Royal College of
Obstetricians &
Gynaecologists

each baby
COUNTS.

2019 progress report

March 2020

Contents

Abbreviations

CTG	cardiotocography
HSIB	Healthcare Safety Investigation Branch
FSE	fetal scalp electrode
HIE	hypoxic-ischaemic encephalopathy
MBRRACE-UK	Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK
NMPA	National Maternity and Perinatal Audit
NPSA	National Patient Safety Agency
PMRT	Perinatal Mortality Review Tool
RCM	Royal College of Midwives
RCOG	Royal College of Obstetricians and Gynaecologists
Sands	Stillbirth and Neonatal Death Society
SCOR	Standardised Clinical Outcome Review
VBAC	vaginal birth after a previous caesarean birth

Acknowledgements

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Foreword

The UK is one of the safest places to give birth and parents rightly expect safe, high-quality maternity care. However, term stillbirths, baby deaths and severe brain injuries are still occurring, some of which may have been avoided if care had been different. The impact of this on families is devastating and learning must come from the loss or harm of every baby.

The Each Baby Counts programme aims to reduce the number of babies who die or sustain severe brain injuries during term birth, which, along with other national initiatives, plays an important role in working towards the aims laid out in the NHS Long Term Plan. It remains an ambitious goal, but we are committed to ensuring we learn and drive national system-wide changes to make maternity care safer for all families.

It is only through high-quality analysis of the data that we can begin to identify the areas for improvement. I would therefore like to thank the local lead reporters, the Each Baby Counts team and everyone who has committed their time and expertise to the programme.

This report examines the data collected on 1130 babies during 2017. We have seen improvement in the number of parents invited to participate in local reviews, although this is not as high as we had hoped. Supportive, parent-centred reporting brings the most important voices to the forefront of the review, and ought to be the norm should they wish to be involved.

The Each Baby Counts team has delivered a thematic analysis looking at the barriers to successful clinical escalation, which is the ability to act upon a potentially critical situation to offer the right medical interventions, in the right time frame. This chapter highlights the complexity of maternity care and the interaction of technical and non-technical skills in a high-pressure environment: human factors, workforce challenges and communication.

It is imperative that senior leadership within the NHS listens to the lessons generated from Each Baby Counts and those from other healthcare improvement programmes. We must learn how to operationalise learning on human factors, team working and behaviour into improvements in practice. We need to fund research into safe staffing levels for the current population and make a national commitment to sustaining our valuable workforce. We must ensure staff are supported and that learning is shared in an open and transparent way.

Each Baby Counts is moving on. It is extremely exciting that Each Baby Counts + Learn and Support is making significant headway to support maternity teams to implement multi-professional learning and clinical leadership, advancing joint working by the RCOG and RCM to drive innovation from within the NHS. It is only by working together that we can get this right, with a national commitment to making maternity care in the UK a place where no family experiences the devastating impact of learning that different care may have led to a different outcome for their child.

Mr Edward Morris, President of the Royal College of Obstetricians and Gynaecologists

Parent foreword

The loss of our son, Louie, in 2011 has deeply impacted our lives forever. Not just us his parents, but his grandparents, aunt, other family members and our close friends. His death, and knowing that it was avoidable, leaves an underlying sadness in everything I do that will always be present.

Since Each Baby Counts began reporting, the key theme of low parental involvement in investigations has been highlighted. It has been made clear that parents should be made aware of the investigation, invited to participate and supported to do so if they choose. Also, in most reviews of Each Baby Counts babies in 2017 there was still no external person involved to give independent scrutiny – another clear recommendation from previous reports. I urge all healthcare professionals who have responsibility for investigations to take action to make change.

Sadly, there are recommendations included in this report that maternity service users would expect to be routine. For example, staff introducing themselves to each other, assessing the skill mix on a particular shift and that new staff should be familiarised with the unit's emergency call protocol. I really encourage maternity staff to urgently implement improvements where needed to ensure the highest levels of maternity care and safety.

The number of Each Baby Counts babies is, at present, static. The lag in data collection and reporting means that we will always be looking at data that is 2–3 years behind so I only hope that year on year we will see the level of parental involvement increase and, of course, an overall fall in Each Baby Counts babies in line with the original aim and target set. I remain hopeful that this will happen.

I urge everyone who reads this report to not just look at this from a professional point of view but from the perspective of parents who have been devastated by avoidable incidents. Errors in care are life changing and life damaging and we must do all we can to improve.

Michelle Hemmington, Louie's mum

Each Baby Counts Advisory Group Parent Representative
and Co-founder of Campaign for Safer Births

Louie shortly after birth at
gestational age 41^{+2} weeks

Executive summary

Introduction

Each Baby Counts is a national quality improvement programme led by the Royal College of Obstetricians and Gynaecologists (RCOG) to reduce the number of babies who die or are left severely disabled as a result of incidents occurring during term labour. In individual maternity units, these events are rare and it is therefore difficult to see clear patterns or identify how best to avoid them. The Each Baby Counts programme brings together the results of local investigations into stillbirths, neonatal deaths and brain injuries occurring during term labour to understand the bigger picture, share the lessons learned and prevent babies from dying or suffering brain injuries in the future.

This report presents key findings and recommendations based on the analysis of data relating to the care given to mothers and babies throughout the UK, to ensure each baby receives the safest possible care during labour.

Key clinical findings

677 192 term babies were born in the UK in 2017:

Babies reported to Each Baby Counts

Final results for **babies born in 2017** who were reported to Each Baby Counts.

677 192
Term babies born
in the UK in 2017

1130
Eligible babies
reported

Babies fully reported and the
reviews appraised by at least two
reviewers as containing sufficient
information for assessment.

986
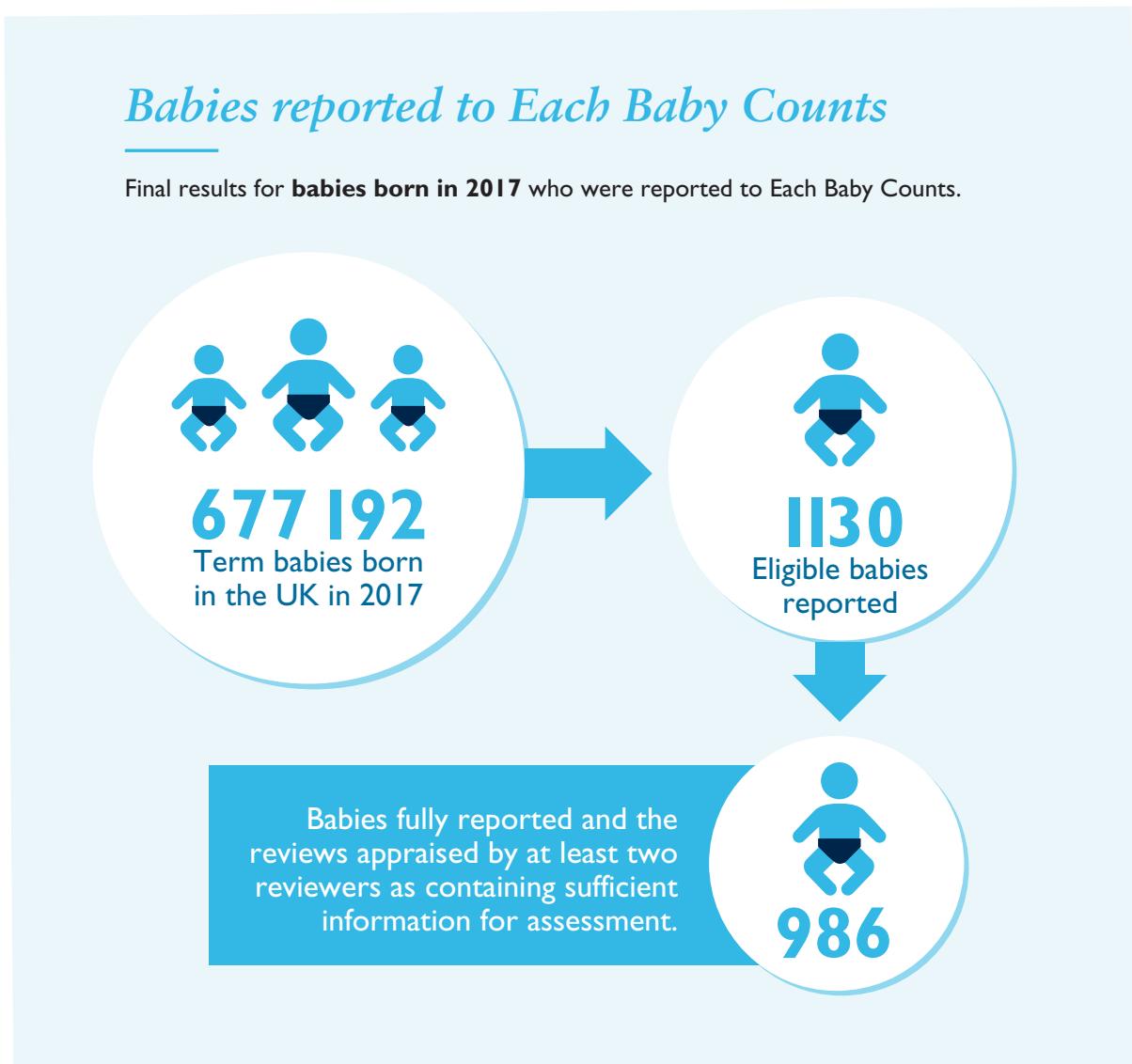
In total, 1130 babies born in 2017 who met the eligibility criteria for Each Baby Counts were reported. There were 130 intrapartum stillbirths, and a further 150 babies were born alive following labour but died within the first 7 days after birth. There were 850 babies who met the Each Baby Counts eligibility criteria for severe brain injury.

The Each Baby Counts definition of severe brain injury is based on information available within the first 7 days after birth and it is not known how many of these babies will have a significant long-term disability as a result of the injuries sustained during birth.

This report looks at parent involvement during the local review process. From analysis of the 986 cases in 2017 that were deemed to be complete in assessing the care provided, it was found that parents were invited to contribute to the local review in 50% of cases, compared with 41% in 2016. This shows that more needs to be done to ensure that all parents are informed and given the opportunity to contribute to the local review.

Parental involvement in reviews

Parental involvement in local reviews containing sufficient information.

No involvement in the review

17%

50%

Invited to contribute to the review

33%

Made aware of the review and/or informed of the outcome
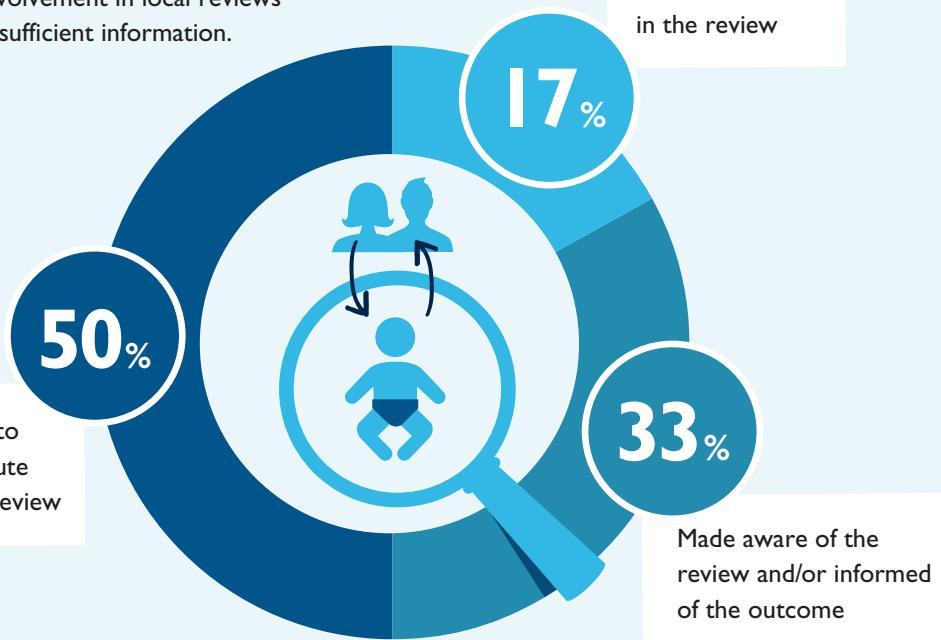
Clinical escalation in maternity care

