National Perinatal Mortality Review Tool

PMRT
Supporting high quality local perinatal reviews

Learning from Standardised Reviews When Babies Die

National Perinatal Mortality Review Tool

Second Annual Report

December 2020

Royal College of Obstetricians & Gynaecologists
each baby COUNTS
University of BRISTOL
THE ROYAL COLLEGE OF MIDWIVES
NHS Birmingham Women's and Children's NHS Foundation Trust
British Association of Perinatal Medicine
MANCHESTER 1824 The University of Manchester
PARENTS
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NHS Bradford Teaching Hospitals NHS Foundation Trust
Sands Stillbirth & neonatal death charity
HQIP Healthcare Quality Improvement Partnership
UNIVERSITY OF LEICESTER
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UNIVERSITY OF OXFORD

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Second Annual Report

Jennifer J Kurinczuk, Thomas Boby, Sarah Prince,
Tracey Johnston, Miguel Neves, Peter Smith, Charlotte Bevan,
Christy Burden, Peter Brocklehurst, Elizabeth S Draper,
Alan Fenton, Alexander Heazell, Sara Kenyon, Marian Knight,
Bradley Manktelow, Dimitros Siassakos, Lucy Smith,
Claire Storey, Derek Tuffnell

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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.

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Foreword

The importance of carrying out a local review of care when a baby dies cannot be overstated. While post mortem consent rates still remain relatively low, this is the only way the vast majority of parents will find out why their baby died and whether this has any implications for a future pregnancy. What emerges from local hospital review is the version of events that parents will remember for the rest of their lives. They will be incorporated into their family history and shared with their own parents, existing and future children, and with grandchildren. The 'missing' child is never forgotten. Making sense of their death, is for many, a life-long task.

In the past local hospital reviews, if carried out all, were largely cursory affairs with little attention paid to the importance of this information for parents, or indeed the value of the findings as a route to improving the quality and safety of maternity and newborn care to prevent similar deaths in the future. Parents, themselves, have raised the alarm about how poor investigations when babies die can lead to repeated mistakes, clusters of avoidable deaths, expensive litigation and years of mental anguish caused to both families and health care staff.

Each year, around 5,000 babies die either during pregnancy or birth, or in the first month after birth across the UK. For about 90% of these deaths a local hospital review is the only 'investigation' of their care that will be undertaken since other organisations with responsibility for reviews and investigations focus solely on a much smaller group of baby deaths.

The national Perinatal Mortality Review Tool was commissioned with the intention of improving the quality of local reviews, by standardising a robust process that would ensure the whole pathway of care is reviewed for every death, incorporating the parents' perspective of their care and aiming to resolve questions they may have. This second annual report arising from the use of the PMRT in 2019 and early 2020 highlights the findings from reviews carried out during the early embedding phase of the tool.

It is heartening to see that use of the PMRT has been widely adopted with over 3,600 deaths reviewed in the period of this report. This represents twice as many deaths undergoing review compared with 2018. Recurrent issues have been identified across reviews which can be used as a roadmap to prioritise actions to improve care at a hospital, regional and national level. Safer care will support UK governments in meeting national ambitions to reduce avoidable deaths.

Yet, while more reviews are being undertaken the quality of these reviews still cannot be assured. One in 5 reviews is still being undertaken by only one or two individuals, and only 1 in 5 has any external member input. We know from previous high-profile investigations this is not compatible with high-quality, robust, multi-disciplinary review likely to identify modifiable factors and improvements to care. While there is an increase in the number of parents being told a review is taking place (84%) the quality of parent engagement in review is still in question since we have yet to hear directly from parents about their own experiences.

There can be no doubt that engaging parents in a meaningful way in the review of their baby's death requires time and training. The data suggest many units may be struggling with resource – with administrative support only available for 1 in 5 reviews. This means clinical members of the review team are spending time on routine tasks rather than focusing on the discussion and identifying improvements in care. The involvement of risk management and members of the governance team as members of the review team has, however, increased from 64% to 92% of reviews which is likely to improve the chances of 'strong' and 'SMART' actions being incorporated into clinical governance plans.

As the joint chairs of the All Party Parliamentary Group on Baby Loss we urge all hospitals providing maternity and newborn care to continue to embrace the challenge of conducting robust reviews using the PMRT. It should not be up to parents to bear the burden of understanding why their baby died. Equally the self-critical examination of care provided when deaths occur is a vital process in improving the quality and safety of maternity and newborn care for future parents. Getting mortality review right first time not only has the potential to prevent future harm in maternity and newborn care, it may also prevent protracted investigations, that come with both economic and personal costs to families, the health care system and its staff.

The UK's tradition of national self-audit to improve care for women, babies and families which began with the confidential enquiries into maternal deaths back in 1952, now continues with the PMRT, but it will only be effective if it is fully supported.

Jeremy Hunt, MP	**Cherilyn Mackrory, MP**
Co-Chair	Co-Chair

All Party Parliamentary Group on Baby Loss

Executive Summary

Background

In 2012 the need to improve the quality of reviews of every perinatal death was identified and a Department of Health/Sands Task and Finish Group was convened leading to the concept of a national perinatal mortality review tool.

Commissioned in 2016, the national Perinatal Mortality Review Tool (PMRT) places at its core the fundamental aim of supporting objective, robust and standardised review to provide answers for bereaved parents about why their baby died. A secondary, but nonetheless important, aim is to ensure local and national learning to improve care and ultimately prevent future baby deaths.

The national PMRT was developed with clinicians and bereaved parents in 2017 and launched in England, Wales and Scotland in early 2018; it was subsequently adopted in Northern Ireland in autumn 2019. Unlike other review or investigation processes, the PMRT makes it possible to review every baby death, after 22 weeks' gestation, and not just a subset of deaths. For 92% of parents the PMRT process will likely be the only review of their baby's death they will receive.

Further refinement and development of the PMRT continued through 2019 and 2020. Recent developments include mechanisms to produce a single integrated report where care of the mother and/or baby was provided by more than one organisation avoiding multiple reviews and reports which may have contradictory elements and findings.

In addition, the tool was adapted in mid-2020 to enable the impact of SARS-CoV-2 on service delivery to be reflected in reviews. Future changes, currently in development, focus on reducing administrative workload by minimising duplication of data provision to meet other requirements, including direct notification of deaths, provision of review findings and additional data to Child Death Overview Panels and the National Child Mortality Database in England via the PMRT. This new capability for England will be released in 2021.

This second annual report builds on the first annual report and presents an analysis of reviews carried out from March 2019 to February 2020 representing the early stages of embedding the PMRT processes. The findings, from England, Scotland and Wales, in this second period are compared with the findings from the first annual report which covered the implementation phase of the PMRT. It is evident from this comparison that the process of improving the quality of reviews and actions developed, maximising the learning and improving care, continues.

Since the PMRT was only adopted in Northern Ireland in autumn 2019, relatively few reviews were conducted in Northern Ireland during the period of analysis reported here, furthermore this was the implementation phase for Northern Ireland and thus it is not appropriate to make comparisons with the data from the other three nations who are in the embedding phase of PMRT use.

It remains the case that the PMRT is only a tool, and will therefore, only be as good as the information that is put into it and the way it is used. If it is to achieve the original vision set out by the Task and Finish Group in 2012, it is up to Trusts and Health Boards to improve the way it is supported and implemented.

Findings

This report presents data from the 3,693 reviews which were completed between March 2019 and February 2020 and thus follows on from the first annual report.

Since it was launched all Trusts and Health Boards across England, Wales, Scotland and Northern Ireland have engaged with the PMRT and by 30th November 2020 over 11,000 reviews had been started or completed using the tool. This represents reviews of the care started for an estimated 83% of all babies who died in the perinatal period comprising 86% of stillborn babies and those who were miscarried in the late second trimester, and 78% of babies who died in the neonatal period.

Multidisciplinary review

The review process should be multidisciplinary to reflect the professionals caring for mothers, babies and their families, and recommendations regarding the constitution of PMRT review groups have been provided. However, the majority of reviews (83%) continue to be carried out by groups which do not include the minimum recommended number of staff fulfilling appropriate roles. In addition about one in five of the reviews were reported as being carried out by only one or two individuals. This does not constitute a robust multidisciplinary review process and furthermore is not an improvement from the early PMRT implementation period. It is important that the number and role of staff involved in a review is recorded accurately, not least to demonstrate the engagement of staff in this key aspect of care and learning. It also ensures the quantification of the person-time resource required to conduct high quality reviews so that this activity is prioritised.

The involvement of a relevant professional external to the Trust or Health Board as part of the PMRT review team is also recommended. In this period 19% of reviews, compared with 9% previously involved an external member. Whilst this represents an improvement the vast majority of reviews still did not involve someone, as recommended by the Kirkup inquiry[ii], who can provide a 'fresh eyes' independent perspective to the review of care which was provided; this needs to be addressed moving forward.

Review of care when a baby dies should be universally regarded as part of routine maternity and neonatal care and should be resourced appropriately. This means including time to participate in reviews in job plans for consultants and prioritising the time required by other staff to participate in reviews; this is a particular issue for those acting as external members of review teams in other Trusts/Health Boards. Resourcing is also required for supporting parents through the PMRT process and for the vital administrative support needed to reduce the burden of tasks for other staff. Whilst the proportion of reviews with administrative support increased from 11% in the previous report to 18%, four in five reviews nevertheless appear to lack this type of support.

On a more positive note an increasing proportion of reviews were conducted by review groups which included a member of the local governance/risk management team (92%) and/or a service manager (40%). This would suggest that the PMRT is more embedded in the local governance processes and there is a greater likelihood of the action plans developed in the review being translated into service improvements.

Parent engagement

It was reported that overall parents had been told in 84% of instances that a review of their care and that of their baby would be carried out. This represents an improvement from 75% in the previous report and is a considerable improvement in parent awareness of reviews compared with earlier MBRRACE-UK Confidential Enquiries and the Each Baby Counts programme. Whilst not all bereaved parents will wish to engage with the review process beyond knowing that it is taking place and being given the results, it is nevertheless surprising that not all parents in this period, for whom a review was conducted, were told that a review would take place.

Fewer than a quarter of parents were reported to have indicated that they had no questions or concerns about their care they wanted the review to address, this was nearly double the proportion in the first period. The PMRT 'Parent Engagement' materials released halfway through this second period clearly had limited impact. It is acknowledged that engaging parents in a meaningful way requires additional resources, but the PARENTS study has shown that more meaningful the engagement the more likely that important lessons for care will be identified in the review.

Issues with care identified

Over 90% of reviews identified at least one issue with care, with an average of four issues per death reviewed. This was unchanged from the findings in the first annual report.

Issues with care relevant to the outcome affected many aspects of care throughout the maternity and neonatal pathway. However, the reviews highlighted particular issues with antenatal care concerning inadequate growth surveillance; delays in diagnosis or inappropriate management of significant medical/surgical/social problems during pregnancy; inadequate investigation or management of reduced fetal movements; inadequate smoking prevention and access to smoking cessation services; and late preg-

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[ii] Kirkup B. The Report of the Morecambe Bay Investigation. London: The Stationery Office. 2015.

nancy booking or unbooked pregnancies. Of note, fetal growth surveillance, management of reduced fetal movement and smoking prevention were evident as particular issues in the first annual report and are addressed by the second version of the NHS England Saving Babies' Lives Care Bundle.

Issues concerning monitoring of both mother and baby during labour, birth and shortly after birth were highlighted in this and the previous report. Staffing issues related to care in labour and birth were more prominent in this second annual report. During neonatal care a need to improve documentation, particularly in relation to resuscitation of the baby, was once again highlighted, as was a requirement to optimise thermal management at all stages of neonatal care. In addition issues with respiratory management during resuscitation were newly identified in this reporting period.

Overall grading of care

Review groups are asked to provide a holistic grading of the care provided at each stage of the care pathway at the end of each review. For 57% of stillbirths and late miscarriage the grading indicated that there were no issues with care during pregnancy, labour and birth that would have affected the outcome for the baby. For a further 27% issues were identified which would have had no effect on the outcome and in only 16% of reviews were issues identified that may or would have made a difference to the outcome. The respective proportions for neonatal deaths including neonatal care were 47%, 40% and 12%. These figures represent a very modest shift from the first annual report.

This suggests that despite identifying some issues with care during the review process, in the vast majority of instances the multidisciplinary review teams have concluded that the majority of deaths occurred despite care that was deemed appropriate. These figures contrast with those from the recent perinatal confidential enquiries and the Each Baby Counts programme and it seems unlikely that the difference is entirely due to the fact the enquiries and Each Baby Counts have focused solely on term, normally formed babies whose deaths would be anticipated as avoidable. It is still early days in terms of embedding the PMRT; it remains to be seen whether there is a further shift in grading in future reports as the local review groups better fulfil the PMRT recommended criteria of being truly multidisciplinary, involving an external reviewer, engaging parents meaningfully in a way that invites probing questions, and undertaking increasingly robust self-examination.

Contributory factors

The majority of factors contributing to the issues identified related to a failure to follow or an absence of guidelines, policies and procedures; also identified were the clinical condition of the mother and/or baby, communication problems and organisational structures. Communication issues in particular predominated in all categories of contributory factors for all aspects of neonatal care from resuscitation through to end of life care.

Action plans

Across the 3,693 reviews a total of 14,325 issues were identified and a total of 8,146 contributory factors requiring action were identified and incorporated into action plans. Findings from a sample of action plans indicated that the majority of action plans were SMART[ii]. The most frequent problem when action plans were not SMART was that the actions were not measurable. However, despite being largely SMART only 5% of the actions planned were 'strong' [iii], although a greater proportion compared with the last annual report were of 'intermediate' strength. There remains a central focus on modifying the actions of individuals through training and communications to staff rather than introducing systems and processes focused on 'strong' changes with 'forcing' features which remove a reliance on individuals to choose the correct action, and places emphasis on system-wide improvement.

[ii] SMART – Specific, Measureable, Achievable, Realistic, Time-bound.

[iii] The strength of an action describes how well the action would eliminate human error. Strong actions are system changes which remove the reliance on individuals to choose the correct action. They use standardisation and permanent physical or digital designs to eliminate human error and are sometime referred to as 'forcing' actions [1].

Conclusions

This report enables comparison between the findings from the first annual report during the PMRT implementation phase to this second report during the early part of the embedding phase. The PMRT is now being used to review the majority of perinatal deaths in England, Wales, Scotland and Northern Ireland.

Bereaved parents have the greatest stake in the findings of the review and their needs should be at the centre of the review. We anticipate that appropriately resourced implementation of the PMRT pathway for parent engagement and supporting resource materials, embedded within the PMRT, will increase meaningful parental involvement, as well as improve the overall quality of reviews.

There have been improvements in the constitution of multidisciplinary review groups nevertheless a substantial proportion of death are still reviewed by only one or two individuals which does not constitute a robust review process. Administrative support is lacking in the main and the involvement of an independent external member to provide a ‘fresh eyes’ perspective is limited. Review of care when a baby dies should be universally regarded as part of routine maternity and neonatal care and should be resourced appropriately.

There have only been modest shifts in the holistic grading of care suggesting that the discipline of robust self-examination is still in the early stages of development in many units. The involvement of a greater proportions of members of the governance/risk teams and service managers in the process of review is a more positive development as it is likely to increases the chances that the action plans developed by the review group will be translated into practice. Local summary review reports and this national report can form the basis of prioritisation of investment in service improvement activities. The strength of action plans developed remains of concern with a continued focus on relatively weak actions rather than strong, system level actions designed to reduce human error.

Recommendations

1. Improve the engagement of parents in reviews by standardising and resourcing local processes to ensure all bereaved parents are told a review will take place and have ample opportunities at different stages to discuss their views, ask questions and express any concerns as well as positive feedback they have about the care they received.

   Action: Trusts and Health Boards, staff caring for bereaved parents
2. Provide adequate resourcing of multidisciplinary PMRT review teams, including administrative support.

   Action: Trusts and Health Boards, Service Commissioners
3. Improve the process of PMRT review by involving sufficient members of multidisciplinary internal staff and an external member as part of the PMRT review team.

