Maternal, Newborn and Infant Clinical Outcome Review Programme

MBRRACE-UK
Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK

MBRRACE-UK
Perinatal Confidential Enquiry

Term, singleton, intrapartum stillbirth and intrapartum-related neonatal death

November 2017

University of Oxford · HQIP Healthcare Quality Improvement Partnership · University of Leicester · TIMMS · University of Birmingham · Sands Stillbirth & neonatal death charity · UCL · NHS Bradford Teaching Hospitals NHS Foundation Trust · npeu National Perinatal Epidemiology Unit

Maternal, Newborn and Infant Clinical Outcome Review Programme

MBRRACE-UK
Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK

MBRRACE-UK
Perinatal Confidential Enquiry

Term, singleton, intrapartum stillbirth and intrapartum-related neonatal death

Executive Summary and Lay Report

Editors: Elizabeth S Draper, Jennifer J Kurinczuk, Sara Kenyon

on behalf of the MBRRACE-UK collaboration

November, 2017

Department of Health Sciences
University of Leicester
Centre for Medicine
University Road
Leicester LE1 7RH

Funding

The Healthcare Quality Improvement Partnership (HQIP) is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies. www.hqip.org.uk/national-programmes

The Maternal, Newborn and Infant Clinical Outcome Review Programme, delivered by MBRRACE-UK, is commissioned by the Healthcare Quality Improvement Partnership (HQIP) on behalf of NHS England, NHS Wales, the Scottish Government Health and Social Care Directorate, the Northern Ireland Department of Health, the States of Guernsey, the States of Jersey, and the Isle of Man Government.

.

Cover Artist: Tana West

Report layout and design: Frances Mielewczyk, Ian Gallimore

This report should be cited as:

Draper ES, Kurinczuk JJ, Kenyon S (Eds.) on behalf of MBRRACE-UK. MBRRACE-UK 2017 Perinatal Confidential Enquiry: Term, singleton, intrapartum stillbirth and intrapartum-related neonatal death. The Infant Mortality and Morbidity Studies, Department of Health Sciences, University of Leicester: Leicester, 2017.

ISBN: 978-09935059-7-3

Individual chapters from this report should be cited using the format of the following example for Chapter 7:

Redshaw M, Dickens J, Kenyon S, Jones, T, Heazell, A on behalf of MBRRACE-UK. Care after birth. In (Eds.) Draper ES, Kurinczuk JJ, Kenyon S on behalf of MBRRACE-UK. MBRRACE-UK 2017 Perinatal Confidential Enquiry: Term, singleton, intrapartum stillbirth and intrapartum-related neonatal death. The Infant Mortality and Morbidity Studies, Department of Health Sciences, University of Leicester: Leicester, 2017; pp67-72.

Published by: The Infant Mortality and Morbidity Studies

Foreword

For the vast majority of women and their babies, the UK is a safe place to give birth. This is thanks to the hard work and dedication of maternity and neonatal staff, medical advances and, importantly, the lessons we have learned from initiatives such as the national perinatal mortality enquiries, first established in 1993. Since then, the overall perinatal mortality rate has fallen as has the proportion of intrapartum deaths in term babies which now accounts for approximately 5% of all perinatal deaths.

However, the death of any woman or baby during pregnancy is a tragedy, and this latest report from the national perinatal mortality enquiry highlights that there is still much more to be done. Despite the fall in mortality rate, these deaths remain a major cause for concern, particularly as the vast majority of the women were receiving direct maternity care when their baby died or when the event in labour or delivery occurred which led to this tragic outcome. For nearly 80%, it was identified that different care might have made a difference, echoing the findings of the Each Baby Counts programme.

The findings of this report demonstrate the complexity and interdependency of the contributory factors, which include both antenatal care and care during labour, with the majority of deaths being attributable to multiple factors rather than a single cause. The link between antenatal care and intrapartum outcomes emphasises the need to improve the identification of reduced fetal growth, the management of reduced fetal movements and maternal diabetes, and efforts to support women to stop smoking. There also need to be improvements in how maternity teams monitor the progress of labour and fetal wellbeing.

