Evaluating the ‘Focus on Normal Birth and Reducing Caesarean Section Rates Rapid Improvement Programme’: a mixed method study in England

Abstract

Background

Caesarean section plays an important role in ensuring safety of mother and infant but rising rates are not accompanied by measurable improvements in maternal or neonatal mortality or morbidity. The ‘Focus on Normal Birth and Reducing Caesarean section Rates Rapid Improvement Programme’ was a facilitative initiative developed to promote opportunities for normal birth and reduce Caesarean section rates in England.

Objective

To evaluate the ‘Focus on Normal Birth and Reducing Caesarean section Rates’ programme, by assessment of: impact on Caesarean section rates, use of service improvements tools and participants’ perceptions of factors that sustain or hinder work within participating maternity units.

Design

A mixed methods approach included analysis of mode of birth data, web-based questionnaires and in-depth semi-structured telephone interviews.

Participants

Twenty Hospital Trusts in England (selected from 68 who applied) took part in the 'Focus on Normal Birth and Reducing Caesarean section Rates Rapid Improvement Programme' initiative. In each hospital Trust, the head of midwifery, an obstetrician, the relevant lead for organisational development, a supervisor of midwives, or a clinical midwife and a service user representative were invited to participate in the independent evaluation.

Methods

Collection and analysis of mode of birth data from twenty participating hospital Trusts, web-based questionnaires administered to key individuals in all twenty Trusts and in-depth semi-structured telephone interviews conducted with key individuals in a sample of six Trusts.

Results

There was a marginal decline of 0.5% (25.9% from 26.4%) in mean total Caesarean section rate in the period 1 January 2009 to 31 January 2010 compared to the baseline period (1 July to 31 December 2008). Reduced total Caesarean section rates were achieved in eight trusts, all with higher rates at the beginning of the initiative. Features associated with lower Caesarean section rates included a shared philosophy prioritising normal birth, clear communication across disciplines and strong leadership at a range of levels, including executive support and clinical leaders within each discipline.

Conclusions

It is important that the philosophy and organisational context of care are examined to identify potential barriers and facilitative factors.

Key words: Caesarean rates, service improvement programme, normal birth, mixed methods

Introduction

Caesarean section rates have risen rapidly over the last three decades causing concern globally. Considerable variation is apparent both *between* countries and across areas and providers *within* countries (Bragg et al., 2010; Declercq et al., 2011). There is no consensus on what Caesarean section rate is acceptable but in 1985 a World Health Organisation study group suggested no additional benefits were associated with rates higher than 10-15% (World Health Organization, 1985) and evidence from more recent studies continues to support this (e.g. Althabe et al., 2006; Gibbons et al., 2010). However, in 2007 several countries reported overall Caesarean section rates above 30% (e.g. Italy 39%, Portugal 35%, United States 32% and Switzerland 32%) and only one industrialised country, the Netherlands reported a rate within the recommended range (14%) (Declercq et al., 2011; Hollowell, 2011). In England since 1990 there has been a virtual doubling of the national Caesarean section rate to 24.6% in 2007/08 (Health and Social Care Information Centre, 2009) and this has been stable since then (Health and Social Care Information Centre, 2010, 2011, 2012, 2013).

Caesarean section plays an important role in ensuring the safety of mother and infant but these large increases in Caesarean section rates have not been accompanied by measurable improvements in either maternal or neonatal mortality or morbidity. There is a growing body of evidence to suggest that Caesarean section can result in increased risk of maternal mortality (Deneux-Tharaux et al., 2006) and maternal and infant morbidity (e.g. Blanchette, 2011; MacDorman et al., 2008; Villar et al., 2007). Studies have demonstrated that Caesarean birth can increase the risk of neonatal mortality

(Gray et al., 2007; MacDorman et al., 2008), admission to neonatal unit (Villar et al., 2007) respiratory distress syndrome and difficulty with bonding and breastfeeding (Churchill et al., 2006). Women may experience increased risk of infection (Liu et al., 2007; Villar et al., 2007), haemorrhage and thrombosis (Deneux-Tharaux et al., 2006) and complications in subsequent pregnancies, such as, placental problems and uterine rupture (Landon et al., 2004; Villar et al., 2006). Therefore it follows that halting this rapid increase in Caesarean section rates would reduce morbidity for women and their babies.

It has been postulated that higher prevalence of factors such as first pregnancy, older maternal age, previous Caesarean section, breech presentation and medical complications such as diabetes, hypertension and obesity may explain variation in Caesarean section rates. However, considerable variation remains even after controlling for such factors (Bragg et al., 2010; Hanley et al., 2010) leading to the conclusion that the most likely reason for variation in rates is difference in thresholds for intervention and variations in preferred models of care at institutional and practitioner levels (Klein et al., 2011; Knight and Sullivan, 2010).