   Action: Trusts and Health Boards, regional support systems and organisations e.g. Local Maternity Systems in England, Service Commissioners
4. Improve the quality of service improvements as a consequence of reviews by developing ‘strong’ actions targeted at system level changes and audit their implementation and impact.

   Action: PMRT review teams, governance teams in Trusts and Health Boards, Service Commissioners
5. Use the local PMRT summary reports and this national report as the basis to prioritise resources towards key aspects of care identified as requiring action.

   Action: Trusts and Health Boards, Service Commissioners, regional support systems, e.g. Local Maternity Systems in England, Governments and national service organisations
6. Conduct research into new interventions that may be required to address issues with care identified in the PMRT report.

   Action: Research funding organisations and researchers

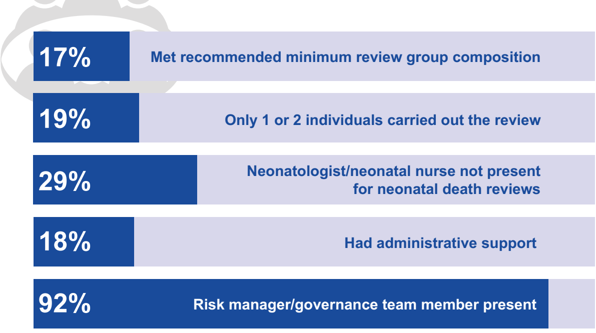
Learning from Standardised Reviews When Babies Die – 2019 Annual Report

Key Messages – December 2020

PMRT
Supporting high quality local perinatal reviews

Since the launch of the Perinatal Mortality Review Tool (PMRT) in early 2018 over 11,000 reviews have been started. Following implementation in 2018, this annual report presents the findings from reviews completed during the embedding phase from March 2019 to February 2020. Here are the key messages from the 3,693 reviews carried in this period.

Multi-disciplinary group review is essential



Issues with care and areas for improvement identified

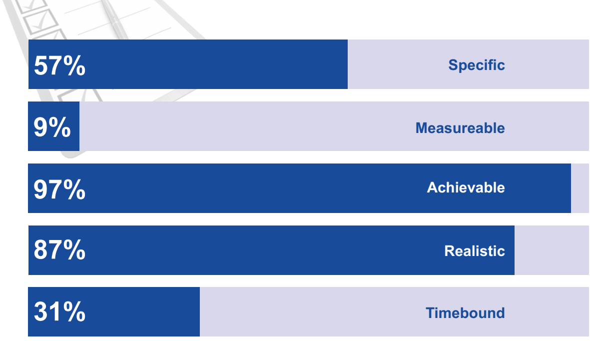
19/20 reviews identified areas for improvement

3/20 issues identified may have made a difference to the outcome

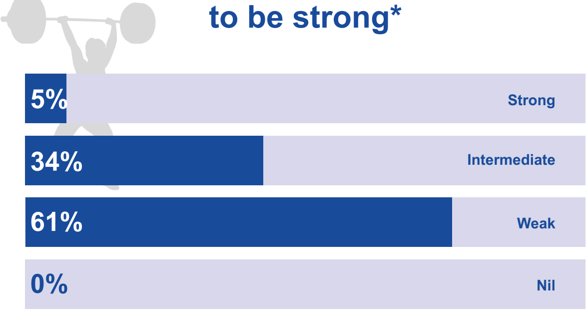
Parent engagement improves the quality of review

Comments, questions and concerns raised by parents

Action plans need to be SMART



Action plans need to be strong*



*Strong actions are system changes which remove the reliance on individuals to choose the correct action. They use standardisation and permanent physical or digital designs to eliminate human error and are sometimes referred to as 'forcing actions'.

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Members of the MBRRACE-UK/PMRT Collaboration

Jenny Kurinczuk - Professor of Perinatal Epidemiology, Director of the National Perinatal Epidemiology Unit, National Programme Lead MBRRACE-UK/PMRT, Nuffield Department of Population Health, University of Oxford

Elizabeth Draper - Professor of Perinatal and Paediatric Epidemiology, Perinatal Programme Co-lead MBRRACE-UK, Department of Health Sciences, University of Leicester

Marian Knight - NIHR Professor of Maternal and Child Population Health, Maternal Programme Lead MBRRACE-UK, National Perinatal Epidemiology Unit, Nuffield Department of Population Health, University of Oxford

Charlotte Bevan - Senior Research and Prevention Officer, Sands (Stillbirth & neonatal death charity)

Christy Burden - Consultant Senior Lecturer in Obstetrics, University of Bristol

Thomas Boby - Senior Programmer, MBRRACE-UK, National Perinatal Epidemiology Unit, Nuffield Department of Population Health, University of Oxford

Peter Brocklehurst - Professor of Women's Health, Director, Birmingham Clinic Trials Unit, Institute of Applied Health Research, University of Birmingham

Alan Fenton - Consultant in Neonatal Medicine, The Newcastle Upon Tyne NHS Foundation Trust, Newcastle

Mandy Forrester – Head of Quality and Standards, The Royal College of Midwives (stepped down March 2018)

Gemma Goodyear - PMRT/RCOG Clinical Fellow July 2019 – January 2020; RCOG representative February 2020 onwards

Alexander Heazell – Professor of Obstetrics and Clinical Director of the Tommy's Stillbirth Research Centre, University of Manchester

Tracey Johnston - Consultant Obstetrician, Maternal and Fetal Medicine, Birmingham Women's and Children's NHS Foundation Trust, Birmingham

Sara Kenyon - Professor in Evidence Based Maternity Care, University of Birmingham

Karen Luyt - Consultant Senior Lecturer in Neonatal Medicine, Programme lead National Child Mortality Database, University of Bristol and University Hospitals of Bristol NHS Trust, University of Bristol

Bradley Manktelow - Associate Professor, Department of Health Sciences, University of Leicester

Sarah Prince - Trainee in Obstetrics and Gynaecology, East of England; PMRT/RCOG Clinical Fellow July 2017 – January 2019; Collaborator February 2019 onwards

Rachel Scanlon – Practice and Standards Professional Advisor, The Royal College Midwives (Stepped down February 2019)

Janet Scott - Head of Research and Prevention, Sands (Stillbirth & neonatal death charity)

Dimitrios Siassakos, Associate Professor, Maternal & Fetal Medicine, EGA Institute for Women's Health, University College London

Lucy Smith - NIHR Senior Research Fellow in Perinatal Health Inequalities, Department of Health Sciences, University of Leicester

Peter Smith – MBRRACE-UK Programmer, National Perinatal Epidemiology Unit, Nuffield Department of Population Health, University of Oxford

Claire Storey - Co-Chair, International Stillbirth Alliance and parent advocate

Derek Tuffnell - Professor and Consultant Obstetrician and Gynaecologist, Bradford Teaching Hospitals NHS Foundation Trust

Zeenath Udin, Head of Quality & Safety, The Royal College of Midwives

Members of the PMRT development working groups

Julie-Clare Becher - Consultant Neonatologist, Department of Neonatology, Royal Infirmary of Edinburgh, Edinburgh

Charlotte Bevan - Senior Research and Prevention Officer, Sands (stillbirth and neonatal death charity)

Thomas Boby - MBRRACE-UK Senior Programmer, National Perinatal Epidemiology Unit, University of Oxford

Malli Chakraborty - Consultant in Neonatal Medicine, Regional Neonatal Intensive Care Unit, University Hospital of Wales, Cardiff

Katy Evans - Maternity Matron, Women and Children's Directorate Governance Lead, Taunton and Somerset NHS Foundation Trust, Taunton

Meg Evans - Consultant Perinatal Pathologist, Department of Pathology, Edinburgh Royal Infirmary, Edinburgh

David Field - Professor of Neonatal Medicine, Perinatal Programme Co-lead MBRRACE-UK Department of Health Sciences, University of Leicester, Leicester

Charlotte Gibson - Consultant Midwife, King's College Hospital NHS Foundation Trust, London

Alex Heazell - Professor of Obstetrics and Director of the Tommy's Research Centre, University of Manchester, Manchester

Tracey Johnston - Consultant Obstetrician, Maternal and Fetal Medicine, Birmingham Women's and Children's NHS Foundation Trust, Birmingham

Sara Kenyon - Professor in Evidence Based Maternity Care, University of Birmingham, Birmingham

Jenny Kurinczuk - National Programme Lead MBRRACE-UK/PMRT, Professor of Perinatal Epidemiology, Director of the National Perinatal Epidemiology Unit, University of Oxford

Karen Luyt - Consultant Senior Lecturer in Neonatal Medicine, University of Bristol and University Hospitals of Bristol NHS Trust, Bristol

Kirsteen Mackay - Consultant Neonatologist, Jessop Wing, Sheffield Teaching Hospitals NHS Foundation Trust

Helen McElroy - Consultant Neonatologist, Medway NHS Foundation Trust, Kent

David Millar - Consultant Neonatologist, Belfast Health and Social Care Trust, Belfast

Miguel Neves - MBRRACE-UK/PMRT Programmer, National Perinatal Epidemiology Unit, University of Oxford

Santosh Pattnayak - Consultant Neonatologist, Lead for Kent Neonatal Transport Service Medway NHS Foundation Trust, Kent

Sarah Prince – PMRT/RCOG Clinical Fellow Royal College of Obstetricians and Gynaecologists

Coralie Rogers - Maternity Matron, Nottingham University Hospitals NHS Foundation Trust, Nottingham

Dimitrios Siassakos - Associate Professor in Obstetrics at University College London and University College Hospital

Peter Smith - MBRRACE-UK Programmer, National Perinatal Epidemiology Unit, University of Oxford

Claire Storey – Co-Chair, International Stillbirth Alliance, Parent Advocate

Melanie Sutcliffe - Consultant Neonatologist, New Cross Hospital, The Royal Wolverhampton NHS Foundation Trust, Wolverhampton

Derek Tuffnell - Professor and Consultant Obstetrician and Gynaecologist, Bradford Teaching Hospitals NHS Foundation Trust

Jonathan Wyllie - Consultant Neonatologist, South Tees Hospitals NHS Foundation Trust, South Tees, Professor of Neonatology and Paediatrics, Durham University

Members of the MBRRACE-UK/PMRT team

Caroline Ellershaw – MBRRACE-UK Administrative Support, Department of Health Sciences, University of Leicester

Ian Gallimore - MBRRACE-UK Project Team Leader, Department of Health Sciences, University of Leicester

Miguel Neves, PMRT Programmer, National Perinatal Epidemiology Unit, Nuffield Department of Population Health, University of Oxford

Scott Redpath, MBRRACE-UK Data Manager, National Perinatal Epidemiology Unit, Nuffield Department of Population Health, University of Oxford

MBRRACE-UK/PMRT Third Sector Stakeholder Group Representatives

Beverly Beech, AIMS for Better Births
Therese McAlorum, CBUK
Charlotte Bevan, Sands
Sarah McMullen, NCT
Jane Brewin, Tommy's
Ashley Martin, ROSPA
Jenny Chambers, ICP Support
Mehali Patel, Sands
Ann Chalmers, CBUK
Nilushka Perera, Best Beginnings
Debbi Chippington Derrick, AIMS for Better Births
Jane Plumb, GBS Support
Jo Dagustun, AIMS for Better Births
Keith Reed, Twins Trust
Jane Denton, MBF
Jessica Reeves, Sands
Ian Evans, CAPT
Janet Scott, Sands
Jane Fisher, ARC
Fiona Spargo-Mabbs, DSM Foundation
Jane Gorringe, Twins Trust
Claire Storey, ISA
Marcus Green, APEC
Liz Thomas, AvMA
Clea Harmer, Sands
Cheryl Titherly, ARC
Michelle Hemmington, Campaign for Safer Births
Maureen Tredwell, BTA
Caroline Lee Davey, BLISS
Nathalie Turville, Elizabeth Bryan Multiple Births Centre
Nicky Lyon, Campaign for Safer Births
Jenny Ward, Lullaby Trust
Amy McCarthy, Twins Trust

MBRRACE-UK/PMRT Royal Colleges and Professional Association Stakeholder Group Representatives

Carmel Bagness - Royal College of Nursing
Sanjeev Deshpandi - British Association of Perinatal Medicine
Anita Dougall - Royal College of Obstetricians and Gynaecologists
Pamela Boyd - Royal College of Nursing
Denise Evans - Neonatal Nurses Association
Mervi Jokinen - Royal College of Midwives
Tamas Martan - British and Irish Paediatric Pathology Association
Surabhi Nanda - British Maternal Fetal Medicine Society
Marcia Philbin - Royal College of Paediatrics and Child Health
Felicity Plaat - Obstetric Anaesthetists Association and Royal College of Anaesthetists
Elena Pollina - British and Irish Paediatric Pathology Association
Shammi Ramlakhan - Royal College of Emergency Medicine

Rachel Scanlan - Royal College of Midwives
Trudi Seneviratne - Royal College of Psychiatrists
Clare Wade - Royal College of Physicians
Melissa Whitworth - British Maternal Fetal Medicine Society
Rachel Winch - Royal College of Paediatrics and Child Health

The Maternal, Newborn and Infant Clinical Outcome Review Independent Advisory Group:

Matthew Jolly, National Clinical Director for Maternity Review and Women's Health, NHS England (IAG Chair)

Carol Beattie, Senior Medical Officer, Department of Health, Northern Ireland

Sarah Corcoran, Team leader, Maternal and Infant Health, Scottish Government

Jacqueline Dunkley-Bent, Chief Midwifery Officer, Nursing Directorate, NHS England

Becky Gunn, Chair of the Royal College of Obstetricians and Gynaecologists Women's Network

Karen Jewell, Nursing Officer for Maternity and Early Years, Welsh Government

Corinne Love, Senior Medical Officer (Obstetrics), Scottish Government

Eddie Morris, Consultant, Obstetrics and Gynaecology, Norfolk and Norwich University Hospital, President, Royal College of Obstetricians and Gynaecologists

Karen Todd, Maternity and Children's Health, Department of Health and Social Care

Zeenath Uddin, Head of Quality and Standards, Royal College of Midwives

Michele Upton, Head of Maternity and Neonatal Safety, NHS England and NHS Improvement

David Williams, Consultant Obstetric Physician, University College Hospital, London

Healthcare Quality Improvement Partnership:

Tina Strack, Associate Director for Quality and Development, National Clinical Audit and Patient Outcomes Programme

Vivien Seagrove, Project Manager

Sue Latchem, Director of Operations

Glossary

CDOP	Child Death Overview Panel (England)
CTG	Cardiotocograph
DH	Department of Health
DNA	Did not attend (appointment)
FIGO	International Federation of Gynecology and Obstetrics
GDM	Gestational diabetes mellitus
NCMD	National Child Mortality Database
NPSA	National Patient Safety Authority
MBRRACE-UK	The collaboration established to deliver the MNI-CORP
MNI-CORP	Maternal, Newborn and Infant Clinical Outcome Review Programme
MSU	Mid-stream sample of urine
PMRT	Perinatal Mortality Review Tool
Sands	Stillbirth and neonatal death charity

Contents

1. Introduction and development of the national Perinatal Mortality Review Tool (PMRT)

The concept of developing a national Perinatal Mortality Review Tool (PMRT) had its origins at a stillbirth prevention summit held with over 50 stakeholders by Sands, the stillbirth and neonatal death charity, in March 2012. A Department of Health (DH)/Sands Task and Finish Group was established with the remit of taking forward the work to develop a national perinatal mortality review tool[iv]. The group developed an aspirational vision for a perinatal mortality review tool (Box 1.1) and a set of principles for the purpose and function of a national tool (Box 1.2).

Box 1.1: Vision for a National Perinatal Mortality Review Tool*

- All perinatal deaths will be reviewed in an objective, robust and standardised way;
- Parents will receive a full explanation as to why their baby died;
- We will learn more about why babies die;
- We will be able to target resources towards causes and address any shortfalls in care at local, network and national levels;
- Learning can be shared;
- Fewer babies will be stillborn or die in the neonatal period and mortality rates will fall.

