

Saving Babies' Lives

A care bundle for reducing stillbirth

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Preface

This document has been produced to provide detailed information for providers and commissioners of maternity care on 'Saving Babies' Lives'.

The elements of the care bundle will be refined over time in response to analysis and evaluation. This document will therefore be reissued in April 2017 in order to reflect further refinements.

Providers and commissioners should seek to roll out this care bundle, and are encouraged to be involved in the analysis and evaluation of its impact.

Foreword

'There has never been a safer time to have a baby in England. The stillbirth and neonatal mortality rate has fallen by a fifth in the last decade. However we can certainly do better and the NHS recently set out a national ambition to halve the rates of stillbirths by 2030, with a 20% reduction by 2020. 'Saving babies' Lives' will help maternity services meet this aspiration. It should not, however, be seen as an isolated intervention. In addition to implementation of the care bundle, I encourage provider Trusts to: participate fully in the Royal College of Obstetricians and Gynaecologists' 'Each Baby Counts' initiative; use the Department of Health and Sands perinatal mortality tool when it becomes available later this year; and adhere to the NICE guidance on diabetes in pregnancy, the importance of which was identified in the recent MBRRACE-UK confidential enquiry into term, antepartum stillbirths.

One of the striking observations of the recent MBRRACE perinatal confidential enquiry is just how frequently undetected poor fetal growth is a factor in stillbirth. It also highlighted the lack of progress in this area since the last national enquiry 15 years ago. There is unwarranted variation in care and outcomes that implementing current best practice will address. Evidence based medicine is the paragon but the search for perfection must not become the enemy of the good. The Saving Babies' Lives Care Bundle has therefore been launched on the basis of current best practice. Future iterations of the bundle will be developed as research is published and resources improve.'



***Dr Matthew Jolly, National Clinical Director for Maternity and Women's Health,
NHS England***

'It is vital that wherever possible we avoid families suffering the tragedy of stillbirth. The Royal College of Midwives welcomes this care bundle which will help professionals and women to work together to prevent avoidable deaths of babies. We also welcome the overall approach of identifying actions, working to overcome the challenges of implementing them and continuously evaluating outcomes and refining the actions as necessary. The Royal College of Midwives has been closely involved in the development of the bundle and looks forward to close involvement in its implementation.'



Professor Cathy Warwick CBE, Chief Executive, Royal College of Midwives

'Last November, the Secretary of State for Health announced a new ambition to reduce the rate of stillbirths by 50% in England by 2030. The publication of this document is therefore timely. The British Maternal and Fetal Medicine Society fully supports the initiatives detailed in this report which are both appropriate and achievable. These proposals will however, have significant implications for pregnant women, particularly with regard to the number of ultrasound scans they are offered. Whilst we look forward to implementing the key messages in this care-bundle, and hope they will translate into a reduction in numbers of this all too common and tragic event, it will be vital to audit the impact of these recommendations to assess their effectiveness.'



Tim Overton, President, British Maternal and Fetal Medicine Society

'The Saving Babies' Lives Care Bundle is a bold step towards introducing many evidence-based and policy recommendations in maternity care towards the goal of reducing stillbirth in the UK.

The impact of stillbirth on parents and professionals is well known to anyone faced with such a sad event. The RCOG are committed to working collaboratively with all partners to reduce these tragic events. We welcome this report which tackles key areas where we believe a difference can be made. Smoking cessation is the key modifiable risk factor and is rightly a key part of the recommendations. The RCOG guideline on the detection of intrauterine growth restriction forms the basis of the growth restriction element of the bundle and the refocussing of attention on reduced fetal movements is both timely and welcomed.

A great step towards implementing "airline levels of safety" is a common-sense and well-considered element of the fetal monitoring section. The RCOG believe that it is a reasonable expectations of women in labour that no healthcare professional should provide intrapartum care on either a labour ward, midwifery led unit or at home without up to date training and competence in fetal monitoring. Achieving training and competence in fetal monitoring demonstrates a real commitment to improving the safety of our maternity systems.

The translation of research into clinical practice, using quality improvement methods, such as this care bundle, will be key to improve safety for the women we care for. As with any quality improvement programme, the measurement of the key outcomes will be critical.

The RCOG 'Each Baby Counts' project collects data on all intrapartum term stillbirths and will be one of many ways to monitor the effects of all the elements of the care bundle. The RCOG will also lead the HQIP-funded National Maternity and Perinatal Audit and therefore will be able to provide data on any factors that may help to improve the clinical outcome for mothers and their new born.

This care bundle clearly demonstrates what can be achieved through collaborative working and the RCOG believe that this will be a significant step forward in achieving a substantial reduction in the UK stillbirth rate.'