Research has been conducted in a number of countries and systems of care to assess the effectiveness of initiatives aiming to influence professional behaviour to lower Caesarean section rates. These include: obstetric clinical interventions, such as external cephalic version for breech presentation and promoting vaginal birth after Caesarean section (Lagrew and Morgan, 1996; Walker et al., 2002); provision of continuous support in labour, either non-professional (Hodnett et al., 2011) or

professional (Janssen et al., 2007), midwifery led care in birth centres (Gottvall et al., 2011; Overgaard et al., 2011) and out-of-hospital settings (Sakala, 1993). Quality related initiatives have also been shown to be effective, such as: promoting the use of evidence-based clinical guidelines (Iglesias et al., 1991), mandatory second opinion (Althabe et al., 2004; Mawson, 2004) and audit with feedback (Main, 1999; Robson et al., 1996). Chaillet & Dumont (2007) conducted a systematic review and concluded that clinical practice can be improved and Caesarean section rates can safely be reduced using multifaceted strategies based on audit and feedback and that identification of barriers to change is a key aspect of success. A systematic review by Caitling-Paul *et al* (2011) assessed the effectiveness of a range of non-clinical interventions with potential to increase uptake and success of vaginal birth after Caesarean section and found that guidelines are influential, especially when adapted locally, and that feedback to obstetricians, use of opinion leaders and individualised information given to women are also effective. Local ownership of the desire to reduce Caesarean section rates was identified as a key factor.

In the 1990s a Working Group in Ontario examined practices at four hospitals with low Caesarean section rates to discover how these rates were maintained (Caesarean Section Working Group et al., 2000). Important factors identified included: cultural aspects such as pride in low rates, a culture of birth as a normal physiological process, the way teams worked together and strong team leadership and commitment to evidence-based practice and other quality improvement activities mentioned above. A key factor highlighted was the ability to manage change. The programme evaluated in this paper was influenced by the work in Ontario (Baldwin et al., 2010; Brodrick et al.,

2011). The NHS Institute for Innovation and Improvement issued a tender for an independent evaluation.

The 'Focus on Normal Birth and Reducing Caesarean Section Rates Rapid Improvement Programme'

This programme was facilitated by a team comprising one obstetrician, two senior midwives and an improvement associate (Institute Team) who worked with maternity services teams in England to use a 'Toolkit' to self-assess the processes and behaviours in their service and to develop a shared vision to promote normal birth and reduce Caesarean section rates (NHS Institute for Innovation and Improvement, 2007). This programme that drew on theories of innovation and aimed to achieve rapid service improvement (Fraser, 2002) was part of the *Spread and Adopt Rapid Improvement Programme* that was implemented in July 2008 within NHS England, a health care system which is free at the point of use for all residents in England and is centrally funded through taxation. Further detail about the development of the initiative and the Toolkit has been reported previously (Baldwin et al., 2010; Baldwin et al., 2007). The aims of the 'Focus on Normal Birth and Reducing Caesarean Section Rates' programme were to: promote normal birth and reduce Caesarean section rates; consider how a culture in a maternity unit can impact on Caesarean section rates; encourage multi-disciplinary working and provide training in service improvement tools.

The programme was offered to twenty NHS trusts selected from 68 applications and comprised: the Toolkit and facilitation for multi-disciplinary teams. Local network events were also available to all maternity units. The Toolkit contained self-improvement pathways designed to be used in a workshop environment, one to encourage teams to consider the organisational characteristics of their Trust and three clinical pathways: keeping first pregnancy and labour normal; vaginal birth after Caesarean section (VBAC) and elective Caesarean section. It also contained a range of tools and measures to support service improvements identified by Trust teams (NHS Institute for Innovation and Improvement, 2007). The tools were designed to be non-prescriptive but to stimulate discussion within multidisciplinary workshops with the aim of developing a shared vision prior to action planning.

This paper evaluates the 'Focus on Normal Birth and Reducing Caesarean Section Rates' programme by exploring changes in Caesarean section rates, use of service improvements tools and how cultures and multidisciplinary working may have impacted on these within participating maternity units.

Methods

A mixed methods approach was used to evaluate and understand the impacts of this complex, multi-faceted initiative. This included collection and analysis of mode of birth data provided by twenty hospital Trusts who took part in the programme, web-based questionnaires administered to key individuals in all twenty Trusts and in-depth semi-

structured telephone interviews conducted with key individuals in a sample of six Trusts. Data were used together to understand different aspects of the initiative, the ways in which the components of the initiative had been used and perceptions of the effects of these activities within different Trusts. As Hammersley (2008) suggests it is important to understand the purposes of different accounts in mixed method research. In this study the aim was for the different methods to complement each other generating insights that together produce a broader and more illuminating picture (Brannen, 2005).

Data collection

Data were collected in March and April 2010. Mode of birth data were collected from participating trusts followed by concurrent administration of web-based questionnaire and semi-structured telephone interviews.

Mode of birth data were requested from the twenty Trusts taking part in the initiative, including: total number of births, number of planned/elective Caesarean births and number of emergency Caesarean births each month during the study period (1st July 2008 to 31st January 2010). For each Trust mean rates, standard deviation and median values were calculated for three different time periods. The first time period (from 1st July 2008 to 31st December 2008) was selected as the baseline period against which the two other time periods (1 January 2009 to 30 June 2009 and 1 July 2009 to 31 January 2010) could be compared.

A web-based questionnaire was developed to collect information and views about each aspect of the programme. This was piloted with a small sample of people with

backgrounds similar to study participants who were not involved in the study and some minor modifications were made as a result of this. The final web-based questionnaire was administered to four key individuals in each trust: the head of midwifery, an obstetrician, the relevant lead for organisational development and a supervisor of midwives or a clinical midwife. The sampling frame was purposive in nature and for healthcare professionals, focused on individuals considered to have had responsibility for, or significant contact with, the initiative. Identification of potential participants was informed by contact lists provided by the rapid improvement programme team and by consultation with senior staff within Trusts. A slightly modified version of the questionnaire was also sent to a service user representative in each Trust. Two reminders were sent if no response was received.