*Vision of the DH/Sands Task and Finish Group

The Kirkup Report of the Morecambe Bay Investigation published in March 2015 highlighted that the care and events surrounding both stillbirth and neonatal deaths at Furness General Hospital were either inadequately scrutinised or sometimes not investigated at all [2]. The recommendations by Kirkup set in train a series of responses including the commissioning in 2016 by the Department of Health (England), with Scotland and Wales, of the development of a national PMRT to improve and standardise the quality of local reviews when perinatal deaths occur. Following a delay, due to external events, work to develop a national PMRT started in February 2017.

[iv] **DH/Sands Task and Finish Group representatives:** Dr Tracey Johnston (chair) and representatives from: Bliss the premature baby charity, British Association of Perinatal Medicine, British Maternal Fetal Medicine Society, Department of Health (England), MBRRACE-UK, NHS Litigation Authority, NHS Strategic Network, Improving Quality, Manchester, Parent representatives, Midwifery Research, Perinatal Institute, Royal College of Midwives, Royal College of Obstetricians and Gynaecologist, Royal College of Pathologists, South West Midlands Newborn Network, the stillbirth and neonatal death charity Sands, the Stillbirth Clinical Studies Group and the Devolved Nations. A number of individuals were invited to provide their specific expertise.

Box 1.2: Principles for a National Perinatal Mortality Review Tool identified by the DH/Sands Task and Finish Group

- There should be comprehensive and robust review of all perinatal deaths from 22^{+0} weeks gestation until 28 days after birth; excluding termination of pregnancy and those with a birth weight <500g;
- Such reviews should be conducted using a standardised nationally accepted tool, ideally web-based, that includes a system for grading quality of care linked to outcomes;
- A multidisciplinary group should review each case at a meeting where time is set aside for doing the work;
- There should be scope for parental input into the process from the beginning;
- The outcome of individual reviews should be shared with the parents/families in a sensitive and timely manner;
- There should be a quality control/review process with external peer review;
- Action plans generated by such reviews must be implemented and monitored;
- There should be biannual reporting to the relevant hospital committee, with evidence of organisational learning;
- These reports should feed up regionally and nationally to allow benchmarking and publication of results, to ensure national learning.

The conceptual basis for the tool development placed at its core the fundamental aim of ensuring that objective, robust, standardised reviews are carried out in order to provide answers for bereaved parents about why their baby died. A second, but nonetheless important aim is to ensure learning from past events in order to improve care and ultimately prevent future deaths.

The PMRT has been designed as an integrated system within the MBRRACE-UK perinatal mortality surveillance data collection system. This enables notification of a death by the provision of demographic and key clinical descriptors that are common to both perinatal surveillance and the PMRT and thus avoids duplicate data entry. Once the notification is complete, users are encouraged to complete the surveillance data collection before starting a review as information common to both the surveillance and the PMRT are cross-populated from the surveillance data collection into the PMRT. Information does not cross-populate from the PMRT to the surveillance data collection; this is by design in order to encourage prompt completion of the surveillance data.

1.1 Deaths suitable for review using the PMRT

The deaths for which the PMRT is designed to support review were defined by the MBRRACE-UK/PMRT collaborators (Box 1.3).

Explicitly excluded from the PMRT review are deaths as the result of a termination of pregnancy or where the death occurs in the community when the baby was discharged home well. The PMRT can be used to review deaths which fall outside the criteria in Box 1.3, but not all aspects of care which should be reviewed will necessarily be covered by the tool.

Box 1.3: Deaths for which the PMRT is designed to support review of care

The PMRT has been designed to support review of the following perinatal deaths:

- Late miscarriages (also referred to as late fetal losses) where the baby is born between 22^{+0} and 23^{+6} weeks of pregnancy showing no signs of life
- All stillbirths where the baby is born from 24^{+0} gestational weeks showing no signs of life
- All neonatal deaths where the baby is born alive from 22^{+0} weeks and dies up to 28 days after birth
- Post-neonatal deaths where the baby is born alive from 22^{+0} weeks and dies after 28 days of birth following neonatal care; the baby may have died in hospital, a hospice or at home following palliative care

The PMRT does not support the review of perinatal deaths where the death meets the criteria above but:

- The death follows a legal termination of pregnancy
- The baby was discharged home well, had not received neonatal care but died up to 28 days after birth
- The baby was discharged home well, had not received neonatal care but died after 28 days after birth

1.2 The importance of parent engagement

An essential aspect of conducting a good quality review is to ensure that parents' concerns and any questions they have about their care are considered during the process. For this reason the questions regarding engagement with parents at the start of the review process are placed as the first set of care-related questions in the PMRT.

1.3 Grading of care

The process of developing the PMRT, the different aspects of the tool and what each aspect aims to achieve was described in detail in the first annual report [3]. Towards the end of each review the PMRT invites the review teams to consider the overall care provided and assign a grading care for the different stages of care (Box 1.4).

Box 1.4: Categories used to grade the different aspects of care for each death

A. No issues with care identified
B. Care issues that would have made no difference to the outcome
C. Care issues which may have made a difference to the outcome
D. Care issues which were likely to have made a difference to the outcome

1.4 Generation of individual review reports and action plans

Once a review has been completed and the responses validated (to ensure that all relevant questions are complete) a report of the review can be generated. The report automatically incorporates the answers to all the relevant questions within the tool. During the course of the review the review team can make notes about specific aspects of care within the PMRT. These notes are incorporated into the report as editable text which allows the review team to expand their notes into narrative prose and provide more detail than is possible by the automatically generated responses.

The action plans are also completed at this stage of report generation with the addition of implementation plans including identifying the individuals responsible and timelines for each action. The action plans from individual reports can also be downloaded as an Excel spreadsheet. This is to allow inclusion of the action plan in the Trust/Health Board governance systems.

Finally the completed report be downloaded, which is referred to as 'published', in a PDF format which can be both saved electronically and printed out for inclusion in the medical records in preparation for discussion with parents at their follow-up appointment. The report can be used as the basis for writing a letter to parents after their follow-up appointment as importantly there is the opportunity to include a management plan for any future pregnancies.

1.5 Generation of summary reports

There is a function available to PMRT users to generate summary reports which cumulate information from reviews carried out in their organisation over a period of time. This enables issues which are repeated through a number of reviews to be identifiable alongside summary information about the deaths which were reviewed and generated these issues. Users can download a summary report at any time and the period covered is defined by the user when they download the report. The summary reports can be used for many purposes including quarterly or half yearly reporting to the management board of the Trust/ Health Board and/or discussion with the Maternity Safety Champion.

It is also possible for users to download a limited summary dataset as an Excel spreadsheet. Again this is for a user defined period and allows additional local analysis to support the production of summary reports.

1.6 Using the PMRT in practice

Guidance is provided on how to use the tool in practice. Reviews should be carried out by multidisciplinary review teams and guidance is provided on the constitution of such teams, together with a terms of reference template. Advice is also provided on how to incorporate the tool into the process of review. This includes ensuring that prior to review of a particular case some information is pre-populated into the PMRT, first by completing the MBRRACE-UK surveillance for that death and second by completing the factual questions within the PMRT. Some of these questions can be completed by administrative support staff and some will need input from a staff member with a clinical background. The pre-population ensures that only questions relevant to the particular death appear.

Prior to the main review meeting some organisations have clinical staff who carry out a pre-review which will speed things up during the actual review meeting and enable the review team to focus on discussing the care. For example, by adding relevant information into the notes section of the tool. This guidance is provided both in a guidance document and as a slide set (*https://www.npeu.ox.ac.uk/pmrt/implementation-support*).

1.7 Parent engagement

Parents whose baby has died have the greatest stake in understanding what happened and why their baby died. They can also offer extremely helpful insights into the care they received. Engaging bereaved parents in the review process and including their views and any concerns and questions they have about their care will enhance the review and ensure that from the outset the review addresses their questions. Parents, particularly mothers, have a unique perspective on everything that happened to them and their baby being the only person actually present for the entirety of the pregnancy.

Engaging bereaved parents in the review process does not mean having the parents present at the review. Engagement means talking to them empathetically ahead of the review and asking for their views and any questions or concerns they have about their care so that these can be specifically considered during the review. During 2018 materials were developed and released in 2019 to support staff in Trusts and Health Boards when engaging with bereaved parents. The materials were developed by a multidisciplinary group from the MBRRACE-UK/PMRT collaboration that included bereaved parents and are based on the published finding from the PARENTS study [4] and the ‘Being Open’ process for maternity services in Scotland.

1.8 Approvals and incentives to encourage the use of the PMRT

Review of care when an adverse outcome occurs is a standard part of clinical care. Indeed, it is a General Medical Council requirement of ‘Good Medical Practice’, section 22(a), that all doctors take part in regular reviews and audits of their work [5]. As part of standard care it is also good practice, for the reasons outlined above, to explain to parents that a review of their care and that of their baby will be carried out. The use of the PMRT to carry out the reviews involves the processing and storage of confidential personal and health data on the MBRRACE-UK/PMRT servers. A legal basis is required to enable this processing and storage to occur.

In discussion with our parent, patient and public stakeholder group it was concluded that seeking the consent of parents to use the PMRT to carry out the review and thus to store their data within the MBRRACE-UK/PMRT system would be burdensome for parents at the time of their bereavement. On this basis an application was made to the Confidentiality Advisory Group of the Health Research Authority (for England and Wales) for section 251 approval to set aside the common law duty of confidence for the purpose of carrying out reviews using the PMRT. Approval was granted in October 2017: 17/CAG/0150. Annual reviews have been submitted to enable the approval to remain current. A similar application was made to the Public Benefit and Privacy Panel for Health and Social Care (PBPP) in Scotland and approved in March 2018: 1718-0249. The PMRT was originally not commissioned for use in Northern Ireland. In autumn 2019 Northern Ireland was included. The legal basis for the use of the PMRT in Northern Ireland is parental consent.

The legal basis for this activity under the Data Protection Act (2018):

Article 6 (1) (e) - processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the data controller*.

and

Article 9 (2) (i) - processing is necessary for reasons of public interest in the area of public health, in ensuring high standards of quality and safety of health care.

* The Healthcare Quality Improvement Partnership which commissions the PMRT is the data controller

The expectation is that all Trusts and Health Boards in England, Wales, Scotland and Northern Ireland will use the PMRT to review their perinatal deaths and the funders encourage this to happen. An added incentive was introduced in England as part of the NHS Resolution Clinical Negligence Scheme for Trusts (CNST) Maternity Incentives Scheme. The scheme incorporates 10 actions to support maternity safety that trusts are expected to comply with to avoid a financial penalty. The first safety action for years one (2018), two (2018-19) and three (2019-21) involves use of the PMRT to review eligible perinatal deaths [6].

1.9 Future plans for development of the PMRT

The tool is constantly under review and is updated regularly to refine the questions (often in response to user requests), improve the flow of the questions and update the national guidance within the tool.

A recent development released in June 2020 allows Trusts/Health Boards to ‘assign’ a review to any other organisation who provided parts of the care for the mother and baby so that they can review the care they provided. Any issues with care identified are ‘owned’ by the organisation that generated them and a single report is produced which includes all elements of the reviews conducted. Production of a single report is designed to avoid parents being given contradictory information and advice. As of 13th October 2020 75% of reviews where care was provided in more than one location have been assigned using this function enabling review by all organisations involved in the care.

In England, notification and the findings from reviews of neonatal deaths also need to be submitted to the local Child Death Overview Panel (CDOP) and the recently established National Child Mortality Database (NCMD) [7]. Work is underway between the MBRRACE-UK/PMRT team and the NCMD team to develop a single process to enable notifications of neonatal deaths to the local CDOP to be generated and forwarded from the MBRRACE-UK/PMRT notification. Following notification the two systems are being integrated further so that the information beyond notification is collected within the PMRT and can be forwarded directly to the local CDOP and NCMD without the need for a separate process of data collection. Of note, the new ‘Working Together to Safeguard Children’ guidance (which has legal force) specifies that a local review of all neonatal deaths must to be carried out by the organisation where the baby died and the review should be carried out using the PMRT [8].

Future developments are planned to continue to reduce duplication of data provision and reducing the burden of review for multiple births where both/all the babies die by cross-population of the pregnancy care information.

2. Conducting reviews

Between the release of the PMRT in January 2018 and 30th November 2020 11,065 reviews have been started and/or completed using the tool. This represents reviews started for an estimated 83% of all eligible perinatal deaths comprising 86% of stillbirths and late miscarriages, and 78% of neonatal deaths across the UK.

This report presents data from the 3,693 reviews which were completed between March 2019 and February 2020 and thus follows on from the first annual report. The findings are compared with findings from the 1,500 completed reviews presented in the first annual report.

With complete birth data now available for 2018 we are able to present exact proportions of deaths which were reviewed in this first year the PMRT was available. Figures below are compared for 2018, 2019 and 2020 based on reviews conducted up until 30th November 2020 (Tables 2.1a, 2.1b, 2.1c).

England

In England in 2018 a total of 3,502 reviews were started and of those reviews 2,965 (85%) were completed to the point the report was 'published'. Overall there were 4,200 perinatal deaths in 2018 and for 83% (3,502) of them a review was started, completed or published and for 71% (2,965) of deaths reviewed the report was published (Table 2.1a). A greater proportion of stillbirths and late miscarriages (88%) were reviewed than neonatal deaths (75%).

Table 2.1a: Number of reviews and the estimated proportion of deaths where a review has been carried out using the PMRT by year, England 2018 to 2020

	Type of death		
	Stillbirths & late miscarriages N (%)	Neonatal deaths N (%)	Total N (%)
2018			
Review started/completed/published	2,347 (88%)	1,155 (75%)	3,502 (83%)
Review published	2,092 (78%)	873 (57%)	2,965 (71%)
2019			
Review started/completed/published*	2,440 (91%)	1,309 (85%)	3,749 (89%)
Review published*	2,139 (80%)	978 (64%)	3,117 (74%)
2020			
Review started/completed/published**	1,835 (91%)	984 (86%)	2,819 (89%)
Review published**	1,087 (54%)	488 (42%)	1,575 (50%)

**Percentages based on the 'expected' number of deaths from the number of deaths in 2018 since the total 2019 and 2020 deaths not yet available due to incomplete notifications by Trusts

**Percentages based on the 'expected' number of deaths for the first nine months of 2018

For 2019 the proportions of deaths reviewed are estimated based on the number of deaths in 2018, as the most complete year of data about deaths available. Based on these estimates 89% of deaths in 2019 had had a review started/completed/published, a small increase compared with 83% in 2018. There was a similarly small increase in the proportion of deaths reviewed where a report was published with 71% in 2018 and 74% in 2019.

For 2020 the proportion of deaths reviewed are also estimated based on the number of deaths in 2018. The proportion of deaths where a review was started/completed/published compared was the same in 2019 and 2020 at 89%. The proportion of reviews published to date is lower than in previous years although this is likely to be the effect of reviews still being in progress (50% versus 71% and 74% in the previous two years). Although the proportion of stillbirths & late miscarriages and neonatal deaths reviewed both increased slightly between 2019 and 2020 there still remains a discrepancy between the proportions reviewed by type of death with a greater proportion of stillbirths & late miscarriages reviewed compared with neonatal deaths.

Scotland

The pattern of reviews in Scotland is similar to that of England although the proportion of deaths reviewed is lower overall in each year and for each type of death.

Table 2.1b: Number of reviews and the estimated proportion of deaths where a review has been carried out using the PMRT by year, Scotland 2018 to 2020

	Type of death		
	Stillbirths & late miscarriages N (%)	Neonatal deaths N (%)	Total N (%)
2018			
Review started/completed/published	96 (47%)	36 (37%)	132 (43%)
Review published	55 (27%)	29 (30%)	84 (28%)
2019			
Review started/completed/published*	160 (78%)	65 (66%)	225 (74%)
Review published*	119 (58%)	52 (53%)	171 (56%)
2020			
Review started/completed/published**	113 (73%)	40 (54%)	153 (67%)
Review published**	66 (43%)	18 (24%)	84 (37%)

*Percentages based on the 'expected' number of deaths from the number of deaths in 2018 since the total 2019 and 2020 deaths not yet available due to incomplete notifications by Health Boards

**Percentages based on the 'expected' number of deaths for the first nine months of 2018

In 2018 in Scotland a total of 133 reviews were started and of those reviewed 84 (63%) of the reviews were completed to the point the report was 'published'. Overall there were 304 perinatal deaths and for 43% of them a review was started, completed or published and for 28% the report was published (Table 2.1b). A greater proportion of stillbirths & late miscarriages (47%) were reviewed than neonatal deaths (37%).

