



NICE works

the final report

Twins and Multiple Births Association
Maternity Engagement Project
Final Report

Tamba
TWINS & MULTIPLE BIRTHS ASSOCIATION

Acknowledgements

Acknowledgements



Birmingham Centre for Women's & New Born's Health

Professor Mark Kilby



BLISS

Caroline Lee-Davey



Brighton & Sussex University Hospital

Joanna Fitzsimons



British Association of Perinatal Medicine

Caroline Lee-Davey,
Kate Dinwiddy



Care Quality Commission

Professor James Walker



Department of Health & Social Care

Karen Todd



Fiveways

Richard Donaldson



Leeds Teaching Hospital

Kathryn Harper



Liverpool Women's Hospital

Jennifer Robinson,
Surabhi Nanda



Maternity Voices Partnership

Lisa Ramsay



MBRRACE

Dr Brad Manktelow



Multiple Births Foundation

Jane Denton



NHS England

Claire Mathews, Lisa Ramsay, Matt Tagney, Jacqueline Dunkley-Bent, Kath Evans, Yana Richens



NHS Fetal Anomaly Screening Programme

Rita Phillips



NHS Improvement

Michelle Upton



NICE

Louise Miller



Public Health England
Annette Mchugh



Royal College of Midwifery
Professor Debbie Carrick-Sen, Mandy Forrester, Lia Brigante, Jacque Gerrard



Royal College of Nursing
Jane Denton, Carmel Bagness



Royal College of Obstetricians & Gynaecologists
Anita Dougall, Mathew Miles



Royal College of Paediatrics and Child Health
Kate Dinwiddy



Sands
Clea Harmer, Mehali Patel, Laura Price, Janet Scott



Select Statistics
Sarah Littler, Sally Hunton



Society & College of Radiographers
Nigel Thomson



St George's University Hospital
Professor Asma Khalil (chaired the steering committee)



University of Leicester
Dr Brad Manktelow



West Middlesex University Hospital
Alexandra Drought

"I feel privileged to have worked closely with the team on this important quality improvement initiative where we aimed to improve the outcomes of multiple pregnancies by promoting the implementation of NICE guidance. The steering committee had a large number of key national stakeholders and their contribution was key to the success of this project. The findings of this report represent real life clinical data on pregnancy outcomes, reflecting current practice in the UK and I see this as an important step towards achieving our national target of reducing stillbirths by 50% by 2025 and in addressing the unmet needs of multiple pregnancies."

Professor Asma Khalil
Chair of Steering Group
(Professor of Obstetrics and Maternal-Fetal Medicine, St George's University Hospital)



Thanks to the Department of Health for financially supporting this quality improvement project, enabling Tamba to advocate on behalf of the multiple birth community and improve health related outcomes for our families.



1

Foreword



Jackie Doyle-Price MP

Parliamentary Under Secretary
of State for Mental Health
and Inequalities

Department of Health
and Social Care

I welcome this important report on the Tamba 'Maternity Engagement Project', which was completed under the Government's 'Innovation, Excellence and Strategic Development (IESD) Fund' for voluntary sector organisations.

The Department for Health and Social Care expects NHS services to be provided in line with NICE clinical guidelines and quality standards. This report demonstrates how increased adherence to the NICE Quality Standard on Multiple pregnancy (QS46) is linked to improved outcomes for women and their babies including reduced rates of stillbirths, neonatal admissions and emergency caesarean sections for multiples.

This research should inform the effective targeting of resources to where they are needed and raises the awareness of key issues in the provision of care for multiple pregnancies. The finding that admissions to neonatal units could be reduced by 1,308 with a cost saving of around £8 million if all maternity units in England implemented similar changes should focus the minds of all commissioners and providers of maternity services working to achieve the national ambition to halve the rates of stillbirths and neonatal deaths by 2025.

This project also emphasises the impact that external, expert support can have on an organisation's continuous quality improvement (QI). The Maternity Transformation Programme's QI programme, the 'Maternal and Neonatal Health Safety Collaborative' together with Maternity Safety Champions, are supporting cultures of multidisciplinary team working and learning in the NHS, vital for safe, high-quality maternity care. They also support implementation of the NHS Long Term Plan commitment to roll out the Saving Babies Lives Care Bundle, which recommends using the NICE guidance for multiple pregnancies, across every maternity unit in England this year.

I would like to thank and congratulate Tamba, the Maternity Engagement Project team and the 30 maternity units that took part in this important research for this excellent report.



2

Executive Summary

2.1 Background

In England, multiple pregnancies make up around 1.5% of pregnancies but account for 5% of stillbirths, 10% of neonatal deaths and 15-20% of all neonatal admissions⁽¹⁾.

The National Institute for Care and Excellence (NICE) first published antenatal care guidelines for multiple pregnancies (Clinical

Guideline 129) in 2011⁽²⁾ and followed these with eight quality standards (NICE QS46) in 2013⁽³⁾. These aim to improve the quality and consistency of clinical care provided, however eight years on from the first guidelines there is still an excessive variation in their implementation across maternity units.

2.2 The Maternity Engagement Project

The central hypothesis of the Maternity Engagement Project was that by providing support to implement NICE QS46, maternity units would increase their level of adherence to NICE quality standards, and this could lead to reduced rates of stillbirth, neonatal death, neonatal admissions and emergency caesarean sections as well as considerable cost savings.


With funding from the Department of Health and Social Care, Tamba's Maternity Engagement Project successfully delivered a three-year project which worked with 30 maternity units across England to

identify and implement changes to improve antenatal care for multiple pregnancies, in line with NICE QS46.

Units were audited and supported to implement an agreed action plan. Follow up re-audits were carried out one year later to assess the changes made and their impact. In total there were 40 statistically significant positive findings which clearly demonstrate that both Tamba's support and the NICE guidelines work. All trusts should ensure they are following NICE QS46 and Tamba can help.

2.3 Key findings

- **65% of units saw a reduction in their neonatal admissions rate** for multiples in 12 months. Across all units there was an average reduction of **5.8** percentage points. This relates to **200 fewer admissions** across the 23 units where data was available.
- There was an instance of increased adherence to NICE

guidelines being linked to a **decrease in neonatal deaths** for multiples in one unit in just 12 months. There is evidence to suggest leadership support and closer adherence to the Quality Standards results in lower stillbirth rates. There is strong evidence that over a longer period implementing the Quality 

2.3 Key findings (continued)

Standards can lead to a considerable fall in stillbirth rates.