Semi-structured telephone interviews were conducted with five key individuals – the head of midwifery, lead clinician, organisational development lead, clinical midwife or supervisor of midwives and a service user - in each of six Trusts. Trusts were purposively selected to provide a range of different geographical locations, sizes of maternity unit and baseline Caesarean section rates. Semi-structured interview schedules were used to explore respondents' experiences of specific activities and how each element of the initiative had contributed to this work. Interviews were conducted by all authors and were taped and fully transcribed.

Analysis

Caesarean section rates were compared to the baseline for the six month periods: 1 January 2009 to 30 June 2009 and 1 July 2009 to 31 January 2010 and for the whole

year (1 January 2009 to 31 January 2010). The Trusts were also grouped into those with increased Caesarean section rates and those achieving a reduction in rates over the periods. The means and rates of change in these means were calculated for each type of Caesarean section.

Analysis of **questionnaire data** included summary statistics for closed response questions and simple content analysis to identify themes in responses to open questions (Robson, 2011).

Interview data were analysed through initial familiarisation by reading and re-reading interview transcripts, followed by thematic analysis. Data were coded using NVivo software and organised into themes. Some themes were directly related to the questions asked of participants, such as: thoughts and perceptions about the different components of the initiative, who was involved in the initiative and the extent to which participants felt multidisciplinary working was achieved. Other themes emerging from the data included: organisational culture, perceived facilitators and barriers to achieving normal birth and change management. Data within each theme were then scrutinised in detail and comparative analysis carried out to highlight similarities and differences across key concepts. Analysis was initially conducted by one researcher (JM) and findings discussed with other researchers (HS and FM). All authors are midwives with extensive research experience using a range of methodologies.

Ethical considerations

Ethics committee approval was not required for this service evaluation. Consent was obtained prior to commencing interviews. Participants were advised that data provided would be held in confidence. Participating trusts have not been identified but have been assigned a letter (e.g. Trust Q).

Results

Mode of birth data was obtained from all twenty Trusts; however, data from one Trust were excluded from the analysis because data provided were not of sufficient quality and were therefore unreliable. Mean total Caesarean section rate declined marginally by 0.5% (26.4% compared to 25.9%) from the baseline period (1 July to 31 December 2008) to the period 1 January 2009 to 31 January 2010. The biggest reduction was in the first 6 months (1 January 2009 to 30 June 2009) when the mean rate fell to 25.5%. In the second half of 2009 the mean rate rose to 26.1%. Reduced total Caesarean section rates were achieved in eight trusts and it is notable that these trusts had higher rates at the beginning of the initiative.

Fifty- four health care professionals (67.5%) and eleven service user representatives (55%) responded to web-based questionnaires. At least one health care professional responded from each of the twenty trusts; respondents' roles can be seen in Table 1. Thirty health care professionals had been involved at the time of the initial application; fifteen became involved at the start of the programme and a further five joined once the work was underway. Of the user representatives, one had encouraged her Trust to take

part in the initiative; five became involved at the time of application or when work had started; two were informed of the ongoing work and two had not been involved.

The six maternity units selected to take part in qualitative interviews ranged in size from 2700 to 10,200 births per year and baseline Caesarean section rates varied from 20% to 30%. Only one of these Trusts achieved a reduction in Caesarean section rate (by 1%) during the initiative. Between two and five representatives who had been involved in the initiative were available from each of the six trusts selected for this phase of the evaluation. These included: four heads of midwifery, one obstetrician, six leaders of the initiative, five clinical midwives and two user representatives.

Components of the initiative

The Toolkit

Responses to questionnaires suggested that all the tools in the Toolkit were used but to varying extents. Most commonly used tools included: self assessment (100%), self improvement action plans (72%) and improvement tools (such as case studies, scenarios and letter templates) (62%). Respondents who took part in semi-structured telephone interviews all said they found the Toolkit clear and easy to understand and use. They felt the Toolkit provided focus, practical application and a framework to tackle areas that might not otherwise have been addressed. Several said they thought it was good that the Toolkit was not dictatorial in nature but rather it enabled the team to decide '*where as an organisation you wanted to be*' (head of midwifery Trust Y). A comment made by a labour ward co-ordinator reiterated this:

'Definitely it's made us …evaluate where we're at and where we want to be. So it's been, a fairly heavily utilised document, the Toolkit, definitely' (labour ward co-ordinator: Trust M)

There were no negative comments about the Toolkit but one interviewee felt that it would benefit from *'something on leadership skills'* (consultant midwife: Trust Y).

Facilitation by the Institute Team

The Institute Team provided facilitation of meetings within trusts as well as support by telephone and/or email. The majority of healthcare professional respondents felt that this contact was helpful (90.5%) and only four respondents (9.5%) found this unhelpful. Institute Team members were used as a resource for ideas and finding ways forward, with some respondents feeling that the facilitation provided '*more direction*' and '*focus*'. Institute Team members were described as *'credible'* and *'grounded'* and it was felt they understood the challenges within the practice setting:

'…the support from the four members of the team;… all of them were very good, …..they know what they're talking about because they're clinicians,… it gives it more credibility'. (labour ward manager: trust Q)

Most questionnaire respondents wanted more support, such as extra workshops at Trust sites.