Royal College of
Obstetricians &
Gynaecologists

Dr David Richmond, President, Royal College of Obstetricians and Gynaecologists

'The recent MBRRACE-UK confidential enquiry into term, antepartum stillbirths highlighted four key areas for action to prevent antepartum stillbirth: screening for gestational diabetes, monitoring fetal growth, managing reduced fetal movements and improving local learning from high quality review of deaths. Twenty years ago the CESDI confidential enquiry on the same topic highlighted the same areas but with limited impact. So how are we going to do better this time? The difference between now and then is that we have national policy engagement with the whole issue of perinatal and maternal mortality and morbidity together with a series of practical actions being set in place to address our continuing high mortality rates; the care bundle provides four elements of this jigsaw puzzle of activities. The bundle encompasses two of the MBRRACE-UK recommendations alongside the key public health action to reduce smoking during pregnancy and the promotion of effective fetal monitoring during labour. However, as the bundle is implemented care providers must also ensure the NICE guideline for gestational diabetes is fully implemented together with use of the DH-Sands standardised tool for perinatal review once it becomes available.

Within the care bundle it is acknowledged that not all aspects are backed by strong evidence of their effectiveness. Importantly the implementation phase of the care bundle provides the opportunity to collect that evidence. In addition to the evaluation of the process of implementation it is vital that well designed trials are also conducted otherwise once these interventions are in place universally the opportunity to collect that evidence will have passed. For example, the implementation phase provides the opportunity to incorporate a step wedge trial design for those interventions without randomised controlled trial evidence. Only then will we be sure that we are actually implementing clinically effective interventions.'



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

'Since it was founded in 1978, Sands has supported tens of thousands of parents whose babies have died before or shortly after birth. We have seen first-hand, every day since then, the devastating impact of these deaths, via our helpline, our 100 support groups across the UK and, more recently, through shared experiences on our social networking sites. But parents have used these platforms for peer-to-peer support not just to grieve but also to raise funds for research and activate for change. They do not want the death of their child to be in vain and they have worked hard in their memories to improve bereavement services at their local hospitals and to raise awareness nationally of the UK's unacceptably high stillbirth rate.

Many parents believe the death of their baby was not an inevitable tragedy and that opportunities to prevent their baby's death were missed. Research into quality of care, such as the latest MBRRACE-UK confidential enquiry into antepartum, term singleton stillbirths, supports that belief, telling us that 6 out of 10 deaths might have been prevented if guidelines had been implemented. The elements in this care bundle pick up on those clear messages, as well as public health information about risks associated with smoking in pregnancy (the leading modifiable risk factor for stillbirth) and the importance of up-to-date CTG training. We welcome the care bundle's focus and implementation in the names of the thousands of precious lives already lost, and in the belief that this bundle provides an opportunity for safer care to protect babies' lives in the future. We hope you do too.'



Charlotte Bevan, Senior Research and Prevention Officer, Sands, the stillbirth and neonatal death charity

Introduction

Evidence and experience tell us more must be done to tackle stillbirth in England. Saving Babies' Lives is a care bundle designed to support providers, commissioners and healthcare professionals take action to reduce stillbirths.

Maternity services in England have never been safer. Stillbirth rates fell to 4.7 per 1,000 total births in England in 2013¹. However, stillbirth rates in the United Kingdom continue to be among the highest of high income countries. The UK has a stillbirth rate more than double that of the best performing nation (Iceland (1.3), and an annual reduction rate (1.4) that compares unfavourably with other well performing nations (Finland, 2.4)² Furthermore, latest ONS data tells us that stillbirth rates have stayed at 4.7 per 1000 total births in England in 2014³. There is around 25 per cent variation in the stillbirth rate across the different English regions⁴.

In most areas of practice, how to achieve excellence is widely known and such care is being delivered by many providers. The MBRRACE report⁵ has demonstrated unwarranted variation in stillbirth rates across the country, despite controlling for deprivation and other factors. This means that all women are not getting the best possible care. It is this variance from best practice that saving Babies' Lives is designed to address.

Reducing stillbirth is a priority for the NHS:

- Reducing stillbirth is a [Mandate objective](#) from the government to NHS England
- It is in the [NHS England Business Plan 2015-16](#).
- Reducing deaths in babies and young children, specifically neonatal mortality and stillbirths is a key indicator in the [NHS Outcomes Framework](#).

In addition, the Secretary of State announced a national ambition to halve the rates of stillbirths, neonatal and maternal deaths and intrapartum brain injuries by 2030, with a 20% reduction by 2020. This announcement was followed by '[Spotlight on Maternity](#)' which sets out how this ambition can be achieved. The ambition is included in the [2016-17 Mandate](#).

