MBRRACE-UK Update:

Key messages from the UK and Ireland Confidential Enquiries into Maternal Death and Morbidity 2017

The latest report from the UK and Ireland Confidential Enquiries into Maternal Deaths, the fourth in the new annual report format, and the first to repeat the three-yearly thematic cycle, was published in December (1), and includes surveillance and Confidential Enquiries covering the period 2013-15. Once again the report includes reviews into the care of women who died during or after pregnancy in the Republic of Ireland as well as the UK. Following the annual topic-specific format, this report includes topic-specific reviews into the care of women who died from neurological conditions, other medical and surgical conditions, sepsis, anaesthetic complications, haemorrhage and amniotic fluid embolism, as well as Confidential Enquiries into the care of women with morbidity due to uncontrolled epilepsy in pregnancy and those with severe postpartum mental illness.

Key facts and figures

- Overall, there was no change in the overall maternal death rate in the UK between 2010-12 and 2013-15, which is now 8.76 per 100,000 maternities (95% CI 7.59 – 10.05).
- There has been a significant 23% decrease in indirect maternal mortality since 2010-12 (95% CI 1-40%), primarily due to a decrease in influenza deaths, and deaths from indirect causes of maternal sepsis.
- Cardiac disease remains the leading cause of indirect maternal death during or up to six weeks after the end of pregnancy with a rate of 2.34 per 100,000 maternities (95% CI 1.76-3.06). Thrombosis and thromboembolism remain the leading cause of direct maternal death during or up to six weeks after the end of pregnancy.
- 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.
- One in seven of the women who die in the period between 6 weeks and one year after pregnancy die by suicide.

Key messages for care

General messages

- Assessors reviewing the care of the women who died from physical or mental health disorders in 2013-15 once again noted the need for more effective pre- or post-pregnancy counselling of women with pre-existing conditions and effective contraception. It is the responsibility of all health professionals to

facilitate opportunistic pre- and post-pregnancy counselling and appropriate framing of the advice when women with pre-existing conditions attend any appointment, and that resources for pre- and post-pregnancy counselling are provided, together with open access to specialist contraceptive services.

- Assessors noted that there was an increasing number of comments in local reviews in relation to staffing-workload balance issues which had an impact on these women's deaths. However, it was not clear whether this was due to increased reporting, or whether this represented a true increase in such pressures. Local review reports submitted to MBRRACE-UK should include a full assessment of staffing-workload balance issues if these were felt to be a contributory factor.

Topic-specific messages

Improving care of women with epilepsy

- More than half of the women who died from epilepsy had stopped taking their anti-epileptic medication. Obstetric teams should take urgent action when pregnant women with a current or past diagnosis of epilepsy have discontinued anti-epileptic drugs without specialist advice. Urgent attempts should be made by all clinicians involved in care to offer the woman immediate access to an appropriately trained professional (e.g. neurologist/epilepsy specialist nurse or midwife) to review her medication and prescribe anti-epileptic drugs if appropriate.
- Improvements in care were noted for 96% of the women with uncontrolled epilepsy who survived, and for more than half it was considered that this would have made a difference to outcome. In particular, the provision of both pre- and post-pregnancy advice could be improved.
    - Women with epilepsy should be provided, before conception, with verbal and written information on prenatal screening and its implications, the risks of self-discontinuation of anti-epileptic drugs and the effects of seizures and anti-epileptics on the fetus and on the pregnancy, breastfeeding and contraception.
    - Postpartum safety advice and strategies should be part of the antenatal and postnatal discussions with the mother alongside discussion of breastfeeding, seizure deterioration and anti-epileptic drug intake.

Improving care of women with stroke

- In general, the care of women with intracranial haemorrhage was good, however, there were a number of areas of care highlighted in the 2014 report which could be further improved:
    - Pregnancy should not alter the investigation and treatment of a woman presenting with a stroke.
    - Neurological examination including assessment for neck stiffness and fundoscopy is mandatory for all women with new onset headaches or headache with atypical features, particularly focal symptoms.

Improving care of women with mental health problems

- It was evident that when mental health and maternity teams recognised and discussed women's risks and put in place preventive treatment and plans for action relapse in future pregnancies was prevented. However, as in previous Enquiries, in many instances women's history of mental health problems was not recognised.
    - 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.
    - Following recovery, it is the responsibility of the treating mental health team to ensure that all women experiencing postpartum psychosis receive a clear explanation of future risk, including the availability of risk minimisation strategies, and the need for re-referral during subsequent pregnancies and that this is shared with other relevant health professionals.

Improving care of women with medical and general surgical disorders

- When delivery was planned, for fetal reasons, in a different unit to where women received their usual antenatal care, women's own health issues were often overlooked. In pregnant or postpartum women with complex medical problems involving multiple specialities, the responsible consultant obstetrician or physician must show clear leadership and be responsible for coordinating care and liaising with anaesthetists, midwives, other physicians and obstetricians and all other professionals who need to be involved in the care of these women.
- Similarly, after pregnancy, care was not always clearly handed over to women's GPs. Women with multiple and complex problems may require additional care following discharge from hospital after birth and there is a need for senior review prior to discharge, with a clear plan for the postnatal period. This review should include input from obstetricians and all relevant colleagues.