NHS Institute events

Seven meetings were held between September 2008 and June 2009 in central England to facilitate Trust teams to address the aims of the initiative. Thirty–two professionals who responded to the questionnaire had attended at least one event. The content of each event was considered relevant by 63% of respondents. Most Trusts tried to achieve attendance from a range of disciplines but in several instances mainly midwives and few, if any, obstetricians attended. Most interviewees felt the events were *'useful'* and *'relevant'* and valued the opportunity for networking with staff from other units to discuss experiences and benchmark against each other, although one respondent felt there was not sufficient time for networking.

Perceived impacts of the programme on women's experiences

The majority of questionnaire respondents (49 health care professionals and 9 user representatives) identified at least one positive impact of the initiative on women's experiences and no one identified any negative impacts. Many of the impacts identified in open questions within the questionnaire related directly to activities in the Toolkit, such as, promotion of normal birth by opening new midwife-led areas, improvements in the birth environment and providing women with information after Caesarean section to increase their chances of normal birth in a subsequent pregnancy.

Respondents also identified several aspects of improved communication as having potential to positively affect women's experiences. These included direct communication with women, for example, using newer forms of media to provide women with information during pregnancy was believed to increase women's confidence and ability to relax, and the availability of debriefing and providing a letter of explanation after a

Caesarean section to increase the chance of normal subsequent birth. Better communication between health professionals was also considered important, such as clearer handover of care between staff and improved daily and weekly multidisciplinary review of Caesarean sections. It is notable that the head of midwifery in the case study Trust with lowest Caesarean section rate emphasised the importance of good communication and involving all staff. In the following quote she explains one aspect of this that she felt was important – the use of a visual display as a means to involve all staff:

> *'…the staff are briefed for ten minutes a day on what's on the board, so therefore everybody hopefully is buying in to providing better care, knowing our results and what we should be pursuing to make our results even better. There's also a section on the board which is called Bright Ideas, and staff are expected to contribute to a bright idea.'* (Head of midwifery: Trust S)

A consultant obstetrician in the same trust explained how she felt discussing Caesarean births was helpful to examine clinical practice with potential to reduce Caesarean section rates:

> *' …we started looking at … some of the Caesarean sections, why are we doing them, discussing them in meetings, and … these Caesarean sections weren't necessarily indicated ...* (consultant obstetrician: Trust S)

Impact of the programme at the organisational level

Environment and Trust culture

The unique environment and culture of each Trust influenced the activities chosen to promote normality and reduce Caesarean section rates. Fifty-three questionnaire respondents indicated the extent to which the initiative helped them to understand their organisation and its culture in a range of ways. Responses can be seen in Graph 1. Notably, all respondents indicated that it had been *very helpful* or *of some help* to identify practices or behaviours they would like to change and most felt it had been helpful to question some of their current practices (96%), reflect on the culture of their unit (96%) and identify the strengths and weaknesses of their service (92%). Fewer respondents felt it had been helpful to achieve user involvement (73%) and learn from other Trust's experiences (75%).

Analysis of the narratives of interviewees from the case study sites provided more in-depth understanding and suggested that despite the different practical applications of the Toolkit across Trusts, several key characteristics appeared to be associated with lower Caesarean section rates (Figure 1). These included a shared vision and clear communication across disciplines, in particular, regular review of cases of Caesarean section. A key component of this clearly recognised and encouraged by the institute team as part of the initiative, was multidisciplinary team working.

Multidisciplinary team working

The need for teamwork across disciplines was clearly articulated by members of all case study Trusts but this was not always easy to achieve. Trusts with lower Caesarean section rates appeared to have achieved a greater degree of multidisciplinary team working, with a shared vision for maintaining normality and agreed ways of working

towards this. The shaded areas of Figure 1 highlight particular areas where multidisciplinary working was either considered to be working well or was a particular challenge. Notably, Trusts with higher rates tended to be experiencing more challenges in achieving good multidisciplinary working. A more detailed examination of the situation from the narratives of a range of individuals in two Trusts, one with a low Caesarean section rate (around 20%) and the other with a high rate (around 30%), provides contextual insights relating to some of the successes and challenges of achieving a shared philosophy and working as a multidisciplinary team (Figure 2 and Figure 3). These examples illustrate different approaches and challenges encountered whilst taking part in this initiative.

Leadership

Leadership was considered to be essential. Some respondents emphasised the need for executive support and attendance of senior people at meetings to encourage further engagement - 'top down' leadership. Analysis of data from case study Trusts suggested the situation was variable; in some Trusts the head of midwifery was supportive in a strategic role and was not involved in the operational implementation, in one Trust the head of midwifery had some operational engagement in the early stages of the work but over time, once a consultant midwife had been appointed, took a more strategic role:

> *'Initially I was probably the lead person … trying to, to get the ball rolling here with changing the organisation of the service. In … 2009, we had a consultant midwife who started to work here … with a remit for normal birth and …there was*

a transition where I handed over some of the lead role to the consultant midwife because I felt it, fit(ted) her remit better' (head of midwifery: Trust M)

The perceived absence of an individual leading the initiative, and/or lack of clarity over responsibilities of individuals within the team responsible were highlighted as barriers to progress. Some Trusts described difficulties when there was a change of head of midwifery or other key person during the initiative. Such changes whilst not insurmountable could lead to decreased motivation. However, leadership was not only perceived as top down but was also seen as important within professional groups at a range of levels. Clinical leaders within each discipline were described as significant motivators within their peer groups (e.g. labour ward lead midwives and lead obstetricians), and some (usually consultant midwives) worked across disciplines. User representatives also felt that professional leadership from midwifery managers, consultant obstetricians and consultant midwives was important.