The National Maternity Review, led by Baroness Julia Cumberlege, sets the strategy for improving maternity care and services over the next five years. The Review's report, [Better Births](#) was published in February 2016. It highlights a range of measures which can improve the safety of care for women and babies, and identifies this care bundle as good practice in reducing stillbirths.

¹ Office for National Statistics. Characteristics of birth 1, England and Wales, 2013. London: ONS, 2014. Available at: <http://www.ons.gov.uk/ons/rel/vsob1/characteristics-of-birth-1--england-and-wales/2013/index.html>

² Flenady V, Wojcieszek A, Middleton P et al. Stillbirths: recall to action in high-income countries. *Lancet* 2016; Published online January 18.

³ Office For National Statistics, Final birth characteristics workbook, 2014. London: ONS, 2015. Available at: <http://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/datasets/birthcharacteristicsinenglandandwales>

⁴ See 1.

⁵ MBRRACE-UK 2015 Perinatal Confidential Enquiry Term, singleton, normally-formed, antepartum stillbirth

What is the Saving Babies' Lives care bundle?

Saving Babies' Lives is designed to tackle stillbirth and early neonatal death. It brings together four elements of care that are recognised as evidence-based and/or best practice:

- 1. Reducing smoking in pregnancy**
- 2. Risk assessment and surveillance for fetal growth restriction**
- 3. Raising awareness of reduced fetal movement**
- 4. Effective fetal monitoring during labour**

These elements were identified as such by experts through a process of engagement and consensus building over a 12 month period since 2014. NHS England has engaged extensively with stakeholders in order to develop the elements of this care bundle and worked in partnership with Royal Colleges, professional societies, charities, health arms-length bodies and government (see Appendix A).

The evidence-base in relation to reducing stillbirths and neonatal deaths is still developing and, as such, the impact of implementing this care bundle and the elements within it must be analysed and evaluated so that it can be further developed and refined. Therefore, this first iteration of Saving Babies' Lives is being published to support providers and commissioners implementing it where they wish to do so, and to support its evaluation.

The care bundle approach is now a recognised and familiar way to bring about improvement in the NHS. Care bundles typically draw together a small number of focused interventions designed to effect improvement in a particular disease area, treatment or aspect of care. They exemplify known best practice in areas where current practice is unacceptably variable. When implemented as a package, evidence shows that greater benefits are achieved at a faster pace than if those improvements had been implemented individually⁶.

⁶The Necrotising Enterocolitis (NEC) care bundle Available at:
http://www.infantgrapevine.co.uk/pdf/inf_049_ime.pdf
<http://networks.pcc-cic.org.uk/nhs-networks/eoe-neonatal-odn/documents/nec-care-bundle-resources>

Element 1: Reducing smoking in pregnancy

Element description
Reducing smoking in pregnancy by carrying out Carbon Monoxide (CO) test at antenatal booking appointment to identify smokers (or those exposed to tobacco smoke) and referring to stop smoking service/specialist as appropriate
Intervention
Carbon monoxide (CO) testing of all pregnant women at antenatal booking appointment and referral, as appropriate, to a stop smoking service/specialist, based on an opt out system. Referral pathway must include feedback and follow up processes.

Process indicators	Outcome indicators
i. Recording of smoking status of each pregnant woman	i. Number/rates of women smoking at booking
ii. Recording of CO reading for each pregnant woman	ii. Number/rates of women smoking at time of delivery (SATOD)
iii. If this identifies exposure to smoke or a high CO reading, referral to stop smoking service or other action	

Rationale

There is strong evidence that reducing smoking in pregnancy reduces the likelihood of stillbirth⁷. It also impacts positively on many other smoking-related pregnancy complications such as premature birth, miscarriage, low birth-weight and Sudden Infant Death Syndrome (SIDS)⁸. Whether or not a woman smokes during her pregnancy has a far reaching impact on the health of the child throughout his or her life⁹.

⁷ Maternal smoking and the risk of still birth: systematic review and meta-analysis; Takawira C Marufu, Anand Ahankari, Tim Coleman and Sarah Lewis BMC Public Health 2015, 15:239 doi:10.1186/s12889-015-1552-5 Available at: <http://www.biomedcentral.com/1471-2458/15/239>

⁸ Royal College of Physicians. Passive smoking and children. A report by the Tobacco Advisory Group. London: RCP, 2010.

⁹ See 8.

This element is strongly evidence based and provides a practical approach to reducing smoking in pregnancy by following NICE guidance¹⁰. It requires electronic testing of all pregnant women for carbon monoxide (CO) exposure and referring those with a positive reading to smoking cessation services. We know adherence to the NICE guidance is variable throughout provider trusts.

This element impacts positively on the other care bundle elements. Reducing smoking in pregnancy will reduce instances of fetal growth restriction and intrapartum complications. This demonstrates the complementary and cumulative nature of the care bundle approach.

