

Reducing Stillbirths in Multiple Pregnancies and the NHS Stillbirth 'Care Bundle'

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Background

Statistics from the Centre for Maternal and Child Enquiries, on Perinatal Mortality, show that multiple pregnancies contribute disproportionately to stillbirths (CMACE 2011). In the UK 2.42 per 200 twin births and 6.22 per 200 triplet and higher-order multiple births are delivered stillborn, compared to 1 in 200 singleton births. The risk of stillbirth in twins is 2-3 times higher than for singletons and the risk of early neonatal death is 6-8 times higher.

A reduction in stillbirth rates is a national policy mandate objective from the government to NHS England, whom in response, have developed a 'care bundle'. The care bundle brings together a series of four specific elements, designed to reflect known best practice in maternity services generally. These interventions and improvements to quality of care, hope to be effective in reducing stillbirth rates. Unfortunately, specific steps towards these objectives among the multiple pregnancy population, are consistently absent from service reviews, commissioning documents, inspection frameworks and also from the stillbirth care bundle (Khalil & Reed). Nevertheless, more recently the national maternity review report, published in February 2016, highlighted the vital importance of, "providing appropriate care for women pregnant with more than one baby."

The Stillbirth Care Bundle Components

1. Smoking reduction/cessation and all women offered a test for carbon monoxide level at antenatal appointments.
2. Identification and monitoring of fetal growth restriction, specifically implementing the use of the 'Growth Assessment Programme' (GAP).
3. Educating pregnant women of the importance of detecting and reporting reduced fetal movement and developing consistent care pathway protocols when concerns are raised.
4. Effective fetal monitoring during labour by implementing a 'fresh eyes' double checking protocol for CTG traces during labour, and an escalation protocol when concerned. This continues to reflect the concepts of the 2014 'Each Baby Counts' campaign into reducing intrapartum stillbirths and hypoxic brain injury.

Whilst the proposed care bundle may succeed in reducing singleton stillbirths, it is unlikely to be effective when applied to the care of multiple pregnancies. One explanation for this is that the fundamental causes of stillbirth, have demonstrable clear differences between twins and singletons. Common primary causes of stillbirths in twins were reported as 21% specific fetal condition (2% in singletons) and 11% congenital anomaly (9% in singletons) (CMACE 2011).

Expert opinion from Dr Asma Khalil, indicates there is no evidence that monitoring fetal growth using the growth assessment programme (GAP) reduces the risk of stillbirth in multiple pregnancy. In fact, NICE guidance recommends not using abdominal palpation or symphysis-fundal height measurements to predict

intrauterine growth restriction- in multiple pregnancies (NICE 2011). The evidence supporting a potential causal relationship between smoking and stillbirth is driven from studies which mostly excluded twin pregnancies (Wisborg 2001; Högberg 2007). Similarly, the evidence suggesting a potential reduction in the risk of stillbirth with the improvement of awareness, introduction of fetal movement information and guidelines, stems from studies which included singleton pregnancies only (Stacey 2011; Tveit 2009). It would be inappropriate to extrapolate a potential benefit in a population of pregnancies (in this case multiple pregnancy), when the studies did not include them (included singleton pregnancies only).

The 'Stillbirth in Multiple Pregnancy' Survey

This section describes the findings of a 'Stillbirths in multiple pregnancies' survey, distributed by Tamba to clinicians and midwives at Multiple Pregnancy Specialist Conferences hosted by the RCOG in London and Tamba in Glasgow during November 2015.

The survey asked clinicians and midwives for their views on the proposed care bundle, and what they believe would result in a reduction in multiple pregnancy stillbirths. 82 clinicians and midwives completed it. Respondents were asked to select which elements they thought would be effective in reducing multiple pregnancy stillbirths, and to select as many as they liked from the list (See Table 1). Over 80% of respondents left at least one of the elements unselected, considering it unlikely to make a significant difference.