- ◆ At re-audit, one unit saw a statistically significant reduction in their neonatal death rate (from 3.2% to 0%, $p=0.0336$).
 - ◆ At re-audit there was some evidence ($p=0.0257$) of stillbirth rates being lower for sites with a maternity champion compared to those without (by approximately -0.009% ; 95% CI = -0.017% to -0.001%).
 - ◆ At baseline, increased adherence to QS46 statement seven (discussions by 24 weeks on preterm labour and birth) and eight (discussions by 32 weeks on timing and delivery) was correlated with a lower stillbirth rate in larger units ($r=-0.89$, $p=0.02$ and $r=-0.9$, $p=0.01$ respectively).
 - ◆ Although in the 12 months between audits there was not a significant change in multiple stillbirth rates, the evidence from St George's University Hospital, which was an exemplar unit and an early adopter of NICE QS46, saw a 70% reduction (from 14 per 1000 in 2012 to 4 per 1000 in 2016) in stillbirths over a five year period. Over a longer period of time (2000-2019) and with an increased cohort, comparing the pre implementation 32/2250 vs. post implementation 5/1147 rates, the result becomes statistically significant ($p=0.008$).
- **60% of units saw a reduction in their emergency caesarean section rate** for multiples in 12 months. Across all units there was an average reduction of 3.1 percentage points. This relates to **105 fewer emergency C-sections** over 26 units where data was available.
 - **100%** of units re-audited increased their overall adherence to NICE QS46 between the baseline and follow-up audits. Units that implemented a higher proportion of the actions to improve care practice identified by Tamba, tended to see a greater increase in their overall adherence to NICE QS46.
 - Nine out of ten professionals in units that had completed the project agreed that "if we hadn't done the Maternity Engagement Project we would not have achieved as much positive change".
 - If all units in England (157) implemented similar changes to increase adherence in NICE QS46, **within a year neonatal admissions could be reduced by 1,308** with a cost saving of **£8 million. Emergency caesarean sections could be reduced by 634** and up to **100 stillbirths** across the UK could be prevented.

2.4 Conclusion

Tamba's Maternity Engagement Project has shown that in the best case, after five years, the lives of up to 100 stillborn babies could be saved every year if all maternity units across the UK follow NICE QS46. This would result in a twin stillbirth rate of 1.85 per thousand which is below the 2016 singleton stillbirth

rate of 3.86⁽⁴⁾. The evidence from the Netherlands is that it is possible to reduce the twin stillbirth rate to a rate lower than the singleton rate⁽⁵⁾.

In addition, at least £8m of financial savings would be made in England. Tamba can support units to achieve these positive outcomes.

2.5 Recommendations

These findings will be of interest to individual trusts and maternity teams looking to implement NHS England's *Saving Babies Lives Care Bundle* which explicitly recommends using the NICE guidance for multiple pregnancies. Furthermore, the CQC's hospital inspection framework checks whether units are delivering care for multiple pregnancies in accordance with this guidance.

Care in multiple pregnancies will be under the spotlight like never before. Various reviews are already underway including; a maternity unit level audit of care based on professional and patient feedback across the UK, an MBRRACE confidential enquiry into twin stillbirths and neonatal deaths and updates to NICE guidance.

Tamba would urge every health professional to work with their maternity safety champions and use the Tamba resources available to ensure their trust is effectively implementing NICE QS46. We encourage all trusts that have taken part in this project to continue their improvement.

We also call on NHS England to ensure that Local Maternity Systems

are aware that this project can make a considerable contribution to meeting the Department of Health's *Better Births* ambition for continuity of carer, and that twin and triplet pregnancies continue to be explicitly recognised in commissioning frameworks, tariff requirements and care bundles.

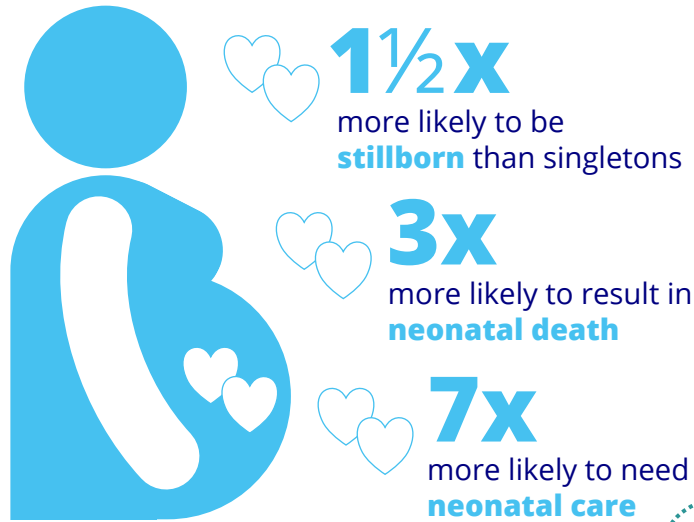


Tamba's Maternity Engagement Project

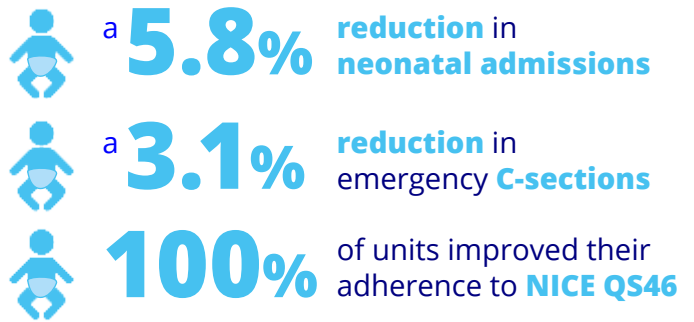
was funded by the Department of Health during 2016-2019 and has been working with 30 maternity units across England to improve outcomes for **multiple pregnancy** families

Tamba
TWIN & MULTIPLE BIRTHS ASSOCIATION

Multiple pregnancies are **high risk**. They are:



NICE works! In just **12 months** our project saw:



...and one unit saw a **significant reduction** in **neonatal deaths**

Just look at what could be **achieved**

Over a longer term...

a **70%** **HUGE FALL**

in **stillbirths**

in just **5 years**

St. George's University Hospital was an early adopter of NICE QS46. They witnessed a 70% drop in stillbirths amongst twins in five years.

If all units followed NICE QS46 **across England:**

100 babies' lives could be saved every year*

Neonatal admissions could be reduced by **1,308** every year

Emergency **C-sections** could be reduced by **634** every year

...and all of this could **save the NHS**

£8 million every year

*this figure is UK wide

90%

of professionals say they could not have achieved what they did without Tamba's

Maternity Engagement Project

All units need to start making improvements now to meet the targets set in the Saving Babies' Lives Care Bundle

Tamba has a team to help you

GET IN TOUCH TODAY

maternityengagement@tamba.org.uk

www.tamba.org.uk



3

Introduction

3.1 Project Context

In England, multiple pregnancies make up around 1.5% of pregnancies but account for 5% of stillbirths, 10% of neonatal deaths and 15-20% of all neonatal admissions⁽⁶⁾.

The risk of preterm birth is also considerably higher occurring in at least 50% of twin pregnancies⁽⁷⁾ with twins facing six times the risk of cerebral palsy⁽⁸⁾. This paints a concerning picture for the multiple birth community, one which is compounded by unwarranted variations in clinical care delivered across the UK.

Whilst Tamba welcomes the current national policy focus on quality improvement and patient safety in our maternity services, there appears to be a distinct lack of understanding surrounding the sophisticated and unique challenges faced by patients with a multiple pregnancy. The National Institute for Care and Excellence (NICE) first published antenatal care guidelines for multiple pregnancies (Clinical Guideline 129) in 2011⁽⁹⁾ and followed these with eight quality standards (NICE QS46) in 2013⁽¹⁰⁾. These guidelines

aim to improve the quality and consistency of clinical care provided, however eight years on there is still an excessive variation in their implementation across different providers⁽¹¹⁾.

