rate, chest pain, persistent tachycardia and orthopnoea are important signs and symptoms which should always be fully investigated. The emphasis should be on making a diagnosis, not simply excluding a diagnosis. Early involvement of senior clinicians from the obstetric and cardiology multidisciplinary team is important, wherever a pregnant or postpartum woman presents with suspected cardiac disease, but particularly if she presents to the Emergency Department.

Where the condition of women with known cardiac disease was recognised to be deteriorating by her cardiology team, this was not always communicated to the maternity team, and this was particularly evident when obstetric and cardiology teams were located in different hospitals. Lack of co-location of obstetric and cardiac services jeopardises interdisciplinary working and communication. Measures such as joint obstetric cardiac clinics, multidisciplinary care plans, copying letters to the woman and all clinicians involved in her care, as well as staff from all specialties writing in the woman's hand held notes may mitigate against the inherent risk of inadequate communication between specialists.

Considerations during labour

The maternal death rate from thrombosis and thromboembolism is not decreasing. All women should undergo a documented assessment of risk factors for venous thromboembolism in early pregnancy or pre-pregnancy. This should be repeated intrapartum or immediately postpartum and if the woman is admitted to hospital or develops other intercurrent problems. In several women who had appropriate assessment of risk, thromboprophylaxis was delayed around the time of delivery or not restarted appropriately postpartum. Women at high risk of thrombosis who have been on prophylaxis or therapy in the antenatal period require careful planning of their delivery to keep the period of time without low molecular weight heparin (LMWH) administration to a minimum. Therapeutic and prophylactic LMWH doses are delayed before caesarean section or induction of labour to limit bleeding risks at delivery and to allow for safe regional analgesia/anaesthesia. All members of the clinical team on labour wards need to be mindful that if inductions or planned caesarean sections are delayed this risks prolonged gaps in women receiving LMWH which can be dangerous. Every effort should be made to prioritize these high-risk women. If prolonged delays (more than 6–12 h) in delivery of women receiving antenatal LMWH prophylaxis or treatment are unavoidable then LMWH should be given in the meantime and the procedure should be re-scheduled.

Post-pregnancy

Where a woman has had an episode of postpartum psychosis, then her risk of recurrence following a future pregnancy is markedly increased. Several women, who had had a postpartum psychosis, received no advice about risk in future postpartum periods, or any discussion of ways to mitigate that risk. In some instances, although a discussion of risk occurred, the level of risk was underestimated or misattributed. This is despite the fact that for a number of these women, care had been provided by specialist perinatal mental health services. Women with any past history of psychotic disorder, even where not diagnosed as postpartum psychosis or bipolar disorder, should be regarded as at elevated risk in future postpartum periods and should be referred to mental health services in pregnancy to receive an individualised assessment of risk.

Conclusions

The value of reviewing the care of women with severe morbidity during or shortly after pregnancy in addition to those who die is now well-recognised. The reviews into the care of women with severe morbidity identify a number of new messages to improve care not previously identified from enquiries into maternal deaths. Particularly valuably, these Enquiries identified a number of clear examples where excellent proactive management led to good outcomes in second and subsequent pregnancies, illustrating the effect of the exemplary care that can be provided in maternity and perinatal mental health services. Increasing proportions of the maternity population have conditions which confer significant risk in future pregnancies, and perhaps the clearest message to take forward is the need to recognise and manage this risk pro-actively. ◆

FURTHER READING

Knight M, Nair M, Tuffnell D, et al., eds. Saving lives, improving Mothers' care - surveillance of maternal deaths in the UK 2011-13 and lessons learned to inform maternity care from the UK and Ireland confidential enquiries into maternal deaths and morbidity 2009-13. Oxford: National Perinatal Epidemiology Unit, University of Oxford, 2015.

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