Results show by far the highest level of confidence in effectiveness, was placed in the Twin-Specific element (86.59%), which does not currently make up part of the proposed care bundle. This demonstrates that the clinicians and midwives at the forefront of care, know reducing stillbirths in multiples will require a tailored approach.

This was reiterated in response to the care bundle elements themselves. Clinicians and midwives displayed a severe lack of confidence in the proposed care bundle, with less than half of respondents (48.78%) believing the elements 'Care pathways for reduced fetal movement' and 'Fresh eyes effective fetal heart monitoring', would be effective at reducing multiple pregnancy stillbirths.

The highest scoring element was for 'stopping smoking' (71.95%). Smoking is associated with an increased risk of stillbirth (Högberg & Cnattingius, 2007), however studies such as this one mostly exclude twin pregnancies.

The proposed growth assessment programme (GAP) was selected as likely to be effective by 60.98% of respondents. When examining this figure alongside additional free text comments (see example below), it is possible clinicians and midwives are aware this element may not be as effective when applied to multiple pregnancies.

'As far as I am aware GAP data is based on singleton growth data therefore I'm not sure if this can be used for twins?'

Table 1

<u>Care Bundle Elements</u>	<u>The % of Respondents that Believe the Element May be Effective</u>
Stopping Smoking (& Check for Carbon Monoxide Level at Antenatal Appointments)	71.95%
The Growth Assessment Programme (GAP)	60.98%
Care Pathways for Reduced Fetal Movement	48.78%
'Fresh Eyes' Effective Fetal Heart Monitoring During Labour	48.78%
Twin-Specific Intervention (E.g. Screening & Treatment of Twin-Twin Transfusion Syndrome)	86.59%

Fig 1. Table of the proposed care bundle elements, and an alternative twin specific approach, showing the percentage of respondents who selected each as potentially effective in reducing stillbirths in multiple pregnancies.

Twenty-six respondents added a brief free text answer under 'please add any other component(s) that you believe are important'. Of these comments, two didn't state additional components, but suggested that success was a cumulative effect of all components. The remaining data was analysed into themes; 1. 'Improving parent's awareness of multiple pregnancy risks.' 2. 'Regular ultrasounds.' 3. 'Access and availability to care.' 4. 'Multiple birth specialists and guidelines'. 5. 'Prevention of multiple pregnancy'. Many of these ideas are covered under the NICE guidelines for multiple pregnancy.

NICE Multiple Pregnancy Guidelines as driver for improving outcomes

A previous TAMBA report on maternity services showed that outcomes for multiple pregnancies compare poorly to singletons. NICE multiple pregnancy antenatal care guidelines (2011) and quality standards (2014) aim to tackle these inequalities and improve quality of care and outcomes.

Care for multiple pregnancies, as informed by the NICE guidance, has been somewhat effective in reducing stillbirths rates since the guidelines were put into place. Tamba believes these guidelines have the potential to help so many more, but found in a recent [Tamba/NCT joint report](#) that over 80% of units were not fully implementing the guidelines. There is also still an important gap to be filled, with a lack of guidance specifically surrounding intrapartum care for multiple pregnancies.

NICE guidance recommends multiple pregnancies are cared for by specialist teams, however only a small percentage of units have specialist midwives (18%) and sonographers (28%) and 30% of multiple mothers do not have care from a specialist consultant (Tamba/NCT Maternity Report 2015).