Based on the estimated number of deaths the proportion of deaths in 2019 where a review was started/completed/published increased, compared with 2018, to 74% from 43%. The proportion of the reviews published doubled with 28% published in 2018 and 56% in 2019. The discrepancy between the proportions reviewed by type of death, with a greater proportion of stillbirths & late miscarriages (78%) reviewed compared with neonatal deaths (66%), has remained effectively unchanged across all three years.

The proportion of deaths reviewed to date in 2020 is slightly less than in 2019 with 73% with a review started/completed/published compared with 78% in 2019.

Wales

In 2018 in Wales a total of 142 reviews were started and of the reviews started 90 (63%) of them were completed to the point the report was 'published'. Overall there were 191 perinatal deaths and for 74% of them a review was started, completed or published and for 47% the review report was published (Table 2.1c). A greater proportion of neonatal deaths (81%) were reviewed than stillbirths & late miscarriages (71%).

Table 2.1c: Number of reviews and the estimated proportion of deaths where a review has been carried out using the PMRT by year, Wales 2018 to 2020

	Type of death		
	Stillbirths & late miscarriages N (%)	Neonatal deaths N (%)	Total N (%)
2018			
Review started/completed/published	92 (71%)	50 (81%)	142 (74%)
Review published	71 (55%)	19 (31%)	90 (47%)
2019			
Review started/completed/published*	90 (70%)	69 (100%)	159 (83%)
Review published*	62 (48%)	27 (44%)	89 (47%)
2020			
Review started/completed/published**	57 (59%)	32 (69%)	89 (62%)
Review published**	27 (28%)	2 (4%)	29 (20%)

*Percentages based on the 'expected' number of deaths from the number of deaths in 2018 since the total 2019 and 2020 deaths not yet available due to incomplete notifications by Health Boards

**Percentages based on the 'expected' number of deaths for the first nine months of 2018

Based on the estimated number of deaths the proportion of deaths in 2019 where a review was started/completed/published increased, compared with 2018, to 83% from 74%. Whereas the proportion of the reviews published remained the same at 47% in both 2018 and 2019. The discrepancy between the proportions reviewed by type of death, with a greater proportion of neonatal deaths (100%) compared with stillbirths & late miscarriages (70%) reviewed has remained effectively unchanged across all three years.

The proportion of deaths reviewed to date in 2020 is less than the proportion in 2019 with 62% with a review started/completed/published compared with 83% in 2019.

Northern Ireland

Trusts in Northern Ireland adopted the PMRT for the conduct of reviews during autumn 2019. As a consequence the reviews carried out in Northern Ireland during the period covered by this report were during the implementation phase of the use of the PMRT and few reviews were completed or published in 2019. Table 2.1d therefore only includes information about reviews carried out from 1st January 2020 to 30th November 2020.

Table 2.1d: Number of reviews and the estimated proportion of deaths where a review has been carried out using the PMRT, Northern Ireland 2020

	Type of death		
	Stillbirths & late miscarriages N (%)	Neonatal deaths N (%)	Total N (%)
2020			
Review started/completed/published**	38 (57%)	14 (25%)	52 (43%)
Review published**	10 (15%)	1 (2%)	11 (9%)

**Percentages based on the 'expected' number of deaths from the number of deaths in for the first nine months of 2018 since 2020 deaths not yet available due to incomplete notifications

2.1 Multidisciplinary review groups

Trusts and Health Boards are each responsible for establishing their own local multidisciplinary perinatal mortality review group. It is recommended that there is a single group within an organisation who meet together to review all the perinatal deaths in their organisation (Box 2.1). It is possible for group members to fulfil multiple roles, provided this does not result in too small a group of individuals.

There is clear evidence that the quality of the local review is much better when a multidisciplinary group conducts the review compared with a single individual or just one or two members of staff [9, 10, 11].

Box 2.1: PMRT recommended composition of the local perinatal mortality review group

Core membership

Roles within the group:

- Chair and Vice-Chair
- Scribe/Admin support
- PMRT/Maternity Safety Champion

Minimum of two of each of the following:

- Obstetrician
- Midwife
- Neonatologist and Neonatal Nurse for:
  - All deaths where resuscitation was commenced
  - All neonatal deaths
- Bereavement team (1 acceptable)
- Risk manager/governance team member (1 acceptable)
- External panel member (1 acceptable)
- Other members as appropriate to the organisation of care in the Trust/Health Board e.g. service manager

Additional members

Named and invited to attend or contribute where applicable:

- Pathologist
- GP/Community healthcare staff
- Anaesthetist
- Sonographer/radiographer
- Safeguarding team
- Service manager
- Any other relevant health care team members pertinent to death

Each participant involved in a review session should be recorded in the PMRT. The information in Table 2.2 is derived from the session participant data. The session with the largest number of participants recorded is taken as an indication that this is the main review session for that death. However, there were significant issues due to incomplete, possibly inaccurate reporting and changes to the way this information was recorded within the PMRT during 2018, particularly the first half of 2018, following which the method of recording within the PMRT was modified. Despite these early issues there was remarkably little change in the number of members of the multidisciplinary teams (MDTs) between the two report periods; 65% of reviews were carried out with an MDT with four or more members in both periods.

The review for any particular death may be re-opened within the PMRT multiple times. Indeed the recommendation is that 'factual' information should be entered ahead of the review meeting so that this meeting can be devoted to discussion of the care. Some review teams also undertake a preliminary clinical review of the care prior to the full review discussion. Furthermore, when information is not available or new information comes to light the death may be discussed at more than one full review meeting. There will be varying numbers of people present for each of these different scenarios. It is for this reason Table 2.2 shows the number of participants for the session with the largest number of participants recorded. In the second reporting period there was a median of five participants for reviews of both neonatal deaths and late miscarriages & stillbirths.

Based on the recorded participants, 20% of reviews of late miscarriages & stillbirths and 17% of neonatal deaths were undertaken by only one or two people rather than a multidisciplinary group. This represents only a marginal reduction in the number of reviews undertaken by too few staff compared with the findings in the first annual report period.

Review group members may fulfil multiple roles, for example a midwife may also be a member of the bereavement team, and it is possible that only the principal role was recorded for some participants. However, there is unlikely to be overlap between midwives, obstetricians, neonatal nurses and neonatologists. The minimum recommended core group, assuming multiple roles, is two midwives and two obstetricians for reviews of late miscarriages and stillbirths, with the addition of two neonatologists and two neonatal nurses for reviews of neonatal deaths. Comparing the two reporting periods, overall there was no change in the proportion of deaths reviewed by a group fulfilling the minimum recommended core group size. It is notable that neonatal deaths were almost never reviewed by a group meeting this minimum recommended size and this was largely because for these deaths the maternity and neonatal staff requirements were rarely both met in the same meeting.

Table 2.2: Number and percentage of staff recorded at the review session with the largest number of participants by type of death, comparing the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

	Reviews Jan 2018 to Feb 2019				Reviews Mar 2019 to Feb 2020			
Number of staff recorded as present	Late miscarriage (N = 143) n (%)	Stillbirth (N = 1,011) n (%)	Neonatal death (N = 346) n (%)	All deaths (N = 1,500) n (%)	Late miscarriage (N = 449) n (%)	Stillbirth (N =2,158) n (%)	Neonatal death (N = 1,086) n (%)	All deaths (N = 3,693) n (%)
1	11 (8%)	83 (8%)	23 (7%)	117 (8%)	**49 (11%)**	**175 (8%)**	**89 (8%)**	**313 (8%)**
2-3	54 (38%)	262 (26%)	87 (25%)	403 (27%)	110 (24%)	495 (23%)	188 (17%)	793 (21%)
4-7	57 (40%)	420 (42%)	129 (37%)	606 (40%)	167 (37%)	864 (40%)	434 (40%)	1,465 (40%)
8+	19 (13%)	246 (24%)	107 (31%)	372 (25%)	**97 (22%)**	**504 (23%)**	**323 (30%)**	**924 (25%)**
None recorded	2				26 (6%)	120 (6%)	52 (5%)	52 (5%)
Median	5	5	6	5	4	5	5	5
At least the minimum number of staff with the correct roles recorded as present for the largest review session *	21 (15%)	224 (22%)	1 (0%)	246 (16%)	96 (22%)	516 (24%)	3 (1%)	615 (17%)

* Minimum recommended staff: two midwives and two obstetricians for reviews of stillbirths and late miscarriages, and in addition two neonatal nurses and two neonatologists for neonatal deaths

Table 2.3 shows the number and percentage of reviews where each type of professional was recorded as being involved in any session for review of a particular death i.e. not just the largest session.

External members: The PMRT guidance recommends the involvement of an external member as part of the multidisciplinary review team, i.e. someone who is external to the Trust/Health Board with relevant clinical expertise, to bring a 'fresh eyes' to the review and to provide robust challenge where complacency or 'group think' in service provision predominates. Anecdotal reports from Trusts/Health Boards indicate that this is one of the more difficult aspects of multidisciplinary review to achieve due to governance issues, workload and, as a consequence, finding suitable clinicians/units to partner with. This probably explains why only 19% of reviews had an external member recorded as present. Whilst still a relatively small proportion this does, however, represent more than a doubling in the proportion of reviews with an external member compared with the reporting period of the first annual report.

Administrative support: The presence of administrative support staff members for 18% of reviews has similarly nearly doubled from the first annual report period where only 11% of reviews had an administrative support present. So whilst this is an improvement this relatively low figure of 18% it does mean that clinical staff must be undertaking tasks, such as the entry of the factual data, which could be completed by a member of the administrative team reducing the burden on the clinical team. This data entry is important as it ensures the PMRT only presents questions relevant to the particular death being reviewed.

Clinical members of staff: Of the direct clinical care team midwives were present for the highest proportion of reviews, they were recorded as involved in 78% of late miscarriage reviews, 85% of stillbirth reviews and 71% of neonatal death reviews; obstetric presence was recorded for 76%, 79% and 72% respectively. Recorded involvement of neonatal staff in reviews of neonatal deaths was much improved from the first annual report with 71% of these reviews involving a neonatal nurse compared with only 24% previously, and 71% involving a neonatologist/paediatrician compared with 59% previously. Only 2% of all reviews involved an anaesthetist and pathologists were present for only 4% of all reviews. There were many fewer reviews in the second period with one participant with an unknown role compared with the first (18% versus 82%), it is nevertheless possible that the presence of some professional groups are under estimated. Clearly not all review groups involve the requisite staff to meet the PMRT guidance or the recommendations from Each Baby Counts [11].

Risk manager/governance team and member of the management team: There was a notable improvement in the proportion of reviews where a member of the risk management or governance team was present from 64% in the first annual report period to 92% for this reporting period. Similarly the proportion of reviews where a member of the management team was present almost doubled, from 24% to 40%. The presence of these members of staff is important to ensure the implementation of action plans to improve services where issues with care have been identified.

Table 2.3: Number and percentage of reviews involving each type of professional, comparing the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

Professional role	Number of reviews with a record of involving this type of professional in any session (% of reviews) Reviews Jan 2018 to Feb 2019				Number of reviews with a record of involving this type of professional in any session (% of reviews) Reviews Mar 2019 to Feb 2020			
	Late miscarriage (N = 143) n (%)	Stillbirth (N = 1,011) n (%)	Neonatal death (N = 346) n (%)	All deaths (N = 1,500) n (%)	Late miscarriage (N = 449) n (%)	Stillbirth (N =2,158) n (%)	Neonatal death (N = 1,086) n (%)	All deaths (N = 3,693) n (%)
External panel member	15 (10%)	90 (9%)	29 (8%)	134 (9%)	**55 (12%)**	**441 (20%)**	**206 (19%)**	**702 (19%)**
Midwife	124 (87%)	848 (84%)	267 (77%)	1,239 (83%)	354 (78%)	1,820 (85%)	826 (76%)	3,009 (81%)
Neonatologist/paediatrician	13 (9%)	127 (13%)	204 (59%)	344 (23%)	87 (19%)	381 (18%)	766 (71%)	1,234 (33%)
Obstetrician	100 (70%)	793(78%)	253(73%)	1,146(76%)	**343 (76%)**	**1,707 (79%)**	**778 (72%)**	**2,833 (76%)**
Bereavement team member	70 (49%)	425 (42%)	145 (42%)	640 (43%)	221 (49%)	1,223 (57%)	526 (48%)	1,977 (54%)
Risk manager/governance team member	79 (55%)	670 (66%)	206 (60%)	955 (64%)	410 (91%)	2,042 (95%)	918 (85%)	3,381 (92%)
PMRT/maternity safety champion*	8 (6%)	117 (12%)	24 (7%)	149 (10%)	69 (16%)	385 (19%)	139 (14%)	593 (17%)
Neonatal nurse	5 (3%)	51 (5%)	83 (24%)	139 (9%)	36 (8%)	190 (8%)	779 (71%)	1,005 (27%)
Service manager/member of management team	26 (18%)	262 (26%)	65 (19%)	353 (24%)	186 (41%)	944 (44%)	366 (34%)	1,499 (40%)
Administrative support staff	14 (10%)	108 (11%)	48 (14%)	170 (11%)	67 (15%)	381 (18%)	230 (21%)	680 (18%)
Pathologist	4(3%)	22 (2%)	4 (1%)	30 (2%)	15 (3%)	105 (5%)	16 (1%)	136 (4%)
Anaesthetist	0 (0%)	39 (4%)	4 (1%)	43 (3%)	8 (2%)	44 (2%)	19 (2%)	71 (2%)
Other	22 (15%)	201(20%)	67 (19%)	290 (19%)	127 (28%)	637 (30%)	558 (51%)	1,323 (36%)
Unknown (in addition to other)	107 (75%)	831 (82%)	297 (86%)	1,235 (82%)	70 (16%)	336 (16%)	252 (23%)	658 (18%)

*Maternity safety champions only relevant in England:

2.2 Timeframes for the conduct of reviews

There are three stages to the conduct of a review using the PMRT:

- The first stage involves the review being started and carried out. As noted above this may involve multiple staff interactions with the PMRT and may involve more than one review meeting at which the care of a particular mother and baby is discussed.
- The second stage is when the review is complete and a draft report is generated within the tool. At this stage if more information becomes available the review can be re-opened to take account of this additional information.
- The third and final stage is when the review is deemed to be finally complete, the final report is generated and 'published' in PDF format. The published report can be downloaded from the PMRT and saved and printed for inclusion in the medical records in preparation for discussions with the parents at their follow-up appointment.

Table 2.4 shows the time from death to the completion of the second stage of the review process (draft report) and the time from the death to completion of the third stage with publication of the final report.

Reviews involving neonatal care tend to take longer to complete and publish. This is likely to be because there is a greater amount of care to review and it requires more staff to be involved in the review group. Some Trusts/Health Boards hold neonatal death reviews over to particular meetings so that neonatal staff are only involved in meetings to review neonatal deaths and stillbirths where resuscitation was attempted, in order to maximise the efficiency of staff time involvement.

The two stages of the process were slower in England in the second compared with the first period; they were marginally faster in Scotland; and in Wales the periods of time taken for both processes have doubled.

There was no consistent pattern of duration by level of service provision; the duration was unrelated to the number of reviews carried out and the review time periods were similar by gestation at birth (data not shown).