Improving prevention and care of sepsis

- On two occasions, women were clearly extremely unwell in the community, but had apparently normal MEOWS scores, which reassured staff. When assessing a woman who is unwell, consider her clinical condition in addition to her MEOWS score.
- In some instances, although staff were aware that women were ill, the severity of their condition was not always communicated to others. Consideration should be given to 'declaring sepsis', analogous to activation of the major obstetric haemorrhage protocol, to ensure the relevant members of the multidisciplinary team are informed, aware and act.

Improving prevention and care of haemorrhage and amniotic fluid embolism

- Reviewers noted once again that excessive doses of misoprostol were used in women who died from haemorrhage. Five women died following induction

of labour after an intrauterine death; all received excessive doses of misoprostol. Misoprostol should always be used with extreme caution for women with late intrauterine fetal death, especially in the presence of a uterine scar. In these women, particularly those with a scar, dinoprostone may be more appropriate.

- Four of the nine women who died from placenta praevia or accreta died following collapse at home. Three of these women were known to have placenta praevia or accreta and two had had previous bleeding episodes. Recurrent bleeding, pain or agitation should be seen as 'red flags' in women with placenta accreta and women should be advised to remain in hospital.
- Assessors felt that hysterectomy could have been undertaken earlier in the course of haemorrhage. In some instances, there was clear reluctance on the part of the managing consultant to initiate the decision for hysterectomy. There is a need for consideration of how competence in abdominal hysterectomy can be achieved for obstetricians in training, and how these skills can be maintained at consultant level, e.g. through simulation training.

Conclusions

It is striking that across these disparate complications and amongst both women who died and those who survive but have severe morbidity, one recurring dominant theme emerges. 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 physical 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.

Key messages from the UK Perinatal Confidential Enquiry into term, singleton, intrapartum stillbirth and intrapartum-related neonatal death 2017

Since the last confidential enquiry into intrapartum stillbirths and intrapartum-related deaths in 1993-1995, overall stillbirth rates have reduced by just over a fifth and neonatal death rates by over a third. Nevertheless, the UK rates are still high compared with other European and other high-income countries. Whilst term intrapartum stillbirths and intrapartum-related neonatal deaths account for only a small proportion of extended perinatal mortality rates, improvements in care during labour, delivery and immediately following birth should reduce such deaths. The latest perinatal enquiry, published in November (2) focused on intrapartum-related deaths, specifically those born at term, excluding major congenital anomalies but including those anomalies where the cause of death was felt to be related to the intrapartum period rather than the anomaly, and reviewed the care of 78 babies (40 stillborn and 38 who died in the neonatal period).

Key facts and figures

- The rate of term, singleton, intrapartum stillbirth and intrapartum-related neonatal death has more than halved since 1993 from 0.62 to 0.28 per 1,000 total births which represents a reduction of around 220 intrapartum deaths per year.
- Since the last confidential enquiry into term intrapartum deaths there has been an increase in the proportion of births to mothers who have risk factors associated with an increased risk of perinatal loss.
    - Maternal age has increased over time.
    - There has also been a steady increase in the percentage of births to mothers in England and Wales born outside of the UK from 11.6% in 1990 to 27.0% in 2014.
    - The prevalence of obesity in pregnancy has also increased, from around 10% in the early 1990s to up to 19% in the early 2000s.
    - There are thus increasing numbers of pregnant women with diabetes and other conditions associated with higher risk and requiring a more complex package of care and interventions.

Key findings and recommendations

General

- The consensus of assessors was that in nearly 80% of deaths improvements in care were identified which may have made a difference to the outcome of the baby.
- Capacity issues were identified as a problem in over a quarter of the cases undergoing panel review. Concerns identified in this confidential enquiry about staffing and capacity issues in maternity services, particularly around the issues of induction of labour and timely transfer to delivery suite, need to be addressed.

Antenatal care

- Screening for fetal growth disorders was not performed according to national

evidence-based guidance in a quarter of cases.

- For those women who attended with reduced fetal movements, management did not follow national guidance in a third of cases.
- While screening for diabetes appeared to be undertaken according to national guidance for all but one case, ongoing care for women with diabetes appeared not to be in a joint clinic for half of the women with the condition.
- Evidence that women with a history of prior caesarean section were counselled or that a management plan for labour had been documented was present in a fifth of cases with this history.
- Two-thirds of women were not screened for smoking in pregnancy according to national evidence-based guidance.