In this report we have focused the thematic analysis on clinical escalation in maternity care. Successful clinical escalation is a complex process that requires a combination of clinical, behavioural and logistical steps in order to correctly identify and deliver urgent care.
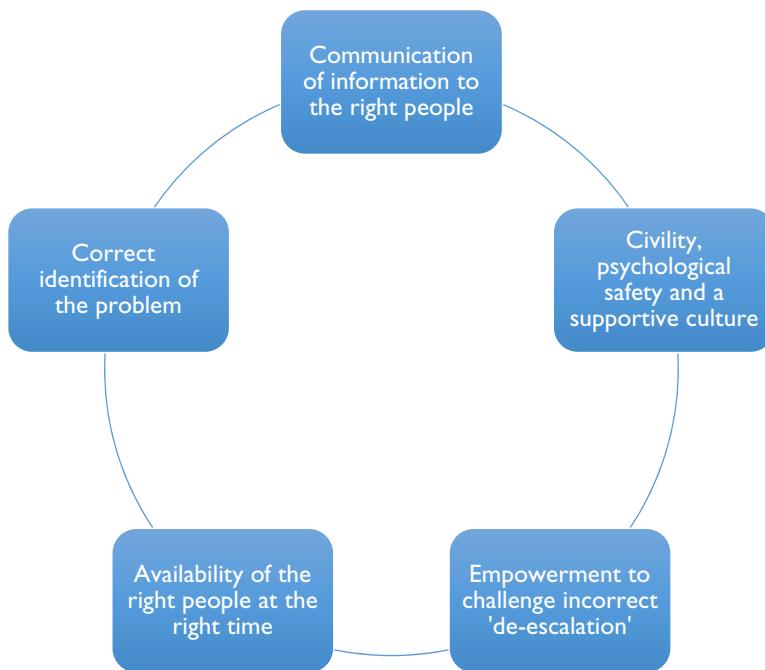
In the analysis of Each Baby Counts babies born in 2017, at least one reviewer felt that 'failure to escalate/act upon risk/transfer appropriately' occurred in 36% (358/986) of reports. This was considered to be as a result of either a lack of awareness of deterioration and the need to escalate, or a breakdown in the process of attempted escalation. Underlying themes were human factors and behaviour, workload and workforce challenges, and errors in communication methods. Locally, care reviews and investigations should attempt to understand the underpinning conditions for these behaviours and actions, with emphasis on the need for systemic culture changes. Nationally, infrastructure and staffing must be adequately resourced to make maternity care safer, and the wider workforce challenges of burnout and attrition must be addressed to support and retain current staff.

Key learning points

Cognitive biases

Escalation begins with correctly identifying an evolving pathology or a potentially critical situation. Mistakes evaluating and interpreting information may interfere with that assessment and result in missed opportunities to provide timely care.

Loss of situational awareness

Intrapartum care is a high-risk environment for loss of situational awareness. **Understanding when it is lost and how to minimise risk** is essential to maintaining safety.

Multidisciplinary team dynamics

Unbalanced skill sets within an unfamiliar team can result in **problems identifying the need for escalation and a lack of assertiveness** in executing the process.

Challenging a decision

All members of the multidisciplinary team must feel empowered to challenge a decision that they feel is incorrect. Where there is disagreement, a third party should be called to provide another opinion and fresh perspective.

Timely obstetric reviews

If an **urgent medical review** is needed and the on-site obstetric team is unable to deliver care in the required time frame, **the consultant must be informed**.

Handover

Loss of escalation momentum can occur owing to incomplete transfer of information between staff. A high-quality handover is essential for continuity of care and for maintaining situational awareness of the unit as a whole.

Emergency escalation protocols

—

Incorrect methods of emergency escalation delay urgent assistance. All staff must be familiar with the location of local emergency buzzers and switchboard escalation protocols.

Recommendations

Human factors and behaviour

—

Each Baby Counts has demonstrated that human factors are recurrent themes that need to be urgently addressed at a systemic level. Research is required to establish how to operationalise learning from this report into practice with improved clinical outcomes.

Workload and workforce challenges

Develop and fund an appropriate tool to record current workload and anticipate the obstetric care required for the population. This tool should complement the midwifery acuity tools currently implemented nationally. Research is required to identify safe obstetric staffing standards for the workload and acuity, to guide policy-level changes for the workforce.

Communication

All staff must be familiar with using their unit emergency communication and escalation protocols, in particular where emergency buzzers are located and how to activate a switchboard emergency call. This should be mandatory in departmental induction and included in simulated escalation calls during local multidisciplinary team training.

Methodology for the Each Baby Counts programme

Each Baby Counts is a UK-wide quality improvement programme led by the RCOG. Its ambition is to reduce the number of babies who die or are left severely disabled as a result of incidents occurring during term labour.

The Each Baby Counts project team, based at the RCOG, has compiled this report. The programme relies on 402 local lead reporters, who have responsibility for completing an online registration form for all eligible babies born in their unit, and 77 multidisciplinary reviewers, who complete an independent review of the local investigation reports submitted by lead reporters. A full list of Each Baby Counts reviewers and the project's methodology, including details of thematic analysis methods, is available in previous reports and on the RCOG website: www.rcog.org.uk/eachbabycounts.

Report structure

This report comprises two main sections:

- Overall findings for 2017 – a quantitative summary of the number of eligible babies, the quality of local reviews and the proportion of babies for whom Each Baby Counts reviewers felt that different care might have made a difference to the clinical outcome.
- Thematic analysis – clinical escalation in maternity care.

Overall findings for 2017

The final results for the babies born in 2017 who were reported to Each Baby Counts are presented in Figure 1.

677 192 term babies born in the UK in 2017

Exclusions:
- Ineligible babies (676 048) – babies who do not meet the Each Baby Counts criteria of stillbirth, early neonatal death and severe brain injury; also excluded are other potentially eligible unreported cases (14)

1130 eligible babies reported

Exclusions – a further 144 babies were excluded for the following reasons:
- Reports that were started but not completed by the lead reporter (20)
- Centrally excluded (congenital or chromosomal abnormalities) (27)
- Completed reports with insufficient information for reviewers to make an assessment of the care provided (55)
- Completed reports not fully reviewed by EBC reviewers before close of reporting period (42)

986 babies fully reported and the reviews uploaded appraised by at least two reviewers as containing sufficient information for assessment

Figure 1 Final results for babies born in 2017 who were reported to the Each Baby Counts programme

677 192 babies were born at term in the UK during 2017.[1] 130 babies died during labour and a further 150 babies were born alive but died within the first week after birth (early neonatal deaths). A total of 850 babies met the Each Baby Counts criteria for severe brain injury diagnosed in the first 7 days of life:

- diagnosed with grade III hypoxic-ischaemic encephalopathy (HIE), *or*
- therapeutically cooled (active cooling only), *or*
- had decreased central tone *and* was comatose *and* had seizures of any kind.

It is important to note that the Each Baby Counts definition of severe brain injury is based on information that is available within the first 7 days after birth, at which point it is not yet known how many of these babies will have a significant long-term disability. 71% of babies were actively therapeutically cooled, which may also reflect a gradual move towards more cooling in current neonatal practice.

The estimated proportion of 2017 babies who met the Each Baby Counts definition of stillbirth, early neonatal death or severe brain injury was one in every 660 term babies (1.52 per 1000 term births). In 2016 it was one in every 620 (1.61 per 1000 term births), and in 2015 it was one in every 635 (1.57 per 1000 term births). However, it may be that the evolving threshholds for cooling are the reason for the increase in the number of babies meeting the Each Baby Counts criteria. As such, data sets across the three reports to date are not directly comparable.

How many babies?

The total number of babies who fulfilled the Each Baby Counts criteria in 2017 was **1130**. Of these:

1130 BABIES IN 2017

12% Intrapartum stillbirths
130 babies

13% Early neonatal deaths
150 babies

75% Severe brain injuries
850 babies

Note: These categories are mutually exclusive. Babies with a severe brain injury who died within the first 7 days of life are classified as early neonatal deaths.

Figure 2 Breakdown of babies reported to Each Baby Counts by eligibility (N = 1130)

Cross-checking of other national sources of data, namely the MBRRACE-UK[*] and the BadgerNet[†] databases, is carried out to identify babies potentially unreported to Each Baby Counts. Units are then asked to provide information on babies meeting the Each Baby Counts case definition. Further information was not received from units for 14 potentially eligible babies identified through these sources; these babies are therefore excluded.

Demographics

Demographic characteristics for eligible babies are presented in Table 1. The data for place of birth also include the number of Each Baby Counts babies where the actual place of birth was different from the intended place of birth.

Table 1 Characteristics of Each Baby Counts eligible babies born in 2017

Characteristics		Reports with sufficient information uploaded to Each Baby Counts (*N*=986)	
		N	%
Singleton birth		963	97.7
Multiple birth		23	2.3
Babies where actual place of birth differed from intended place of birth		176	17.8
Actual place of birth	Obstetric unit	887	90.0
	Alongside midwifery unit	67	6.8
	Free-standing midwifery unit	12	1.2
	Home	15	1.5
	Other	3	0.3
	In transit	2	0.2

Analysis of local reviews

The information for 1110 (98%) of the 1130 babies reported for 2017 was fully completed by a lead reporter on the Each Baby Counts online reporting system. The other 20 reports on the system were started but were not completed by the lead reporter(s) of the relevant trusts/health boards. Of the 1110 completed reports, 1101 (99%) had undergone a local review process.

Overall cases

986 (95%) of the 1041 local reviews that underwent assessment contained sufficient information for the expert reviewers to classify the care provided (Figure 3). The proportion of local reviews that contained sufficient information has seen a steady growth each year, from 75% in 2015 to 89% in 2016 and 95% for these 2017 data.

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[*] MBRRACE-UK is the collaborative work with the Healthcare Quality Improvement Partnership (HQIP) to carry on the national programme of work conducting surveillance and investigating the causes of maternal death, stillbirths and infant deaths [npeu.ox.ac.uk/mbrrace-uk].

[†] BadgerNet data are collated through the National Neonatal Research Database (NNRD), which is utilised for research, audit or health service evaluations and is approved by the National Research Ethics Service [www.imperial.ac.uk/neonatal-data-analysis-unit/neonatal-data/utilising-the-nnrd].
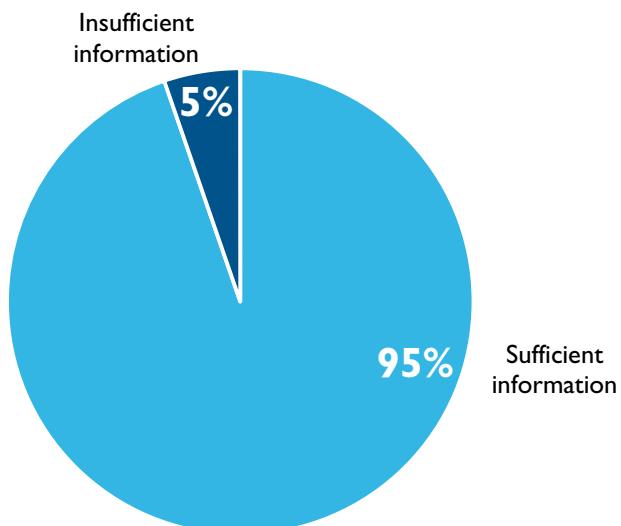
Figure 3 Proportion of completed investigation reports containing sufficient information to classify the care provided (*N* = 1041)

Neonatal cases

For babies born in 2017, 770 reviews were additionally assessed by Each Baby Counts neonatal reviewers to assess the care of liveborn babies or those undergoing extensive resuscitation. Of the 770 reports assessed, 468 (61%) were assessed as containing sufficient information specifically about the neonatal care provided (Figure 4). This was noted to be substantially lower than the proportion of reports containing sufficient information about the maternity care overall (95%).