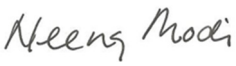
However, the underlying issues – an overstretched and under-resourced maternity and neonatal workforce, and changing population demographics – also need to be understood. This report outlines how heavy workload and staff capacity issues can affect the care provided, leading to delays in transfer to the obstetric unit, plans for induction of labour being postponed and difficulty in providing some elements of advanced life support when a baby requires resuscitation after being born. There are many reasons for the increased demand on maternity services, including the changing characteristics of women receiving care. There has been a rise in the number of older women and women with obesity giving birth, and also greater ethnic diversity within the UK population. All these factors are associated with an increased risk of perinatal death, and the needs of this changing population must be reflected in the healthcare services that are delivered.

This is not to excuse poor care, nor the failure to learn the lessons from each death. Again echoing the Each Baby Counts findings, this report emphasises the need to improve the quality of local reviews, always offering the parents the opportunity to be involved, to ensure clinical staff understand what they could have done differently and make the necessary changes in future. The national Perinatal Mortality Review Tool will support staff to undertake meaningful multi-disciplinary reviews and develop action plans to ensure lessons learnt are translated into actual clinical practice.

Every midwife, obstetrician, neonatologist and neonatal nurse should read this report and ensure that, where changes are needed to their practice, these are put in place. Policy-makers, commissioners and health service providers should likewise note where system- or organisation-level change is needed to ensure front-line staff have the support and resources they need. Only with this holistic collaborative approach will women and babies across the UK receive the safe, high-quality care they deserve.

Lesley Regan
President, Royal College of Obstetricians and Gynaecologists

Kathryn Gutteridge
President, Royal College of Midwives



Neena Modi
President, Royal College of Paediatrics and Child Health

Executive summary

Background

This report represents the findings of the third perinatal confidential enquiry carried out as part of the MBRRACE-UK programme of work and focuses on term, singleton, intrapartum stillbirths and intrapartum-related neonatal deaths. This topic was selected as part of the standard process for the selection of topics for the Clinical Outcome Review Programme.

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 cases apart from those that are inevitable. This enquiry focuses 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. The premise of the enquiry was if a baby was determined to be alive at the onset of labour at term then the expected outcome would be a healthy infant.

The group selected for enquiry constituted around only one in twenty of the extended perinatal deaths (225 out of 4392 (5.1%) in the UK in 2015). The enquiry aimed to identify potentially preventable failures of care along the whole care pathway, but with a particular focus on care during labour, delivery and any resuscitation, which might have contributed to the death. The findings from the enquiry will have identified areas of care for improvement in the future.

The intrapartum stillbirth and intrapartum-related death at term enquiry

The development of the enquiry followed the standard methodology used by MBRRACE-UK for perinatal confidential enquiries. Firstly, a multidisciplinary topic expert group (TEG) was established and one face-to-face meeting was held where a series of questions and potential checklists were developed (using the relevant guidance from the Royal College of Obstetricians and Gynaecologists, the Royal College of Anaesthetists, the Royal College of Pathologists, the National Institute for Health and Care Excellence (NICE), Resuscitation Council (UK), and Sands) to facilitate the evaluation of the quality of care provision for each step of the care pathway:

- Antenatal care
- Care during labour
- Care at birth
- Resuscitation care
- Neonatal care
- Postnatal and bereavement care
- Follow-up visit and review of care
- Post-mortem and placental histology

As the previous MBRRACE-UK confidential enquiry was focused on antepartum stillbirth, the guidance for a number of areas of the care pathway had already been identified, notably antenatal care, post-natal and bereavement care, follow-up, review and pathology. The main remit of the TEG was therefore focused on care during labour and at birth, resuscitation care and neonatal care.