Evidence suggests that maternity units that follow national clinical guidance have the potential to reduce the clinical risks associated with fetal compromise and patient safety within the antenatal care period and improve patient outcomes⁽¹²⁾. This particularly appears to be the case concerning multiple pregnancies where units have implemented a model of care that closely matches that set out in NICE QS46.

Furthermore, research suggests that external quality improvement interventions have increased success rates within the NHS, as they provoke practice reflection and motivate behaviour change in ways not achieved by some internal interventions. This is potentially due to the neutrality of the external body, being removed from the organisation's internal politics and culture⁽¹³⁾.

3.2 The Maternity Engagement Project

3.2.1 Project background and aims

In 2016 Tamba secured Department of Health and Social Care funding to undertake the Maternity Engagement Project which aimed to improve the outcomes for twin and other multiple pregnancies across 30 targeted

maternity units in England. The project was conducted over a three-year period with units having one year to implement changes.

The project aimed to achieve this outcome through ensuring multiple pregnancy care is delivered

consistently and in line with national guidance - specifically NICE Quality Standard 46 (NICE QS46). NICE's guideline and quality standards aim to improve outcomes by recommending additional care that should be offered to women with twin and triplet pregnancies. Overall evidence suggests that adherence to clinical guidelines in maternity care saves lives and improves outcomes for multiples

and their families, whilst promoting good, safe quality care for all⁽¹⁴⁾.

The central hypothesis of the Maternity Engagement Project was therefore that by providing support to maternity units to implement NICE QS46, the units would increase their level of adherence to NICE QS46, and this increased adherence would, in turn, lead to improved patient outcomes.

» NICE Quality Standard 46

The quality standard is made up of eight statements that describe high-quality care for patients and are summarised as follows:

- 1 Women who are pregnant with twins or triplets (referred to as a multiple pregnancy) have an ultrasound scan between 11 weeks and 13 weeks 6 days of their pregnancy. This is to see whether the babies share the same placenta (chorionicity) and amniotic sac (amnionicity). This information is recorded in the woman's notes.
- 2 Women with a multiple pregnancy have an ultrasound scan between 11 weeks and 13 weeks 6 days of their pregnancy to record the positions of their babies.
- 3 Women with a multiple pregnancy are cared for by a team of healthcare professionals with different skills and roles (for example, specialist doctors, specialist midwives and ultrasound operators).
- 4 Women with a multiple pregnancy have a care plan that has the dates and times of all their antenatal care appointments and details of who the appointments are with.
- 5 Women with a multiple pregnancy are monitored to check the babies for any complications (for example, to check the babies' growth and blood flow) in a way that is appropriate for their pregnancy.
- 6 Women with a multiple pregnancy have an expert in fetal medicine involved in their care if their pregnancy is higher risk or if there are complications.
- 7 Women with a multiple pregnancy discuss the risks and signs of an early (preterm) labour with one or more members of their healthcare team. The discussion should take place by 24 weeks of their pregnancy and also cover the possible problems associated with an early birth.
- 8 Women with a multiple pregnancy have a discussion with one or more members of their healthcare team about the timing of the birth and how they want their babies to be delivered. This discussion needs to take place by 32 weeks of their pregnancy and include agreement of their birth plan.

3.2.2 Delivery method

The project compared practice at each participating unit against seven of the eight⁽¹⁵⁾ NICE QS46 statements. A description of the delivery method follows.



To capture the baseline situation, independent midwifery consultants with extensive experience of multiple pregnancies and NICE QS46 implementation were contracted by Tamba to visit units and carry out a **baseline audit**. The audit involved:

- Ethical protocols being agreed by the unit and Tamba. The visits were conducted in line with Caldicott principles⁽¹⁶⁾ and the necessary confidentiality agreements were put in place with the units prior to the visit.
- Reviewing a sample of multiple birth mothers' case notes from patients that had delivered their babies in the 12-month period prior to the baseline audit (typically ten per unit to fit the resources available and to be able to conduct an audit in one working day). Tamba requested that units randomly select a mixture of monochorionic, dichorionic and triplet pregnancies. In total 277 case notes were reviewed by Tamba's midwifery consultants at baseline.
- The risk of three different midwifery consultants reviewing notes at different units and interpreting them differently was mitigated by one of the Tamba Maternity Engagement project team accompanying them on early baseline audits, and discussions within the team to agree what evidence constituted "high-risk", "continuity of care" or whether someone was a "specialist"⁽¹⁷⁾.
- Reviewing practice and protocols by conducting structured conversations with staff that look after multiple pregnancies (in total over 140 group or individual interviews were conducted with relevant healthcare professionals including fetal medicine consultants, obstetricians, heads of midwifery, midwives and sonographers).
- Trusts providing statistics relating to patient outcomes for the 12 months prior to the baseline audit and any intervention from Tamba (see 3.2.4).

The audit process offered each site the opportunity to reflect upon current practice and provided a platform from which to implement practical solutions to improve care and explore barriers to change. The approach was very much "unit led", with the Tamba project team facilitating the process, capturing information and feeding back to the unit in the form of a recommended bespoke **action plan** which:

- Highlighted areas where the unit could increase NICE QS46 adherence using a "traffic light" system (i.e. green - no action required, amber - action required and red - urgent action required).
- Suggested resources to support implementation of those actions.
- Incorporated areas that linked to other national policy priorities and inspection frameworks.

To finalise the action plan, a conference call was held with key staff at Tamba and the unit to review the actions and agree dates to review progress.

The unit then took ownership of delivering the plan. During its implementation the unit could access a **support package** including the following:

- Access to Tamba's midwifery consultants with specialist experience and knowledge of multiple births for remote support over 12 months, including scheduled quarterly update calls.
- Peer-support learning and networking opportunities (including advice and support from other units of similar size that have been shown to closely follow NICE guidelines).

- Best practice tools e.g. Tamba's Multiple Pregnancy Care Pathway.
- Signposting to innovative multiple specific resources such as multiple growth charts⁽¹⁸⁾ and awareness of leading research in the field.
- Access to a free extensive specialist health care professional online CPD resource (208 professionals from the participating units signed up to this resource⁽¹⁹⁾) and free multidisciplinary study day (111 professionals from the participating units attended a study day).
- Access to the full range of Tamba booklets, leaflets, factsheets, webinars and courses which offer guidance and support to both health professionals and parents.
- A quarterly health professional newsletter.

Approximately 12 months after the baseline audit Tamba's midwifery consultant returned to the unit to conduct a **re-audit** using the same process as the baseline audit described above (i.e. a review of case notes, a review of practice, and gathering statistics relating to patient outcomes) This was followed by another conference call to review what had been achieved and make suggestions as to how progress could be sustained.



3.2.3 Profile of participating units

The Maternity Engagement Project enrolled the participation of 30 maternity units across England. Participation was entirely voluntary. Units were selected to ensure a range of sites by size, specialism and resource (using MBRRACE⁽²⁰⁾ groupings⁽²¹⁾ see table one below) and by location (see Table 2).