When Tamba sought expert opinion, Dr Asma Khalil suggested the following key priorities for implementation, as recommended by NICE, are likely to reduce the risk of stillbirth in multiple pregnancies:

- *Multiple pregnancies should be cared for by specialist teams, with early referral of complicated pregnancies to a tertiary level fetal medicine centre.* In a recent paper introducing a specialised twins clinic at a metropolitan tertiary maternity hospital, Sydney, Australia has been associated with a reduction in the Caesarean section rates, late preterm birth, inpatient stay and a trend towards reducing stillbirth compared to other models of care (Henry 2015). In another study from the USA, a specialist twin clinic was associated with significantly lower rates of very low birth weight infants, neonatal intensive care unit admission, and perinatal mortality (Ellings 1993).
- *Screening for twin-twin transfusion syndrome (all monochorionic twin pregnancies should be scanned every two weeks from 16 weeks until 26 weeks' gestation).* Pregnancy outcomes associated with untreated twin-twin transfusion syndrome are very poor, with up to 90% resulting in stillbirth, neonatal death or disability. Timely diagnosis and its treatment using fetoscopic laser ablation significantly improve the pregnancy outcomes, resulting in rates of up to 85% survival of at least one baby, with a low incidence of neurodevelopmental delay (NICE 2011).
- *Monitoring for intrauterine growth restriction (estimate fetal weight discordance using two or more biometric parameters at each ultrasound scan from 20 weeks). Ultrasound scans should be performed at intervals of less than 28 days. Consider a 25% or greater difference in size between twins or triplets as a clinically important indicator of intrauterine growth restriction and offer referral to a tertiary level fetal medicine centre*

In a UK study, including more than 2000 twin pregnancies, a discordance of $\geq 25\%$ in estimated fetal weight using ultrasound was found to be the optimal cut-off for the prediction of stillbirth and neonatal mortality irrespective of chorionicity or individual fetal size, stressing the importance of calculating the estimated fetal weight discordance at each scan in the second half of the pregnancy (D'Antonio 2013)

- *Offer women with uncomplicated:*
 - i. Monochorionic twin pregnancies elective birth from 36+0 weeks, after a course of steroids*
 - ii. Dichorionic twin pregnancies elective birth from 37+0 weeks*
 - iii. Triplet pregnancies elective birth from 35+0 weeks, after a course of steroids.*

There is an increase in the risk of stillbirth in multiple pregnancies per week towards the end of pregnancy. The relative risk of stillbirth per week of gestation compared to the risk in singleton pregnancies at ≥ 42 weeks rise significantly from 37 weeks (NICE 2011).

The Stillbirth in Multiple Pregnancy Survey – NICE Intervention Measures

The Stillbirth in Multiple Pregnancy survey, next asked what measures respondents thought *should* be included in the care bundle, in order for it to be effective at reducing stillbirths in multiple pregnancies. Seven potential measures were listed, derived from the NICE guidance for multiple pregnancy. Respondents were asked to rate order of priority from 1 to 5.