This element reflects the wider prevention agenda, impacting positively on long term outcomes for families and society. It will enhance midwives' role in promoting public health messages and interventions.

Implementation

Midwives must have the time and the tools to carry out the activities required by this element. They need adequate time at the first booking appointment to carry out the CO test and deliver key messages. CO monitors and relevant consumables must also be sustainably provided. Midwives must have up to date knowledge and skills training to maximise their potential to impact positively on pregnancy outcomes.

¹⁰ <https://www.nice.org.uk/guidance/ph26>

Element 2: Risk assessment and surveillance for fetal growth restriction

Element description
Risk assessment and surveillance of pregnancies for fetal growth restriction
Interventions
1. Use supplied algorithm to aid decision making on classification of risk, and corresponding surveillance of all pregnancies. (Some providers may wish instead to use the RCOG algorithm*)
2. For women at high risk of fetal growth restriction, fetal growth to be assessed using serial ultrasound scans as per algorithm (Appendix B). Estimated fetal weight derived from ultrasound measurements recorded on a chart**
3. For low risk women, fetal growth to be assessed using antenatal symphysis fundal height charts** by clinicians trained in their use. All staff must be competent in measuring fundal height with a tape measure, plotting measurements on charts, interpreting appropriately and referring when indicated.
4. Ongoing audit, reporting and publishing (on local dashboard or similar) of Small for Gestational Age (SGA) birth rate, antenatal detection rate, false positive rate and false negative rate.
5. Ongoing case-note audit of selected cases not detected antenatally, to identify learning and improve future detection

* The RCOG algorithm triages women with three or more minor risk factors into a serial scanning pathway

** Customised¹¹ or other established growth chart

¹¹ RCOG Green-Top Guideline 31: The Investigation and Management of the Small-for-Gestational-Age Fetus, Royal College of Obstetricians and Gynaecologists, 2013 www.rcog.org.uk/womens-health/investigation-and-management-small-gestational-age-fetus-green-top-31

Intervention	Process indicators	Outcome indicators
<p>1. Use supplied algorithm (or RCOG algorithm) to aid decision making on classification of risk, and corresponding screening and surveillance of all pregnancies</p>	<p>i. Risk stratification algorithm (either care bundle or RCOG) incorporated in unit protocol</p>	<p>i. All relevant staff trained in use of algorithm</p> <p>ii. Proportion of pregnancies appropriately screened and monitored according to risk</p>
<p>2. For women at high risk of fetal growth restriction, fetal growth will be assessed using serial ultrasound scans as per algorithm. Estimated fetal weight derived from ultrasound measurements recorded on a chart**</p>	<p>i. Use of estimated fetal weight charts implemented</p> <p>ii. Training programme on use of charts in place</p>	<p>i. Estimated fetal weight derived from ultrasound biometry and used to plot every growth scan</p> <p>ii. All staff competent in use of estimated fetal weight charts, and audited within Trusts e.g. through midwifery supervision/trust based training and competence records</p>
<p>3. For low risk women, fetal growth will be assessed using antenatal symphysis fundal height charts** by clinicians trained in their use. All staff must be competent in measuring symphysis fundal height with a tape measure, plotting measurements on charts, interpreting appropriately and referring when indicated</p>	<p>i. Use of symphysis fundal height charts implemented</p> <p>ii. Training programme in place on use of fundal height charts, interpretation and referral</p>	<p>i. Symphysis fundal height charts used in each pregnancy</p> <p>ii. All fundal height measurements plotted on chart</p> <p>iii. Audit of representative sample of maternity to identify that:</p> <ul style="list-style-type: none"> • charts are being used • charts are plotted correctly • staff in need of further training are identified • evidence of completion of re-training available
<p>4. Ongoing audit of Small for Gestational Age (SGA) birth rates, with reporting of antenatal detection rate, false positive rate and false negative rate on local dashboard or similar).</p>	<p>i. Completion of SGA detection audit cycle</p>	<p>i. Increase/decrease of antenatal detection rate of SGA babies at birth, including false positive and false negative rate</p> <p>ii. Rate of stillbirths with SGA with and without antenatal detection</p>
<p>5. Ongoing case-note audit of selected cases of SGA not detected antenatally to identify barriers</p>	<p>i. Appropriate process established for review of e.g. 10 or more cases each 6 months</p>	<p>i. Action plans based on missed case audit are implemented to drive improvement</p>

**Customised or other established growth chart

Rationale

There is strong evidence to suggest that fetal growth restriction (FGR) is the biggest risk factor for stillbirth¹². This was also the major factor identified in the recent MBRRACE report on stillbirths, which states that ‘about one in three term, normally formed, antepartum stillbirths are related to abnormalities of fetal growth’¹³.