Over 88% of the 2017 Each Baby Counts eligible babies were born alive yet neonatal clinicians in local units were only involved in reviewing the care of 74% of those babies (645). This is reflected in the quality of neonatal information contained in local reports. This report reiterates the importance of neonatal representatives' expertise in reviews for all liveborn babies and those undergoing extensive resuscitation.
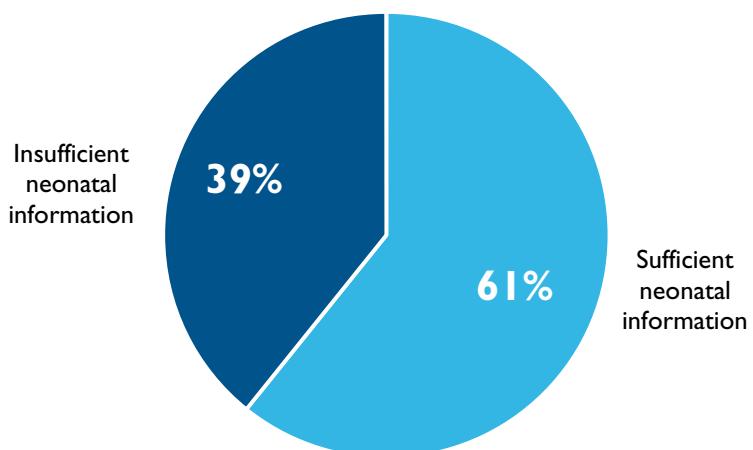
Figure 4 Proportion of investigation reports assessed by neonatal specialists that contained sufficient neonatal information to classify the neonatal care provided (*N* = 770)

Make-up of local review panels

95% of the local reports containing sufficient information were carried out by a multidisciplinary team (i.e. a panel that consisted of individuals with expertise from more than one specialty).

While these results are encouraging, the Each Baby Counts project team would still like to emphasise that the panel should always comprise individuals with the pertinent level of expertise and experience for the individual cases being reviewed.

As expected, midwives and obstetricians were regularly present, though participation from other specialties was lower, with senior management involved in 48% and pathologists involved in only 3% of reviews, as shown in Figure 5, which includes stillbirth cases with neonatal attendance.
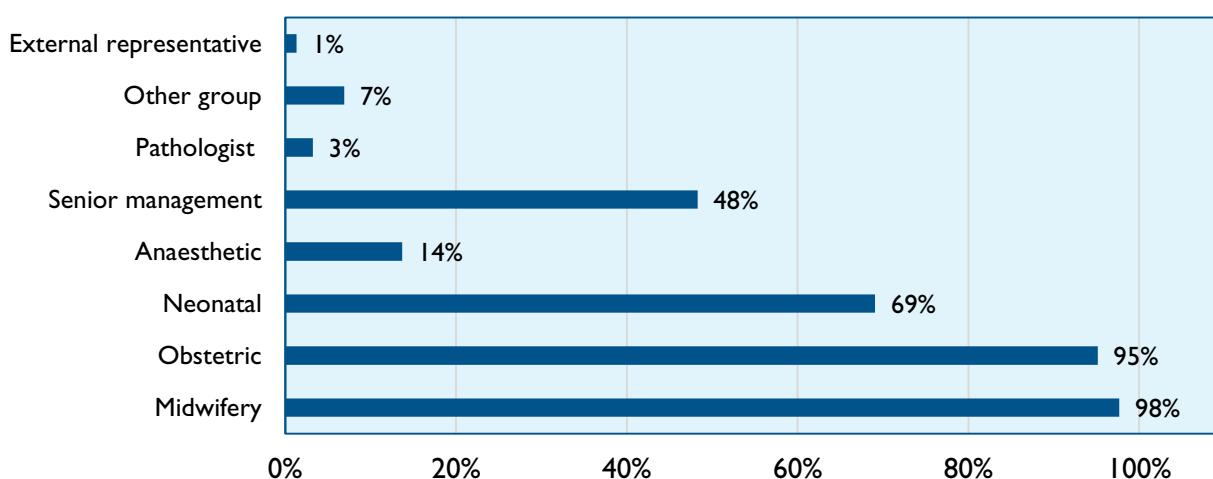
Figure 5 Contributors to local review panels for reviews containing sufficient information (*N* = 986)

Recommendation

All local reviews of neonatal deaths or babies undergoing extensive resuscitation must involve a neonatologist.

Tools and methodologies used in reviews

Out of the 986 local reviews that contained sufficient information, 82% (804 reviews) used a specific tool or methodology to conduct the review. The most common process was Root Cause Analysis, and some reviews used more than one methodology (Figure 6).

The Perinatal Mortality Review Tool (PMRT), which is now used widely, was only piloted in 2017 and thus was only used in a small number of these reviews. A PMRT-style tool is required to standardise the review of morbidity for liveborn babies to reduce the variation and quality of reviews.
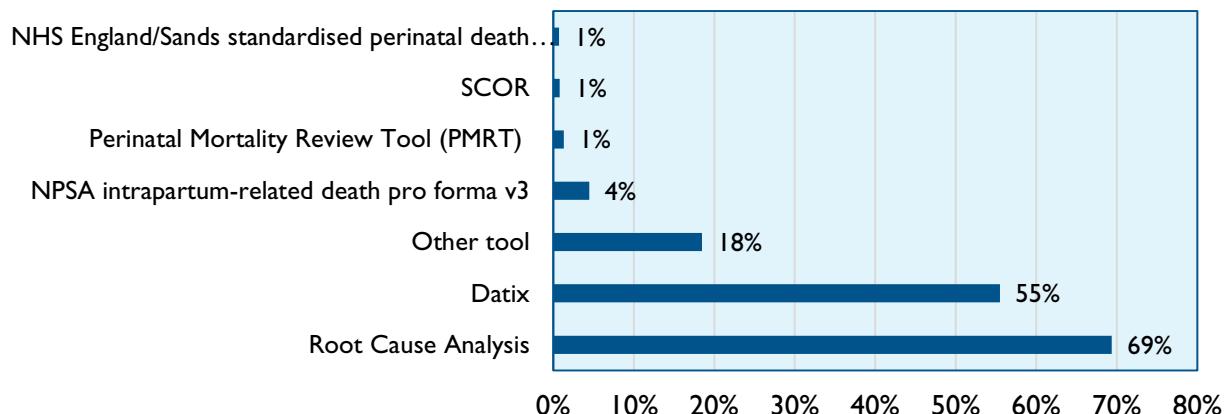
Figure 6 Tools and methodologies used in local reviews containing sufficient information (*N* = 986)

> **Recommendation**
>
> There remains an urgent need for a PMRT-style tool that includes morbidity to be commissioned by the UK healthcare system.

Quality of reviews

Each Baby Counts reviewers were impressed with the quality of numerous 2017 reports, with some examples of positive feedback received being:

- '*Excellent, thorough review of the case with very well thought out findings and actions to be put in place. External input sought and provided*'
- '*Very comprehensive review addressing key points and lessons learnt*'
- '*Excellent documentation of neonatal assessment after delivery and subsequent clinical progress including investigations*'
- '*Very thorough and comprehensive review and very clear action plan*'

The reasons for classifying 55 (5%) reviews as containing insufficient information by the Each Baby Counts reviewers were as follows:

- no detailed case description – 44 (80%)
- no timeline provided – 38 (69%)
- no specific tool used – 41 (75%)
- other – 49 (89%).

These reasons were not mutually exclusive, so reviewers could list multiple reasons for an incomplete report.

Examples of 'other' reasons include:

- '*there is only a timeline rather than any sort of investigation*'
- '*No details of the antenatal care which could have shown issues in the care that may have changed the clinical condition at delivery. No detailed neonatal resuscitation. No detailed action plan*'
- '*Minimal information supplied – 9 lines in total! No neonatal detail, no Apgars, no information on neonatal assessment and management and decision making regarding HIE and decision to cool*'

Parental involvement in reviews

It is encouraging that parental involvement in reviews has continued to increase, with 50% of parents invited to contribute to the review in 2017 (Figure 7), compared with 41% in 2016[2] and 34% in 2015.[3] Nevertheless, parents were not involved in the review process in 17% of local reviews, which, while a reduction from 22% in 2016, shows that there is still a need for improvement.

No involvement in
the review

17%

Made aware of
the review and/or
informed of the
outcome

33%

50%

Invited to contribute
to the review
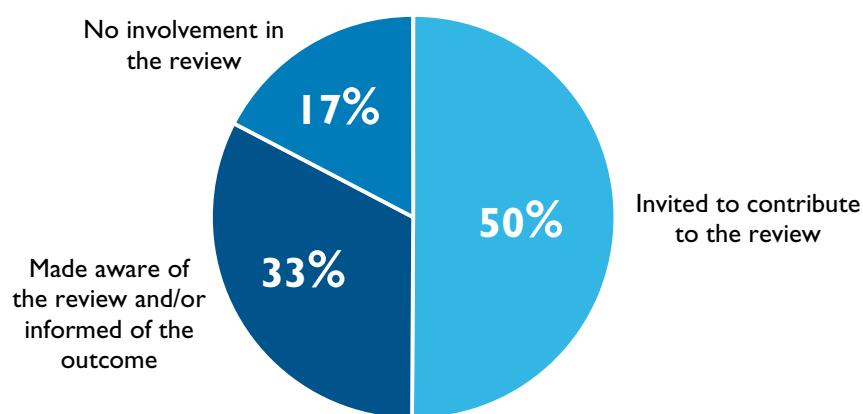
Figure 7 Parental involvement in local reviews containing sufficient information (*N* = 986)

Recommendation

The Each Baby Counts project team encourages all trusts and health boards to always inform the parents of any local reviews taking place and invite them to contribute in accordance with their wishes. This is an important process which should become the minimum standard for every trust and health board.

As discussed in the previous report,[2] there are a number of different approaches that can be applied to involve parents in local reviews.[3] Input from parents is vital to have a better understanding of their perspective on the care provided, to gather more information and to address any concerns or questions.

The Sands stillbirth and neonatal death charity has produced a video 'The Parent Voice',[4] which highlights the importance of parent engagement. The PMRT Parent Engagement Materials[*] have been designed in collaboration with Sands to provide healthcare

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[*] The PMRT Parent Engagement Materials are a series of resource-based processes that aim to support health professionals through the use of a flow chart, template letters and other resources [www.npeu.ox.ac.uk/pmrt/parent-engagement-materials].

professionals with tools and materials to better engage with parents during reviews. They are based on key findings from the PARENTS study,[5] which showed that parents wanted flexibility, inclusivity and transparency during the review process.

The Each Baby Counts project team recommends the use of the PMRT Parent Engagement Flow Chart, which provides consistent guidance to staff on involving and supporting parents during the review process. The materials include a parent information leaflet, template letters and parent feedback forms.

> ### Recommendation
> All Each Baby Counts babies who are stillborn or babies who die within the first 28 days of life should be reviewed using the PMRT.

Would different care have made a difference to the outcome?

In the event a reviewer indicates that there is sufficient information in the local review that is uploaded to the Each Baby Counts portal, they are advised to indicate in their opinion whether different care might have made a difference to the outcome. In the analysis, 28% (272) of the babies were identified by the reviewers to have an outcome where different care would have been unlikely to have made a difference (Figure 8). In 72% (714), at least one of the independent reviewers was of the opinion that different care might have made a difference to the outcome. In 2016 this was 71% (678/955) and in 2015 it was 76% (552/727).
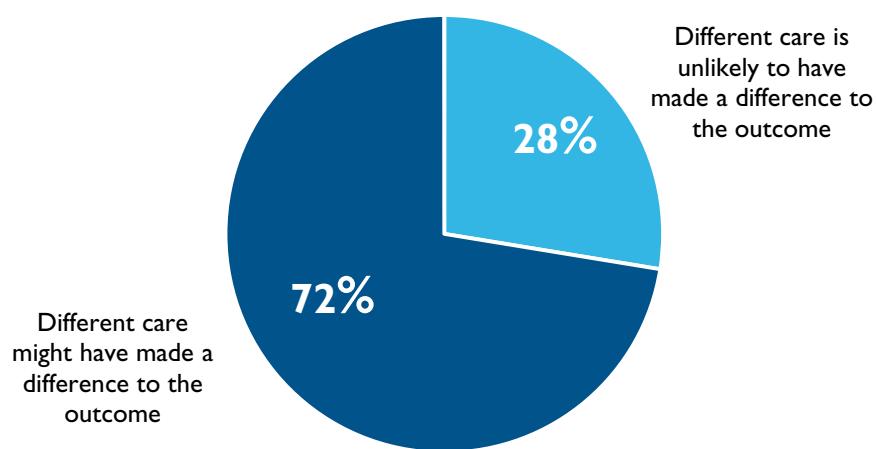
Figure 8 Proportion of babies for whom different care might have made a difference to the outcome (*N* = 986)