Chart 1

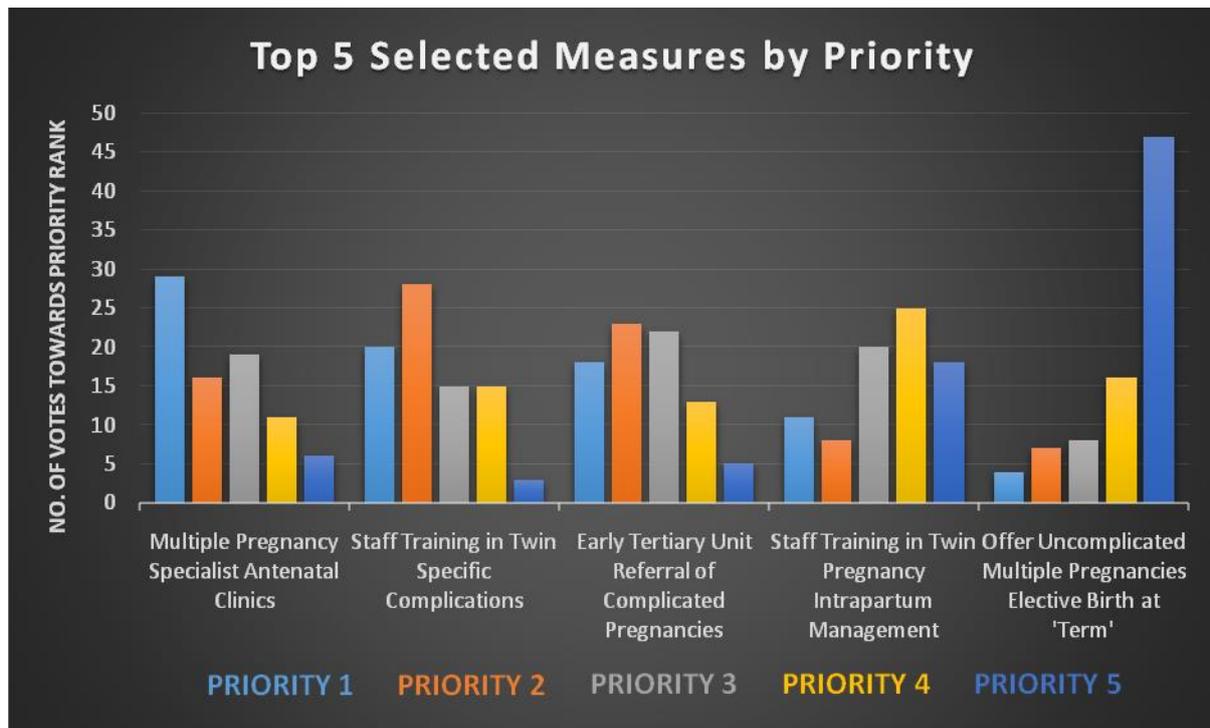


Fig 2 Chart showing the top 5 selected potential NICE measures, rated by priority, that respondents believe should be included in a multiple pregnancy stillbirth care bundle.

Reasons for top priority selection?

Interestingly only 5 measures were selected overall, with two 'screening for twin–twin transfusion syndrome' and 'monitoring for intrauterine growth restriction' not placing as a top priority intervention by any of the 82 participants. This may be explained by the accompanying qualitative data, and the 'umbrella' solution view described by many respondents.

When asked why they had selected their number one priority, respondents were given the chance to enter a free text explanation. This feedback was looked at qualitatively and analysed into key themes. The chart below shows the breakdown of how many respondents selected each measure as a top priority. The qualitative data largely reiterated the logical assumption that top priority was selected because of the belief it would be the most effective at reducing multiple pregnancy stillbirth. However, there were also several other interesting themes which came to light.