Currently, the only way to manage growth restriction is to deliver the baby. Therefore, antenatal detection of growth restricted babies is vital and has been shown to reduce stillbirth risk significantly because it gives the option to consider timely delivery of the baby at risk. However, antenatal detection of small for gestational age (SGA) babies has been poor, varying greatly across trusts in England in those that calculate their rates. Most trusts do not calculate their detection rates and these are therefore unknown.

This element ensures that the risk of FGR has been assessed for all pregnancies. It defines the surveillance regime necessary for high and low risk pregnancies. It requires trusts to publish their antenatal detection rates of SGA babies, thereby encouraging benchmarking and improvement of performance. Lastly, it requires trusts to audit SGA cases not detected antenatally to identify the reasons why, learn from them and improve future detection. (Definitions of the terms FGR and SGA and how they are used in this document are in Appendix B)

Effective surveillance of all pregnancies is required throughout pregnancy and should reflect the level of FGR risk:

- For low risk pregnancies, standardised serial measurement of fundal height and plotting on symphysis fundal height (SFH) charts is the recommended method of surveillance for SGA, as per RCOG Green Top Guidelines¹⁴.
- For pregnancies at increased risk (for example due to past obstetric history or ongoing smoker at booking), RCOG Green Top Guideline¹⁵ recommends serial ultrasound assessment of fetal growth throughout the third trimester.

There is continued debate about the role of customisation of symphysis fundal height, estimated fetal weight and birthweight in screening for FGR. This care bundle does not stipulate whether providers should use customisation, although the benefits of training in the measurement of symphysis fundal height and the use of charts within the Growth Assessment Protocol (GAP) programme are acknowledged.

¹² Gardosi J, Madurasinghe V, Williams M, Malik A, Francis F. Maternal and fetal risk factors for stillbirth: population based study. *BMJ*:f108 <http://www.bmj.com/content/346/bmj.f108>

¹³ MBRRACE-UK 2015 Perinatal Confidential Enquiry Term, singleton, normally-formed, antepartum stillbirth

¹⁴ RCOG Green-Top Guideline 31: The Investigation and Management of the Small-for-Gestational- Age Fetus. Royal College of Obstetricians and Gynaecologists, 2013 www.rcog.org.uk/womens-health/investigation-and-management-small-gestational-age-fetus-green-top-31

¹⁵ See 12

Element requirements

1. Trusts must ensure that adherence to the algorithm and guidance is captured through an agreed data collection system/audit tool.
2. Trusts must ensure that a robust training programme and competency assessment is included in any screening for FGR used e.g. measurement of fundal height, use and interpretation of charts, ultrasound scanning for growth.
3. SFH charts can be customised for maternal size, ethnicity and parity. Trusts will decide which criteria they use, if any, to customise growth charts.
4. Trusts must ensure that data on SGA birth rates and antenatal detection rates, false positive and false negative rates are monitored on an ongoing basis following implementation of the element. There should be internal consistency within the trust on the use of customisation of estimated fetal weight derived from ultrasound charts and centile birthweight charts.