The Each Baby Counts neonatologist reviewers assessed the care of 468 babies whose reports were deemed to contain sufficient information to determine the neonatal care provided. In 264 (60%) cases, the neonatal review determined that different neonatal care is unlikely to have made a difference in the outcome. In 176 (40%) of those cases that were reviewed, the Each Baby Counts neonatologist reviewer was of the opinion that different neonatal care might have made a difference to the outcome (Figure 9).
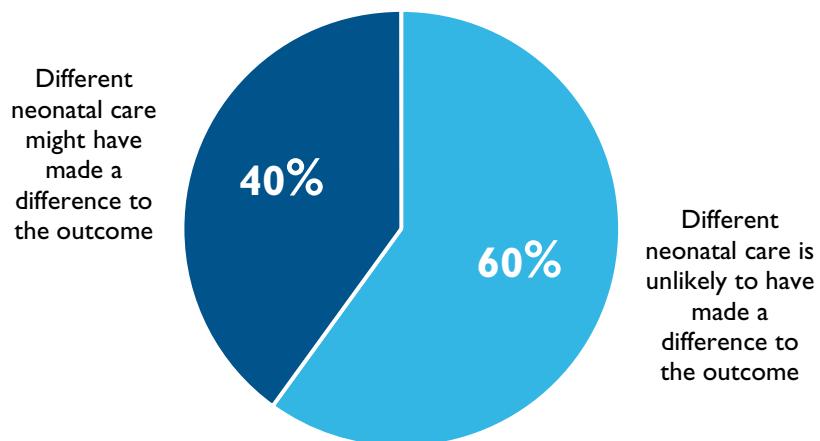
Figure 9 Proportion of babies for whom different neonatal care might have made a difference to the outcome (*N* =440)

Where a reviewer considers that different care might have made a difference to the outcome, they are asked to indicate what they consider to be the critical contributory factors influencing the outcome. Each baby's care can be reviewed by up to five multidisciplinary reviewers and they can each identify multiple critical contributory factors.

These contributory factors are shown in Figure 10 for all themes excluding neonatal care, which is outlined separately in Figure 11.
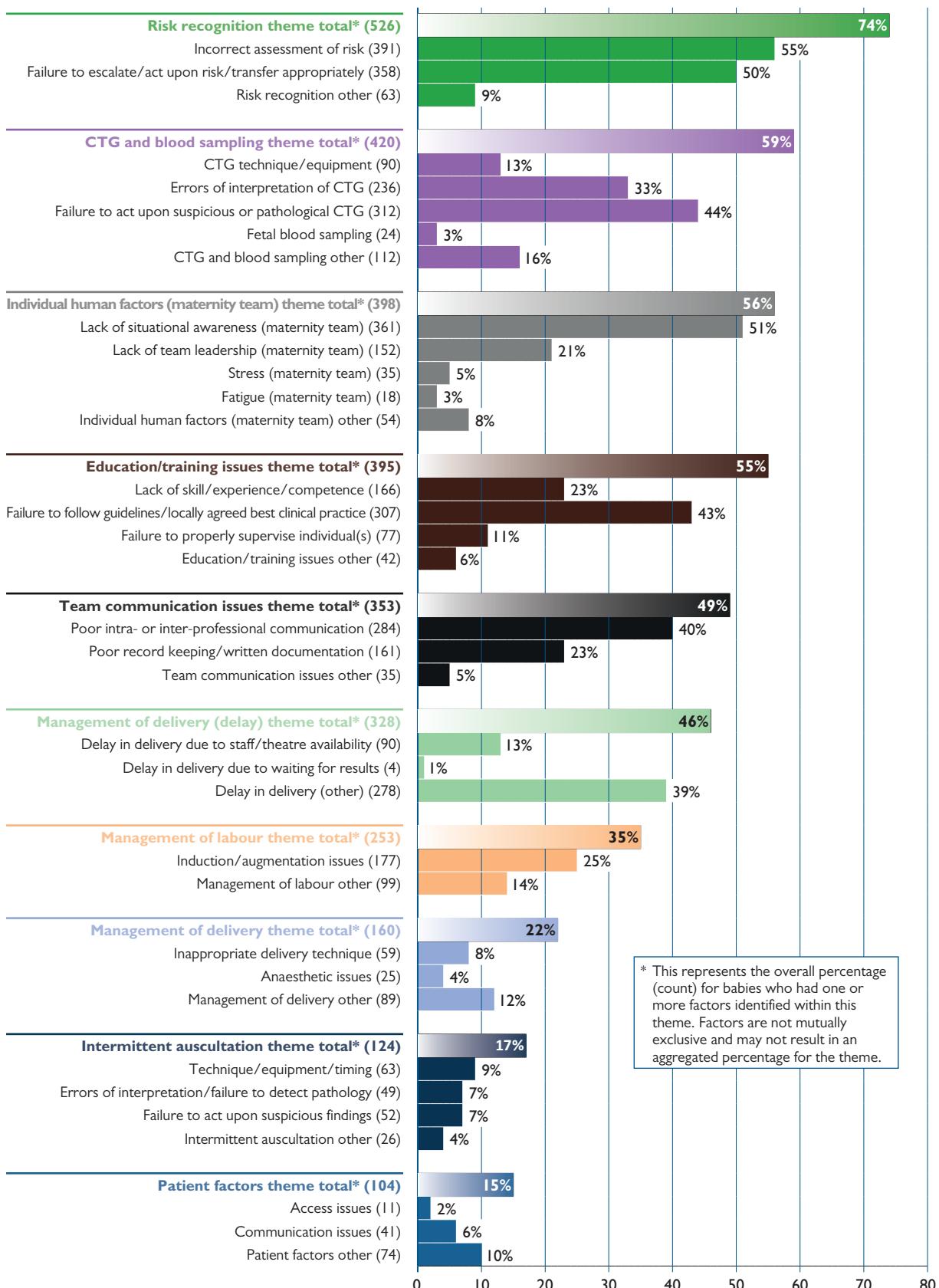
Figure 10 Critical contributory factors identified in babies for whom different care might have made a difference to the outcome (*N* = 714); note that each baby has potentially two or more reviewers identifying contributory factors and multiple factors may apply to the same baby
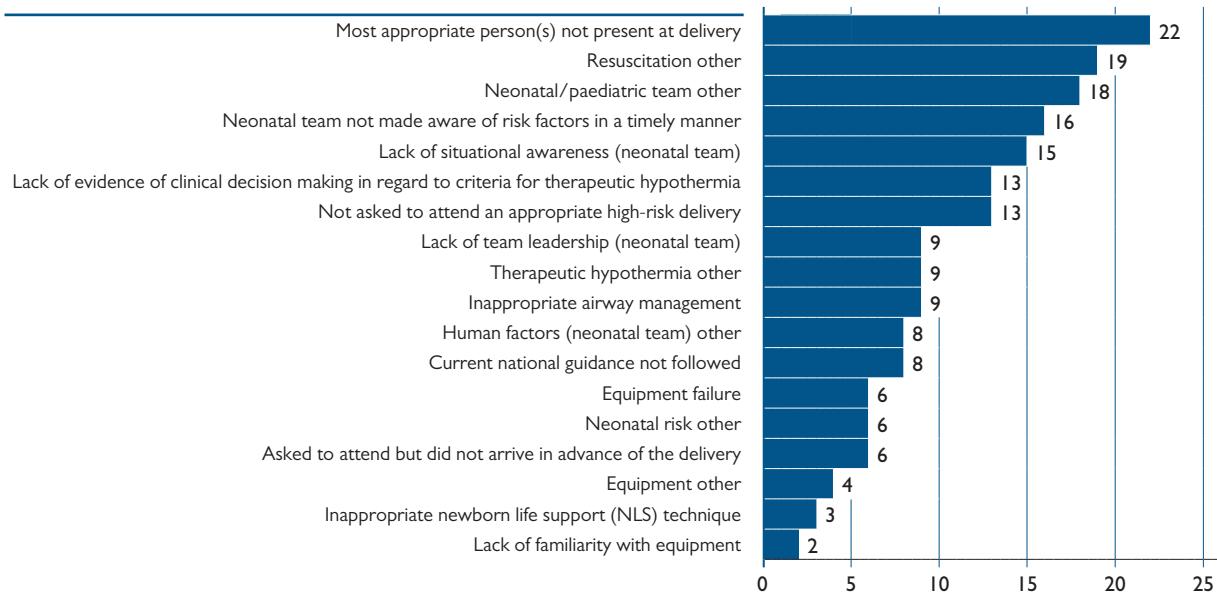
Figure 11 Critical contributory factors in neonatal care identified in babies for whom different care might have made a difference to the outcome (*N* = 176), showing the number of babies with that factor; note that each baby has potentially two or more reviewers identifying contributory factors and multiple factors may apply to the same baby

Only 52 of 714 babies were considered to have only a single critical contributing factor. The median of factors per baby was 6, with a range from 1 to 22.

These critical contributory factors were further categorised under themes. The five most common themes are shown in Figure 12 and are CTG and blood sampling, risk recognition, team communication issues, individual human factors, and education/training. There were only 69 babies where reviewers did not identify any critical contributory factors falling under one of these themes.
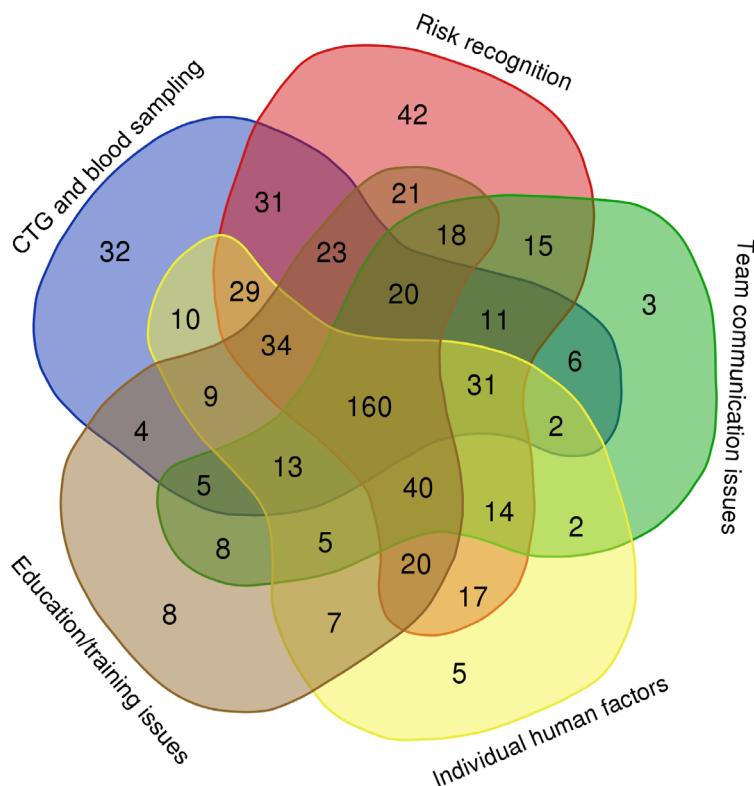
Figure 12 Interrelation of the five most commonly identified themes (*N* = 645); diagram produced using http://bioinformatics.psb.ugent.be/webtools/Venn/

Escalation has been examined in depth in the next chapter, which thematically analyses the reviews identifying clinical escalation in maternity care, part of the risk recognition theme, as a contributory factor. The Each Baby Counts team analysed cases where one or more of the key factors identified concerned a breakdown in escalation and provision of timely senior care.

Clinical escalation in maternity care

Introduction

High-quality and safe intrapartum care requires the ability to detect and act upon evolving pathology or a potentially critical situation. Offering the right medical interventions, in the right time frame, to the right women, is key to preventing harm.

Escalation is a complex process that starts with the recognition of clinical deterioration and the awareness to rapidly involve senior members of the multidisciplinary maternity team. Effective, safety-critical communication then needs to be used to initiate a timely response to the problem. For the purposes of this chapter, escalation can therefore be simplified into separate concepts:

- the correct identification of the need to escalate
- the ability to act on this
- the staff and resources available to deliver the required care.