EXEMPLAR UNITS

Within each of the four groups a unit was selected as an exemplar comparator. As no NICE adherence data was available at the outset of the project, the units with the highest levels of patient satisfaction as measured by a previous Tamba survey were selected as exemplars (high levels of satisfaction being used as proxy to identify units already implementing good practice - all four exemplar units had, for

example, implemented multiple disciplinary teams, recommended schedules of care and twin clinics). The exemplar units had access to Tamba's support, therefore they should not be considered "control" units as they were, to varying degrees, exposed to the intervention - instead they were examples at the outset of the project of what might be achieved within each group.

Two of these exemplar units (groups one and four) conducted their audits independently of Tamba and their results are not included in the analysis below. The other two (groups two and three) had audits conducted by Tamba and are included in the analysis. Therefore, the total number of "test" units (where Tamba completed audits) was 28⁽²²⁾.

TABLE 1 Participating units by MBRRACE grouping

MBRRACE Group	MBRRACE Group definition	Total number of units	Number of "test" units
1	Level 3, Neonatal Intensive Care Unit (NICU) and Neonatal Surgery	7	6
2	Level 3, NICU	6	6
3	4,000 or more births per annum at 22 weeks or later	10	10
4	2,000-3,999 births per annum at 22 weeks or later	5	4
5	Under 2,000 births per annum at 22 weeks or later ⁽²³⁾	2	2
	TOTAL	30	28

TABLE 2 Participating units

Unit	Region	Group
Hull Royal Infirmary (Hull and East Yorkshire Hospitals)	Yorkshire & Humber	1
The Rosie Hospital (Cambridge University Hospitals)	East of England	1
Princess Anne Hospital (University Hospital Southampton)	South East	1
St Michaels Hospital (University Hospitals Bristol)	South West	1
Norfolk and Norwich University Hospital	East of England	1
Leeds General Infirmary (The Leeds Teaching Hospitals)	Yorkshire & Humber	1
St George's Hospital (St George's University Hospitals) - Exemplar unit	London	1
University Hospital (Universal Hospitals Coventry and Warwickshire)	West Midlands	2
Burnley General Teaching Hospital (East Lancashire Hospitals)	North West	2
St Peter's Hospital (Ashford and St Peter's Hospitals)	South East	2
Luton & Dunstable University Hospital	East of England	2
Royal Bolton Hospital (Bolton) - Exemplar unit	North West	2
Diana, Princess of Wales Hospital, Grimsby (Northern Lincolnshire and Goole)	Yorkshire & Humber	3
Scunthorpe General Hospital (Northern Lincolnshire and Goole)	Yorkshire & Humber	3
Basildon University Hospital (Basildon and Thurrock University Hospitals)	East of England	3
Royal Cornwall Hospital	South West	3
Kingston Hospital	London	3
St Mary's Maternity Hospital (Poole Hospital)	South West	3
The Princess Alexandra Hospital	East of England	3
Epsom Hospital (Epsom and St Helier University Hospitals)	South East	3
St Helier Hospital (Epsom and St Helier University Hospitals)	London	3
Lister Hospital (East and North Hertfordshire) - Exemplar unit	East of England	3
Royal Surrey County Hospital	South East	4
Stepping Hill Hospital (Stockport)	North West	4
West Cumberland Hospital, Whitehaven (North Cumbria University Hospitals)	North West	4
The Cumberland Infirmary, Carlisle (North Cumbria University Hospitals)	North West	4
Leighton Hospital (Mid Cheshire Hospitals) - Exemplar unit	North West	4
Royal Bournemouth Hospital (The Royal Bournemouth and Christchurch Hospitals)	South West	5 ⁽²⁴⁾
Dorset County Hospital, Dorchester	South West	5

3.2.4 Approach to outcome measurement

MEASURING ADHERENCE

The table below captures the evidence Tamba's independent midwifery consultants were looking for in patients' notes in order to quantify a unit's adherence to NICE QS46. If no evidence was found in the notes, it was assumed that the action had not been taken.

For each of the seven statements reviewed, a percentage adherence was calculated (number of patient notes meeting

guidelines/number of patient notes reviewed). For statements three and five, a mean average of three "sub-statements" was calculated to give an overall adherence for that statement. For statement four the mean average of two sub-statements was taken.

An overall adherence rate for each unit was then calculated by taking the mean average of the seven statement adherence rates.

TABLE 3 Statements reviewed in Tamba's audit

Statement	Evidence
1	Chorionicity and amnionicity of the pregnancy determined using ultrasound and recorded between 11 weeks 0 days and 13 weeks 6 days
2	Fetuses labelled using an ultrasound scan and recorded between 11 weeks 0 days and 13 weeks 6 days
3	3a. Women seen by an obstetrician specialising in multiple pregnancies
	3b. Women seen by a midwife specialising in multiple pregnancies
	3c. Scans undertaken by a sonographer with specialist training in multiple pregnancies
4	4a. Women with a care plan that specified the timing of MDT antenatal care appointments
	4b. Women with a care plan that specified scans at correct intervals appropriate for the type of multiple pregnancy
5	5a. Women monitored for fetal complications according to the chorionicity and amnionicity of her pregnancy
	5b. Monitoring carried out by same person
	5c. Monitoring carried out by someone qualified to detect TTTS
7	Women that had a discussion by 24 weeks with one or more members of the MDT about preterm labour & birth
8	Women that had a discussion with one or more members of the MDT by 32 weeks about the timing of birth and possible modes of delivery

MEASURING PATIENT OUTCOMES

Units supplied statistics relating to the following patient outcomes for multiple pregnancies⁽²⁵⁾. These represent key outcomes in antenatal care and are in line with those measured in other national maternity improvement initiatives. This allowed the project to establish outcomes for comparison against national averages and to assess how units were performing against units of a similar size and resource on a national scale.

- Stillbirth rates
- Neonatal deaths
- Neonatal admissions
- Emergency caesarean sections

MEASURING CHANGES IN PRACTICE

In order to determine changes in working practice, Tamba's midwifery consultants carried out structured conversations with key health professionals as part of the

audit process. Health professionals were also asked about changes they have implemented during the external project evaluation (see 3.3.1 below). The following areas of working practice were prioritised for measurement.

- The presence of a multiple pregnancy care plan in patient notes
- The presence of a multiple births antenatal clinic
- The presence of a multiple pregnancy specialist obstetrician
- The presence of a multiple pregnancy specialist midwife
- The presence of a multiple pregnancy sonographer
- Consistent positional labelling of fetuses at the dating scan and recording positions in patient notes using "left and right", or "upper and lower"

3.2.5 Project management and governance

The project was managed by a small team within Tamba consisting of a Project Manager, Senior Project Co-ordinator and Project Co-ordinator - supported by the charity's senior management. Three independent midwifery consultants (from Liverpool Women's Hospital, Leeds General Infirmary and the Brighton and Sussex University Hospital Trust) were contracted by Tamba to conduct the audits and support the units with implementation. Statistical support was originally provided by an Evaluation Officer and subsequently outsourced to a statistical services company (Select Statistics).