Chart 2

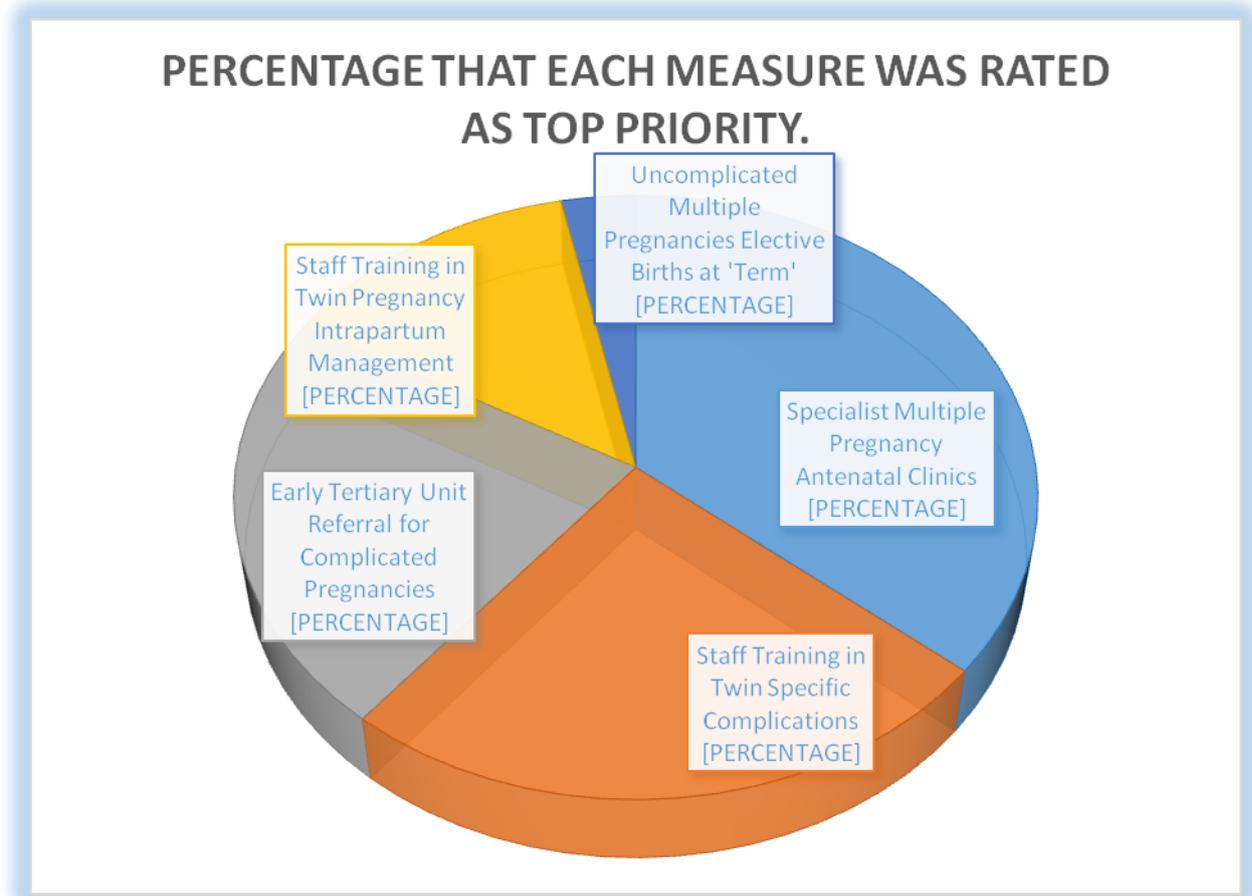


Fig 3. Chart showing 5 measures by the percentage they were chosen as top priority.

Specialist multiple pregnancy antenatal clinics (36%) and early tertiary unit referral for complicated pregnancies (22%), both reflecting the need for 'specialist care' make up a total 58% of what clinicians and midwives believe should be the top priority intervention in reducing stillbirths in multiple pregnancy.

The Qualitative data

69 of 82 respondents completed the opened ended question 'please say why you have selected your number one priority?' This qualitative data was then analysed into themes. The majority of comments reiterated that they simply thought their chosen top priority would make the biggest difference because it was intrinsically important, adding little additional information;

'Early referral will hopefully mean a better outcome.'

'Offering specialist clinics - improves care and overall outcomes.'

'Twins need to be managed at a designated tertiary centre to recognise complications and to optimise care.'

Further themes were developed, adding useful insight into the views of medical professionals, at the forefront of multiple pregnancy care every day.

Theme 1: Training Should be Across All Levels.

It seems a general consensus across much of the data, that knowledge and training of staff at all levels, would be the ideal scenario. This was highlighted by comments such as these;

'We need to make all staff aware of twin specific issues and also which sort of twins are likely to suffer from each. All staff need to be alert to these and refer into relevant obstetric / midwifery care as appropriate.'

'Unless people know what to look for (or refer for) they cannot do it. You don't know what you don't know'.

'If all were aware of what complications to look out for from the most junior midwife - general ?? that improves the chance of identifying problems'.

'I feel if all staff are trained well and aware of complications they will be picked up'.

Theme 2: Staff themselves believe more training would be beneficial.

It quickly became apparent that many respondents felt from personal experience that there was not enough training on multiple pregnancies at present;

'Not enough training in twin specific complications is given during midwifery training - extra knowledge would be helpful'.