Previous work in this field has highlighted the importance of human factors and the interplay of social and behavioural influences on clinicians' ability to escalate. The literature suggests that the following are some of the non-clinical factors influencing escalation:

- lack of confidence
- a willingness to appear capable
- perceived lack of psychological safety (fear of repercussions)
- lack of clarity with escalation protocols.[6]

The Each Baby Counts team aimed to explore some of these issues through the analysis of local reviews to understand the barriers to delivering timely senior care for a complication or evolving clinical situation.

Methodology

From the eligible and fully reported babies born in 2017, the Each Baby Counts team identified 358/986 (36%) for whom 'failure to escalate/act upon risk/transfer appropriately' was selected by at least one reviewer as a critical contributory factor. For these babies, there were an average of nine other factors alongside a need for more rapid escalation identified as contributing to the adverse outcome. The proportion of babies in this category remains high, with 307/955 (32%) noted in 2016 and 283/727 (39%) in 2015. Hence this topic was chosen as the focus for this year's thematic analysis.

After reading and re-reading the local review reports, an initial thematic frame was developed. This was subsequently discussed and refined with the project team. Themes were recorded using NVivo software to support the analysis.[7] Analysis continued until no new themes emerged; data saturation was reached after 41 of the 358 reports. As per Each Baby Counts methodology, themes identified from a sample of 10% (five cases) were cross-checked by an independent external reviewer.

Two distinctions in escalation were identified:

- lack of awareness of deterioration and the need to escalate
- a breakdown in the process of attempted escalation

and these could be categorised into the three themes below.

Theme 1 – Human factors and behaviour (page 16)

1.1 Cognitive biases

1.2 Loss of situational awareness

1.3 Multidisciplinary team dynamics

1.4 Challenging a decision

Theme 2 – Workload and workforce challenges (page 23)

2.1 High unit activity

2.2 Timely obstetric reviews

Theme 3 – Communication (page 26)

3.1 Handover

3.2 Emergency communication protocols

Presentation of findings and learning

Anonymised extracts from local reviews are used throughout this report to highlight examples within each theme. Each section is accompanied by concluding learning points and summary statements focusing on what you, as a front-line clinician or local unit, can do. These are intentionally simplified and aim to assist locally to improve immediate practice. The report concludes with recommendations at an academic and policy level focusing on systemic change.

Theme 1 – Human factors and behaviour

The study of contributors to human error originated in the aviation industry and has become more widely understood and recognised in medicine. Human factors refer to a range of non-technical precursors to potential mistakes or, in this analysis, breakdowns in the escalation process.[8]

1.1 Cognitive biases

Diagnosis and decision making should be evidence-based, methodical and analytical. However, when required to process large volumes of information under stress, clinicians often resort to 'mental shortcuts' (heuristics) combined with previous experience to allow rapid decision making.[9] This is an essential aid in processing large volumes of information under pressure and forms the basis of recognising common patterns and signs, but also leaves room for errors known as cognitive biases. Recurrent examples were found in the reviews where cognitive biases led to a missed clinical risk factor or evolving deterioration and resulted in a lack of awareness of the need to escalate.

By nature of being human, we all have inherent biases; some are innate and others are learned or are products of interaction with our environment. Diagnostic mistakes are more frequently attributed to errors in thinking than technical errors.[10] There is extensive literature concerning factors that can predispose someone to make these cognitive errors; some of these factors may be familiar to those working in an intrapartum care environment (Table 2).[11–14]

Table 2 Factors predisposing people to cognitive biases[11–14]

Individual factors	Systemic factors
• High stress • Fatigue • Distraction • Previous experiences affecting interpretation of information • Fear of doing harm or failure	• Workload • Insufficient time to gather and interpret information • Inadequate teamwork • Lack of support

There are many different ways that biases can manifest in clinical practice.[9] The most common cognitive error seen in this analysis was fixation (a narrowed focus on a single aspect) where the whole clinical picture was overlooked.

❝*In fixation, analytical thought is so dominated by one issue that the conscious threshold for sensory inputs is greatly raised, so high in fact that things such as warning sounds or lights or other people speaking are not registered at all.*❞

Patrick Mitchell, *Safer Care—Human Factors in Healthcare: Trainer's Manual* (2013)[15]

Fixation bias

> ❝Although concerns had been identified with the CTG, staff did not consider all the clinical findings but appear to have focused on achieving a [spontaneous vaginal] delivery… The risk of third-degree tears increases with operative delivery, as such the registrar was attempting to reduce this risk by continuing to aim for [spontaneous vaginal] delivery… this should have been balanced against the potential need for earlier instrumental delivery based on the whole clinical picture.❞

In this scenario, there was a fixation on achieving spontaneous vaginal birth because of the increased risk of perineal injury with an instrumental birth. This resulted in a reluctance to intervene in the second stage despite abnormal fetal monitoring, which delayed appropriate intervention. It was also unclear from the report how much was discussed between the clinicians and the woman, to enable her to make informed decisions on risk.[16]

In other reviews, attempts to improve the woman's birth experience, despite good intentions, also demonstrated fixation biases and resulted in harm. Examples included inappropriate delays in deciding to transfer from low- to high-risk care and delays in calling for obstetric assistance. It can be a difficult task for clinicians to balance safety and women's experience in labour. Good communication, clear explanations of the indication for recommended interventions and a holistic approach are needed to facilitate shared decision making and informed patient choice.

Confirmation bias

Confirmation biases were also commonly seen in the reviews. This concept refers to looking for evidence to confirm a pre-existing belief or opinion and therefore not noticing other evidence that may disprove it ('seeing only what you expect to see').[9]

There were many examples of missed opportunities to act earlier on signs of maternal or fetal compromise, which were often interpreted incorrectly. Although the classification of CTGs is standardised according to guidelines, action is dependent on correctly interpreting risk factors and processing new information.

> ❝The woman was experiencing pressure in the vagina and the baby was moving. The impression at this time was that she was showing signs of full dilatation. The woman had had a previous caesarean section and the hyperstimulation of the uterus, bloodstained [amniotic fluid], 'period-like' pains over an epidural, and the decelerations on the CTG could have alerted the midwife to a possible uterine rupture and a medical opinion could have been sought.
>
> … it was noted [at caesarean delivery] that the baby was lying in the peritoneal cavity. There was an extensive rupture of the lower segment and cervix down to the vagina.❞

Despite the woman having the known risk factor of a previous caesarean section and signs suggestive of a scar rupture, these were incorrectly mistaken for signs of the second stage of

labour. Although rapid delivery took place once the eventual bradycardia was noted, there were missed opportunities to escalate earlier for a medical review to evaluate the overall picture.

Diagnostic momentum

Diagnostic momentum ('the bandwagon effect') describes a bias commonly seen in medicine, where the team follows the course of action decided by the previous clinician.[9] Once an idea has been fixed within a group, it reduces the chance of alternatives being considered with objective second opinions from colleagues outside of the immediate situation.

> "At 01.35 the fetal heart rate was recorded as 154 beats per minute and Patient X went to use the toilet. The midwife then attempted to auscultate the fetal heart on Patient X's return to the birthing room and was unable to locate the heart rate. A second midwife was called to the room to assist and both midwives tried unsuccessfully for 10–15 minutes to locate the fetal heart. The Labour Ward coordinator was called and a decision was made to transfer Patient X to the Labour Ward at 02.25."

In this example, there was difficulty in trying to locate the fetal heartbeat in a previously uncomplicated labour. The midwife in her statement explained that she was sure it was an equipment error; there was no reason to consider that the fetal heartbeat was suddenly absent. Unfortunately, despite escalating to a colleague to assist her, the certainty that they would be able to locate the fetal heartbeat with alternative equipment became shared by the second midwife in an example of diagnostic momentum. This led to delays in calling for emergency obstetric assistance and a bedside ultrasound scan.

Cognitive biases

Key learning points
Escalation begins with correctly identifying an evolving pathology or a potentially critical situation. Mistakes evaluating and interpreting information may interfere with that assessment and result in missed opportunities to provide timely care.

Things you can do
Slow down with a 'diagnostic time-out' to consider alternative diagnoses before formulating a management plan, unless following an emergency protocol.[17]

Things your unit can do
Embedded checklists (such as surgical checklists and ward round pro formas) can help override potential biases by providing structure and encouraging a 'step back'.[9]

Use local case review meetings to reflect on decision making and use the Safety–II principles of promoting learning from when things go well as well as when things could be improved.[18,19]

Breaks are vital to limit errors caused by stress, hunger and fatigue. If high workload prevents breaks being taken, this should be formally recorded via incident reporting.

1.2 Loss of situational awareness

Situational awareness describes the concept of understanding what is happening in the environment around you and being alert to detecting change.[20] Activity on a delivery suite can change rapidly and simultaneous emergencies can occur suddenly. The ability to interpret information from multiple sources and prioritise in a stressful environment is a key skill for intrapartum care.

Loss of situational awareness was frequently identified in the reviews, often in relation to misinterpreting the severity or speed of clinical deterioration and losing awareness of time passing.

"Failure to recognise an evolving problem, or the transition from normal to abnormal, was a common theme. It was rarely due to a single issue, more commonly appearing to arise from a more complex failure of situational awareness and ability to maintain an objective overview of a changing situation."

MBRRACE-UK, *Perinatal Confidential Enquiry: Term, Singleton, Intrapartum Stillbirth and Intrapartum-related Neonatal Death* (2017)[1]

> **"Initial examination and attempts at manual rotation began at 03.22 and this was not achieved until 03.39 [and delivery at 03.44]. This is an inappropriate delay in a baby with a low pH on fetal blood sample [7.20 at 03.00]… It is not clear when [the consultant] was asked to attend. When there were difficulties in rotating the baby the consultant on call should have been called immediately, if not already present. The urgency of the delivery has not been appropriately managed."**

In this scenario, there was a persistently pathological CTG preceding an abnormal fetal blood sample and a decision to expedite the birth with forceps. There appears to have been lost situational awareness of the passage of time and the difficulty of the situation by both registrars, as they attempted to deliver an already-hypoxic baby. As both were focused on the delivery, the overview or 'helicopter view' of the timescale and deteriorating situation was lost.

Loss of situational awareness

Key learning points

Intrapartum care is a high-risk environment for loss of situational awareness. Understanding when it is lost and how to minimise risk is essential to maintaining safety.

Things you can do

Try to anticipate lost situational awareness when under periods of stress, fatigue and high activity, and ask for help early, rather than when it is already lost.

The helicopter view must be maintained; if you hold this role and become engaged in a task, you should aim to delegate overview responsibility to the most senior colleague available.[3]

> **Loss of situational awareness** (*continued*)
>
> *Things your unit can do*
>
> Multidisciplinary human factors training, although not linked directly to improvements in outcomes, raises awareness of their impact and can standardise team working and communication. This is particularly important for new registrars and midwifery coordinators to enable them to develop the non-technical skills required for safe leadership. The RCOG Human Factors eLearning module is free and accessible to aid in local training.[21]
>
> Set times for regular safety huddles to maintain situational awareness and review activity.[22]

1.3 Multidisciplinary team dynamics

Better Births, the programme of improvements arising from a major review of maternity services in England, advocates that '*if you work together you train together*' and multidisciplinary emergency skills training is already nationally implemented, designed to improve team working in obstetric emergency scenarios.[23] A maternity team is subject to frequent changes, resulting in multiple combinations of team dynamics.

There were examples of challenges in team working due to unfamiliarity of staff and specific gaps in overall skill mix on the unit. This not only had an effect on the team's ability to recognise the need to escalate an evolving clinical scenario but also impacted on their response to the advice given.

> "The midwife looking after Patient X was new [and] the coordinating midwife was relatively new to the role of coordinator. The obstetric registrar was a locum. As such the team working together that night most likely had not worked together as a team before, and were likely unfamiliar with each other and how they work… there may have been reluctance by the midwives to ask for medical review when a clear plan had not been formulated by the obstetric registrar."

A combination of unfamiliar staff led to a series of missed opportunities to escalate. Junior staff did not recognise the need for escalation of fetal wellbeing concerns. There also appears to have been an assumed hierarchy and a reluctance of the midwives to escalate to an obstetrician they did not know.

> "In her statement, the senior midwife highlights the heavy workload experienced that night. She also highlights the skill mix for that shift on delivery unit, including a bank midwife and a newly qualified midwife… but there is no evidence that proper escalation of these concerns occurred at the beginning of the shift."

In this example, there was again retrospective acknowledgement by the coordinator of concerns over the skill mix, but it was not highlighted at the time.