Table 2.4: Time from the death to the review report generation and publication comparing the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

	Reviews Jan 2018 to Feb 2019				Reviews Mar 2019 to Feb 2020			
	Time from death to draft report generation (weeks)		Time from death to report publication (weeks)		Time from death to draft report generation (weeks)		Time from death to report publication (weeks)	
	Median	Range	Median	Range	Median	Range	Median	Range
Country:								
England	16	0 to 80	17	0 to 80	17	0 to 111	20	1 to 111
Wales	15	1 to 31	16	1 to 41	31	3 to 98	36	3 to 98
Scotland	15	2 to 80	16	2 to 80	**14**	**1 to 85**	**15**	**1 to 85**
Overall	16	0 to 80	17	0 to 80	18	0 to 111	20	1 to 111
Type of death:								
Late miscarriages	16	0 to 47	16	0 to 47	17	2 to 104	19	2 to 104
Stillbirths	15	0 to 80	17	0 to 80	17	0 to 104	19	0 to 107
Neonatal deaths	17	0 to 55	18	0 to 55	19	1 to 111	21	1 to 111

2.3 Parent engagement in reviews

At the time the data were extracted for the first annual report the ‘Parent Engagement’ materials, which include principles of parent engagement and resources to support engagement in review, were being developed and had not been released on the PMRT website. These materials could therefore not have impacted the depth and quality of parent engagement seen in the reviews during this first period.

The ‘Parent Engagement’ materials were subsequently released on the PMRT website in summer 2019 and so may have had an impact on the quality of parent engagement during the second half of the second period.

The first two questions in the PMRT concern parent engagement in the review process. First, the review group are asked to indicate whether parents have been informed that a review of their care and that of their baby will be carried out.

In the first reporting period 75% of reviews indicated that parents had been told a review of their care and that of their baby was being carried out (Table 2.5). This increased to 84% in the second reporting period. Thus, whilst it continues to be the case that not all parents were told a review would take place, this nevertheless represents an improvement from the first year and a considerable improvement from earlier findings from MBRRACE-UK confidential enquiries and Each Baby Counts reviews [9, 11]. Of note there was little variation by type of death in both periods and the variation seen by country in the first period was not evident in the second period.

2.4 Parent perspectives and concerns

The second question in the PMRT asks whether the parents’ perspectives were sought and whether they had been asked about concerns they had about their care and/or the care of their baby. For 73% of reviews in the first period there was an indication that parents’ perspectives and any concerns about their care and the care of their baby had been sought; this had increased to 84% in the second period (Table 2.5). Again the variation by country seen in the first reporting period was no longer evident in the second reporting period and there was little variation by type of death. Similarly in the second period there was little evidence of variation in whether parents’ perspectives were sought by level of service provision or gestational age at birth (data not shown).

Table 2.5: Number and percentage of reviews indicating parents' perspectives of care were sought and comments recorded comparing the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

	Reviews Jan 2018 to Feb 2019				Reviews Mar 2019 to Feb 2020			
	Reviews where parents' perspectives were indicated as having been sought		Reviews with parents' comments recorded*		Reviews where parents' perspectives were indicated as having been sought		Reviews with parents' comments recorded*	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Country:								
England	1,070	76%	1,037	73%	2,916	84%	2,899	84%
Wales	19	82%	18	78%	70	86%	70	86%
Scotland	35	57%	34	56%	**130**	**87%**	**130**	**87%**
Overall	1,124	75%	1,089	73%	3,116	84%	3,099	84%
Type of death:								
Late miscarriages	100	70%	98	69%	365	81%	365	81%
Stillbirths	781	77%	755	75%	1,879	87%	1,875	87%
Neonatal deaths	243	70%	236	68%	872	80%	859	79%

* A number of the comments were not actually parental comments

No difference by unit size or gestational age.

The findings reported here focus on the questions parent may have had about their care. Many of the comments that were included in the parent responses related to questions they had about why their baby died; these are not included here.

All the parents' comments were read to identify the main themes regarding any concerns or questions they had about their care and these were grouped into six main themes. The parents' comments from the first 1,000 reviews in the second period and the comments from the 1,500 reviews in the first period were categorised quantitatively using the same set of themes (Table 2.6).

Of the 1,000 reviews in the second period 775 (78%) indicated that the parents had 'no concerns' which represents an increase from 39% of the reviews in the first period. Furthermore 91 (9%) indicated that they received very good care and this was similar to the proportion in the first period (86; 6%). Complimentary comments were included for example:

"Excellent care provided by the midwife who delivered [baby's name]."

Five parents in both periods of time were concerned that the mother had done something to contribute to her baby's death. Sixteen parents in the second period and 14 in the first had questions about whether what had happened in this pregnancy might affect any future pregnancy.

It is a positive finding that the majority of parents had no concerns, and indeed some, as illustrated above, expanded this by praising the care that they had received. It is, however, somewhat surprising that nearly four fifths of parents voiced no concerns about their care at all and this was double the proportion expressing no concerns in the first period. This may to some extent reflect the quality of parent engagement and more particularly the timing of the discussions with parents.

Importantly the MBRRACE-UK/PMRT 'Parent Engagement' materials were only released halfway through the second period. With time need to adopt the processes their impact will have been limited. The materials emphasis the point that some parents may need multiple opportunities to discuss their care as concerns may arise as they continue to reflect on what had happened and the care they received. Parents may also find it difficult to express any questions or concerns they have about their care unless the staff discussing their care with them actively asks them about any questions or concerns they may have, rather than just waiting for parents to raise them. Furthermore, these discussions need to happen in an environment which is conducive to parents feeling able to disclose their experiences and feelings. One might anticipate that with improved approaches to parents a greater proportion of them will feel more able to express any questions they have about their care and this will be reflected in future reports.

It was nevertheless encouraging to see that some parents were able to share their perspective about their care. It was also reassuring to see that 8% of reviews indicated that the parents were happy or satisfied with the care that they had received with many of these parents praising the high-quality care they had received.

Table 2.6: Themes from those parents who had questions or expressed concerns about their care comparing the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

	Frequency of responses Jan 2018 to Feb 2019 N = 468 n (%)	Frequency of responses Mar 2019 to Feb 2020 N=225 n (%)
Concerns about management plans and the care received	208 (44%)	120 (53%)
Poor communication	25 (5%)	21 (9%)
Did not feel listened to	21 (4%)	14 (6%)
Concerns about technical aspects of care e.g. scans quality and reporting	22 (5%)	9 (4%)
Felt unsupported	8 (2%)	8 (4%)
Left alone in labour	4 (1%)	5 (2%)

3. Findings from the PMRT reviews

The results given below present a comparison of findings from the first 1,500 reviews carried out using the PMRT (Table 3.1) between the general release of the PMRT and 20th February 2019 (reported in the first annual report) and the reviews carried out between 1st March 2019 and 29th February 2020.

3.1 Characteristics of the reviews

Table 3.1 shows the characteristics of the first 1,500 perinatal deaths reviewed using the PMRT from release of the PMRT to February 2019 (first annual report) and the 3,693 reviews carried out in the year March 2019 to February 2020. In both periods the majority of the reviews were carried out in England which reflects the fact that the majority of births, and thus deaths (89% of deaths in 2018), occur in England. It probably also reflects that the initial uptake of the PMRT was faster and more complete than in Wales and Scotland, which is most likely an effect of the NHS Resolution Maternity Incentive Scheme which was introduced as the PMRT was launched in England.

Stillbirths were over-represented as a proportion of deaths reviewed compared with stillbirths as a proportion of all perinatal deaths (58% in 2018) in the UK in the first period (67%) but not in the second period (58%). This was a consequence of the increase over time in the number and proportion of neonatal deaths reviewed using the PMRT.

Table 3.1: Characteristics of the reviews by country, size of unit, and type of death by gestational age for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

	Reviews Jan 2018 to Feb 2019		Reviews Mar 2019 to Feb 2020	
	Number of reviews N = 1,500	Percentage of reviews	Number of reviews N = 3,693	Percentage of review
Country:				
England	1,416	94%	3,642	94%
Wales	23	2%	81	2%
Scotland	61	4%	150	4%
Service provision:				
Level 3 neonatal unit & neonatal surgery	468	31%	1,231	33%
Level 3 neonatal unit	321	21%	861	23%
4,000+ births per annum*	517	35%	1,037	28%
<4,000 births per annum*	194	13%	564	15%
Type of death by gestational age at birth:				
Late miscarriages	143	10%	449	12%
Stillbirths				
24 - <28 weeks	284	19%	551	15%
28 - <32 weeks	186	12%	366	10%
32 - <37 weeks	246	16%	577	16%
37+ weeks	292	20%	652	18%
Missing gestation	3**	--	12**	--
All stillbirths	1,011	67%	2,158	58%

Table 3.1: Contd. Characteristics of the reviews by country, size of unit, and type of death by gestational age for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

	Reviews Jan 2018 to Feb 2019		Reviews Mar 2019 to Feb 2020	
	Number of reviews N = 1,500	Percentage of reviews	Number of reviews N = 3,693	Percentage of review
Neonatal deaths	17	0 to 55	18	0 to 55
<24 weeks	96	6%	297	8%
24 - <28 weeks	89	6%	271	7%
28 - <32 weeks	37	3%	125	3%
32 - <37 weeks	49	3%	167	5%
37+ weeks	75	5%	224	6%
Missing gestation	--	--	2	--
All neonatal deaths	346	23%	1,086	29%

**Units without level 3 neonatal service provision or neonatal surgery.

** Mainly unbooked pregnancies

3.2 Issues with care identified

Issues with care are generated within the tool in response to questions about appropriateness of care. There were originally 538 unique issues which could be generated within the PMRT from the standard responses. With the addition of Coronavirus related responses in summer 2020 there are now 713 unique issues which can be generated of which 615 have been used at least once. It is also possible for the users to generate their own custom issues on the basis of their review findings.

Overall, for just over 90% of deaths reviewed, in both periods one and two, at least one issue was generated, with a median of four issues per death (Table 3.2). At just less than 90% a slightly smaller proportion of reviews identified at least one issue for late miscarriages. For stillbirths the proportions for both periods was just over 90% and for neonatal deaths nearly all deaths reviewed had at least one issue raised. The respective median numbers of issue were three, four and five with only the latter having changed between the first and second periods. It is not necessarily the case that poorer care was provided when a neonatal death occurred compared with a late miscarriage. This difference is likely to largely be due a function of the fact that more care will have been provided for mothers and babies who experience a neonatal death compared with a stillbirth and/or a late miscarriage, and thus there are more circumstances in which issues with care can arise.

Table 3.2: Number and proportion of reviews with issues with care identified and the average number of issues identified per death reviewed, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

	Reviews Jan 2018 to Feb 2019			Reviews Mar 2019 to Feb 2020		
	Number of reviews with at least one issue generated	Percentage of all reviews with at least one issue generated	Median number of issues per death reviewed	Number of reviews with at least one issue generated	Percentage of all reviews with at least one issue generated	Median number of issues per death reviewed
Country:						
England	1,334	94%	4	3,238	89%	4
Wales	23	100%	4	68	84%	3
Scotland	59	97%	3	131	87%	3
Overall	1,416	94%	4	3,437	93%	4
Service provision:						
Level 3 neonatal unit & neonatal surgery	436	93%	4	1,130	92%	4
Level 3 neonatal unit	311	97%	4	810	94%	3
4,000+ births per annum*	488	94%	4	982	95%	4
<4,000 births per annum*	181	93%	5	515	91%	4
Type of death by gestational age at birth:						
Late miscarriages	127	89%	3	399	88%	3
Stillbirths						
<37 weeks	664	93%	4	1,355	91%	3
37+ weeks	281	96%	4	613	94%	4
All stillbirths	940	93%	4	1,980	92%	4
Neonatal deaths	17	0 to 55		18	0 to 55	
<37 weeks	266	98%	7	841	98%	5
37+ weeks	75	100%	8	215	96%	6
All neonatal deaths	341	99%	7	1,058	97%	5

* Units without level 3 neonatal service provision or neonatal surgery

To present the findings about the issues coherently, the closely related issues in the 538 unique issues that can be generated were grouped a priori into 84 issue categories. For each issue category the number and proportion of reviews with at least one issue in each category was identified. Tables 3.3 to 3.7 illustrate the most frequent categories of issues in pre-conception and antenatal care, intrapartum care, neonatal care, end of life care, and care after death respectively. Only those issue categories which featured in 10 or more reviews are shown in the tables below. The issue categories are ordered by frequency in the second reporting period. Issues generated concerning informing parents of the review and seeking their perspectives and views are not included here as they are described in section 2(d) (parental perspectives and concerns).

The tables show the number and proportion of all issues generated that were in each category both for issues that were directly relevant to the outcome for that death and issues that were not relevant to the outcome. Issues that are not directly relevant to a particular death are nevertheless still important to identify as they demonstrate a potential deficiency in care that may need to be addressed to improve care provision and prevent similar future deaths and serious morbidity.

Table 3.3: The most common issues with care presented in related categories identified during the review of pre-conception and antenatal care, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

Issue categories	Reviews Jan 2018 to Feb 2019			Reviews Mar 2019 to Feb 2020		
	Number and percentage of reviews with each issue N=1,500 n (%)	Number of issues relevant to the outcome N=883 n (%)	Number of issues not relevant to the outcome N=2,555 n (%)	Number and percentage of reviews with each issue N=3,693 n (%)	Number of issues relevant to the outcome N=1,871 n (%)	Number of issues not relevant to the outcome N=5,706 n (%)
Smoking assessment and management of exposure to tobacco smoke	604 (40%)	113 (13%)	556 (22%)	1,226 (33%)	196 (11%)	1,195 (21%)
Lack of appropriate referral for social issues[1] or screening for domestic abuse at booking	196 (13%)	11 (1%)	191 (7%)	808 (22%)	51 (3%)	767 (13%)
Inadequate growth surveillance	384 (26%)	269 (30%)	362 (14%)	712 (19%)	448 (24%)	636 (11%)
Assessment and management of aspirin requirement	339 (23%)	66 (7%)	278 (11%)	628 (17%)	128 (7%)	522 (9%)
Late booking/unbooked pregnancy	220 (15%)	65 (7%)	280 (11%)	568 (15%)	201 (11%)	821 (14%)
Inadequate investigation or management of reduced fetal movements[2]	230 (15%)	142 (16%)	188 (7%)	456 (12%)	273 (15%)	419 (7%)
Delay in diagnosis or inappropriate management of significant medical/surgical/social problems during pregnancy[3]	155 (10%)	106 (12%)	117 (5%)	363 (10%)	343 (18%)	256 (5%)
Not offered routine MSU at booking	222 (15%)	<10	213 (8%)	282 (8%)	11 (1%)	271 (5%)
Screening for or management of gestational diabetes mellitus (GDM)	164 (11%)	17 (2%)	172 (7%)	246 (7%)	38 (2%)	257 (5%)

Table 3.3: Contd. The most common issues with care presented in related categories identified during the review of pre-conception and antenatal care, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

Issue categories	Reviews Jan 2018 to Feb 2019			Reviews Mar 2019 to Feb 2020		
	Number and percentage of reviews with each issue N=1,500 n (%)	Number of issues relevant to the outcome N=883 n (%)	Number of issues not relevant to the outcome N=2,555 n (%)	Number and percentage of reviews with each issue N=3,693 n (%)	Number of issues relevant to the outcome N=1,871 n (%)	Number of issues not relevant to the outcome N=5,706 n (%)
Communication with mothers with learning difficulties, hearing problems or poor/no English	62 (4%)	10 (1%)	54 (2%)	197 (5%)	41 (2%)	164 (3%)
Issues with anomaly screening or management of anomalies[4]	50 (3%)	21 (2%)	42 (2%)	149 (4%)	39 (2%)	143 (3%)
Lack of appropriate pre-conception counselling/ management of medical and past obstetric complications[5]	77 (5%)	16 (2%)	75 (3%)	--	--	--
No antenatal discussion of birth options after previous caesarean section	31 (2%)	<10	26	72 (2%)	6 (<1%)	67 (1%)
No local DNA policy, or policy not instituted following DNA for antenatal appointments[6]	31 (2%)	12 (1%)	22 (1%)	69 (2%)	39 (2%)	45 (%)
Inappropriate management given obstetric and/or family history	22 (1%)	<10	16	67 (2%)	15 (1%)	56 (1%)
Incorrect risk assessment or type of care at booking	37 (3%)	28 (3%)	33 (1%)	60 (2%)	35 (2%)	56 (1%)

1. Includes: housing, benefits, social support, teenager, other vulnerabilities
2. Includes: no risk assessment; investigations indicated not carried out; poor quality, or incorrectly interpreted CTGs; lack of appropriate written information for mother
3. Includes: appropriate management according to local guidelines, but not national guidelines
4. Includes: anomaly scan late or not offered despite booking early enough; further trisomy testing indicated but not offered or results missing; condition amenable to prenatal diagnosis/ultrasound detection but not detected prenatally
5. Incudes: for anti-convulsants, warfarin, SSRIs, psychoactive drugs or history of pre-eclampsia/HELLP syndrome/eclampsia
6. Includes: GDM screening

Table 3.3 shows that the most common issue category in the second period for antenatal care concerned ‘smoking assessment and management of exposure to tobacco smoke’: for 33% of deaths reviewed smoking-related issues were identified. By far the single most common smoking-related issue was not performing carbon monoxide screening at booking, which was an issue in 910 reviews (25%) in the second period, and an improvement compared with 484 (32%) in the first period . The second most common single smoking-related issue, identified in 195 (5%) of reviews in the second period versus 91 (6%) in the first, was not offering referral to smoking cessation services for family members who live with the mother and who smokes.