The MBRRACE-UK perinatal mortality surveillance system provided a sampling frame for the selection of a random sample of term, intrapartum stillbirths and intrapartum-related neonatal deaths stratified by UK country for review by multidisciplinary enquiry panels. An initial sample of 104 out of a potential 225 cases was selected in June 2016 and submitted for review by confidential enquiry until saturation of themes was achieved and no new lessons for future care were emerging: 78 cases (40 intrapartum stillbirths and 38 intrapartum-related neonatal deaths). These 78 cases were discussed at ten separate multidisciplinary confidential enquiry panels.

Representativeness of the sample

Given the availability of the total sample of potential cases for any enquiry being available from the MBRRACE-UK perinatal mortality surveillance data, a random sample of eligible cases can be selected for the enquiry. Therefore, as in the previous antepartum stillbirth enquiry, we have been able to generate results from the enquiry which are not only rich in depth following the review of the individual case notes, but are also generalisable despite the relatively small sample. This enabled us to produce both quantitative and qualitative results, thus maximising our understanding of how care was provided at all points on the care pathway for all intrapartum cases as well as to individual women and their families.

Study findings

Intrapartum death rates

The definition of intrapartum death used in the Confidential Enquiry into Stillbirths and Deaths in Infancy (CESDI) enquiry in 1993 was normally formed babies of 2.5 kg or more who were stillborn or died within the first week of life where the death was related to problems during labour for England, Wales and Northern Ireland [1]. Applying this definition to the perinatal surveillance data for 2015 births shows that over the period 1993 to 2015 the rate of intrapartum deaths reduced by over 50% from 0.62 per 1,000 total births to 0.28 per 1,000 total births, which represents a reduction of around 220 intrapartum deaths per year.

Maternal characteristics

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 with the highest proportion of births in the 1970s being to women aged between 25 and 29 years whereas, by 2000, the largest proportion of births was to women aged between 30 and 34 [2]. By 2014 the average age of first-time mothers was 30.2 years with 21.5% of mothers giving birth at 35+ years [3]. 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. [4].The prevalence of obesity in pregnancy has also increased, from around 10% in the early 1990s to up to 19% in the early 2000s [5,6]. These changes have also meant that there are increasing numbers of pregnant women with diabetes and other conditions associated with higher risk and requiring a more complex package of care and interventions [7].

Consensus findings from the enquiry panels

The overall findings from the enquiry panels are provided in the table below, which indicates both the quality of care provision for the outcome of the baby and the mother across all aspects of the care pathway. In terms of the baby the panels broadly interpreted ‘outcome’ to represent whether the care provision may have contributed to the death. From the mother’s perspective outcome was interpreted as the care the mother received after delivery including her physical and psychological wellbeing and full consideration of her future fertility.

Overall, in terms of the outcome for the baby, the panel consensus was that in nearly 80% of deaths improvements in care were identified which may have made a difference to the outcome of the baby. This may represent a single issue at one point in the care pathway with all remaining care being considered appropriate or multiple issues at one or more points on the care pathway. Although this finding is similar to the previous confidential enquiry carried out for term intrapartum deaths it should be considered in the context of the growth in the amount of guidance that has been produced since the mid-1990s which has increased the rigour with which these deaths are reviewed at the enquiry panels.

Confidential enquiry summary grading of quality of care

Overall quality of care	Stillbirth				Neonatal death			
	Baby		Mother		Baby		Mother	
	n	%	n	%	n	%	n	%
Good care; no improvements identified	3	*8*	12	*30*	2	*5*	10	*26*
Improvements in care identified which would have made no difference to outcome	6	*15*	10	*25*	6	*16*	9	*24*
Improvements in care identified which may have made a difference to outcome	31	*78*	18	*45*	30	*79*	19	*50*
TOTAL	**40**	***100***	**40**	***100***	**38**	***100***	**38**	***100***

In terms of the care after delivery, physical and psychological outcome and/or future fertility for the mother, in just under half of intrapartum stillbirths (45%) and half of intrapartum-related neonatal deaths the consensus of the panels was that improvements in care may have made a difference.