Looking at both these vignettes, increasingly common scenarios should have been recognised as risk factors in advance. However, there is no easy solution; moving colleagues around on the rotas to balance skill sets can be disruptive and may not be logistically possible. The midwifery manager and consultant on call should be aware of the skill mix of the team and be easily accessible for further support or second opinions if needed.

Multidisciplinary team dynamics

Key learning points

Unbalanced skill sets within an unfamiliar team can result in problems identifying the need for escalation and a lack of assertiveness in executing the process.

Things you can do

Introductions for all team members at handover, by name and role, can improve team working. A team brief at the start of the shift to establish skill sets can help identify team members who may need extra support.[24,25]

Things your unit can do

Gaps in both medical and midwifery rotas will often be known in advance. Where possible, organisational changes to avoid imbalance of skill mix should be made. If this is not possible, further senior support should be easily accessible to the team on shift.

1.4 Challenging a decision

Frequent examples were seen where the escalation process was correctly initiated after concerns were identified, but care was incorrectly 'de-escalated' or delayed at the level of the second colleague review.

The confidence and security to speak up and express concerns is vital for patient safety.[26] There are many reports in the literature about a flattened hierarchy improving safety within a unit, particularly in fast-paced environments such as an operating theatre or delivery suite.[27] A flattened hierarchy is a culture where junior staff feel able to speak up about safety concerns to senior colleagues, or to other professionals within the multidisciplinary team. It removes the assumption that the decision of the most senior doctor or midwife is final and promotes an environment of psychological safety for staff to speak up, challenge seniors when needed and request a second opinion without repercussions.

Although not alluded to in these reports, since the Kirkup report on the Morecambe Bay Investigation and other high profile cases there has been an increased awareness of the role of dysfunctional team relationships in maternity safety.[26] Incivility in the workplace affects all members of an organisation: recipients, witnesses and service users.[28] This is being explored in health care, with evidence of rudeness during simulated emergencies negatively impacting on diagnosis and technical performance.[29,30] These behaviours undermine confidence and can adversely affect a clinician's ability to escalate to uncivil colleagues.

As discussed previously, the interaction between people, their environment and the resulting decisions they make is what makes the process of escalation complex and multi-dimensional. Differing experience, levels of confidence and personality types have all been suggested as reasons why some people may find it more difficult to challenge decisions.[6] Graded assertiveness tools may help in structuring safety-critical communication. They provide a measured increase in the firmness of the challenge, and set clear expectations to continue escalating concerns until a solution has been achieved (Box 1).[21]

Box 1	'PACE', a worked example of a graded assertiveness communication tool[21]
Probe	I would like [patient name] in room one reviewed urgently please. I'm concerned as she has a temperature and is feeling unwell with an accompanying fetal tachycardia.
Alert	I think this is chorioamnionitis. Should I start preparing the antibiotics? Her HR is 140 and the CTG is now pathological.
Challenge	This patient is a priority and delivery needs to be expedited. If you are in theatre and cannot come now, please can you ask another registrar or the consultant to come urgently?
Emergency	I have patient safety concerns and will call another senior now for help.

It is difficult to draw conclusions from the vignettes without more in-depth questioning at a local level as to why certain behaviours occurred. Examples of good practice where a decision was challenged have been included for comparison to share learning from positive team working.[18,19]

> "The CTG remained abnormal until 03.33 when there was a terminal bradycardia. The attending midwife did recognise the abnormalities in the CTG. There was escalation to the coordinating midwife and also to the obstetric registrar. However, they both failed to recognise the ongoing abnormalities and the need for intervention. These abnormalities persisted over a period of hours prior to the terminal bradycardia."

In this example, the midwife identified a concern and escalated appropriately, but both the coordinator and registrar de-escalated by incorrectly reassuring her that the CTG was normal. After this, the midwife did not continue to escalate the same concern, resulting in hours passing with ongoing CTG abnormalities. She may have felt unable to challenge the decision made by seniors owing to hierarchy, or thought that she must have been wrong instead because of lack of confidence. There was a missed opportunity to ask another colleague to review for another opinion.

> "After 35 minutes, as … reduced variability persisted along with the occasional late deceleration, the midwife performed a vaginal examination and then contacted the obstetric registrar. The registrar could not attend immediately, but asked the SHO [junior doctor] to attend. The midwife wanted a middle grade opinion, so took the CTG to the registrar, who then made the decision for transfer to delivery suite."

This vignette demonstrates a different approach and highlights an example of good practice. The midwife was confident in her assessment that the situation was serious and that it was likely that the junior doctor would still have needed to discuss their findings with the registrar, which would have caused delays. There was no assumed hierarchy and clearly good communication and team work between both clinicians to ensure that care was provided urgently.

Challenging a decision

Key learning points

All members of the multidisciplinary team must feel empowered to challenge a decision that they feel is incorrect. Where there is disagreement, a third party should be called to provide another opinion and fresh perspective.

Things you can do

The use of graded assertiveness communication tools such as PACE (probe, alert, challenge, emergency) may assist in challenging a decision where there is a perceived steep hierarchy.[21]

Things your unit can do

Poor behaviours and hierarchy may influence staff ability to make sound decisions and result in a reluctance to escalate. Staff need to be supported by senior managers to speak up about negative behaviour. Strong obstetric and midwifery leadership is required to address culture changes, with clear expectations of accountability, responsibility and unit values.

Theme 2 – Workload and workforce challenges

The impact of high activity on an already stretched service must be acknowledged, as well as the limitations of the current infrastructure to cope with an increased acuity of workload. Acuity differs from activity by taking into account the intensity of care required. An increasingly high-risk population brings the challenge of regularly increased workload to maternity units, which need to ensure that they have the physical space and staff numbers required to provide safe care.[31,32]

This report analysis is based on data from 2017, when there were obstetric registrar rota gaps in 88% of units, a 30% trainee attrition rate, and just under 180 full-time-equivalent new consultants predicted to join the workforce between 2016 and 2021. In midwifery, 3500 full-time-equivalent posts were unfilled.[33] The workforce is currently under pressure at all levels of the multidisciplinary team, with high rates of burnout also reported across the specialty.[34,35]

2.1 High unit activity

High unit activity as a theme has been identified in both previous Each Baby Counts reports.[2,3] In this current analysis, there were also multiple references to high activity, high acuity or both. This was reflected in local reports at each level of the escalation pathway, but was seen most commonly in waiting for rooms/theatre availability or obstetric review.

> "Patient X presented to delivery suite triage via [ambulance] at 01.50 reporting regular contractions… she was significantly tachycardic and hypertensive. This should have prompted an immediate registrar review and repetitive observations every 15 minutes. However, due to the acuity in triage, Patient X was admitted to the waiting room for an examination couch to become available."

Here there was a significant delay between the woman's arrival in the emergency walk-in unit and observations being taken, escalated and acted upon. In this instance, the woman already had abnormal observations identified by the ambulance service, which should have prompted an urgent assessment and escalation to the obstetric team on arrival. This was delayed by lack of physical space in the unit and by acuity of workload, despite adequate staffing.

> "The unit was busy and activity was high, which impacts on all aspects of care. Hospital X's Maternity Services Escalation Policy had been implemented. The unit had remained busy all day and when the night shift staff arrived on duty at 19.00, the unit was still in a period of high acuity. Patient Y received 1 : 1 care during labour, however the activity on the unit during admission did impact on care provision from the obstetric team."

Local policies provide guidance on immediate and long-term actions when units are under high pressure with midwifery staffing or bed shortages. However, they do not usually specify any guidance for doctors on when the team needs to escalate and ask for consultant help owing to activity, anticipating that multiple women may need obstetric input at once.

2.2 Timely obstetric reviews

In several instances, a request for a registrar review was followed by documentation that the registrar had been called but was not available. This was commonly seen alongside high workload, when the obstetric team was already occupied providing care to other women. Repeatedly, the escalation attempt ended there, leading to a delay in medical review until the registrar was available. There was also a consistent theme of not informing the consultant on call when multiple obstetric reviews were required simultaneously.

There is variable national obstetric staffing depending on the unit workload, ranging from single registrar only to residential consultant on call, with a national standard that the on-call consultant must be available to attend within 30 minutes outside of routine hours.[32] Previous work has shown no change in adverse outcomes out of hours with the introduction of routine 24 hour consultant cover.[36]

However, it needs to be highlighted that current consultant on call rotas often involve elective work the next day. More frequent interruptions at night to help the 'shop-floor' team manage routine workload rather than an emergency would require changes to working patterns at a national level and could have further detrimental effects on consultant burnout.[32,35]

Fundamentally the role of the consultant is to provide leadership, overall situational awareness and clinical expertise.[37] Without being informed of the unit pressures in a timely manner, they are unable to maintain the helicopter view and make a decision on whether they need to attend in person to help with the obstetric workload.

> "At 02.00 the midwife documented that she was waiting [for] registrar review. It is not clear from the documentation or supporting statements when this review was requested or if this review was outstanding from the previous request for a registrar review. At 02.20 the documentation suggests that the registrar was busy in another room and the need for an urgent review is documented at 02.30. There were some changes in the fetal heart pattern during labour which required senior obstetric review… this was a missed opportunity to inform the consultant on call."

In this example, it is unclear why there was acceptance of waiting for the registrar, despite correctly identifying suspected fetal wellbeing concerns and need for urgent intervention. As discussed previously, gradual assertiveness communication tools could have clarified the urgency of the situation and helped the team to maintain situational awareness of the unit and prioritise staff. Clear communication back from the registrar on their workload and a helicopter overview of whole-unit activity from the coordinator is essential to ensure that an early 'jump call' for further help is made.

> "The registrar was unable to review Patient X in a timely manner [as they were] in theatre performing a caesarean section. The CTG required a review as it was showing abnormal features. The unit was busy and the registrar was going to be unavailable whilst he was in theatre. The consultant was not informed."

Instead of preparing a second theatre and phoning the consultant, the team in the above scenario waited for the registrar to come out of theatre. There may have been a loss of situational awareness over the length of time spent in theatre and a lack of leadership from the registrar in initiating an alternative course of action. The result was a prolonged delay between initially identifying suspected fetal compromise and expediting birth.

Workload and workforce challenges

Key learning points
If an urgent medical review is needed and the on-site obstetric team is unable to deliver care in the required time frame, the consultant must be informed.

Things you can do
Be confident in your clinical assessment, regardless of role or grade. If you feel that the woman needs a senior review, you have a professional duty of care to escalate these concerns. Conservative measures can be implemented while awaiting a definitive management plan (e.g. stopping oxytocin, turning to left lateral).

> **Workload and workforce challenges** (*continued*)
>
> *Things your unit can do*
>
> The consultant obstetrician and midwifery manager on call must be informed and asked to attend when the unit is identified as being at risk owing to high activity and/or acuity of workload.
>
> Ensure that staff know they are expected and encouraged to escalate to midwifery managers and obstetric consultants in an emergency 'jump step' if the coordinator and/or registrar are unavailable.[37] A clear list of names and phone numbers of who to call makes the senior team accessible to staff when they are needed.

Theme 3 – Communication

Across the maternity multidisciplinary team, transfer of patient information and clinical responsibility occurs constantly. Unfortunately, this provides multiple opportunities for important information to be missed and can result in de-escalation due to communication breakdown.

> *"Effective communication is key to all clinical care, particularly in the maternity services, where there may be multiple handovers of care. Communication is effective only if the relevant information is actually made available to, and understood by, those who need to act on it."*
>
> The King's Fund, *Safe Births: Everybody's Business* (2008)[38]

3.1 Handover

Handover was defined by the former National Patient Safety Agency as 'the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis.'[39] Effective handover is essential in facilitating the sharing of relevant, high-quality information in a shift-work-based environment.

Handover between individuals

There were many examples of appropriate decision making to expedite births that were then followed by delays, probably because the sense of urgency was lost during the transfer of information.

> *"Patient X had an abnormal CTG in triage, which was discontinued during a deceleration to allow Patient X to go to the toilet… when Midwife B took over care from Midwife A [to transfer the patient to theatre], she was unaware that there were previous CTG concerns and therefore did not recommence the CTG."*

In this example, a midwife from another clinical area was asked to take over the care of a woman with an abnormal CTG and transfer her for an emergency caesarean section. The suspected fetal compromise was identified and escalated well in triage, but the midwife did not recommence the previously abnormal CTG. A handover of care between midwives

then occurred at a critical point when this information was lost and not communicated immediately with the wider multidisciplinary team.