The project team reported each quarter to a steering committee.

Membership of the committee included:

- Department of Health & Social Care - Maternity Safety Programme
- NICE
- Royal College of Obstetricians & Gynaecologists
- Royal College of Midwives
- Royal College of Nursing
- British Association of Perinatal Medicine
- Bliss
- Sands
- MBRRACE
- Multiple Births Foundation

3.2.5 Project management and governance (continued)

- NHS England - Maternity Voices Partnership & Maternity Transformation
- NHS Improvement - Maternity and Neonatal Transformation
- FASP (Fetal Anomaly Screening Programme)
- Society of Radiographers
- Care Quality Commission - Maternity
- St George's Hospital
- The University of Birmingham

3.3 Scope of the report

This report explores the performance of the Maternity Engagement Project in relation to its core hypothesis - i.e. that units could be encouraged and supported to make changes to the antenatal care they provide for multiple pregnancies, that these changes would increase units' adherence to NICE QS46, and that increased adherence to the

guidelines would improve patient outcomes.

In addition, the experiences of Tamba and the participating units of implementing the project are used to generate recommendations for all those seeking to improve practice and outcomes for twin and other multiple pregnancies.

3.3.1 Inputs

This report draws on the following sources:

- An interim report of the project produced in conjunction with Eva Antoniou ("*NICE works, what we have learnt so far*") covering analysis of the baseline audit results (July 2018)⁽²⁶⁾.
- An external evaluation of the project conducted by Fiveways NP Ltd (December 2018). This evaluation:
 - ◆ reviewed the implementation of the project and its method of measurement.
 - ◆ identified good practice, potential improvements, key recommendations and lessons learned to support the development of the approach for other maternity services.
- ◆ identified outcomes generated by the project in addition to those relating to NICE adherence and patient outcomes.
- External statistical analysis of the project's outcomes (actions taken, levels of NICE adherence and patient outcomes) comparing the baseline and re-audit data, produced by Select Statistics Ltd (February 2019).
- Feedback provided by parents from participating units via a Tamba patient satisfaction survey conducted after the baseline audit, and one in-depth qualitative interview (from an additional unit). The implementation of the parent survey was problematic - units were distributing it at different

times and the response (97 surveys from 16 units) was not sufficient to triangulate NICE adherence, patient outcomes and patient experience. (perhaps understandably as the audience were parents of newborns). Although not statistically robust enough to be included in the project's outcome analysis, qualitative responses from parents have been used to illustrate points within this report.

- Feedback from professionals working in the participating units (the external evaluation generated insight from 47 professionals from 25 participating units via an online

survey and conducted nine in-depth interviews. Research for the final report included a further eight in-depth interviews with professionals from the units).

- Feedback from the Tamba project team and steering group (the external evaluation generated insight from seven members of the Tamba project team, including the three midwifery consultants, and three steering committee members via in-depth interviews and facilitated discussions).
- A review of project documentation (e.g. audit reports, resources available to units, reports to the funder).

3.3.2 Report structure

Section 4 covers the actions taken by units (with Tamba's support) to improve NICE Q46 adherence, outlining what changes to practice occurred in the 12 months following Tamba's baseline audit and action plan. Qualitative feedback from parents and professionals working in the units (including four detailed case studies) is used to highlight the need for those actions and the experience of making those changes.

Section 5 covers the changes to the level NICE Q46 adherence for each statement across the participating units in the 12 months between the baseline audit and re-audit. It also explores the correlation between taking the actions described in section 4 and improving adherence.

Section 6 explores the changes in patient outcomes across the participating units in the 12 months between the baseline audit and re-audit. It explores the relationship

between changes to adherence (described in section 5) and changes to patient outcomes. It also postulates what the wider impact of Tamba's project might be if more units were able to achieve the level of improvement in performance as achieved by the project.

Section 7 summarises key findings from an external process evaluation of the project, including learning for future implementation.

Sections 8 and 9 outline the key conclusions from the project and clarify its recommendations for NHS trusts, units, and policy makers.





4

Changes to unit
practice during
the project

Key points

- 59% units introduced at least one new working practice in the twelve months between baseline audit and re-audit in order to improve NICE QS46 adherence.
- 85% units improved at least one area of working practice in order to improve NICE QS46 adherence.
- All but one of the 26 units that needed to make changes in working practice did so.
- Units in group two made the most positive change in the six areas of practice measured by the project - addressing (by introducing or improving practice) 81% of the areas of practice requiring change.
- The change most commonly introduced by units was the establishment of a multiple pregnancy specialist midwife (38% units).
- The area of practice in which most units (73%) made positive change (i.e. introduced or improved) was the use of a multiple pregnancy care plan. This change was facilitated by the provision of Tamba's NICE endorsed Multiple Pregnancy Care Pathway⁽²⁷⁾.
- Introducing and improving specialist obstetricians, midwives and sonographers was often challenging for units as they faced barriers including concerns of "deskilling" those who weren't in a specialist role.
- Other barriers to change experienced by units included staffing and capacity issues, and resistance to alter established working practices within sonography teams.
- 85% of professionals in units that had completed the project said that the awareness of the clinical needs of multiple pregnancy families had improved (no-one thought it had got worse).
- 81% said the continuity of care for women expecting multiples had improved over the period of the project (no-one thought it had got worse).



Data analysis of changes made by units during the twelve months between baseline audit and re-audit focussed on the following six areas of practice.

- A multiple pregnancy care plan (Quality Statement 4)
- A multiple births antenatal clinic (supporting QS4, QS6 and QS7)
- A multiple pregnancy specialist

obstetrician (QS3a)

- A multiple pregnancy specialist midwife (QS3b)
- A multiple pregnancy sonographer (QS3c)
- Positional labelling (QS2)

In each area, units were scored on a five-point scale as shown in Table 4.

TABLE 4 Changes made by units

Scale	Situation at baseline	Situation at follow-up	Description
A	Not present	Present	"Introduced"
B	Present - but not optimum	Present - and optimum	"Improved" ⁽²⁸⁾
C	Present	Present	"No change - positive"
D	Not present	Not present - planned	"Planned"
E	Not present	Not present	"No change - negative"

4.1 Actions taken by unit and group

- 16 of the 27 (59%) units introduced at least one of the six changes above (i.e. "A" on the above scale) in the twelve months between audit and re-audit.
- 23 units (85%) made improvements to one or more of those six areas of practice (i.e. "B" on the above scale).
- Only two units did not make any improvements or changes but one of those already had each action in place at the baseline audit.

- Following the project, five units had made the changes necessary to demonstrate optimum levels of practice across all six areas.

Considering those six areas of practice, units in group two made the most positive change - addressing (by introducing or improving practice) 81% of the areas requiring change (i.e. those that were not already in place at baseline). Units in group three made the least positive change.

TABLE 5 Positive changes by group

Group	Number of units	Areas requiring change	Areas introduced	Areas improved	% of areas requiring change addressed
1	6	25	8	7	60%
2	5	26	11	10	81%
3	10	58	5	28	57%
4/5	6	35	12	10	63%
Total	27	144	36	55	63%

4.2 Actions taken by area of practice

This section provides more details of the change recorded in the re-audit in the six areas of practice.