The most common category for issues in antenatal care that were identified as relevant to the outcome was inadequate growth surveillance: 24% of relevant issues. This was followed by delay in diagnosis or inappropriate management of significant medical/surgical/social problems during pregnancy: 18% of relevant issues; and inadequate investigation or management of reduced fetal movements: 15% of relevant issues. Smoking assessment and management of exposure to tobacco smoke and late pregnancy booking or unbooked pregnancies were both the fourth most common issue categories identified: both 11% of relevant issues.

Inadequate growth surveillance, inadequate investigation and/or management of reduced fetal movements and the prevention of smoking are addressed by the Saving Babies’ Lives Care Bundle in England [12]. Of note the frequency of occurrence of each of these issue categories and the proportion relevant to the outcome have reduced slightly in the second period compared to the first, which is perhaps an indication of the impact of the implementation of national and local initiatives such as the Care Bundle.

It is clear from the reviews that some Trusts/Health Boards do not offer the recommended routine midstream urine test [13]. Social issues, diagnosis and management of medical and surgical problems and lack of appropriate pre-conception care are all significant issues that figured highly in both the MBRRACE-UK perinatal confidential enquiries and continue to be highlighted in the findings from the on-going confidential enquiries into maternal deaths [9, 10, 14].

Table 3.4: The most common issues with care identified during intrapartum care, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

Issue group	Reviews Jan 2018 to Feb 2019			Reviews Mar 2019 to Feb 2020		
	Number and percentage of reviews with each issue N=1,500 n (%)	Number of issues relevant to the outcome N=346 n (%)	Number of issues not relevant to the outcome N=1,033 n (%)	Number and percentage of reviews with each issue N=3,693 n (%)	Number of issues relevant to the outcome N=869 n (%)	Number of issues not relevant to the outcome N=2,369 n (%)
Issues with monitoring of the mother[1]	507 (34%)	52 (15%)	506 (49%)	944 (26%)	114 (13%)	954 (40%)
No assessment of mother's risk status or inadequate management at the start of her care in labour or during the course of her labour	118 (8%)	41 (12%)	116 (11%)	198 (5%)	83 (10%)	219 (9%)
Staffing issues[2]	82 (5%)	40 (12%)	107 (10%)	289 (5%)	132 (15%)	257 (11%)
Issues with communication with mothers with poor/no English	77 (5%)	13 (4%)	64 (6%)	244 (7%)	45 (5%)	202 (9%)
Fetal monitoring issues[3]	53 (4%)	67 (19%)	44 (4%)	162 (4%)	180 (21%)	173 (9%)
Inappropriate setting/location of birth	53 (4%)	24 (7%)	30 (3%)	138 (4%)	50 (6%)	90 (4%)
Issues with birth mode(s)[4]	42 (3%)	19 (5%)	28 (3%)	101 (3%)	68 (8%)	60 (3%)
Issues in management of intra and post-partum complications	37 (2%)	24 (7%)	18 (2%)	89 (2%)	55 (6%)	45 (2%)
Issues in management of (threatened) preterm labour	27 (2%)	22 (6%)	18 (2%)	73 (2%)	28 (3%)	92 (4%)
Inappropriate duration of labour or management of delay in labour	23 (2%)	<10	21 (2%)	56 (2%)	27 (3%)	46 (2%)
Inadequate documentation	20 (1%)	10 (3%)	20 (2%)	74 (2%)	28 (3%)	80 (3%)
Maternal transfer issues	19 (1%)	12 (3%)	18 (2%)	43 (1%)	24 (3%)	29 (1%)
Pain management issues	19 (1%)	<10	13 (1%)	43 (1%)	4 (1%)	41 (2%)
Specific birth planning advice indicated for pregnancy complications but not given	19 (1%)	<10	12 (1%)	33 (1%)	12 (1%)	21 (1%)
Medication issues[5]	12 (1%)	<10	11 (1%)	31 (1%)	5 (1%)	27 (1%)

1. Includes: infrequent observations and lack of partogram
2. Includes: insufficiently senior staff involved in care and lack of one-to-one care in established labour
3. Includes: incorrect method of fetal monitoring, interpretation or management, from prior to established labour to the latent phase of labour
4. Includes: inappropriate choice, timing and management
5. Includes: oxytocin and medication for pre-existing conditions

By far the most common issue category for intrapartum care (Table 3.4), was ‘issues with monitoring of mother’; this was identified in 26% of reviews, it was the third most common issue relevant to the death (13%) and by far the most common issue not directly relevant to the death (40%). The single most common issue within this category was that the mother’s progress in labour was not monitored on a partogram: identified in 804 (22%) reviews in the second period versus 441 (29%) in the first. In 5% of reviews in the first period versus 8% in the second, maternal observations in labour, commensurate with the mother’s level of risk and national guidelines, were not carried out. These findings mirror those of the confidential enquiry into term intrapartum deaths.

Of the issues that were assessed as relevant to the outcome, fetal monitoring issues comprised the largest proportion at 21%. The most common single issues in fetal monitoring were during established labour and included an inappropriate type of fetal monitoring, not carrying out fetal heart monitoring correctly, poor technical quality of CTGs and incorrect interpretation of the fetal heart rate. Staffing issues relevant to outcomes were evident for 15%, and issues with no assessment of the mother’s risk status or inadequate management at the start of her care or during her care in labour evident for 10%. Again these are issues identified in the previous MBRRACE-UK confidential enquiries.

Table 3.5: The most common issues with care identified during neonatal care (excluding end of life care), for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

Issue group	Reviews Jan 2018 to Feb 2019			Reviews Mar 2019 to Feb 2020		
	Number and percentage of reviews with each issue N=346 n (%)	Number of issues relevant to outcome N=81 n (%)	Number of issues not relevant to outcome N=907 n (%)	Number and percentage of reviews with each issue N=1,086 n (%)	Number of issues relevant to outcome N=440 n (%)	Number of issues not relevant to outcome N=2,611 n (%)
Inadequate documentation overall	185 (53%)	32 (40%)	579 (64%)	791 (73%)	125 (28%)	1,553 (59%)
Resuscitation		172 (50%)			525 (48%)	
Transfer to neonatal unit		25 (7%)			107 (10%)	
Neonatal care		35 (10%)			134 (12%)	
Transfer to an external neonatal unit		14 (4%)			25 (2%)	
Thermal management issues overall	61 (18%)	14 (17%)	60 (7%)	272 (25%)	88 (20%)	248 (9%)
Resuscitation		18 (5%)			24 (3%)	
Neonatal care		14 (4%)			64 (5%)	
Transfer to neonatal unit/other location		50 (15%)			174 (16%)	
Issues with respiratory management during resuscitation[1]	56 (16%)	<10	54 (6%)	183 (17%)	55 (13%)	157 (6%)
Issues with cardiovascular management on neonatal unit[2]	21 (6%)	<10	18 (2%)	45 (4%)	43 (10%)	43 (2%)
Issues with communication with parents[3]	13 (4%)	<10	18 (2%)	43 (4%)	56 (3%)	56 (2%)

1. Includes: issues around establishing ventilation, intubation, positive pressure respiratory support, oxygen saturation monitoring and administration of surfactant
2. Includes: line placement and radiological confirmation of line position
3. Includes: mothers with poor/no English

Table 3.5 demonstrates that the majority (73%) of reviews of neonatal deaths in the second period found documentation that was inadequate such that particular aspects of care could not be reviewed. This proportion had increased substantially from 53% in the first period. Gaps in documentation most commonly related to resuscitation, and these gaps included: whether a carbon dioxide detector was used during the resuscitation; whether delayed cord clamping was indicated and carried out appropriately during resuscitation; whether parents were kept informed about the progress of the resuscitation of their baby; and whether thermal management during resuscitation was appropriate. After inadequate documentation, thermal management issues were the most common issue identified, particularly during transfer of the baby to the neonatal unit or other locations. Issues with thermal management at some stage of care were identified in 25% of reviews of neonatal deaths in period two (18% in period one) and represented 20% of the issues relevant to the outcome in the second period compared with 17% in period one.

The most common issues during end of life care (Table 3.6) were the same in both periods and related to a lack of discussions with parents about organ donation (19% of reviews in period two compared with 24% of reviews in period one) and post-mortems (14% of reviews in period two and 15% in period one) as well as inadequate documentation (17% period two and 16% period one). Reassuringly, combining the issues relating to parent preferences, parent involvement in decisions, or the meeting of parental religious, cultural and spiritual needs, occurred in only 51 (1%) reviews.

The most common issues after death in both periods (Table 3.7) related to placental histology, in particular, placental histology being carried out but not by a perinatal or paediatric pathologist (10% of reviews period two and 12% period one) or the placenta not being sent for histological examination (4% of reviews period two and 3% period one). Of note in 546 (15%) of reviews it was noted that the baby had to be transferred to another hospital for post-mortem. This is most likely a consequence of the limited number of perinatal/paediatric pathologists across the UK but does lead to significant delays in the availability of the results which consequently delays the timing of feed-back to parents.

Table 3.6: The most common issues with care identified during end of life care, for the two periods: Jan 2018 - Feb 2019 and Mar 201 9- Feb 2020

Issue group	Reviews Jan 2018 to Feb 2019	Reviews Mar 2019 to Feb 2020
	Number and percentage of reviews N=346 n (%)	Number and percentage of reviews N=1,086 n (%)
Organ donation not discussed with parents despite no specific contraindications	82 (24%)	209 (19%)
Inadequate documentation	57 (16%)	180 (17%)
Post-mortem not discussed with parents prior to the baby's death	52 (15%)	151 (14%)

Table 3.7: The most common issues with care identified after the baby had died, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

Issue group	Reviews Jan 2018 to Feb 2019	Reviews Mar 2019 to Feb 2020
	Number and percentage of reviews N=1,500 n (%)	Number and percentage of reviews N=3,693 n (%)
Placental histology was performed but not by a perinatal/paediatric pathologist	177 (12%)	351 (10%)
The placenta was not sent for histological examination	38 (3%)	136 (4%)
The placenta was sent for histological examination but there is no result in the notes	27 (2%)	52 (1%)

Table 3.7: Contd. The most common issues with care identified after the baby had died, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

Issue group	Reviews Jan 2018 to Feb 2019	Reviews Mar 2019 to Feb 2020
	Number and percentage of reviews N=1,500 n (%)	Number and percentage of reviews N=3,693 n (%)
It is not possible to assess from the notes whether the parents were offered a hospital post-mortem	19 (1%)	39 (1%)
The parents consented to a full or limited post-mortem examination but this was not carried out	17 (1%)	7 (<1%)
The parents were not offered a hospital post-mortem	16 (1%)	63

3.3 Grading of care

A key part of the review is the final holistic assessment of the overall grading of care provided throughout the different stages of the care pathway (Tables 3.8 to 3.13).

During the second period there were 57% and 62% of reviews with no issues with care (grade A) identified during pregnancy for both late miscarriages & stillbirths and neonatal deaths respectively compared with 62% for both types of deaths reported in the first annual report (Tables 3.8 and 3.9); a marginal decrease for late miscarriages & stillbirths.

For 27% of late miscarriages & stillbirths and 26% of neonatal deaths in the second period care issues were identified that would not have made a difference to the outcome (grade B) which represented only marginal changes compared with the first period.

For 13% of late miscarriages & stillbirths and 8% of neonatal deaths issues were identified that may (grade C) have made a difference to the outcome in the second period; a marginal increase from 10% and 6% in the first period. The proportions of issues identified which were likely to have made a difference to the outcome (grade D) were the similar in the two periods: 3% for late miscarriages & stillbirths and 2% for neonatal deaths.

It is important to acknowledge that where issues with care were identified (Grades B, C and D) action is required even if the issue would not have made a difference to the outcome for the particular baby whose death is being reviewed.

The grading of care requires the local review group to take a robust and self-critical holistic view of the care provided. In over 50% of deaths reviewed the conclusion of the review group was that that there was overall no issue with care prior to the death of the baby. This is despite the fact that at least one individual issue with care was identified in 90% of deaths reviewed, in both periods one and two, with a median of four individual issues per death (Table 3.2).

The only external comparison available comes from the two most recent published MBRRACE-UK confidential enquiries [9, 10]. For term antepartum late miscarriages & stillbirths, 60% of deaths were considered by the confidential enquiry panels to have had issues with care that may have made a difference to the outcome. In the MBRRACE-UK term intrapartum stillbirths and intrapartum related neonatal deaths enquiry 78% of deaths were identified as having issues with care that may have made a difference to the outcome [10].

The disparity in the findings between PMRT reviews and the confidential enquiries may of course be a result of the fact that the confidential enquiries only included deaths at term, the deaths occurred some time ago and care may have improved, and confidential enquiries, being based on individual sets of notes, generally do not have access to all the relevant contextual information. It is also probably unreasonable to expect that the grading of care from the two processes will ever match, nevertheless the discrepancy remains very large with only a marginal change in the figures for the PMRT reviews between the two reporting periods.

Table 3.8: Grading of care during pregnancy care, labour and birth for late miscarriages & stillbirths, for the two periods: Jan 2018 - Feb 2019 and Mar 201 9- Feb 2020

	Reviews Jan 2018 to Feb 2019		Reviews Mar 2019 to Feb 2020	
	Number of reviews N = 1,154	Percentage of reviews*	Number of reviews N = 2,607	Percentage of reviews*
A – No issues with care identified	710	62%	1,496	57%
B - Care issues that would have made no difference to the outcome	291	25%	705	27%
C - Care issues which may have made a difference to the outcome	114	10%	329	13%
D - Care issues which were likely to have made a difference to the outcome	30	3%	72	3%
Unrecorded	9	1%	5	--

*Rounding errors may result in percentages totalling 99% or 101%

Table 3.9: Grading of care during pregnancy, labour and birth for neonatal deaths, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

	Reviews Jan 2018 to Feb 2019		Reviews Mar 2019 to Feb 2020	
	Number of reviews N = 346	Percentage of reviews*	Number of reviews N = 1,086	Percentage of reviews*
A – No issues with care identified	214	62%	678	62%
B - Care issues that would have made no difference to the outcome	102	29%	278	26%
C - Care issues which may have made a difference to the outcome	20	6%	84	8%
D - Care issues which were likely to have made a difference to the outcome	7	1%	18	2%
Unrecorded	3	1%	28	3%

*Rounding errors may result in percentages totalling 99% or 101%

The grading of neonatal care following the birth of babies who were born alive but died after birth showed a similar proportion of reviews, 68%, in the first period and 63% in the second period, with no issues with care identified (Table 3.10); 27% and 32% in periods one and two respectively were identified as having issues with care that would have made no difference to the outcome; and only 3% and 5% of reviews identified issues with care which may/were likely to have made a difference to the outcome. The latter is in contrast to the finding from the MBRRACE-UK term, intrapartum confidential enquiry where for 79% of the neonatal deaths issues with care were identified which may have made a difference to the outcome [10]. Again this wide disparity is unlikely to be entirely due to the fact that the confidential enquiries reviewed only deaths at term. Table 3.11 illustrates the most serious level of grading of care combining care during pregnancy, labour and birth for all deaths and care during the neonatal period for neonatal deaths.