Formal handover between teams

Shift changes are a high-risk period, when continuity of individual patient care needs to be maintained to a high standard while ensuring overall safety for the unit by a new multidisciplinary team.[40] Accurate, succinct information needs to be handed over to the next team, which is of little benefit unless it is understood and acted upon appropriately.

There is evidence that a multidisciplinary handover improves communication and reduces errors, yet this is not universally implemented in maternity care.[22] Potential barriers to this include different shift times for different members of the multidisciplinary team, lack of space and lack of leadership for organisational change.[41]

Non-essential interruptions, distractions and lack of systematic communication tools are examples of ways ineffective handover can prevent the concerns escalated by one shift from being acted upon by their colleagues.[39,41]

> "The level of urgency communicated in the handover did not place the needs of this case in front of the process of the handover and the ward round of other cases needing medical review… The net effect of the handover is that this case was not reviewed until the emergency event."

In this vignette, a communication breakdown led to a woman not being correctly prioritised for an urgent review after the shift change. Neither the incoming midwife receiving a 1:1 handover nor the obstetric team receiving the main handover were aware of the need for an urgent examination and review at the start of the shift. The concern and escalation commenced by the night team was lost at the point of staff changeover.

Handover

Key learning points
Loss of escalation momentum can occur owing to incomplete transfer of information between staff. A high-quality handover is essential for continuity of care and for maintaining situational awareness of the unit as a whole.

Things you can do
There must be clear ownership of responsibility between those giving and receiving the handover to record accurate information. Interruptions should be kept to a minimum and structured communication tools used to effectively transfer large volumes of information.[40]

Things your unit can do
The consultant obstetrician and midwifery manager on call must be informed and asked to attend when the unit is identified as being at risk owing to high activity and/or acuity of workload.

Handover (*continued*)

Things your unit can do (continued)

A structured multidisciplinary handover should be in place in all units to improve communication and team working and to avoid missed information.[22]

3.2 Emergency communication protocols

The step between correctly identifying the need for emergency escalation and the right help arriving relies on a robust and clear communication protocol. Lack of familiarity with this protocol was noted as a factor at literature review and in this analysis.

All units have a local emergency protocol to rapidly alert multidisciplinary team members to the location and nature of an emergency event. The emergency alarm should be activated in such an event to alert staff nearby to provide immediate help. If a full multidisciplinary protocol needs to be initiated, such as neonatal resuscitation, then the standardised emergency number should be used to contact switchboard. This is 2222 in all NHS trusts in England and Wales, and it is also widely used across most of the rest of the UK.[42]

Some reports highlighted instances where the wrong method was used when attempting to escalate for help, at the initiation level through to confusion at switchboard.

> "When Midwife A recognised that the fetal heart rate was slow in recovering to the baseline following a deceleration… they made the decision to call for assistance. It appears that they used the patient call bell rather than the emergency buzzer."

In this example, the patient call bell was used instead of the emergency buzzer during a prolonged deceleration. In a non-urgent situation, the patient call bell can be used to alert a colleague to attend, but the response time can be variable and is dependent on staff being free to attend. It was not explored in the local report whether this was a human error due to stress and panic, or whether there was a system error that contributed to confusion, such as a lack of appropriate staff induction to the unit.

> "ANNP [advanced neonatal nurse practitioner] was called prior to the birth in view of the bradycardia… Crash call put out for neonatal team at 1 minute of age, however obstetric emergency call put out rather than neonatal emergency call. Further crash call for neonatal team put out at 5 minutes of age. Neonatal registrar arrived at 15 minutes of age."

Here, further neonatal help was required urgently and an emergency call was requested. The message got lost at some point during the call to switchboard, resulting in the wrong emergency call cascade being activated and delaying advanced neonatal care.

Emergency communication protocols

Key learning points

Incorrect methods of emergency escalation delay urgent assistance. All staff must be familiar with the location of local emergency buzzers and with switchboard escalation protocols.

Things you can do

Clear communication asking for local emergency teams (e.g. 'obstetric emergency team') should be used when putting out emergency calls. When calling for help, give a clear instruction and ensure that it is repeated back to you correctly before ending the call (closed loop communication).

Things your unit can do

All new or temporary agency staff must be made familiar with the unit's emergency call protocol. This should be a training priority at induction or at the start of an agency shift.

Incorporating real-time switchboard escalation is a useful focus for local training to ensure that staff are confident in putting out emergency calls.

Summary

Clinical escalation is a key part of effective intrapartum care. A need for improvement in escalation practice was noted in over one-third of the 2017 Each Baby Counts reports. Successful escalation is a process that requires a complex combination of clinical, behavioural and logistical steps. A simplified schematic for these is presented in Figure 13.[6]
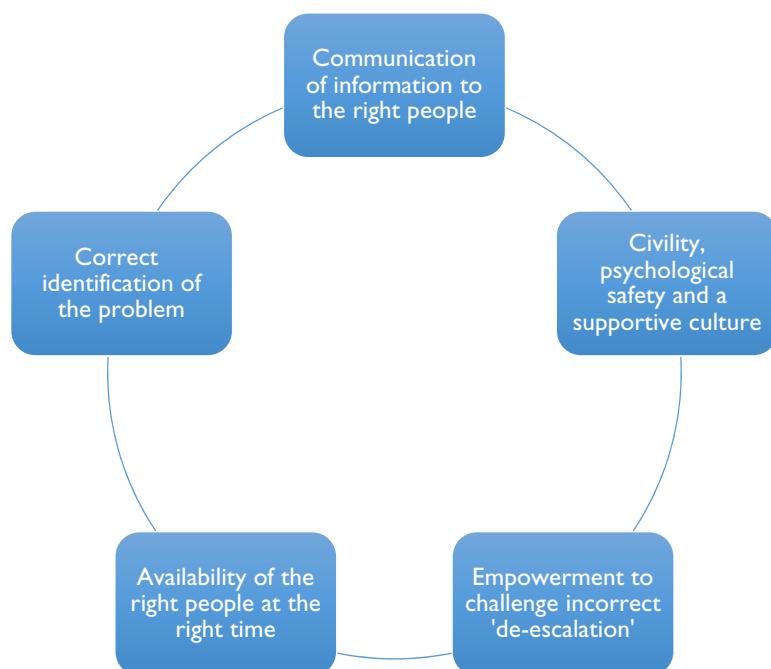

Figure 13 A schematic for successful clinical escalation

Cognitive errors and lack of appreciation of the whole clinical picture were common initial factors in why escalation was not initiated or clinical concerns were then incorrectly de-escalated. Difficulties in team dynamics and lack of psychological safety may reduce confidence to escalate or to challenge decisions by senior members and resulted in delayed care. Care reviews and investigations should attempt to understand the underpinning social and logistical conditions for these behaviours and actions, with emphasis on the need for systemic culture changes.[6]

We have raised awareness over the course of the whole Each Baby Counts project of the importance of human factors and non-technical skills, and these are reiterated in this report as key features of safe maternity care. However, staff training alone is unlikely to be effective without addressing the escalation system at unit level. It is imperative that we establish how best to operationalise a better understanding of these elements into unit-level interventions to improve clinical outcomes.[43]

High acuity was repeatedly identified as an important potential contributor to failures in response to escalation. Workload and staffing shortages have previously been highlighted in other national reports.[2,31,44] Further research is urgently required to establish current optimal safe obstetric 'shop-floor' staffing levels for the workload and pressures of high acuity. Infrastructure and staffing must be adequately resourced to make maternity care safer. The wider workforce challenges of burnout and attrition must be addressed at a national level to support and retain current staff.

Better multidisciplinary communication and an organisational change to limit handovers at high-risk 'checkpoints' in patient care are key learning points to improve safety at handover. The current process of escalating for help via buzzers and switchboard also leaves room for human error. These escalation process errors can be mitigated by ensuring that staff are provided with a proper induction to the unit and by using simulated emergency calls during multidisciplinary training, but wider changes and the introduction of modern communication systems are also needed.[45,46]

As advocates for women and their babies, all healthcare professionals involved in maternity care have a duty of care to take responsibility for their part in improving the escalation process. All staff should be professional and civil in our behaviour to all colleagues, assertive and receptive with decision challenges, and be leaders who encourage junior staff to call early for help

It is also important to acknowledge that healthcare staff are human; although it is necessary to confront unwelcome behaviours, such behaviours may also be warning signs that indicate a need to support maternity professionals working under unprecedented pressure.[35] It is also crucial for all clinicians working in today's NHS to also advocate for a national commitment to maternity resources and staffing, to ensure a service that has the workforce and infrastructure available to deliver timely, safe and optimal care.

Recommendations

Human factors and behaviour

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Each Baby Counts has demonstrated that human factors are recurrent themes that need to be urgently addressed at a systemic level. Research is required to establish how to operationalise learning from this report into practice with improved clinical outcomes.

Workload and workforce challenges

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Develop and fund an appropriate tool to record current workload and anticipate the obstetric care required for the population. This tool should complement the midwifery acuity tools currently implemented nationally. Research is required to identify safe obstetric staffing standards for the workload and acuity, to guide policy-level changes for the workforce.

Communication

All staff must be familiar with using their unit emergency communication and escalation protocols, in particular where emergency buzzers are located and how to activate a switchboard emergency call. This should be mandatory in departmental induction and included in simulated escalation calls during local multidisciplinary team training.

Key learning points

Cognitive biases

Escalation begins with correctly identifying an evolving pathology or a potentially critical situation. Mistakes evaluating and interpreting information may interfere with that assessment and result in missed opportunities to provide timely care.

Loss of situational awareness

Intrapartum care is a high-risk environment for loss of situational awareness. **Understanding when it is lost and how to minimise risk** is essential to maintaining safety.

Multidisciplinary team dynamics

Unbalanced skill sets within an unfamiliar team can result in **problems identifying the need for escalation and a lack of assertiveness** in executing the process.

Challenging a decision

All members of the multidisciplinary team must feel empowered to challenge a decision that they feel is incorrect. Where there is disagreement, a third party should be called to provide another opinion and fresh perspective.

Timely obstetric reviews

If an **urgent medical review** is needed and the on-site obstetric team is unable to deliver care in the required time frame, **the consultant must be informed**.

Handover

Loss of escalation momentum can occur owing to incomplete transfer of information between staff. A high-quality handover is essential for continuity of care and for maintaining situational awareness of the unit as a whole.

Emergency escalation protocols

Incorrect methods of emergency escalation delay urgent assistance. All staff must be familiar with the location of local emergency buzzers and switchboard escalation protocols.

Things you can do

Human factors and behaviour

Slow down with a 'diagnostic time-out' to consider alternative diagnoses before formulating a management plan, unless following an emergency protocol.

Try to anticipate lost situational awareness when under periods of stress, fatigue and high activity, and ask for help early, rather than when it is already lost.

The helicopter view must be maintained; if you hold this role and become engaged in a task, you should aim to delegate overview responsibility to the most senior colleague available.

Introductions for all team members at handover, by name and role, can improve team working. A team brief at the start of the shift to establish skill sets can help identify team members who may need extra support.

The use of graded assertiveness communication tools such as PACE (probe, alert, challenge, emergency) may assist in challenging a decision where there is a perceived steep hierarchy.

Workload and workforce challenges

Be confident in your clinical assessment, regardless of role or grade. If you feel that the woman needs a senior review, you have a professional duty of care to escalate these concerns. Conservative measures can be implemented while awaiting a definitive management plan (e.g. stopping oxytocin, turning to left lateral).

Communication

There must be clear ownership of responsibility between those giving and receiving the handover to record accurate information. Interruptions should be kept to a minimum and structured communication tools used to effectively transfer large volumes of information.

Clear communication asking for local emergency teams (e.g. 'obstetric emergency team') should be used when putting out emergency calls. When calling for help, give a clear instruction and ensure that it is repeated back to you correctly before ending the call (closed loop communication).

Things your unit can do

Human factors and behaviour

Embedded checklists (such as surgical checklists and ward round pro formas) can help override potential biases by providing structure and encouraging a 'step back'.

Use local case review meetings to reflect on decision making and utilise the Safety–II principles of promoting learning from when things go well as well as when things could be improved.