Before established labour

- There was a lack of recognition of the transition from the latent to the active phase of labour and to institute appropriate monitoring in an eighth of cases.
- There were problems for a third of women who required induction of labour:
    - delays in starting or continuing induction or both;
    - a lack of fetal monitoring during the induction process;
    - heavy workload contributed to a number of cases.
- There should be national development of a standardised risk assessment tool for determining a woman's risk status on admission in presumed labour, or prior to induction, and regularly throughout labour.
- National guidance should be developed for care during the latent phase of labour once a mother accesses maternity services and this should take account of her risk status. This should include frequency, nature (intermittent auscultation or cardiotocography), and interpretation of fetal heart rate assessment.

Maternal and fetal monitoring during established labour

- The method of fetal monitoring was assessed as being correct for the level of risk in 80% of babies. However, the assessors noted a number of areas for improvement in the method, interpretation, escalation and response to fetal monitoring:
    - for the two-fifths of babies where intermittent auscultation was undertaken the frequency was not compliant with national guidance in a third of cases in the first stage of labour and a quarter in the second stage;
    - in the cases where abnormalities were detected by intermittent auscultation, continuous electronic fetal monitoring was not commenced in a quarter of cases;
    - where electronic fetal monitoring was undertaken, hourly review was not documented in half of cases;
    - there were delays in referral to medical staff by midwives in nearly half of cases where that was required.
- There should be a national discussion about the content of fetal monitoring training (both intermittent auscultation and continuous electronic fetal monitoring) and agreement over the content, duration and frequency of training as well as

whether competency should be formally assessed for healthcare professionals caring for women in labour.

Intrapartum care and communication

- There was a significant delay in both the decision to expedite the birth and in actually achieving birth in approximately a third of the deaths reviewed.
- In over three-quarters of deaths there was effective communication between the multidisciplinary team during labour and medical staff attended promptly when required to do so.
- Signs of uterine rupture were not identified in four out of the five women who experienced uterine rupture.
- Lack of recognition of an evolving problem, or the transition from normal to abnormal, was a common theme. It was rarely due to a single issue, more commonly appearing to arise from a more complex failure of situational awareness and ability to maintain an objective overview of a changing situation. Multidisciplinary training in situational awareness and human factors should be undertaken by all staff who care for women in labour.

Resuscitation and neonatal care

- Deaths of the type reviewed by the enquiry are rare within any one service. In the absence of immediate senior support there was some evidence of confusion regarding: a) the need for intubation; b) the use of blood; c) any decision to stop resuscitation; and d) actions to be taken following a home birth needing advanced resuscitation.
    - Local guidance should be developed to cover the particular circumstance of resuscitation of a baby born in extremis and out of hours in their service. This guidance should be practical and include issues around the use of volume expanders and the use of neonatal intubation.

Care after birth

- The quality of bereavement care was variable, with a lack of joint obstetric and neonatal input seen. A co-ordinated approach should be adopted for care following all intrapartum related deaths with good communication between maternity and neonatal care providers as relevant to ensure seamless care for parents. This should include:
    - the development and implementation of a bereavement checklist for all intrapartum related deaths irrespective of the place of death;
    - follow-up with input from all relevant professional groups who have been involved in the care.

Local review of intrapartum death

- Although the majority (95%) of intrapartum-related deaths were reviewed, many of the reviews were lacking in quality. The quality of the reviews was judged to be good for around a quarter, adequate for a further quarter and poor for just under half, with two not assessed.
- Adequate resource and training should be given to enable all intrapartum deaths to be systematically reviewed to facilitate organisational learning:
    - Using a standardised tool/methodology and following the relevant national

Serious Incident Frameworks, including review of the contributory factors;

- By an appropriate multidisciplinary panel including obstetricians, midwives and pathologists and, as appropriate, a neonatologist and anaesthetist. Opportunity for the parents' perspectives of their care to be included in the review. Consideration should be given to including an independent external assessor on the panel.
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National quality improvement and training programmes

- National quality improvement and training programmes should be implemented to improve compliance with national guidance.
  - In the antenatal period: monitoring growth in pregnancy, management of reduced fetal movements, care of women with diabetes in a combined clinic, documentation of discussion and the agreed management plan for labour and birth following previous caesarean section, the offer of carbon monoxide breath testing at booking and referral to smoking cessation services.
  - In labour: intermittent auscultation during the first and second stage of labour, real time ultrasound scanning should there be difficulty in detecting the fetal heart rate.
  - At resuscitation: all health care professionals who are routinely present at births should undertake regular Newborn Life Support training. This includes all new starters and ambulance staff.
  - After birth: Trusts and Health Boards should work to improve the bereavement care for parents, all maternity units should adopt the national tool for perinatal death review (Perinatal Mortality Review Tool) when it is available.

Conclusions

While fewer babies at term die after care in labour starts than previously, this report has identified that there remain problems with the quality of care. The recommendations for improvement in service provision and local review of the death, the development of new national guidance and of training for staff provide an opportunity to reduce this further. The forthcoming introduction of a national standardised tool to support staff reviewing perinatal death in their Trusts is an important step forward. If we learn the lessons and implement the changes the report has highlighted, the numbers of babies like this that die should reduce.

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