- The change most commonly introduced by units (A on the scale) was the establishment of a multiple pregnancy specialist midwife (38% of units).
- The three areas most likely to be improved by units (B on the scale) were the multiple pregnancy care plan (46% units), the provision of a multiple pregnancy sonographer (44% units) and positional labelling (44% of units).
- The area in which most units (73%) made positive change (A plus B) was the use of a multiple pregnancy care plan.
- If those units that already had the required practice in place at the baseline audit are excluded, the change that was implemented the least involved the specialist multiple births antenatal clinic. Only 44% of the 25 units that could have introduced or improved this

aspect of their service did so. In addition, overall the proportion of units making positive change (A plus B) regarding the provision of a multiple pregnancy specialist obstetrician looks low (40%), but this represents 61% of the 18 units that had the opportunity to introduce or improve that area (see Table 6 overleaf).



TABLE 6 Positive changes by area of practice within units that required action

Action (number of units)	% units introduced (A)	% units improved (B)	% making positive change (A+B)	% making positive change that did <u>not</u> already have this in place
A multiple pregnancy care plan (26)	27%	46%	73%	79% (24)
A specialist multiple births antenatal clinic (27)	23%	19%	42%	44% (25)
A multiple pregnancy specialist obstetrician (26)	7%	33%	40%	61% (18)
A multiple pregnancy specialist midwife (27)	38%	19%	57%	60% (25)
A multiple pregnancy sonographer (27)	22%	44%	66%	75% (24)
Positional labelling (27)	19%	44%	63%	68% (25)

4.2 Actions taken by area of practice (continued)

More details of changes by area of practice follows. In some cases, units introduced the recommended change after the re-audit, where there is evidence of this it is noted beneath the relevant table below. Relevant qualitative feedback generated in

the research for the external evaluation relating to these changes is also included.

4.2.1 A multiple pregnancy care plan

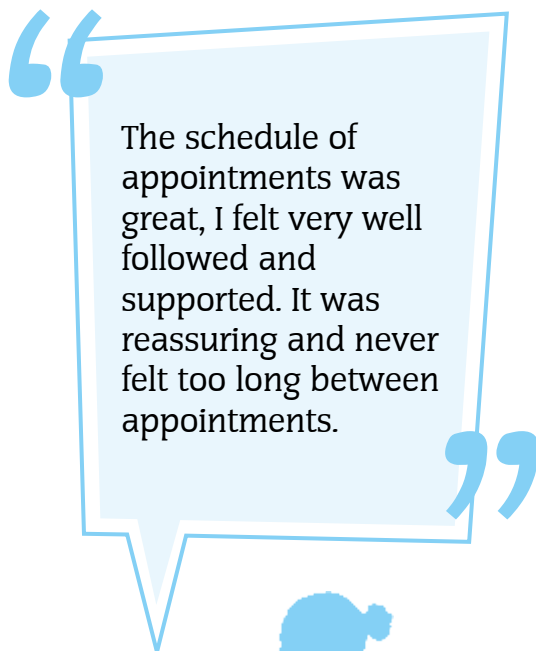
27% of units introduced a multiple pregnancy care plan and an

additional 46% improved an existing care plan.

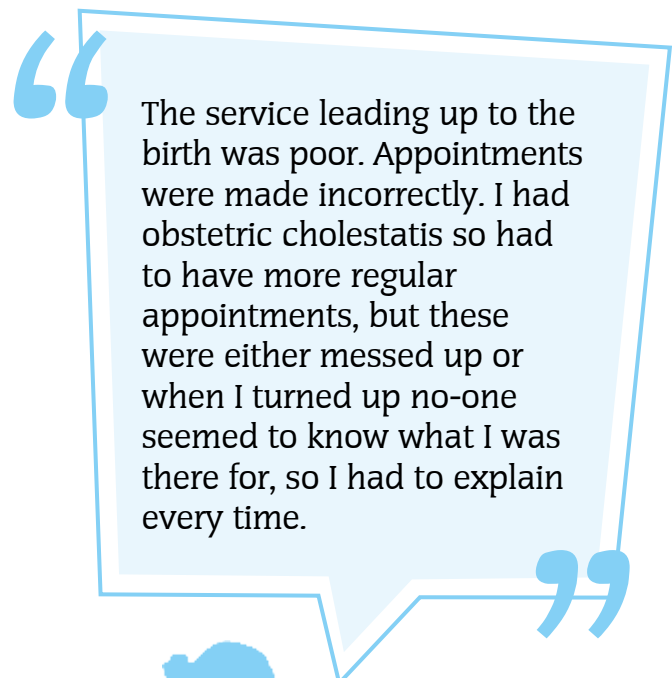
TABLE 7 Actions taken - Multiple care plan

Group	Introduced	Improved	No change - positive	Planned	No change - negative
1 (5) ⁽²⁹⁾	2	1	1	0	1
2 (5)	3	1	1	0	0
3 (10)	1	6	0	1	2
4/5 (6)	1	4	0	1	0
Total (26)	7	12	2	2	3

In qualitative feedback gathered after the baseline audit, parents revealed mixed experiences of how their antenatal care was planned:



Parent 15



Parent 3



In particular, parents would welcome more detailed discussions around the timing and mode of delivery as part of their plan:



Parent 12

“ It was clear from discussions prior to 36 weeks that they would prefer a vaginal delivery - I wasn't really asked what my preference was. I was never really sure of how far it would be safe for me to go and when they would consider intervening. ”



There were no discussions - I was told!



Parent 10



The provision of Tamba's Multiple Pregnancy Care Pathway proforma supported units standardise their care planning:

Unit 1
Midwife
(survey)



“ The care plans have been more consistently adhered to over the audit period. Prior to the audit, our documentation did not always prove that women were receiving information about the signs and symptoms of pre-term labour, or that the delivery had been planned by 32 weeks. Our documentation is more robust now. ”



We have a high turnover of midwives and doctors - the fact the proforma is so user friendly has really helped. Some registrars have worked in hospitals where they don't have a proforma and their feedback is 'this is great, this is brilliant, it makes it simple and easy to see that all these risk factors have been discussed'. Parents like to have the facts and figures about the risk factors, the proforma makes sure people are on the right medication or supplements and helps to identify any issues early. It also ensures discussions on risks happen in a timely fashion - they can be as early as 14-18 weeks. We have ladies who transfer - we complete the proforma for them. Often they haven't been told about the risks.

Unit 10
Midwife
(interview)



» Case study: Introducing a multiple pregnancy care plan

Tamba's Multiple Pregnancy Care Pathway is a tool that supports healthcare professionals to meet specific aspects of the multiple birth NICE guidelines. It also supports statements 1, 3, 4, 5, 7 and 8 in NICE's quality standard on multiple pregnancy (QS46). The proforma is used throughout a pregnancy and, as well as encouraging the NICE guidelines to be followed, it also captures important information relating to the pregnancy at key stages. NICE endorsed use of the proforma in summer 2018.