Breaks are vital to limit errors caused by stress, hunger and fatigue. If high workload prevents breaks being taken, this should be formally recorded via incident reporting.

Multidisciplinary human factors training, although not linked directly to improvements in outcomes, raises awareness of their impact and can standardise team working and communication. This is particularly important for new registrars and midwifery coordinators to enable them to develop the non-technical skills required for safe leadership. The RCOG Human Factors eLearning module is free and accessible to aid in local training.

Set times for regular safety huddles to maintain situational awareness and review activity.

Gaps in both medical and midwifery rotas will often be known in advance. Where possible, organisational changes to avoid imbalance of skill mix should be made. If this is not possible, further senior support should be easily accessible to the team on shift.

Poor behaviours and hierarchy may influence staff ability to make sound decisions and result in a reluctance to escalate. Staff need to be supported by senior managers to speak up about negative behaviour. Strong obstetric and midwifery leadership is required to address culture changes, with clear expectations of accountability, responsibility and unit values.

Workload and workforce challenges

The consultant obstetrician and midwifery manager on call must be informed and asked to attend when the unit is identified as being at risk owing to high activity and/or acuity of workload.

Ensure that staff know they are expected and encouraged to escalate to midwifery managers and obstetric consultants in an emergency 'jump step' if the coordinator or registrar are unavailable. A clear list of names and phone numbers of who to call makes the senior team accessible to staff when they are needed.

Communication

Avoid 1 : 1 handovers or breaks at high-risk stages, such as transferring to a different clinical area in the presence of serious maternal or fetal concerns. This will limit the potential for errors and loss of escalation momentum at critical points.

A structured multidisciplinary handover should be in place in all units to improve communication and team working and to avoid missed information.

All new or temporary agency staff must be made familiar with the unit's emergency call protocol. This should be a training priority at induction or at the start of an agency shift.

Incorporating real-time switchboard escalation is a useful focus for local training to ensure that staff are confident in putting out emergency calls.

References

1. Draper ES, Kurinczuk JJ, Kenyon S (editors) on behalf of MBRRACE-UK. *MBRRACE-UK 2017 Perinatal Confidential Enquiry: Term, Singleton, Intrapartum Stillbirth and Intrapartum-related Neonatal Death*. Leicester: Department of Health Sciences, University of Leicester; 2017 [www.npeu.ox.ac.uk/mbrrace-uk/reports/perinatal-mortality-and-morbidity-confidential-enquiries].

2. Royal College of Obstetricians and Gynaecologists. *Each Baby Counts: 2018 Progress Report*. London: RCOG; 2018 [www.rcog.org.uk/en/guidelines-research-services/audit-quality-improvement/each-baby-counts/reports-updates/each-baby-counts-2018-progress-report/].

3. Royal College of Obstetricians and Gynaecologists. *Each Baby Counts: 2015 Full Report*. London: RCOG; 2017 [www.rcog.org.uk/en/guidelines-research-services/audit-quality-improvement/each-baby-counts/ebc-2015-report/].

4. Sands stillbirth and neonatal death charity. The Parent Voice: Sands' Charlotte Bevan on parents and the Perinatal Mortality Review Tool (PMRT). *YouTube* video [www.npeu.ox.ac.uk/pmrt/parent-engagement-materials].

5. University of Bristol, PolicyBristol. *All Parents Should be Offered the Opportunity to Engage with the Review of Their Baby's Death*. Policy Report 37. October 2018 [www.bristol.ac.uk/policybristol/policy-briefings/engaging-parents-baby-loss].

6. Bergström J. *Escalation: Explorative Studies of High-risk Situations from the Theoretical Perspectives of Complexity and Joint Cognitive Systems*. Doctoral thesis. Lund: Lund University (Media-Tryck); 2012 [https://lup.lub.lu.se/search/publication/b3187a67-b8c0-4711-83b9-ba66a3b163ab].

7. NVivo qualitative data analysis software. Version 12. QSR International; 2018.

8. Brennan PA, Mitchell DA, Holmes S, Plint S, Parry D. Good people who try their best can have problems: recognition of human factors and how to minimise error. *Br J Oral Maxillofac Surg* 2016;54:3–7.

9. Dobler CC, Morrow AS, Kamath CC. Clinicians' cognitive biases: a potential barrier to implementation of evidence-based clinical practice. *BMJ Evid Based Med* 2019;24:137–140.

10. Stiegler MP, Tung A. Cognitive processes in anesthesiology decision making. *Anesthesiology* 2014;120:204–17 [https://anesthesiology.pubs.asahq.org/article.aspx?articleid=1918006].

11. Balogh EP, Miller BT, Ball JR, editors. *Improving Diagnosis in Health Care*. Washington DC: National Academies Press; 2015 [www.ncbi.nlm.nih.gov/books/NBK338596].

12. Henriksen K, Brady J. The pursuit of better diagnostic performance: a human factors perspective. *BMJ Qual Saf* 2013;22 Suppl 2:ii1–ii5 [www.ncbi.nlm.nih.gov/pmc/articles/PMC3786636].

13. Graber ML, Kissam S, Payne VL, Meyer AN, Sorensen A, Lenfestey N, et al. Cognitive interventions to reduce diagnostic error: a narrative review. *BMJ Qual Saf* 2012:21:535–57.

14. Croskerry P. The importance of cognitive errors in diagnosis and strategies to minimize them. *Acad Med* 2003;78:775–80.

15. Mitchell P, editor. *Safer Care—Human Factors in Healthcare: Trainer's Manual*. Cove: Swan & Horn; 2013 [www.researchgate.net/publication/275517632_Safer_Care_Human_ Factors_for_healthcare_Trainer's_Manual].

16. Cheung, E, Goodyear, G, Yoong, W. Medicolegal update on consent: 'The Montgomery Ruling'. *The Obstetrician & Gynaecologist* 2016;18:171– 2 [https://obgyn.onlinelibrary.wiley. com/doi/full/10.1111/tog.12303].

17. Croskerry P. (2013). Cognitive debiasing 2: impediments to and strategies for change. *BMJ Qual Saf* 2013;22(Suppl 2):ii65–ii72. [www.ncbi.nlm.nih.gov/pmc/articles/ PMC3786644/].

18. Hollnagel E. *Safety–I and Safety–II: The Past and Future of Safety Management*. Farnham: Ashgate Publishing; 2014.

19. Liberati EG, Tarrant C, Willars J, Draycott T, Winter C, Chew S, Dixon-Woods M. How to be a very safe maternity unit: an ethnographic study. *Soc Sci Med* 2019;223:64– 72 [www.ncbi.nlm.nih.gov/pmc/articles/PMC6391593/].

20. Jackson KS, Hayes K, Hinshaw K. The relevance of non-technical skills in obstetrics and gynaecology. *The Obstetrician & Gynaecologist* 2013;15:269–74 [https://obgyn.onlinelibrary. wiley.com/doi/full/10.1111/tog.12053].

21. Royal College of Obstetricians and Gynaecologists. *Human Factors*. eLearning. 2019.

22. NHS Improvement. *Implementing Handovers and Huddles: A Framework for Practice in Maternity Units*. London: NHS Improvement; 2019 [https://improvement.nhs.uk/ resources/implementing-huddles-and-handovers-framework-practice-maternity-units/].

23. National Maternity Review. *Better Births: Improving Outcomes of Maternity Services in England*. UK: NHS England; 2016 [www.england.nhs.uk/mat-transformation/ implementing-better-births/mat-review].

24. World Health Organization. *Safe Surgery Saves Lives : The Second Global Patient Safety Challenge*. Geneva: WHO; 2008 [www.who.int/patientsafety/safesurgery/en/].

25. Bobb MR, Ahmed A, Van Heukelom P, Tranter R, Harland KK, Firth BM, et al. Key high-efficiency practices of emergency department providers: a mixed-methods study. *Acad Emerg Med* 2018;25:795–803 [www.ncbi.nlm.nih.gov/pmc/articles/PMC6005715/].

26. Kirkup B. *The Report of the Morecambe Bay Investigation*. UK: The Stationery Office; 2015 [www.gov.uk/government/publications/morecambe-bay-investigation-report].

27. Green B, Oeppen RS, Smith DW, Brennan PA. Challenging hierarchy in healthcare teams – ways to flatten gradients to improve teamwork and patient care. *Br J Oral Maxillofac Surg* 2017;55:449–53.

28. Porath C, Pearson C. The price of incivility. *Harv Bus Rev* 2013;91:114–21,146.

29. Riskin A, Erez A, Foulk TA, Kugelman A, Gover A, Shoris I, et al. The impact of rudeness on medical team performance: a randomized trial. *Pediatrics* 2015;136:487–95 [https://pediatrics.aappublications.org/content/136/3/487.long].

30. Katz D, Blasius K, Isaak R, Lipps J, Kushelev M, Goldberg A, et al. Exposure to incivility hinders clinical performance in a simulated operative crisis. *BMJ Qual Saf* 2019;28:750–7.

31. Royal College of Obstetricians and Gynaecologists. *Obstetrics and Gynaecology Workforce Report 2017*. London: RCOG; 2017 [www.rcog.org.uk/workforce2017].

32. Royal College of Obstetricians and Gynaecologists. *Providing Quality Care for Women: a Framework for Maternity Service Standards*. London: RCOG; 2016 [www.rcog.org.uk/en/guidelines-research-services/guidelines/standards-for-maternity-care].

33. Royal College of Midwives. *New NMC report shows the need for more midwives says RCM*. Media release, 2 November 2017 [www.rcm.org.uk/media-releases/2017/november/new-nmc-report-shows-the-need-for-more-midwives-says-rcm/].

34. Cresswell K, Graham R, Wright A, Garelick T, Yoong W. Managing burnout in obstetrics and gynaecology. *The Obstetrician & Gynaecologist* 2019;21:7–9.

35. Bourne T, Shah H, Falconieri N, Timmerman D, Lees C, Wright A, et al. Burnout, well-being and defensive medical practice among obstetricians and gynaecologists in the UK: cross-sectional survey study. *BMJ Open* 2019;9:e030968 [www.ncbi.nlm.nih.gov/pmc/articles/PMC6887071/].

36. Knight HE, van der Meulen JH, Gurol-Urganci I, Smith GC, Kiran A, Thornton S, et al. Birth "out-of-hours": an evaluation of obstetric practice and outcome according to the presence of senior obstetricians on the labour ward. *PLoS Med* 2016;13:e1002000 [www.ncbi.nlm.nih.gov/pmc/articles/PMC4836717].

37. Royal College of Obstetricians and Gynaecologists. *Responsibility of Consultant On-call*. Good Practice No. 8. London: RCOG; 2009 [www.rcog.org.uk/en/guidelines-research-services/guidelines/good-practice-8].

38. The King's Fund. *Safe Births: Everybody's Business*. London: The King's Fund; 2018 [www.kingsfund.org.uk/publications/safe-births-everybodys-business].

39. National Patient Safety Agency. *Seven Steps to Patient Safety*. London: NPSA; 2004.

40. Royal College of Obstetricians and Gynaecologists. *Improving Patient Handover*. Good Practice No. 12. London: RCOG; 2010 [www.rcog.org.uk/en/guidelines-research-services/guidelines/good-practice-12].

41. British Medical Association. *Safe Handover: Safe Patients. Guidance on Clinical Handover for Clinicians and Managers*. London: BMA; 2004.

42. Resuscitation Council UK. *Standardisation of the 'Crash' Call Number – 2222*. Archive; 2004 [www.resus.org.uk/archive/archived-cpr-information/standardisation-of-the-crash-call-number-2222/].

43. Dixon-Woods M, Martin GP. Does quality improvement improve quality? *Future Hosp J* 2016;3:191–4 [www.rcpjournals.org/content/futurehosp/3/3/191].

44. The Kings Fund. *Staffing in Maternity Units: Getting the Right People in the Right Place at the Right Time*. London: The King's Fund; 2011 [www.kingsfund.org.uk/publications/staffing-maternity-units].

45. Department of Health and Social Care. *The Future of Healthcare: Our Vision for Digital, Data and Technology in Health and Care*. Policy paper. 2018 [www.gov.uk/government/publications/the-future-of-healthcare-our-vision-for-digital-data-and-technology-in-health-and-care].

46. Johnston M. Escalation of care in surgery: a systematic risk assessment to prevent avoidable harm in hospitalized patients. *Ann Surg* 2015;261:831–8.

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