Just over 10% of the mothers included in this enquiry were vulnerable women with major social and/or mental health problems where there were examples of both excellent and poor care provision. In these difficult situations there was evidence of midwifery staff making every effort to help these women comply with their care and appointments. However, there was also evidence of a few situations where the problems of women were inadequately responded to and misrepresented in the medical notes. Dealing with the complexity of these situations adds to the daily challenges and pressures faced by health professionals.

Capacity Issues

Capacity issues were identified as a problem in just over a quarter of the cases undergoing panel review (n=21) and, in a further seven cases, the notes identified issues that could be related to problems with staffing / capacity: a potential 28 cases (35.9%). Most issues were identified during the intrapartum period (n=17 +7) with a further four cases relating to the neonatal period and involving problems with transport (n=2), a referral of one baby outside of the network and a reported paediatrician shortage in one further case.

In ten of the 17 cases identified during the intrapartum period the panel felt that the capacity issue played a contributory role to the outcome. Ten cases involved delays in transferring the mother from either an antenatal setting or a midwifery-led unit to the delivery suite, due to either lack of a room or increased activity levels and a lack of staff. In a further four cases there were delays in induction of labour or in performing an artificial rupture of the membranes because of increased activity of the unit. Such delays suggest that during periods of high activity the ability of the wider maternity service to cope with the demand for one-to-one care and/or timely review by obstetric or medical staff is sometimes compromised.

References

1. Confidential Enquiry into Stillbirths and Deaths in Infancy (CESDI). Annual Report for 1 January–31 December 1993. Part 1: summary of methods and main results. London: Department of Health, 1995.

2. Office for National Statistics. Health Statistics Quarterly 23: ONS, Autumn 2004. Available online at: file:///Z:/Downloads/hsq2_tcm77-141910.pdf.

3. Office for National Statistics. Child Mortality Statistics 2015: Table 1: Live births, stillbirths, infant deaths and childhood deaths under 16: numbers and rates. ONS, 2017.

4. Office for National Statistics. Statistical Bulletin. Birth Summary Tables, England & Wales: 2014. ONS, 2014. Available online at: file:///Z:/Downloads/Birth%20Summary%20Tables,%20England%20and%20Wales%202014.pdf.

5. Heslehurst N, Ells LJ, Simpson H, Batterham A, Wilkinson J, Summerbell CD. Trends in Maternal Obesity Incidence Rates, Demographic Predictors, and Health Inequalities in 36,821 Women over a 15-year Period. BJOG: An International Journal of Obstetrics and Gynaecology 2007,114(2),187-194.

6. Kanagalingam MG, Forouhi NG, Greer IA, Sattar N. Changes in Booking Body Mass Index Over a Decade: Retrospective analysis from a Glasgow Maternity Hospital. BJOG: An International Journal of Obstetrics and Gynaecology 2005,112(10),1431-1433.

7. National Maternity Review. Better Births: Improving outcomes of maternity services in England. National Maternity Review, 2016. Available online at: www.england.nhs.uk/wp-content/uploads/2016/02/national-maternity-review-report.pdf.

Key findings

Key findings from the Confidential Review Panels

- 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.
- Capacity issues were identified as a problem in over a quarter of the cases undergoing panel review (n=21). The majority of staffing and capacity problems were related to delivery suite (n=17) with the remaining issues relating to neonatal care provision.
- The panel consensus was that in nearly 80% of deaths improvements in care were identified which may have made a difference to the outcome of the baby
- There is an increasing proportion of births to mothers who have risk factors associated with an increased risk of perinatal death. This has resulted in increasing numbers of pregnant women with conditions who require a more complex package of care and interventions.

Key findings for the provision of 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.