According to Mr Richard Smith, Consultant at Norfolk and Norwich University Hospitals Trust, Tamba's Maternity Engagement Project encouraged his unit to develop their own care plan which is initially completed at the parents' booking visit. *"Beforehand the approach was not always consistent across members of the team - with notes being written freehand rather than in a template. Tamba helped us focus our efforts. The fact we were going to be audited again in twelve months' time gave us some*

specific targets to work towards. Tamba also offered useful advice and guidance on the content of the plan."

Richard has already seen the benefits of using the care plan. *"It provides a consistent approach for parents no matter who they are seeing, and ensures we are complying with the national guidance. It has also helped us to share important information both with parents, who receive a copy of their plan, and with other members of the team. We are now moving towards embedding the free text comments made on the antenatal care record into the patients' electronic record for intrapartum and postnatal care - so they are very visible to the relevant member of staff without them having to trawl through the notes."*

Richard also considers the care plan has contributed to patient safety. *"Any measure that tightens the control we have over meeting the national guidance has to be a positive step towards patient safety both for mothers and babies. Furthermore, we have two specialist consultants, and other obstetricians at different stages of their training but who*

are not specialists. The care plan means that those doctors in training are more empowered to deal with less complicated multiple pregnancies, which allows more time for specialists to see more complex patients who need consultant input at every appointment."

One case study where the project has improved safety involved a patient with a pregnancy recorded as dichorionic at booking. Complications arose which were suggestive of a monochorionic pregnancy. The team were able to look back at the scan image (which the sonography team have been attaching to the record since Tamba's visit). This allowed them to reclassify the pregnancy as monochorionic and manage the pregnancy appropriately, with a good outcome.

In conclusion, Richard feels that the project has been *"a positive experience for patients and staff, I would encourage any unit considering introducing a multiple specific antenatal care plan to engage with Tamba every step of the way."*

4.2.2 A specialist multiple births antenatal clinic

23% of units introduced a specialist multiple births antenatal clinic, and a further 19% made improvements to the delivery of their clinic. These steps were twice as likely to be

taken in the larger units (groups 1 and 2 - 60% introduced or improved) than smaller units (groups and 4 - 31%).

TABLE 8 Actions taken - Multiple birth clinic

Group	Introduced	Improved	No change - positive	Planned	No change - negative
1 (5) ⁽³⁰⁾	2	1	1	0	1
2 (5)	1	2	0	2*	0
3 (10)	2	1	0	1	6
4/5 (6)	1	1	0	1	3
Total	6	5	1	4	10

* One site (in Group 2) that was recorded as planning to introduce a clinic at their re-audit (in March 2018), indicated in the external evaluation survey (September 2018) that they had subsequently made this change.

Several respondents to the external evaluation survey mentioned the impact of a specialist clinic in their qualitative feedback:

“ The biggest change has been the introduction of the Specialist Midwife Twin Clinic. Women with a DCDA pregnancy are now having excellent continuity of care which they appreciate and enjoy. ”

Unit 6
Midwife
(interview)



“ The previous clinic was a consultant-led clinic, the new one is about parental wellbeing. More [expectant mothers] are opting for vaginal birth because they see they are going to be looked after by a midwifery team - the possibility of a little bit of normality in what would otherwise be considered a higher risk pregnancy. ”

Unit 8
Midwife
(interview)



“

The midwife-led clinic builds a relationship with multiple pregnancy women whom are often anxious and need lots of reassurance.

”

Unit 10
Midwife
(survey)



This was echoed in one parents' feedback:

“



Parent 7

Overall the care I received was just as I hoped and expected it would be. I liked the fact that everything was in one place (midwife, sonographer, consultant and diabetic clinic - as I developed gestational diabetes) and staff arranged appointments to run after the other. I was monitored more closely than in a regular pregnancy.

”



Case study: Introducing a specialist multiple births antenatal clinic

Although not specifically mentioned in the NICE QS46 guidance, establishing a specialist multiple births clinic supports the delivery of several of the quality statements (e.g. 4, 6 and 7).

Setting up a multiples clinic was something that Kingston Hospital NHS Foundation Trust had given the green light for just prior to Tamba's Maternity Engagement project. Resources in terms of hours and space had been approved for a clinic for those expecting non-identical twins.

According to Sophie Linghorn, Multiple Birth Midwife at Kingston Hospital NHS Foundation Trust, Tamba's support proved useful in the early days of the clinic, as a point of reference for what needed to be covered at each appointment. The on-going support of Tamba's specialist midwife was also important. In addition, Sophie feels that the support she received from

her fetal medicine consultants and consultant midwife was *"invaluable"*. Having those relationships in place made the introduction of the clinic very straightforward.

The clinic has allowed Sophie to incorporate specialist midwifery-led care into a previously consultant-led model. *"I am now able to have regular contact with all our twin mothers who are now getting specialist midwife support."* For example, she can *"drip feed antenatal information at every appointment so parents are getting information about (for example) feeding, getting into a routine, safe sleeping, and the neonatal unit rather than cover it all in one 'twins talk.'"* Sophie also has been given time to do the booking appointment for those expecting twins. *"Parents are also signposted to Tamba's resources plus they have an email address for non-urgent advice or questions."*

The twin clinic has added to an already close working relationship between Sophie and the fetal medicine consultants - for Sophie this has meant that, for the more high-risk pregnancies, *"there is more of a feeling that we are all watching these women, their scans and their appointments."* This will help improve patient safety: *"I could tell you the history of every pregnant woman from last year - we have much more surveillance and communication within the team."*

The benefits of offering the clinic and providing continuity of care are clear to Sophie: *"as a midwife, it is the best way to work and it gives me a great deal of satisfaction - but the main benefit is for the women. I have never had so many thank you cards from parents in my career! They feel more looked after. All mention the trust and reassurance that is built and how anxiety levels have lessened."*

4.2.3 A multiple pregnancy specialist obstetrician

Two thirds of units already had a nominated multiple pregnancy obstetrician at baseline, but half of these did make improvements to

their provision. Two units (both in group four) introduced a specialist obstetrician during the project.

TABLE 9 Actions taken - Specialist obstetrician

Group	Introduced	Improved	No change - positive	Planned	No change - negative
1 (6)	0	1	3	2*	0
2 (5)	0	2	3	0	0
3 (10)	0	5	2	1	2
4/5 (6)	2	1	1	2	0
Total (27)	2	9	9	5	2

* One site (in Group 1) that was recorded as planning to introduce a specialist obstetrician at their re-audit (in February 2018), indicated in the external evaluation survey (September 2018) that they had subsequently made this change.

4.2.4 A multiple pregnancy specialist midwife

38% of units introduced a specialist multiple pregnancy midwife, and a further 19% improved their provision.

Positive change was less evident in group three (with only 40% introducing or improving this role).

TABLE 10 Actions taken - Specialist Midwife

Group	Introduced	Improved	No change - positive	Planned	No change - negative
1 (5) ⁽³¹⁾	2	0	1	0	2
2 (5)	2	3	0	0	0
3 (10)	2	2	0	3	3
4/5 (6)	4	0	0	2	0
Total (26)	10	5	1	5	5

4.2.5 A multiple pregnancy sonographer

22% of units introduced a nominated multiple pregnancy

sonographer, and a further 44% improved their provision.