'Training is so valuable, as a student I feel I know very little re, multiple birth so keep to change this to improve my own practice'.

'I am a Midwife - so primarily rely on care plans. But I feel there is a lack of information, understanding and confidence in the team'.

Training all staff at all levels, in the specialist care of a minority group, would not be practical, cost effective, or even possible; 'difficult to believe everyone can be experts'. Therefore, the focus of these comments should be on the desire to identify and manage complications early, which can be done by a nominated specialist team as recommended in the NICE guidance.

'Specialist clinics are important for these high risk pregnancies as it standardised care and those running them are used to dealing with complications'.

'Earlier detection and recognition of problems as they arise mean a specific designated specialist service'.

'Offering specialist clinics - improves care and overall outcomes'.

So multiple pregnancies are considered high risk, and it appears a unanimous view that the aim should be to provide better care to these women. Some believe training

at all levels will increase how quickly problems are identified and dealt with. This view is especially evident within those in the field who feel frustrated at the lack of training and understanding they currently have available. A good solution to this problem seems to be specialist teams. Currently this care is at best variable across the UK, if present at all. If this specialist multidisciplinary care, informed by NICE guidance, were to exist, it may act as an umbrella solution, addressing many of the other points simultaneously.

'(Multiple pregnancy specialist antenatal clinics) variable throughout the UK. Women need consistency of care and treatment in a specialised unit/hospital'.

'If multiple pregnancy clinics exist then the care is specific/standardised and so all other 4 points are more likely to happen.'

'If you have a unit that is dealing with multiple pregnancy management and complication you will resolve all the problems highlighted'.

'Dedicated specialist clinics allow the development of local expertise and increase staff awareness'.

Theme 3: Intrapartum care (the missing NICE element)

The last theme that emerged repeatedly was the mention of intrapartum care of multiple pregnancies. This is a point currently absent from the NICE guidelines, and clearly one that needs addressing.

The Royal College of Obstetricians' 'Each Baby Counts' campaign in 2014 to reduce intrapartum stillbirths and hypoxic brain injury, introduced the 'fresh eyes' effective fetal monitoring approach. The figures presented are worrying; "in the UK, each year around 500 babies die or are left with severe brain injury – not because they are born too soon or too small, or have a congenital abnormality, but because something goes wrong during labour. The RCOG does not accept that all of these are unavoidable tragedies..."

Multiple pregnancies are high risk, and coupled with the lack of specific intrapartum guidelines, they might be at greater risk of becoming one of these tragedies. With proper intrapartum guidelines and training, more of these tragedies may be avoided.

'(Training the staff in intrapartum management of twin pregnancies) to ensure women at their most vulnerable point are supported'.

'For all emergency staff should be training to manage vaginal birth in twins'.

'(Training the staff in intrapartum management of twin pregnancies) Still not accepted as safe by 'older' midwives'.

'Importance in the training of junior staff. Skills are being lost on the delivery suite, from today's meeting I think there may be more vaginal deliveries as the speakers so far have said MC twins is safe to delivery vaginally. Training of staff on delivery suite

is relatively easy to deliver! And to assess its effectiveness , more prominence is needed on accessible skills drills, on site and in the labour ward.'

Conclusions

In conclusion, the opinions of clinicians and midwives indicate little support for the proposed care bundle as an effective measure in the reduction of stillbirths in multiple pregnancies. The free text views of respondents closely reflect the NICE guidelines for multiple pregnancy. The top priority interventions respondents believe to be effective, are the important elements of the NICE guidance. The only criticisms were not about what interventions would be effective, but the current limited availability and implementation of these guidelines, which clearly must continue to improve across the UK. Therefore, it appears imperative that to achieve the national policy goal of reducing stillbirths for all groups the care bundle should be updated to ensure specific actions targeted at multiple pregnancies, which embed and promote the widespread uptake of the latest NICE guidance.



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