Respondents felt there was a need to accord a higher priority to the Initiative publicly within the organisation and involve all stakeholders, seeking suggestions from all members of staff, including '*doubters*'. Crucial elements of success were considered to be maintenance of enthusiasm, achieving engagement and consensus, and supporting staff through a period of change. Factors facilitating this included: recognising the need for staff dedicated to the project with protected time and resources; the opportunity to share good practice and learn from experiences in other Trusts (both successes and

challenges); having the Institute team as a support; access to the toolkit and good quality, accessible data to measure progress.

Discussion

The ‘Focus on Normal Birth and Reducing Caesarean Section Rates’ programme was well-received and most respondents identified benefits for their organisation and for women’s care. The non-dictatorial, facilitative nature of the programme was appreciated for ease of use in a variety of different local contexts. All components of the programme were considered helpful: the Toolkit was considered to be clear, easy to understand and provided focus and practical application; the Institute Team was seen as credible and their facilitation was used as a resource for finding ways forward thus also providing direction and focus and the content of the NHS Institute events was considered relevant. However, within the timescale of this study there was little change in the mean total Caesarean section rate. A small change was noted within the first 6 month period that could be explained by Trusts working on some of the easy to achieve activities – ‘quick wins’ (such as changing the birth environment to ensure it is homely and the bed is not the main focus of the birthing room), and this was encouraged by the Institute Team to increase motivation within Trusts. Reduced total Caesarean section rates were achieved in eight trusts, mostly those with the highest rates. There are various possible interpretations of this finding, for example, static Caesarean section rates might be considered an improvement against a continuing upward trend. However in England, since 2005/06 rates have been stable (Health and Social Care Information Centre, 2009, 2010, 2011, 2012).

Many teams had introduced service improvements and had begun to attempt to change organisational culture – a challenging process that may take time to translate into the measurable outcome of reduced Caesarean section rates. Some respondents commented that this work had helped their organisations to reach a point at which service development could commence and this was, in itself, seen as beneficial. This evaluation took place at a relatively early stage in the change process and there is potential for further impact from a variety of activities at a later date, both as a result of components of the Toolkit and when further changes to organisational culture have occurred.

A shared philosophy prioritising normal birth and clear communication across disciplines were seen as key components of work to reduce Caesarean section rates. Strong leadership was also considered important at a range of levels, including top-down executive support and leaders to motivate change within each clinical group. The benefits of engaging opinion leaders to manage tensions, foster interest from stakeholders and maintain commitment has recently been highlighted in a review of the key characteristics of knowledge transfer and exchange more generally (Pentland et al., 2011). Opinion leaders can have social influence within peer groups by virtue of representativeness and credibility and or can be considered experts and influence through authority and status (Greenhalgh et al., 2004). In this study Trusts with the lowest Caesarean section rates appeared to have both kinds of leaders working towards a common goal of reduced rates.

As discussed by Pentland *et al* (2011) in relation to knowledge transfer, it is also likely that organisational capacity is important; that there may be specific prerequisites for creating action from knowledge, such as the need to ensure sufficient time, financial and human resources. A review by Greenhalgh *et al* (2004) highlights that structural and cultural contexts and features within organisations have been shown to influence the likelihood that an innovation will be adopted. This may, at least in part, explain the difference in Caesarean section rates across trusts both at the outset and following implementation of the programme. The flexible nature of this facilitative programme may have been advantageous in that aspects of the programme could be selected or not perhaps in line with organisational capacity. Whilst this was viewed positively by respondents in this study this flexibility could have meant that the more difficult to tackle aspects of the programme may not have been attempted by some trusts.

To date, no 'magic bullets' have been identified that achieve large reductions across a range of different contexts and settings. It is notable that a meta-analysis of studies investigating interventions aiming to reduce Caesarean section rates concluded that multifaceted strategies including physician education, audit and feedback and physician and public education and physician peer review were most effective (Chaillet and Dumont, 2007). In addition, it is possible that a greater reduction in caesarean section rates would be achieved if services could be reorganised to provide women at low obstetric risk with further choice of place of birth and more women decided not to birth in obstetric units. A large cohort study conducted in England found that women considered to be 'low risk' who planned to birth at home or in a midwifery unit (either freestanding or alongside an obstetric unit) were significantly less likely to have a caesarean section

than ‘low-risk’ women who planned to birth in an obstetric unit and there was no difference in adverse perinatal outcomes between the groups (Health and Social Care Information Centre, 2009; Hollowell, 2011). Many of the NHS Trusts that participated in this study did have freestanding or alongside midwifery units but some participants discussed the need to encourage further use of these. To change the balance of care across these services, for example to offer all ‘low risk’ women birth outside of obstetric units would require major organisational and cultural changes however, and to date there has been little investigation of aspects such as multidisciplinary working, leadership or culture and philosophy of care that were considered to be important by respondents in this study.

Limitations of this study include the difficulties in obtaining data from Trusts within a tight timescale. We found that methods used by Trusts to collate data varied considerably; in some sites, manual data collection was required and this meant there were variations in the quality of source data available to this evaluation. Time constraints required the different components of this evaluation to be carried out in parallel, when a sequential approach may have been beneficial. For example, it was necessary to use the baseline Caesarean section rates to select case study sites rather than selecting Trusts with reduced rates during the initiative. However, analysis of data from these sites highlight key components that appear to be important in relation to low Caesarean section rates and despite the differences in the context of maternity care between the two countries there is considerable similarity with the findings of the Ontario study (Caesarean Section Working Group et al., 2000). As this initiative was influenced by the Ontario work it

could be argued that this is not surprising, however, within a different country with different working practices this cannot be assumed.