Table 3.10: Grading of care from birth to the death of the baby for neonatal deaths, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb

	Reviews Jan 2018 to Feb 2019		Reviews Mar 2019 to Feb 2020	
	Number of reviews N = 346	Percentage of reviews*	Number of reviews N = 1,086	Percentage of reviews*
A – No issues with care identified	237	68%	679	63%
B - Care issues that would have made no difference to the outcome	92	27%	342	32%
C - Care issues which may have made a difference to the outcome	11	3%	46	4%
D - Care issues which were likely to have made a difference to the outcome	1	0%	8	1%
Unrecorded	5	1%	11	1%

*Rounding errors may result in percentages totalling 99% or 101%

Table 3.11: Most serious level of grading of care during pregnancy, labour, birth and during the neonatal period for neonatal deaths, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

	Reviews Jan 2018 to Feb 2019		Reviews Mar 2019 to Feb 2020	
	Number of reviews N = 346	Percentage of reviews*	Number of reviews N = 1,086	Percentage of reviews*
A – No issues with care identified	159	46%	507	47%
B - Care issues that would have made no difference to the outcome	147	42%	439	40%
C - Care issues which may have made a difference to the outcome	26	7%	111	10%
D - Care issues which were likely to have made a difference to the outcome	8	2%	24	2%
Unrecorded	6	2%	5	<1%

*Rounding errors may result in percentages totalling 99% or 101%

The quality of bereavement care is a key aspect of care for parents (Tables 3.12 and 3.13) and has the potential to impact both parents' immediate and long-term psychosocial wellbeing after bereavement. Only 3% of issues with bereavement care were identified in the first period which may have made a difference to the outcomes for the mother increasing to 3% in the second period (Table 3.12). This compares to 65% of mothers who had a term, antepartum stillbirth and 45% of mothers who had a term intrapartum stillbirth from the MBRRACE-UK confidential enquiries [9, 10]. Similarly issues which may have affected the outcome for the mother were identified by MBRRACE-UK in 50% of term intrapartum-related neonatal deaths in the confidential enquires compared with only 1% of PMRT reviews (Table 3.13) in period one and 5% in period two.

Table 3.12: Grading of bereavement care following late miscarriage and stillbirth, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

	Reviews Jan 2018 to Feb 2019		Reviews Mar 2019 to Feb 2020	
	Number of reviews N = 1,154	Percentage of reviews*	Number of reviews N = 2,607	Percentage of reviews*
A – No issues with care identified	955	83%	2,175	83%
B - Care issues that would have made no difference to the outcome	141	12%	336	13%
C - Care issues which may have made a difference to the outcome	23	2%	70	3%
D - Care issues which were likely to have made a difference to the outcome	8	1%	22	1%
Unrecorded	27	2%	4	--

*Rounding errors may result in percentages totalling 99% or 101%

Table 3.13: Grading of bereavement care following neonatal death, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

	Reviews Jan 2018 to Feb 2019		Reviews Mar 2019 to Feb 2020	
	Number of reviews N = 346	Percentage of reviews*	Number of reviews N = 1,086	Percentage of reviews*
A – No issues with care identified	312	90%	933	86%
B - Care issues that would have made no difference to the outcome	22	6%	94	9%
C - Care issues which may have made a difference to the outcome	5	1%	28	3%
D - Care issues which were likely to have made a difference to the outcome	0	%	21	2%
Unrecorded	7	2%	10	1%

*Rounding errors may result in percentages totalling 99% or 101%

There was little difference in the grading of care findings between reviews undertaken earlier or later in the time period, although the majority of the missing grades were in reviews carried out in the first half of 2018 and in early 2019.

3.4 Contributory factors

Once a review is complete the team is presented with the list of issues which have been generated in the course of the review including any custom issues they have generated themselves. They are then asked to identify for each issue the factor(s) contributing to the failure to provide appropriate care using the National Patient Safety Agency Contributory Factors Framework [15]. It is possible to identify more than one contributory factor per issue although this happened on relatively few occasions. The review team is then asked to consider for each issue whether that issue contributed to the outcome and whether remedial action is needed. Remedial action may be required regardless of whether or not the issue contributed directly to the outcome and this is an outcome option.

Across the 3,693 reviews a total of 15,054 issues were identified and a total of 18,920 ‘contributory factors’ were identified as contributing to the issues. Table 3.14 presents the number of contributory factors by whether or not they had an impact on the outcome and whether they required remedial action.

Overall 43% of the contributory factors identified required action to improve the care provided; 13% where the factor may have contributed to the outcome and 30% where the factor had no impact on the outcome but action was needed. Reviews carried out in Scotland and Wales were slightly more likely than reviews carried out in England to identify factors that may have contributed to the outcome and required action. Other than Trusts/Health Boards with services including a level 3 neonatal unit, which identified a greater proportion of contributory factors that did not affect the outcome but required action (35%) versus those that possibly affected the outcome and required action (10%), the proportion of contributory factors was similar across level of service provision at 21% versus 13% respectively (data not shown).

The proportion of contributory factors which had a possible impact on the outcome where action was needed increased with increasing gestational age group for stillbirths (15% for preterm versus 24% for term) but not for neonatal deaths. There was a greater proportion of factors that did not affect the outcome but action was needed identified for stillbirths (32%) compared with neonatal deaths (26%).

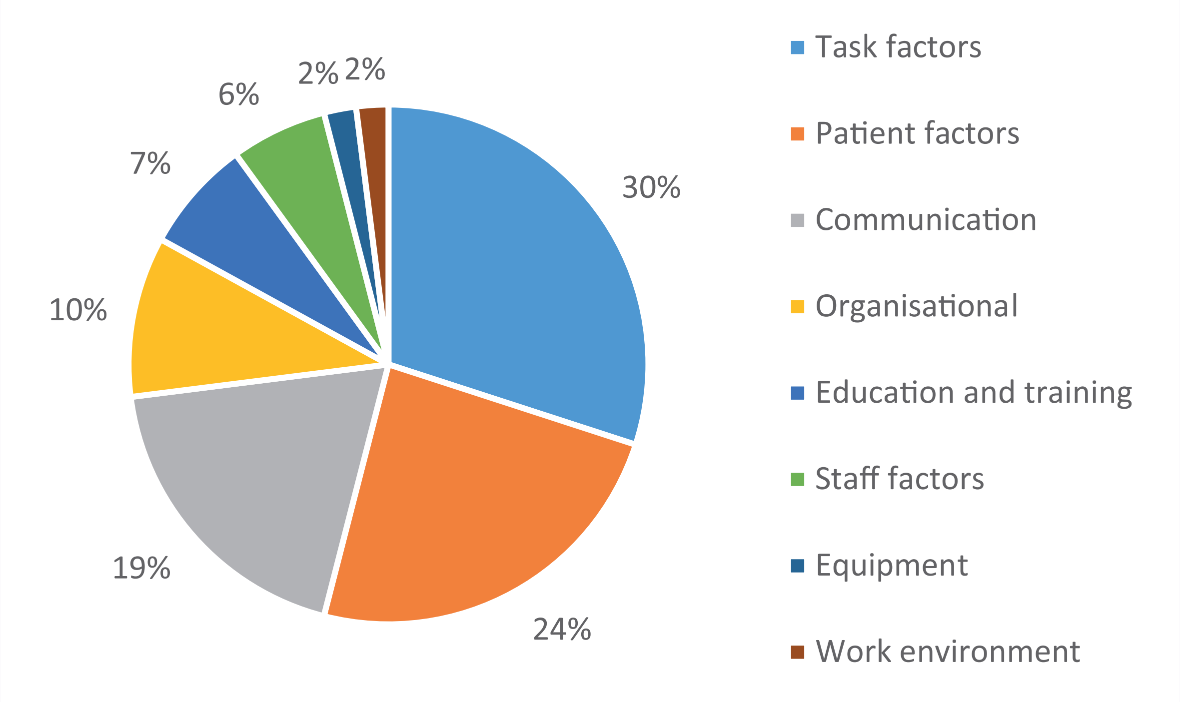
Table 3.14: Number and proportion of contributory factors by impact on outcome and the need for remedial action, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020 (row percentages)

	Reviews Jan 2018 to Feb 2019				Reviews Mar 2019 to Feb 2020			
		Number of contributory factors with:				Number of contributory factors with:		
	No outcome contribution (% factors)	No impact/ possible impact on outcome and no action needed (% factors)	No impact on outcome but action needed (% factors)	Possible impact on outcome and action needed (% factors)	No outcome contribution (% factors)	No impact/ possible impact on outcome and no action needed (% factors)	No impact on outcome but action needed (% factors)	Possible impact on outcome and action needed (% factors)
England	263 (3%)	4,512 (60%)	1860 (25%)	949 (13%)	380 (2%)	9,809 (55%)	5,328 (30%)	2,358 (13%)
Wales	0 (0%)	60 (48%)	32 (26%)	31 (25%)	0 (0%)	256 (62%)	78 (19%)	77 (19%)
Scotland	6 (2%)	142 (29%)	78 (27%)	60 (21%)	0 (0%)	329 (52%)	205 (32%)	100 (16%)
Overall	269 (3%)	4,714 (59%)	1,970 (25%)	1,040 (13%)	380 (<1%)	10,394 (58%)	5,611 (30%)	2,535 (13%)
Late miscarriages	18 (3%)	339 (65%)	127 (24%)	40 (8%)	1 (<1%)	970 (61%)	534 (33%)	96 (6%)
Stillbirths								
<37 weeks	84 (3%)	1,838 (58%)	819 (26%)	429 (14%)	59 (1%)	3,031 (51%)	1,964 (33%)	910 (15%)
37+ weeks	38 (3%)	651 (47%)	361 (26%)	339 (24%)	23 (1%)	1,342 (44%)	939 (31%)	716 (24%)
All stillbirths	122 (3%)	2,489 (55%)	1,180 (26%)	768 (17%)	82 (1%)	4,373 (49%)	2,903 (32%)	1,626 (18%)
Neonatal deaths								
<37 weeks	104 (5%)	1449 (66%)	517 (23%)	132 (6%)	249 (3%)	3,926 (62%)	1,665 (26%)	534 (8%)
37+ weeks	25 (4%)	445 (63%)	146 (21%)	91 (13%)	48 (3%)	1,013 (55%)	491 (27%)	274 (15%)
All neonatal deaths	129 (4%)	1,894 (65%)	663 (23%)	223 (8%)	297 (4%)	4,939 (60%)	2,156 (26%)	808 (10%)

*Rounding errors may result in percentages totalling 99% or 101%

The NPSA contributory factors framework has a three-level hierarchical structure. The number of issues linked to the eight level 1 contributory factors are shown in Figure 3.1. This figure excludes those issues where a contributory factor was not assigned. Task and patient factors accounted for 56% of factors (54% in the previous report), and communication and organisational factors accounted for a further 29% (28% previously). As previously, these four categories together accounted for over 80% of the contributory factors assigned.

Figure 3.1: Categories of level 1 National Patient Safety Authority contributory factors



The level 2 details are given in Appendix A. In brief the most common task-related factor (84%) was concerned with guidelines, policies and procedures, indicating that these were either not followed or not available to follow. Clinical conditions accounted for 53% of patient-related factors and 28% of social factors. Written and verbal communication together, not surprisingly, accounted for 78% of communication factors and communication management accounted for 20% of factors in this category. Organisational structures accounted for 62%, priorities accounted for 19% of organisational factors whereas a safety culture account for only 5% of organisational factors. Competence was identified for 59% of educational and training factors.

Considering the contributory factors by stage of care: patient (clinical) factors and organisational issues (80%) were the commonest contributory factors identified for issues related to pre-conceptional care. Patient and task factors were the commonest factors identified in relation to antenatal care and intrapartum care (both 59%). Communication (34%) was the commonest factor identified for neonatal resuscitation, with communication, patient and task factors (25%, 12% and 34% respectively) identified for neonatal transfer. Communication (30%) and task (22%) factors were the commonest factors related to neonatal care. Patient factors and communication accounted for 38% and 25% respectively in relation to end of life care. Communication (31%), organisational factors (22%), and task (19%) factors were identified in relation to after death care.

3.5 Assessment of the quality and strength of the actions planned

Two qualitative assessments of actions planned were undertaken for the purposes of this report. The first was conducted on a sample of 100 actions planned that were randomly selected. The purpose of this analysis was to describe the types of actions planned as a consequence of the reviews and assess their quality. Two measures of quality were used: whether actions were SMART (Specific, Measurable, Achievable, Realistic and Time-bound), and the strength of actions.

The strength of an action, as defined by the Veterans Affairs National Center for Patient Safety, describes how well the action will eliminate human error [1]. Stronger actions are system level changes which remove the reliance on individuals to choose the correct action. They use standardisation and permanent physical or digital designs to eliminate human error. They are sometimes referred to as 'forcing' actions. Intermediate strength actions reduce the risk of human error but do not fully control the actions of individuals. Weaker actions only support individuals to choose the correct action but do not control their actions. A random sample of 100 action plans was taken; the issues to which they related are given in Table 3.15.

Table 3.15: Frequency of issues randomly sampled for quality assessment

Issue group	Number
Antenatal booking	31
Antenatal care	16
Care during labour or immediately postpartum	23
Neonatal resuscitation	10
Neonatal care including neonatal transport	6
Pathology	4
Language and communication	1
Parents' perspectives of care	9
Total	**100**

Table 3.16 shows the grouping of the type of action/implementation planned; more than one action can be planned per issue. This compared the type of action/implementation planned for the actions plans reviewed in the first annual report compared with the second annual report.

Table 3.16: Type of action/implementation planned, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

Action/implementation planned	Reviews Jan 2018 to Feb 2019 Number	Reviews Mar 2019 to Feb 2020 Number
Introduce a checklist or decision aid	7	4
Equipment replacement or repair/new equipment	1	5
Conduct a further review/additional analysis	8	13
Increase the number of staff	1	0
Provide feedback to an individual	17	7
Develop a policy/guideline	2	7
Refer for a serious incident investigation	5	0
Send out a staff reminder	23	7
Provide staff training	19	36
Standardise the process	3	4
Develop a system change/software enhancement	14	17
Total	**100**	**100**

The commonest actions planned in the first period were to send out a staff reminder (21% of the actions planned), provide staff training (16%), provide feedback to individuals (15%) and to develop a system change (13%). Of note feedback to individuals was the only action identified for 10 of the actions planned. In the second period providing staff training was the commonest action (36%). Developing system change (17%) usually involved a new procedure, but this rarely involved any 'forcing' measure. Conducting a further review or additional analyses was also quite commonly planned (13%).

Box 3.1 gives examples of the types of actions planned.

Box 3.1: Examples of actions planned by type of action

System change

"The placenta was brought up to the delivery suite following a harrowing delivery in A&E and there had been a plan for it to be examined but this was not passed onto those on the day shift…..additional question to be added to the electronic record to prompt sending the placenta for histology, plan to review the process once implemented."

Staff training

"This mother's risk status during labour was not assessed during the course of her labour……Midwife education as part of learning and professional development."

Further review

"There were concerns about the baby's growth rate but these were not investigated and acted upon appropriately….. Consultant and scan department to review process and guidelines"

Individual feedback

"Referrals for scans and/or further investigations were not undertaken when required…. the Community Midwife has had a reflective discussion with her Manager with regard to the management of accelerated growth from Fundal Height and that the correct action would have been to refer in for a Growth Scan."

Table 3.17 presents the analysis of the sample of individual actions planned in the second period to assess whether the objectives were SMART and compares them with the sample in the first period. The majority of the actions in both periods were specific, achievable and realistic. However, just over half were measurable in the first period and only 1 in 10 were measurable in the second period, and between 1 in 5 and 1 in 3 were time-bound. Box 3.2 gives examples of actions planned according to how SMART they were.