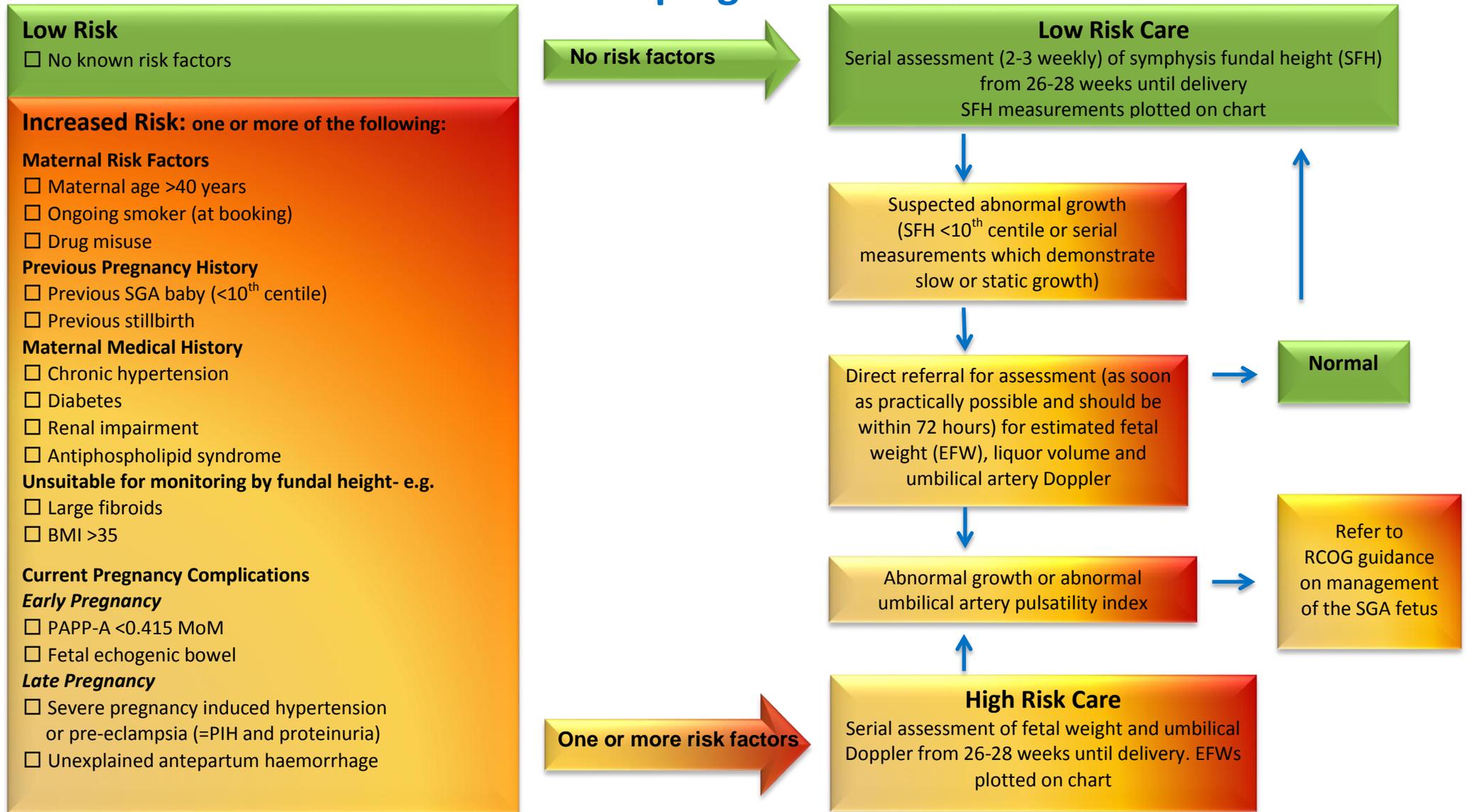
Implementation

This element is likely to require increased numbers of ultrasound scans in units not currently following the RCOG guidance on serial ultrasound for high risk pregnancies. This will require capacity building in the ultrasonography workforce. Current ultrasound scanning policies vary between obstetric units, primarily because of resource issues. Uptake of RCOG recommendations varies, with an average of three third trimester ultrasound scans carried out on women at increased risk. More frequent ultrasound scans and extending scans to term is associated with improved antenatal detection of FGR.

The RCOG SGA guideline advises that fetal biometry scans need not be performed more frequently than every three weeks. Some units advocate three weekly scans until delivery whilst others champion the use of Middle Cerebral Artery Doppler in late pregnancy to help identify late placental failure by the identification of re-distribution of blood flow.

Accurate ultrasound biometry is critical in determining management. Providers are therefore encouraged to develop audits or quality assurance procedures to ensure ultrasound scans are performed to a high standard. The most effective quality assurance methodology will be shared in future iterations of the care bundle.

Algorithm and Risk Assessment Tool: Screening and Surveillance of fetal growth in singleton pregnancies



Element 3: Raising awareness of reduced fetal movement

Element description		
<p>Raising awareness amongst pregnant women of the importance of detecting and reporting reduced fetal movement (RFM), and ensuring providers have protocols in place, based on best available evidence, to manage care for women who report RFM.</p>		
Interventions		
<p>1. Information and advice leaflet* on reduced fetal movement (RFM), based on current evidence, best practice and clinical guidelines, to be provided to all pregnant women by, at the latest, the 24th week of pregnancy and RFM discussed at every subsequent contact.</p>		
<p>2. Use provided checklist to manage care of pregnant women who report reduced fetal movement, in line with RCOG Green-top Guideline 57¹⁶</p>		
Intervention	Process indicators	Outcome indicators
<p>1. Information and advice leaflet* on reduced fetal movement (RFM), based on current evidence, best practice and clinical guidelines, to be provided to all pregnant women by, at the latest, the 24th week of pregnancy and RFM discussed at every subsequent contact.</p>	<p>i. Leaflet* given to and discussed with all pregnant women by 24th week of pregnancy</p> <p>ii. Feedback obtained from sample of women to gauge whether messages have been assimilated as intended</p>	<p>Percentage of women reporting RFM who have received the leaflet*</p> <p>Percentage of women reporting RFM who understood the message</p>
<p>2. Use provided checklist to manage care of pregnant women who report reduced fetal movement, in line with RCOG Green-top Guideline 57¹⁷</p>	<p>i. Protocol in place that follows checklist for care for pregnant women who report RFM</p> <p>ii. Care for all pregnant women who report RFM managed according to checklist</p>	<p>i. Stillbirth rate (decrease/increase)</p> <p>ii. Induction rate (increase/decrease)</p> <p>iii. Percentage of women reporting RFM who have 1. further action 2. no further action</p>

*Leaflet produced by Tommy's/NHS England with organisations at Appendix A

¹⁶ RCOG Green-top guideline 57: Reduced Fetal Movement, Royal College of Obstetricians and Gynaecologists, 2011. https://www.rcog.org.uk/globalassets/documents/guidelines/gtg_57.pdf

¹⁷ See 17.