Conclusions

It appears unlikely that any one particular quality assurance approach will achieve the required reductions in Caesarean section rates across the range of westernised maternity systems and settings. For organisations concerned about their Caesarean section rate, an analysis of the local situation should be carried out to identify local barriers and characteristics that need to be addressed. These may include robust performance data and aspects of organisational culture, such as a philosophy of care that is supportive of normal birth across different professional groups and leadership at a range of levels. There is a need for clarity at the outset on the programme's objectives, what it can provide and the demands of participation on Trusts. Programmes should include service improvements that offer 'quick wins' and more challenging goals of cultural and organisational change. Anticipated benefits should include some that can be quantified, with recording systems established at an early stage to enable regular, consistent and robust measurement. Trust project teams should be clearly identified and where possible continuity of teams should be maintained. Champions of the initiative should be identified within and across disciplinary groups and at a range of levels. All staff groups should be involved including junior midwives, community-based midwives and non-professionally trained staff. Senior managers and professional leaders should be explicit in their support of the initiative and anticipate and ensure resource requirements are met.

References

Althabe, F., Belizán, J.M., Villar, J., Alexander, S., Bergel, E., Ramos, S., Romero, M., Donner, A., Lindmark, G., Langer, A., Farnot, U., Cecatti, J.G., Carroli, G., Kestler, E., 2004. Mandatory second opinion to reduce rates of unnecessary caesarean sections in Latin America: a cluster randomised controlled trial. The Lancet 363, 1934-1940.

Althabe, F., Sosa, C., Belizán, J.M., Gibbons, L., Jacquerioz, F., Bergel, E., 2006. Cesarean Section Rates and Maternal and Neonatal Mortality in Low-, Medium-, and High-Income Countries: An Ecological Study. Birth 33, 270-277.

Baldwin, J., Brodrick, A., Cowley, S., Mason, N., 2010. An innovative toolkit to support normal birth. Journal of Midwifery and Women's Health 55, 270-272.

Baldwin, J., Brodrick, A., Mason, N., Cowley, S., 2007. Focus on normal birth and reducing caesarean section rates. MIDIRS Midwifery Digest 17, 279-282.

Blanchette, H., 2011. The rising cesarean delivery rate in America: what are the consequences? Obstetrics and gynecology 118, 687-690.

Bragg, F., Cromwell, D.A., Edozien, L.C., Gurol-Urganci, I., Mahmood, T.A., Templeton, A., van der Meulen, J.H., 2010. Variation in rates of caesarean section among English NHS trusts after accounting for maternal and clinical risk: cross sectional study. BMJ 341, c5065.

Brannen, J., 2005. Mixed methods research: a discussion paper. ESRC, London.

Brodrick, A., Mason, N., Baldwin, J., 2011. Using collaborative theories to reduce Caesarean section rates and improve maternal and infant wellbeing, in: Downe, S., Byrom, S., Simpson, L. (Eds.), Essential midwifery practice: Expertise, leadership and collaborative working. Blackwell, Oxford, pp. 195-220.

Caesarean Section Working Group, Biringer, A., Davies, B., Nimrod, C., Sternberg, C., Youens, W., 2000. Attaining and maintaining best practices in the use of caesarean section: an analysis of four hospitals. Ontario Women's Health Council, Ontario.

Catling-Paull, C., Johnston, R., Ryan, C., Foureur, M.J., Homer, C.S.E., 2011. Non-clinical interventions that increase the uptake and success of vaginal birth after caesarean section: a systematic review. Journal of Advanced Nursing 67, 1662-1676.

Chaillet, N., Dubé, E., Dugas, M., Francoeur, D., Dubé, J., Gagnon, S., Poitras, L., Dumont, A., 2007. Identifying barriers and facilitators towards implementing guidelines to reduce caesarean section rates in Quebec. Bulletin of the World Health Organization 85, 733-820.

Chaillet, N., Dumont, A., 2007. Evidence-Based Strategies for Reducing Cesarean Section Rates: A Meta-Analysis. Birth 34, 53-64.

Churchill, H., Savage, W., Francome, C., 2006. Caesarean birth in Britain. Middlesex University Press.

Declercq, E., Young, R., Cabral, H., Ecker, J., 2011. Is a rising cesarean delivery rate inevitable? Trends in industrialized countries, 1987 to 2007. Birth (Berkeley, Calif.) 38, 99-104.

Deneux-Tharaux, C., Carmona, E., Bouvier-Colle, M.-H., Bréart, G., 2006. Postpartum Maternal Mortality and Cesarean Delivery. Obstetrics & Gynecology 108, 541-548 510.1097/1001.AOG.0000233154.0000262729.0000233124.

Fraser, S.W., 2002. Accelerating the Spread of Good Practice. A Workbook for Health Care. Kingsham Press, Chichester, West Sussex.

Gibbons, L., Belizán, J., M, Lauer, J.A., Betrán, A.P., Merialdi, M., Althabe, F., 2010. The Global Numbers and Costs of Additionally Needed and Unnecessary Caesarean Sections Performed per Year: Overuse as a Barrier to Universal Coverage. World Health Report. Background Paper, No 30 World Health Organization, Geneva.