Table 3.17: Actions/implementation planned by whether or not the objectives were SMART, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

SMART criteria	SMART objective Jan 2018 to Feb 2019 N=84 n (%)	SMART objective Mar 2019 to Feb 2020 N=100 n(%)
Specific	74 (88%)	57 (57%)
Measurable	43 (52%)	9 (9%)
Achievable	82 (98%)	97 (97%)
Realistic	82 (98%)	87 87%)
Time-bound	17 (20%)	31 (31%)

*Rounding errors may result in percentages totalling 99% or 101%

Box 3.2: Examples of actions planned by how SMART they were

Vague

"Community Midwives to be made aware to ask the domestic violence question at booking and other interactions with women"

No plan

"Patient did not make follow up appointments and therefore some SFH measurements were missed….. no action needed"

SMART

"The parents were not told that a review of their care and that of their baby is being carried out…this needs to be discussed at the time of birth. A process to ensure this happens will be formulated with bereavement leads, and risk and patient safety managers. Bring action plan back for discussion at the next PMRT review meetings."

Whilst actions may be SMART they may not necessarily be 'strong'. The actions planned were therefore assessed for strength by categorising the action strength using the Veterans Affairs definitions [1]. Examples of weak through to strong actions are shown in Box 3.3. As can be seen in Table 3.18 the majority of the actions were weak in both the first and second periods (57% and 61% respectively) and in the second period only 5% of actions were strong compared with 10% in the first period. A greater proportion of actions were intermediate: 17% versus 34% in the first and second periods respectively. This was largely because in the second period there were more guidelines, system changes and new procedures planned for development. However, very few of these were associated with forcing actions and largely relied on individual actions to ensure they were carried out.

Table 3.18: Assessment of the strength of the 100 actions planned, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

Action strength	Issues from reviews Jan 2018 to Feb 2019 Number	Issues from reviews Mar 2019 to Feb 2020 Number
Weak	57	61
Intermediate	17	34
Strong	10	5
Nil	16	--

Box 3.3: Examples of the strength of actions planned

Weak

"This mother's progress in labour was not monitored on a partogram..... raise awareness and training with midwifery staff"

A reminder for individual action without any controls

Intermediate

"Fundal height measurements had not been plotted on a chart and IUGR was missed fetal growth charts have now been introduced into the clinical notes"

A new system in place but still requires an individual to act without any controls

Strong

"The resuscitation of the baby did not follow the Neonatal Life Support (NLS) guidelines…… pre-made 'grab' boxes for neonatal resuscitation prepared and placed on all resuscitaires along with laminated cards detailing specific drugs and doses."

A system level physical design to eliminate human error

Overall, whilst the majority (64%) of the actions planned met three of the five SMART criteria, only 5% of actions were strong and 34% were of intermediate strength. In terms of action strength this represents an improvement in the second period compared with the first. Assessment of the impact of the actions planned tended to rely on process measures rather than impact on outcome. A strong action planned was more likely to be associated with a planned impact measure that was based on the outcome compared with weak actions.

One other important aspect to consider when assessing these findings is that whilst the PMRT review group may plan a series of actions these are unlikely to be 'owned' by the PMRT team. Action plans need to be incorporated into the Trust and Health Board local governance processes and it is possible that when the responsibility for these actions is transferred to the local governance team that any relatively weak actions are translated into stronger actions. This information cannot be captured within the PMRT so it is not possible to assess whether this is indeed the case. This does, however, highlight the fact that members of the local governance team should be part of the PMRT review team and should support the development of strong actions by the PMRT team. It was therefore heartening to see that a greater proportion of reviews were carried out in the second period with a member of the local governance/risk team and/or a service manager as part of the review group (Table 2.3) which suggests improved efficiency in the adoption and management of the planned actions through the Trust/Health Board governance processes.

3.6 Assessment of actions planned for issues with the greatest impact on outcomes

The purpose of the second qualitative analysis of actions planned was to describe the actions developed for the issues in antenatal, intrapartum and neonatal care that may have the most impact on the deaths. In order to identify these issues, for the 536 reviews which concluded that different care before the death may or would have made a difference to the outcome, the most common issues that were relevant to the outcome and required action were identified. For antenatal care this was inadequate growth surveillance; for intrapartum care it was inadequate monitoring of the fetus; and for neonatal care it was issues with thermal management. The free text for all the actions planned for each of these potentially high impact issues was analysed and categorised into the type of actions planned.

i) Antenatal care – inadequate growth surveillance

In total, there were 257 actions planned in response to 186 growth surveillance issues that were relevant to the outcome and required action, which were identified in reviews where the grading of care indicated that different care would or may have made a difference to the outcome. Several categories of actions emerged from analysis of the free text data. These are outlined in Table 3.19, along with the frequency of each action category.

Table 3.19: Types of action/intervention planned for high impact issues in intrapartum care: fetal monitoring, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

Action	Frequency of actions planned Jan 2018 to Feb 2019 N=135 n (%)	Frequency of actions planned Mar 2019 to Feb 2020 N=1868 n (%)
Education/communication to staff	70 (52%)	96 (51%)
Update, amend, review or develop guidance, policy, protocol or process	45 (33%)	55 (30%)
Process other than education for individual(s) involved	19 (14%)	32 (17%)
Further investigation, RCA or SIRI	13 (10%)	18 (10%)
New tool/aide development or modification	12 (9%)	8 (4%)
Audit/service evaluation/QA process	11 (8%)	12 (6%)
Feedback to another organisation	5 (4%)	7 (4%)
Review of capacity or staffing/new capacity development	4 (3%)	2 (1%)
No action	1 (1%)	15 (8%)
Other	8 (6%)	12 (6%)

*Percentages exceed 100% as a plan could include more than one action type.

The most common actions planned were staff education and communications, which featured in half of the actions planned in both periods. Updating, reviewing, amending or developing new guidance or new processes featured in just less than a third of plans. The distribution of types of actions were consistent between the two periods.

ii) Intrapartum care – inadequate fetal monitoring

There were 139 actions responding to 58 issues relating to inadequate fetal monitoring that were deemed relevant to the outcome and requiring action, for those reviews where different care may or would have impacted the outcome. The categories of actions and their frequencies are shown in Table 3.20. Again, educational interventions were by far the most common actions planned, featuring in nearly all the action plans in the second period compared with two-thirds in the first period.

Table 3.20: Types of action/intervention planned for high impact issues in intrapartum care: fetal monitoring, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

Action	Frequency of actions planned Jan 2018 to Feb 2019 N=51 n (%)	Frequency of actions planned Mar 2019 to Feb 2020 N=58 n (%)
Education/communication to staff	33 (65%)	57 (98%)
Update, amend or review guidance, policy, protocol or process	19 (37%)	28 (48%)
Further investigation, RCA or SIRI	16 (31%)	26 (45%)
Staff assessment	5 (10%)	21 (36%)
New tool/aide development or modification	1 (2%)	1 (2%)
No action	1 (2%)	2 (3%)
Other	1 (2%)	3 (5%)

*Percentages exceed 100% as a plan could include more than one action type.

iii) Neonatal care – inadequate thermal management

There were only 16 actions identified to address 12 issues with thermal management that were relevant to the outcome and required action, for reviews where different care may or would have made a difference to the outcome. These fit into the five categories outlined in Table 3.21.

Table 3.21: Types of action/intervention planned for high impact issues in neonatal care: thermal management, for the two periods: Jan 2018 - Feb 2019 and Mar 2019 - Feb 2020

Action	Frequency of actions planned Jan 2018 to Feb 2019 N=8 n (%)	Frequency of actions planned Mar 2019 to Feb 2020 N=16 n (%)
Audit/service evaluation/QA process	5 (63%)	2 (16%
Education/communication to staff	3 (38%)	3 (25%)
Further investigation, RCA or SIRI	1 (13%)	5 (42%)
Feed back to staff	--	2 (16%)
Purchase new equipment	--	3 (25%)

*Percentages exceed 100% as a plan could include more than one action type.

4. Conclusions

This analysis has enabled comparison between the findings from the first annual report during the PMRT implementation phase to this second report during the early part of the embedding phase. The PMRT is now being used to review the majority of perinatal deaths in England, Wales and Scotland.

Bereaved parents have the greatest stake in the findings of the review and their needs should be at the centre of the review. We anticipate that appropriately resourced implementation of the PMRT pathway for parent engagement and supporting resource materials, embedded within the PMRT, will increase meaningful parental involvement, as well as improve the overall quality of reviews.

There have been improvements in the constitution of multidisciplinary review groups nevertheless a substantial proportion of death are still reviewed by only one or two individuals which does not constitute a robust review process. Administrative support is lacking in the main and the involvement of an independent external member to provide a perspective is limited. Review of care when a baby dies should be universally regarded as part of routine maternity and neonatal care and should be resourced appropriately.

There have only been modest shifts in the holistic grading of care suggesting that the discipline of robust self-examination is still in the early stages of development in many units. The involvement of a greater proportions of members of the governance/risk teams and service managers in the process of review is a more positive development as it is likely to increases the chances that the action plans developed by the review group will be translated into practice. Local summary review reports and this national report can form the basis of prioritisation of investment in service improvement activities. The strength of action plans developed remains of concern with a continued focus on relatively weak actions rather than strong, system level actions designed to reduce human error.

5. Recommendations

1. Improve the engagement of parents in reviews by standardising and resourcing local processes to ensure all bereaved parents are told a review will take place and have ample opportunities at different stages to discuss their views, ask questions and express any concerns as well as positive feedback they have about the care they received.

   Action: Trusts and Health Boards, staff caring for bereaved parents

2. Provide adequate resourcing of multidisciplinary PMRT review teams, including administrative support.

   Action: Trusts and Health Boards, Service Commissioners

3. Improve the process of PMRT review by involving sufficient members of multidisciplinary internal staff and an external member as part of the PMRT review team.

   Action: Trusts and Health Boards, regional support systems and organisations e.g. Local Maternity Systems in England, Service Commissioners

4. Improve the quality of service improvements as a consequence of reviews by developing ‘strong’ actions targeted at system level changes and audit their implementation and impact.

   Action: PMRT review teams, governance teams in Trusts and Health Boards, Service Commissioners

5. Use the local PMRT summary reports and this national report as the basis to prioritise resources towards key aspects of care identified as requiring action.

   Action: Trusts and Health Boards, Service Commissioners, regional support systems, e.g. Local Maternity Systems in England, Governments and national service organisations

6. Conduct research into new interventions that may be required to address issues with care identified in the PMRT report.

   Action: Research funding organisations and researchers

6. References

1. US Department of Veterans Affairs. . Root Cause Analysis Tools. VA National Center for Patient Safety. REV.02.26.2015. (Pgs 26-29) *https://www.patientsafety.va.gov/docs/joe/rca_tools_2_15.pdf (accessed 10th September 2019)*

2. Kirkup B. The Report of the Morecambe Bay Investigation. London: The Stationery Office. 2015 *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/408480/47487_MBI_Accessible_v0.1.pdf* (accessed 10th September 2019)

3. Chepkin S, Prince S, Johnston T, Boby T, Neves M et al. Learning from Standardised Reviews When Babies Die. National Perinatal Mortality Review Tool: First Annual Report. Oxford: National Perinatal Epidemiology Unit. 2019. *https://www.npeu.ox.ac.uk/pmrt/reports*

4. Parents' study, University of Bristol. *https://www.bristol.ac.uk/policybristol/policy-briefings/engaging-parents-baby-loss/* (accessed 16th July 2019)

5. General Medical Council. Good Medical Practice. London: GMC, March 2013. *https://www.gmc-uk.org/-/media/documents/good-medical-practice---english-20200128_pdf-51527435.pdf?la=en&hash=DA1263358CCA88F298785FE2BD7610EB4EE9A530* (accessed 16th July 2019)

6. NHS Resolution. Maternity Incentives Scheme Year 3. Updated September 2020. London, NSHR 2020. *https://resolution.nhs.uk/services/claims-management/clinical-schemes/clinical-negligence-scheme-for-trusts/maternity-incentive-scheme/* (accessed 25th October 2020)

7. National Child Mortality Database (England), University of Bristol. *https://ncmd.blogs.bristol.ac.uk/our-team/* (accessed 16th July 2019)

8. HM Government. Working together to Safeguard Children. A guide to inter-agency working to safeguard and promote the welfare of children. London. July 2018. *https://www.gov.uk/government/publications/working-together-to-safeguard-children--2* (accessed 16th July 2019)

9. Draper ES, Kurinczuk JJ, Kenyon S. (Eds.) on behalf of MBRRACE-UK. MBRRACE-UK Perinatal Confidential Enquiry: Term, singleton, normally formed, antepartum stillbirth. Leicester: The Infant Mortality and Morbidity Studies, Department of Health Sciences, University of Leicester. 2015. *https://www.npeu.ox.ac.uk/downloads/files/mbrrace-uk/reports/MBRRACE-UK%20Perinatal%20Report%202015.pdf* (accessed 10th May 2019)

10. 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. *https://www.npeu.ox.ac.uk/downloads/files/mbrrace-uk/reports/MBRRACE-UK%20Intrapartum%20Confidential%20Enquiry%20Report%202017%20-%20final%20version.pdf* (accessed 10th May 2019)

11. Royal College of Obstetricians and Gynaecologist. Each Baby Counts 2018 progress Report. London: RCOG, 2018. *https://www.rcog.org.uk/en/guidelines-research-services/audit-quality-improvement/each-baby-counts/reports-updates/each-baby-counts-2018-progress-report/* (accessed 10th May 2019)

12. NHS England. Saving Babies' Lives Version Two. A care bundle for reducing perinatal mortality. London: NHS England. 2019. *https://www.england.nhs.uk/wp-content/uploads/2019/07/saving-babies-lives-care-bundle-version-two-v5.pdf* (accessed 10th May 2019)

13. NICE. Antenatal care for uncomplicated pregnancies. Clinical Guideline 62. Published 2008, updated 2019. *https://www.nice.org.uk/guidance/cg62/* (accessed 21st July 2019)

14. Knight M, Bunch K, Tuffnell D, Jayakody H, 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 2014-16. Oxford: National Perinatal Epidemiology Unit, University of Oxford 2018 *https://www.npeu.ox.ac.uk/mbrrace-uk/reports* (accessed 1st Nov 2020)

15. National Patient Safety Agency. Root Cause Analysis Investigation Tools: Contributory Factors Classification Framework. *https://webarchive.nationalarchives.gov.uk/20171030125651/http://www.nrls.npsa.nhs.uk/resources/?entryid45=75605* (accessed 10th May 2019)

16. National Bereavement Care Pathway. *www.nbcpathway.org.uk* (accessed 10th September 2019)

Appendix A. Categories of level 1 and level 2 NPSA contributory factors, March 2019 to February 2020

Contributory Factors	Number contributory factor linked to issues N = 17,692
Task Factors	4,875
Guidelines, Policies and Procedures	4,097
Procedural or Task Design	464
Decision making aids	314
Patient Factors	3,981
Clinical Conditions	2,148
Social Factors	112
Interpersonal Relationships	265
Physical Factors	253
Mental/Psychological Factors	203
Communication	3,187
Written communication	1,930
Communication Management	649
Verbal communication	602
Non-verbal communication	6
Organisational	1,595
Organisational structure	984
Priorities	309
Externally imported risks	222
Safety culture	80
Education and Training	1,100
Competence	646
Appropriateness	301
Availability / accessibility	108
Supervision	45
Staff Factors	1,002
Cognitive Factors	812
Physical issues	147
Personality Issues	21
Psychological Issues	14
Social Domestic	8
Equipment	353
Usability	155
Positioning	133
Integrity	34
Displays	31
Work Environment	350
Administrative factors	88
Staffing	81
Environment	81
Workload and hours of work	50
Design of physical environment	20
Time	30
Not classified	**1,249**

MBRRACE-UK/PMRT Collaboration
National Perinatal Epidemiology Unit
Nuffield Department of Population Health
University of Oxford
Old Road Campus
Oxford OX3 7LF

Tel: +44-1865-617929
Email: pmrt@npeu.ox.ac.uk
Web: www.npeu.ox.ac.uk/pmrt

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