Key findings for care before labour is established

- There was a failure to recognise 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.
- Errors with cardiotocography (CTG) monitoring before labour was established were identified in a tenth of cases, involving incorrect use of the intrapartum classification for pre-labour CTGs and/or a failure to respond appropriately to an abnormal pre-labour CTG.
- Difficulties were identified with the ultrasound diagnosis of intrauterine death, if suspected on commencement of monitoring, in a third of cases where the baby died before established labour.

Key findings for maternal and fetal monitoring during established labour

- For those women who had a partogram, only a third were fully completed.
- The method of fetal monitoring was assessed as being correct for the level of risk in 80% of cases.
- There were errors 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 was evidence of lack of situational awareness in many of the cases.

Key findings for intrapartum care and communication

- Service capacity issues during intrapartum care affected over a fifth of the deaths reviewed, with more than half of these situations being considered to have contributed to the poor outcome.
- More than three-quarters of the deaths had quality of care issues identified during labour that potentially affected the outcome.
- In around one in ten women requiring caesarean section the category of urgency was either incorrectly applied or not applied when birth required expediting.
- 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.
- There was a failure to identify signs of uterine rupture in four out of the five women who experienced uterine rupture.
- Failure to recognise 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.

Key findings for resuscitation and neonatal care

- In general, resuscitation was delivered effectively by clinical staff present at the delivery, based on the Newborn Life Support programme. There was, however, evidence of significant failings in the approach to resuscitation adopted in a small number of cases.
- All of the cases reviewed required extensive resuscitation and the involvement of senior staff to assist. Access to such assistance was sometimes delayed because staff were working elsewhere in the hospital.
- In some instances poor record-keeping prevented a clear picture emerging of events at resuscitation.
- 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.

- Of those babies admitted to neonatal care the vast majority were well managed in terms of the risk of hypoxic ischaemic encephalopathy and associated risk of multiple organ failure.
- Local mortality reviews typically did not consider the neonatal aspects of care.

Key findings for care after birth

The quality of bereavement care was variable, with a lack of joint obstetric and neonatal input seen. This was demonstrated by the following:

- The quality of bereavement care was assessed as good for nearly a half of the parents, satisfactory for nearly a third, and either poor or with insufficient information in the notes in the remaining instances.
- A bereavement checklist was present in the majority of notes; however, this was more likely to be in the notes of those mothers who had experienced a stillbirth than in the notes of those who had experienced a neonatal death.
- It was not clearly documented that all relevant healthcare professionals had been informed of the stillbirth or neonatal death.
- Continuing midwifery involvement after discharge home was not documented for all women. For those for whom continuing midwifery support was documented, the number of postnatal contacts varied, with those women who had experienced a stillbirth having the highest numbers of visits.
- The obstetric team almost always provided the bereavement care when intrapartum stillbirths occurred. When intrapartum-related neonatal deaths occurred both teams were involved in over half of deaths and just the neonatal team in a quarter.
- Written information to support the offer of a post-mortem was apparent in half the deaths. However, this represents around three-quarters of stillbirths and a quarter of neonatal deaths. This may reflect that non-medicolegal post-mortems are conducted with less frequency following neonatal death.
- Follow-up meetings with parents were documented as taking place in just over half of stillbirths and two-thirds of neonatal deaths. Where no follow-up visit took place the reasons were not documented in half the cases.
- Follow-up meetings were documented as having been conducted by a consultant obstetrician or neonatologist in about two-thirds of cases and a third took place over 12 weeks after the death. Plans for any future pregnancy were documented as having been discussed in just over half of cases.
- A letter summarising the discussion, results of investigations / post-mortem findings and plans for any future pregnancy were only sent to just over a third of parents. While half of those letters sent were of good quality, a further third were considered adequate and the remainder were felt to be poor.

Key findings for post-mortem examination and reporting

- Almost all of the intrapartum stillbirths and three-quarters of the intrapartum-related neonatal deaths selected for the confidential enquiry underwent some form of formal pathological examination, although a quarter of both groups only had placental examination. Almost a third of the neonatal deaths had neither post-mortem nor placental histology carried out.
- Placental histology reports were evaluated according to a pre-defined checklist based upon guidelines from the Royal College of Pathologists. Although many of these reports were regarded

as excellent or good, a substantial number were considered poor or unsatisfactory.