Gottvall, K., Waldenstrom, U., Tingstig, C., Grunewald, C., 2011. In-Hospital Birth Center with the Same Medical Guidelines as Standard Care: A Comparative Study of Obstetric Interventions and Outcomes. Birth-Issues in Perinatal Care 38, 120-128.

Gray, R., Quigley, M.A., Hockley, C., Kurinczuk, J.J., Goldacre, M., Brocklehurst, P., 2007. Caesarean delivery and risk of stillbirth in subsequent pregnancy: a retrospective cohort study in an English population BJOG 114, 264-270.

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., Kyriakidou, O., 2004. Diffusion of Innovations in Service Organizations: Systematic Review and Recommendations. Milbank Quarterly 82, 581-629.

Hammersley, M., 2008. troubles with triangulation, in: Bergman, M.M. (Ed.), Advances in mixed method research. Sage, London, pp. 22-36.

Hanley, G.E., Janssen, P.A., Greyson, D., 2010. Regional variation in the cesarean delivery and assisted vaginal delivery rates. Obstetrics and gynecology 115, 1201-1208. Health and Social Care Information Centre, 2009. NHS maternity statistics, England 2007-08. Department of Health.

Health and Social Care Information Centre, 2010. NHS maternity statistics, England: 2009-10. Department of Health, London.

Health and Social Care Information Centre, 2011. NHS Maternity Statistics, England: 2010-11. Department of Health, London.

Health and Social Care Information Centre, 2012. NHS Maternity Statistics - England, 2011-12. Department of Health, London.

Health and Social Care Information Centre, 2013. NHS Maternity Statistics, England: 2012-13. Department of Health, London.

Hodnett, E., Gates, S., Hofmeyr, G., Sakala, C., Weston, J., 2011. Continuous support for women during childbirth. Cochrane Database of Systematic Reviews Issue 2. Art. No.: CD003766. DOI: 10.1002/14651858.CD003766.pub3.

Hollowell, J., 2011. Birthplace programme overview: background, component studies and summary of findings. Final report part 1. NIHR Service Delivery and Organisation Programme.

Iglesias, S., Burn, R., Saunders, L.D., 1991. Reducing the cesarean section rate in a rural community hospital. CMAJ 145, 1459–1464

Janssen, P.A., Ryan, E.M., Etches, D.J., Klein, M.C., Reime, B., 2007. Outcomes of planned hospital birth attended by midwives compared with physicians in British Columbia. Birth-Issues in Perinatal Care 34, 140-147.

Klein, M.C., Liston, R., Fraser, W.D., Baradaran, N., Hearps, S.J.C., Tomkinson, J., Kaczorowski, J., Brant, R., The Maternity Care Res, G., 2011. Attitudes of the New Generation of Canadian Obstetricians: How Do They Differ from Their Predecessors? Birth-Issues in Perinatal Care 38, 129-139.

Knight, M., Sullivan, E.A., 2010. Variation in caesarean delivery rates. BMJ 341, c5255.
Lagrew, D.C., Morgan, M.A., 1996. Decreasing the cesarean section rate in a private hospital: Success without mandated clinical changes. American journal of obstetrics and gynecology 174, 184-191.

Landon, M.B., Hauth, J.C., Leveno, K.J., Spong, C.Y., Leindecker, S., Varner, M.W., Moawad, A.H., Caritis, S.N., Harper, M., Wapner, R.J., Sorokin, Y., Miodovnik, M., Carpenter, M., Peaceman, A.M., O'Sullivan, M.J., Sibai, B., Langer, O., Thorp, J.M., Ramin, S.M., Mercer, B.M., Gabbe, S.G., 2004. Maternal and Perinatal Outcomes Associated with a Trial of Labor after Prior Cesarean Delivery. New England Journal of Medicine 351, 2581-2589.

Liu, S., Liston, R.M., Joseph, K.S., Heaman, M., Sauve, R., Kramer, M.S., System, f.t.M.H.S.G.o.t.C.P.S., 2007. Maternal mortality and severe morbidity associated with low-risk planned cesarean delivery versus planned vaginal delivery at term. Canadian Medical Association Journal 176, 455-460.

MacDorman, M.F., Declercq, E., Menacker, F., Malloy, M.H., 2008. Neonatal mortality for primary cesarean and vaginal births to low-risk women: application of an "intention-to-treat" model. Birth (Berkeley, Calif.) 35, 3-8.

Main, E.K., 1999. Reducing Cesarean Birth Rates With Data-driven Quality Improvement Activities. Pediatrics 103, 374-383.

Mawson, A.R., 2004. A mandatory second opinion policy reduces caesarean section rates in hospitals in Latin America. Evidence-Based Healthcare and Public health 8, 392-395.

NHS Institute for Innovation and Improvement, 2007. Pathways to success: a self-improvement toolkit: focus on normal birth and reducing caesarean section rates NHS Institute.

Overgaard, C., Møller, A.M., Fenger-Grøn, M., Knudsen, L.B., Sandall, J., 2011. Freestanding midwifery unit versus obstetric unit: a matched cohort study of outcomes in low-risk women. BMJ Open 1.

Pentland, D., Forsyth, K., Maciver, D., Walsh, M., Murray, R., Irvine, L., Sikora, S., 2011. Key characteristics of knowledge transfer and exchange in healthcare: integrative literature review. Journal of Advanced Nursing 67, 1408-1425.