Rationale

Confidential enquiries into stillbirth have consistently described a relationship between episodes of reduced fetal movement (RFM) and stillbirth incidences. From the CESDI reports¹⁸ to the first MBRRACE report in 2015¹⁹, unrecognised or poorly managed episodes of reduced fetal movement have been highlighted as contributory factors to avoidable stillbirths.

In addition, a growing number of studies have confirmed a correlation between episodes of RFM and stillbirth^{20 21}. We await the publication of the AFFIRM study, which will give us the best evidence yet.

This element and its interventions are aligned with the RCOG Green-Top guideline 57²². This is the best evidence summary and set of recommendations to date.

Implementation

It is possible that this element will cause an increase in ultrasound scans and obstetric interventions such as induction of labour and caesarean section. The AFFIRM study is exploring the impact of increasing maternal awareness of the importance of reduced fetal movements, both on service demand and on stillbirth rates. How Trusts understand and meet any challenges to service will be included in future iterations of this document.

¹⁸ Maternal and Child Health Research Consortium. Confidential Enquiry into Stillbirths and Deaths in Infancy: 4th Annual Report, 1 January–31 December 1995. London: Maternal and Child Health Research Consortium, 1997.

¹⁹ See 5

²⁰ Stacey T, Thompson JM, Mitchell EA et al. Maternal Perception of Fetal Activity and Late Stillbirth Risk: Findings from the Auckland Stillbirth Study. *Birth*. 2011;38:311–316.

²¹ Heazell A. Reduced Fetal Movements. *BMC Pregnancy Childbirth*. 2012; 12(Suppl 1): A10.

²² See 13

Checklist for Required Management of Reduced Fetal Movements

- . Based upon RCOG Guideline 57
- . For women ≥ 28 weeks gestation
- . Keep in guidance notes about Fetal Medicine Unit referral for women < 24 weeks gestation

Attendance with Reduced Fetal Movements

Please initial when complete

• Ask

Is there maternal perception of reduced fetal movements?

• Assess

Are there risk factors for Fetal Growth Restriction or Stillbirth?

Consider - multiple consultations for RFM, known FGR, maternal hypertension, diabetes, extremes of maternal age, primiparity, smoking, obesity, racial/ethnic factors, past obstetric history of FGR or stillbirth) and issues with access to care.

• Act

Auscultate fetal heart (hand-held Doppler / Pinnard)

Perform cardiotocograph to assess fetal heart rate in accordance with national guidelines.

If risk factors for FGR/Stillbirth, perform ultrasound scan for fetal growth, liquor volume and umbilical artery Doppler within 24 hours.

• Advise

Convey results of investigations to the mother.

Mother should re-attend if further reductions in fetal movements at any time.

• Act

Act upon abnormal results promptly.

Element 4: Effective fetal monitoring during labour

Element description		
Effective fetal monitoring during labour		
Interventions		
<p>1. All staff who care for women in labour are required to undertake an annual training and competency assessment on cardiocotograph (CTG) interpretation and use of auscultation. No member of staff should care for women in a birth setting without evidence of training and competence within the last year.</p> <p>2. Buddy system in place for review of cardiocotograph (CTG) interpretation, with a protocol for escalation if concerns are raised. All staff to be trained in the review system and escalation protocol.</p>		
Intervention	Process indicators	Outcome indicators
<p>1. All staff who care for women in labour to undertake and pass an annual training and competency assessment on cardiocotograph (CTG) interpretation and use of auscultation. No member of staff should care for women in a birth setting without evidence of competence within the last year.</p>	<p>i. Number of staff who have received training on CTG interpretation and auscultation (use this as numerator and express as a %)</p> <p>ii. Number of staff who are deemed competent in CTG interpretation and auscultation (use this as numerator and express as a %)</p> <p>iii. Number of staff who have successfully completed mandatory annual updates on CTG interpretation and auscultation (use this as numerator and express as a %)</p> <p>(denominator for each indicator: total number of labour ward staff at trust whose role includes the care of women in labour.)</p>	<p>i. Intrapartum stillbirth decreases/increases</p> <p>ii. Number of cases of severe brain injury decreases/increases*</p>