- Almost three-quarters of the reports contained a specific clinico-pathological correlation and/or interpretation of histological findings as recommended by the Royal College of Pathologists.
- Post-mortem reports were evaluated by trained perinatal pathologists and were found, with few exceptions, to be of good quality.

Key findings for local review of intrapartum death

- Although the majority (95%) of intrapartum-related deaths were reviewed, many of the reviews were lacking in quality. Review should be undertaken using the 'Serious Incident Framework' which should include review of contributory factors / root causes.
- While root cause analysis was documented in around two-thirds of reviews, consideration of the nine contributory factors (as recommended by the National Patient Safety Agency) was documented in only 11% of all reviews.
- Multidisciplinary panels reviewed 86% of deaths. For those babies whose care included care from the neonatal team (for whom resuscitation failed or who died in the neonatal unit) only just over a tenth included input from the neonatal team. A pathologist was only documented as present for two reviews.
- Parents were documented as being involved in only five of the reviews and an external person in nine of them.
- Actions were recommended in the majority of reviews. Individual actions were recommended in over two-thirds of reviews and institutional actions in over three-quarters. Audit was planned or undertaken for less than a fifth of cases.
- The quality of the reviews was assessed by the multidisciplinary confidential enquiry panels and judged to be good for around a quarter, adequate for a further quarter and poor for just under half, with two not assessed.

Recommendations, initiatives and quality improvements

Key recommendations to reduce intrapartum death

1. 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.

   ACTION: Policy makers, service planners / commissioners, clinical directors, heads of midwifery

2. Multidisciplinary training in situational awareness and human factors should be undertaken by all staff who care for women in labour.

   ACTION: Professional organisations, clinical directors, heads of midwifery, health professionals

3. Adequate resource and training should be given to enable all intrapartum deaths to be systematically reviewed to facilitate organisational learning:

   a) using a standardised tool / methodology and following the relevant national Serious Incident Frameworks, including review of the contributory factors;

   b) 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.

   c) 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.

ACTION: Service planners / commissioners, professional organisations, clinical directors, heads of midwifery, health professionals

New initiatives to reduce intrapartum death

1. 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.

   ACTION: Professional organisations, NICE, research funders

2. 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.

   ACTION: Professional organisations, NICE

3. 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.

   ACTION: Professional organisations, clinical directors, heads of midwifery, health professionals

4. Research into how best to assess the baby's wellbeing during labour should be prioritised.

   ACTION: Research funders

5. Due to differing local circumstances maternity services should develop local guidance that clarifies the actions that should be undertaken when serious problems arise in a home birth, either planned or unplanned..

   ACTION: Clinical directors, heads of midwifery, health professionals

6. 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.

   ACTION: Clinical directors, heads of midwifery, health professionals

7. National guidance is needed regarding the principles that should guide decisions to stop resuscitation and/or re-orientate care. Further research is also needed to guide practice in this area.

   ACTION: Professional organisations, NICE, research funders

8. National guidance should consider the approach to the resuscitation of a baby with prolonged bradycardia following delivery after lung aeration is confirmed.

   ACTION: Professional organisations, NICE

9. 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.

   ACTION: Professional organisations, clinical directors, heads of midwifery, health professionals

Quality improvement programmes to reduce intrapartum death

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.

  ACTION: clinical directors, heads of midwifery, health professionals

MBRRACE-UK

Department of Health Sciences
University of Leicester
Centre for Medicine
University Road
Leicester
LE1 7RH

Tel: +44-116 252 5425
Email: mbrrace-uk@npeu.ox.ac.uk
Web: www.npeu.ox.ac.uk/mbrrace-uk

MBRRACE-UK
Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK