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Each baby counts: National quality improvement programme to reduce intrapartum-related deaths and brain injuries in term babies

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A B S T R A C T

Although the most recent MBRRACE-UK (Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK) perinatal mortality report has shown a downward trend in perinatal mortality, the UK still lags behind the best-performing countries in Europe. The burden of perinatal morbidity and mortality is wide-reaching and devastating for the families and care-providers involved. The aim of the Each Baby Counts (EBC) project is to reduce intrapartum term stillbirths, early neonatal deaths, and severe brain injuries by 50% by 2020. Every maternity care provider has been asked to report their intrapartum term stillbirths, early neonatal deaths and severe brain injuries to the EBC project and provide a copy of the local review. The local reviews are assessed by two trained EBC reviewers in order to establish whether the reviews are of adequate quality. The EBC reviewers are asked independently to assess whether there is sufficient clinical information to make a clinical judgement about care, and whether different care could have had a positive impact on the outcome. The reviewers are asked to indicate in what areas care might be improved. The analysis of the local reports will be twofold. Initially quantitative analysis will provide us with information about the scale of the problem, the quality of the local review process into adverse events, and who is involved in such reviews. Qualitative analysis of the themes highlighted in the reviews will enable us to develop care bundles or other tools to drive local quality improvement.

1. Introduction

The most recent MBRRACE-UK (Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK) perinatal mortality report shows a downward trend in perinatal mortality; nevertheless, the UK [1] still lags behind the best-performing countries in Europe [2]. Experiencing a stillbirth, neonatal death, or severe brain injury in their newborn is associated with significant emotional, psychological, social, and economic costs to parents, their families, and friends [3]. Caring for parents and children through such events also has a significant impact upon the healthcare professionals involved. Claims concerning negligence in maternity care reported to the National Health Service Litigation Authority represent the highest value of claims and second highest frequency of claims [4]. The highest value claims are cerebral palsy (40.52%), cardiotocogram (CTG) interpretation (14.95%), and management of labour (13.6%) according to a report in 2013 [4]. The total value of all claims in this 10-year period was £3.1 billion. Of this amount, stillbirth claims amounted to just 0.5%. Current expenditure in maternity claims has risen to nearly £500 million per year [5], making clear the potential financial savings from these two groups alone. In addition to this financial cost is the unquantifiable social, psychological, and emotional cost to the families and staff involved.

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2. Epidemiology of intrapartum-related stillbirth and perinatal death

More than a million stillbirths are estimated to occur in labour each year [6]. Unfortunately, more than 130 countries do not have available data on intrapartum stillbirths [6]. In the UK, one in 12 stillbirths occurs intrapartum at any gestation [1], and the incidence is likely to be much higher in low- and middle-income countries [6]. There is considerable variation in overall stillbirth rates across high-income countries, ranging from 1.3 per 1000 births in Iceland to 8.8 per 1000 births in the Ukraine [2]. The UK sits in the middle of the rankings with a rate of 2.9 stillbirths per 1000 births [2]. Direct comparison between countries continues to be hindered by variation in data capture and reporting methods, including variable inclusion of termination of pregnancies or the use of lower gestations to define stillbirth; however, real epidemiological variation in rates is present with potential for reduction [2].

3. Identifying the causes of intrapartum events and formulating solutions

Maternity care in the UK has a strong association with risk management, as is evident though the achievements in reduction of maternal mortality associated with pregnancy through the national-level confidential enquiries dating back to 1952 [7]. The 1997 Confidential Enquiries into Stillbirths and Deaths in Infancy report included a chapter on intrapartum-related deaths of normally formed babies weighing >1.5 kg in 1994–1995. The report found that 660 (75.6%) of the 873 intrapartum fetal deaths were associated with suboptimal intrapartum care [8]. Errors in fetal heart rate monitoring, CTG interpretation, risk assessment, management of labour, and delivery were identified as the common themes in these cases [9].

In 2003, a retrospective audit of 10 regions in Europe examined perinatal deaths between 1993 and 1998. The English region consisted of seven former National Health Service (NHS) regions in England. In the English region, 53.5% of cases involved suboptimal care that had either possibly or likely contributed to the fatal outcome [9]. When this was compared to the nine other regions, England had the highest percentage of cases that involved suboptimal care [10].

Seven years later a regional confidential enquiry found that 21 out of 25 (84%) of the intrapartum fetal deaths could have been avoided if better care had been provided, it and identified CTG interpretation, risk assessment, management of labour, and delay in labour as causes [10]. Therefore, we know that there is a problem and that common themes have previously been identified but there has been very little change in these themes over the last 19 years. The Each Baby Counts (EBC) project has established an infrastructure that brings together the results of local investigations into these events to understand the bigger picture and share the lessons learned to improve future care.

4. Rationale for the Each Baby Counts (EBC) project

The overall aim of the EBC project is to achieve a 50% reduction in the incidents during term labour that lead to stillbirth, early neonatal death and severe brain injury in normally formed infants by 2020. However, the evidence base for effective actions to reduce stillbirths and neonatal deaths is still developing [11], and, due to the relative infrequency of these events, randomised controlled trials are unlikely to be feasible. By bringing together data from all local investigations of the care of babies who die or who have a severe brain injury, contemporary common themes may be identified that might be used to formulate recommendations for improvements in the provision of maternity care. This EBC goal will be achieved through the following four objectives:

1. To set up an ongoing UK-wide surveillance of term intrapartum stillbirth, early neonatal death, or severe brain injury in normally formed infants.
2. To undertake ongoing analysis of local governance/risk management investigations of these babies.
3. To use the results of this analysis to encourage local improvement of the quality of maternity services. Some of the issues identified will be national, but the focus of the project is on local quality improvement initiatives.
4. To use the data we collect to drive continuous improvement in services, measuring our stated outcomes over the period of our project and reporting trends.

5. Inclusion criteria

The EBC project focuses upon normally formed term babies including multiple pregnancies. Notifiable babies include those born at term (≥37 completed weeks of gestation) following labour that resulted in one of the following outcomes:

- Intrapartum stillbirth: when the baby was thought to be alive at the start of labour but was born with no signs of life.
- Early neonatal death: when the baby died within the first week of life (i.e. days 0–6) of any cause.
- Severe brain injury diagnosed in the first seven days of life, when the baby:
  - was diagnosed with grade III hypoxic ischaemic encephalopathy (HIE) or
  - was therapeutically cooled (active cooling only) or
  - had decreased central tone and was comatose and had seizures of any kind.

This is a pragmatic definition which is a composite of defined populations such as the TOBY (Total Body HYpothermia) trial [12] as well as data that we are able to capture from neonatal information systems. The definition is deliberately wide in order to maximise the learning that is possible.

In order to capture as many 'intrapartum' events as possible, the definition of labour includes:

- any labour diagnosed by a health professional, including the latent phase of labour at <4 cm cervical dilatation;
- when the woman called the unit to report any concerns of being in labour, for example (but not limited to), abdominal pains, contractions, or suspected ruptured membranes;
- when the baby was thought to be alive at induction of labour;
- when the baby was thought to be alive following suspected or confirmed pre-labour rupture of membranes.

Although intrapartum care at term is a narrow focus, we believe that such an emphasis will allow us to target the most preventable causes of perinatal death and injury, as these women are under medical and midwifery care when the events occur. Limiting the project to intrapartum events also reduces overlap with other work that is being undertaken aiming to reduce antenatal stillbirths.

By including women in the latent phase of labour the EBC project is adopting an inclusive approach and thus potentially capturing causes of death and severe injury that are not investigated systematically elsewhere. It was felt that the learning from these early labour events could be significant and this warrants

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