Intervention	Process indicators	Outcome indicators
2. Buddy system in place for review of cardiotocograph (CTG) interpretation, with protocol for escalation if concerns are raised. All staff to be trained in review system and escalation protocol.	i. Buddy system used in all intrapartum CTG interpretation according to local protocol ii. Sticker system used according to guideline for all women in labour undergoing CTG monitoring iii. Escalation protocol in place and used appropriately (documentary evidence required for each indicator)	i. Intrapartum stillbirth decreases/increases ii. Number of cases of severe brain injury* decreases/increases iii. Neonatal death within first seven days involving severe brain injury* decreases/increases
*Diagnosed in the first seven days of life, when the baby: <ul style="list-style-type: none"> • Was diagnosed with grade III hypoxic ischaemic encephalopathy (HIE) OR <ul style="list-style-type: none"> • Was therapeutically cooled (active or passive) OR <ul style="list-style-type: none"> • Had decreased central tone AND was comatose AND has seizures of any kind. 		
A number of these indicators will be collected and can be achieved by participation in the RCOG Each Baby Counts project		

Rationale

Cardiotocography (CTG) monitoring is a well-established method of confirming fetal wellbeing and screening for fetal hypoxia. It is the best method available to monitor a fetus during a high risk labour.

However, CTG interpretation is a high level skill and is susceptible to variation in judgment between clinicians and by the same clinician over time²³. These variations can lead to inappropriate care planning and subsequently impact on perinatal outcomes²⁴.

As well as reducing stillbirth rates there is a need to reduce avoidable fetal morbidity related to brain injury causing conditions such as Hypoxic-Ischemic Encephalopathy (HIE) and Cerebral Palsy. These conditions carry huge emotional and financial cost to families. They are also a significant economic burden to the health and social care system, both through

²³ Alfrevic Z, Devane D and Gyte GML (2013) Continuous Cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour (Review). The Cochrane Collaboration. John Wiley & sons Ltd.

²⁴ See 11

the care needed to support those with a brain injury throughout their lives and the cost of litigation rightfully brought by families when something goes wrong during labour.

Implementation

Trusts must be able to demonstrate that all qualified staff who care for women in labour are competent to interpret CTG, use the buddy system at all times and escalate accordingly when concerns arise or risks develop. This includes staff that are brought in to support a busy service from other clinical areas such as the postnatal ward and the community.

Trusts must identify appropriate training packages and be able to assess competence as defined locally.

Of note is the currently active INFANT trial which will test CTG decision support software and determine whether this is better than current practice at preventing poor outcomes and inappropriate interventions. In addition, the RCOG is conducting a review with NICE into the classification of CTGs. This is being done through the Intrapartum Care High Risk (IPCHR) guideline and seeks to consider the relative benefits of using the NICE classification compared to the International Federation of Gynaecology and Obstetrics (FIGO) classification system for the interpretation of CTGs.

Appendix A: Acknowledgments

NHS England would like to thank the following contributors to the development of the elements of this care bundle:

Element 1: Reducing smoking in pregnancy

Name	Organisation
Ann Hoskins	Public Health England
Cara Taylor	Central Manchester University NHS Foundation Trust
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Janet Fyle	The Royal College of Midwives
Jo Locker	Public Health England
Joanne McCullagh	NHS England
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Element 2: Risk assessment and surveillance for fetal growth restriction

Name	Organisation
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Element 3: Raising awareness of reduced fetal movement

Name	Organisation
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Jane Munro	The Royal College of Midwives
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Element 4: Effective fetal monitoring during labour

Name	Organisation
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Appendix B: Definitions

Small for gestational age (SGA): This is defined as a weight (fetal or at birth) measurement below the 10th centile and can be applied to fundal height, estimated fetal weight (EFW) or birth weight. Some of these babies are normal (constitutionally small). Some advocate that if the cut-off limit is customised, most (but not all) constitutional variation will have been adjusted for and the smallness is more likely to be pathological (i.e. FGR).

Fetal Growth Restriction (FGR): The term used for babies that have slow or no growth. There is no standard definition, but many define FGR by the rate of growth according to serial fundal height or ultrasound EFW measurements (regardless of whether they are already below the tenth centile or not), with or without abnormal umbilical or fetal Doppler flow measurements.

Notes

1. **SGA Rate** $\frac{\text{No. with birth weight} < 10^{\text{th}} \text{ centile}}{\text{Total No. of births}}$ is expected to be 10% in a normal ('optimal') population free from pathology, and varies with the prevalence of factors such as smoking, social deprivation, diabetes, congenital anomalies etc.

2. **Antenatal detection of SGA** is on the basis of an estimated fetal weight derived from ultrasound below the 10th centile. The rate (%) is calculated as $\frac{\text{No. detected antenatally}}{\text{Total No. SGA at birth}}$.