Robson, C., 2011. Real world research: a resource for users of social research methods in applied settings, 3rd ed. Wiley, Chichester.

Robson, M.S., Scudamore, I.W., Walsh, S.M., 1996. Using the medical audit cycle to reduce cesarean section rates. American journal of obstetrics and gynecology 174, 199-205.

Sakala, C., 1993. Midwifery care and out-of-hospital birth settings: How do they reduce unnecessary cesarean section births? Social Science & Medicine 37, 1233-1250.

Villar, J., Carroli, G., Zavaleta, N., Donner, A., Wojdyla, D., Faundes, A., Velazco, A., Bataglia, V., Langer, A., Narvaez, A., Valladares, E., Shah, A., Campodonico, L., Romero, M., Reynoso, S., de Padua, K.S., Giordano, D., Kublickas, M., Acosta, A., World Health Organization Global Survey on, M., Perinatal Health Research, G., 2007. Maternal and neonatal individual risks and benefits associated with caesarean delivery: multicentre prospective study. BMJ (Clinical research ed.) 335, 1025.

Villar, J., Valladares, E., Wojdyla, D., Zavaleta, N., Carroli, G., Velazco, A., Shah, A., Campodónico, L., Bataglia, V., Faundes, A., Langer, A., Narváez, A., Donner, A., Romero, M., Reynoso, S., Simônia de Pádua, K., Giordano, D., Kublickas, M., Acosta, A., 2006. Caesarean delivery rates and pregnancy outcomes: the 2005 WHO global survey on maternal and perinatal health in Latin America. The Lancet 367, 1819-1829.

Walker, R., Turnbull, D., Wilkinson, C., 2002. Strategies to address global cesarean section rates: A review of the evidence. Birth-Issues in Perinatal Care 29, 28-39.
World Health Organization, 1985. Appropriate technology for birth. Lancet 2, 436-437.

	n	% of sample
Consultant midwife	5	9%
Hospital/community/integrated midwife	2	4%
Midwifery manager/matron/labour ward coordinator	18	33%
Head of Midwifery	11	20%
Practice development midwife	2	4%
Obstetrician	13	24%
Other	3	6%
Total	***54***	

Table 1: Roles of health care professionals

Figure 1: separate file

Graph 1: separate file

Figure 2: Multidisciplinary working: Trust S – Low Caesarean section rate (around 20%)

The lead obstetrician for labour ward and the clinical midwifery manager were keen to promote normal birth and reduce Caesarean section rates and worked with their respective peer groups to achieve this. They review all Caesarean sections and hold regular multidisciplinary meetings to discuss cases which appeared to increase awareness across the service and create and maintain a shared philosophy of care.

Midwifery manager: *'…everybody had a greater awareness; consultants, registrars, SHOs, ultrasonographers, student midwives, student nurses, anaesthetists even came [to the meetings]. … they all bring a different perspective, and they also take credibility back to their own peer group.'*

Consultant obstetrician *'…it feels, as the labour ward lead, that we're working better together, that it's not us and them.'*

Discussions were held in an open manner, and support provided for more junior staff. This resulted in a culture where challenge was the norm.

Consultant obstetrician*:* '*if somebody says that a woman needs a Caesarean section our senior midwives are prepared to say 'why?' and not just accept that because a doctor's saying it that it's necessarily the right thing. …and it just seems a more challenging culture, but at the end of the day, we're all working for the same thing.'*

The success of the work done to date did not lead to complacency; rather there was a continued focus on improvement.

Head of midwifery: '*I do think we've made good progress with it [multidisciplinary working], but I think it would be complacent if we sat here to say ... there isn't more work to do, because there's always more work to do … to keep developing and improving the service. You know, it's good today but tomorrow can be better...'*

Figure 3: Multidisciplinary working: Trust Y – High Caesarean section rate (around 30%)

The focus on multidisciplinary working within the initiative was one of the factors that encouraged this Trust to become involved in the first place. In the context of high Caesarean section rates, taking part in the initiative was seen as a way to address issues believed to be contributing to this.

Head of midwifery: *…I think it was the fact that it was multi-disciplinary, so it was about involving lots of different people, that's what really attracted us, and there was a toolkit to help us do that, cos we didn't know where to start. We knew we had a problem, we knew what the issues were, actually addressing them was the challenge for us.*

There appeared to be an underlying difference in philosophy – a lack of understanding between midwives and obstetricians and a difference of opinion about how labour should be managed.

Head of midwifery: *'...their [obstetricians] view was that perhaps midwives weren't using their professional judgement correctly, that they were leaving ladies too long without intervening, whereas our view was that maybe sometimes they were intervening too soon or they were medicalising the labour and therefore, …our intervention rates were higher. And so there started to become a slight differing of opinion about how this, the issues could be addressed.*

Clinical midwife*: I think that people are reluctant to change….Some of the consultants are very medicalised, and some of the midwives for that matter, quite tough to get on to side… Not everybody needs to be on CTGs and that they don't need to be on beds and stuff like that…*

Obstetricians did not attend the initial meetings related to the initiative and a separate meeting was arranged to fit in with their time commitments which was well attended. More recently there was a feeling that progress was being made to improve multidisciplinary working.

Consultant midwife*: I just feel that we've got different agendas. Although now we are meeting with our medical colleagues on a regular basis, which is a move in the right direction, so that's great.*