TABLE 11 Actions taken - Multiple pregnancy sonographer

Group	Introduced	Improved	No change - positive	Planned	No change - negative
1 (6)	2	1	3	0	0
2 (5)	2	2	0	0	1
3 (10)	0	7	0	1	2
4/5 (6)	2	2	0	1	1
Total (27)	6	12	3	2	4

Case study: Building a Multi-Disciplinary Team

The third quality statement within NICE QS46 is that *"women with a multiple pregnancy are cared for by a multidisciplinary core team"* and that *"members of this team will have the expertise needed to provide high-quality care for women with a multiple pregnancy."* The guidance recommends the team consists of a specialist obstetrician, specialist midwife and an ultrasonographer, *"all of whom have experience and knowledge of managing twin and triplet pregnancies."*

The situation at Basildon and Thurrock University Hospitals NHS Foundation Trust before the Maternity Engagement project was not in line with this guidance. Women expecting dichorionic twins were put under the care of one of eleven consultants and there was no dedicated multiples midwife. Women would see the midwife who was assisting the doctor in their clinics at the time. They might also see their registrar.

According to Donna Southam, Advanced Specialist Audit and Research Midwife at Basildon and Thurrock *"it was evident in the initial audit that Tamba conducted that there was no consistency within the consultant team as to how to manage twin pregnancies."* The audit highlighted that, although monochorionic twins were seen by the same fetal medicine consultant, those expecting dichorionic twins were neither seen by an obstetrician or a midwife specialising in multiple pregnancies, nor scanned by a sonographer with specialist training in multiple pregnancies.

Tamba's recommendation was to

implement a multiples clinic, run by specialist staff.

To implement this Donna embarked on ten months of "non-stop escalation" feeding back at divisional governance meetings, the NICE committee, and meeting with the Clinical Director and General Manager of the imaging department. For Donna, implementing change was all about raising the issues at the right level and *"making everyone aware we weren't offering the best service we could."*

To implement change Donna believes it is necessary to have someone leading the project with experience of setting up services and project management, who is tenacious and willing to be a leader within a change management process, and able to build the respect of the consultant community.

The trust now has a dedicated multiples clinic with a specialist midwife and deputy (who now see all the women after their scans), and a specialist obstetrician, which was challenging as, according to Donna, *"we needed to review job plans to facilitate a consultant leading on the clinic. Job planning for consultants is not a simple process - it takes about a year to get anything changed and agreed. It can be difficult for Clinical Directors and Clinical Leads to manage."*

There is also a lead sonographer, although some of Tamba's other recommendations on screening (such as labelling and weight discordance) took longer to introduce. In this case, Donna stresses the importance of having the resources to constantly monitor implementation: *"we were told*

by sonography they were doing labelling and weight discordance, but they weren't. I had to get it on the imaging department's risk register that they were breaching NICE guidance, once I did that it turned around within a week." The fact that the trust was going to be re-audited by an external organisation (Tamba) also helped with encouraging action: *"when people know somebody's watching they change their behaviour"*.

The benefits of the multi-disciplinary team are already being realised. *"It feels like a team, they work well together. It's co-ordinated. The midwife can bring forward appointments with the consultant if she has any concerns. Women have fewer, more streamlined appointments and a named contact. It's good for continuity of care."*

Donna is full of praise for Tamba's approach *"it's a low-cost intervention that leads to a smarter way of working."*

Crucially, having the MDT may have already helped to improve patient outcomes. A weight discordance of over 25% should be referred to the fetal medicine unit. In 2018 the MDT had three cases of a discordance of over 40% who were referred, seen the next day, and delivered within 72 hours because of serious concerns. According to Donna *"we weren't doing that before, previously these parents might have seen a junior doctor and been sent home, and the sonographers wouldn't be writing down the weight discordance - so we may have had poor outcomes that could have been prevented. Now we are monitoring and following guidance and have clear pathways in place."*

4.2.6 Positional labelling

19% of units introduced positional labelling at the dating scan, and a further 44% improved their practice.

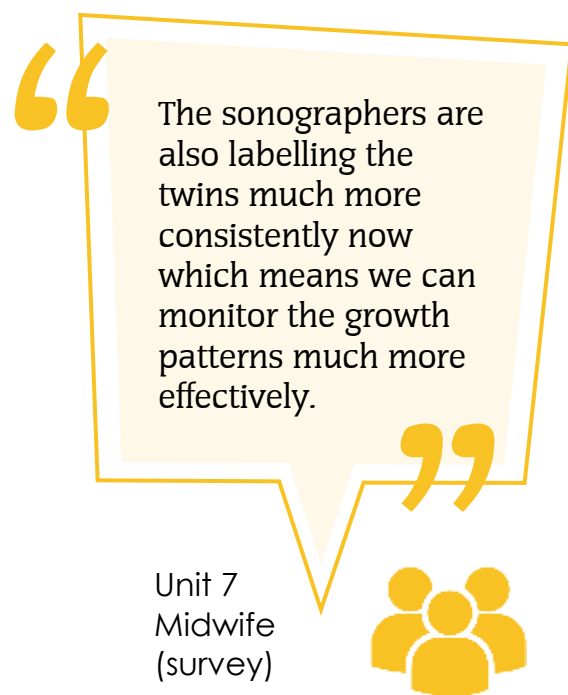
TABLE 12 Actions taken - Positional labelling

Group	Introduced	Improved	No change - positive	Planned	No change - negative
1 (6)	0	3	2	0	1*
2 (5)	3	0	0	2**	0
3 (10)	0	7	0	1	2
4/5 (6)	2	2	0	1	1
Total (27)	5	12	2	4	4

* One site (in Group 1) that was recorded as not having labelling in place, and not planning to introduce it at their re-audit (in February 2018), indicated in the external evaluation survey (September 2018) that they had subsequently made this change.

** Two units (in Group 2) that were recorded as planning to introduce labelling at their re-audit (in February and August 2018 respectively), indicated in the external evaluation survey (September 2018) that they had subsequently made this change.

Qualitative feedback described how action taken on labelling was improving patient care:



4.3 Other changes prompted by the project

The research amongst units for the external evaluation revealed that involvement in the project generated broader positive

changes in addition to the changes specifically targeted by the project (above).

4.3.1 Attitudinal change

Amongst staff in units that had had both their audit and re-audit (27):

- 81% said that the understanding of what is required to deliver the best possible care to multiple pregnancy families had improved (no-one thought it had got worse).
- 85% said that the awareness of

the clinical needs of multiple pregnancy families had improved (no-one thought it had got worse).

- 82% agreed that "the Maternity Engagement Project has helped to raise the profile of effective care for women expecting multiples within my hospital" (no-one disagreed).

This cultural or attitudinal change was also reflected in some of the qualitative feedback:



Unit 11
Senior
Management
(survey)

“

The overall focus on multiples by the team has led to an improvement in standards and care provided to families.

”

“

It has just snowballed from a simple email saying I was keen to get involved in this audit! Because the audit was so positive, news travelled to senior management. They were dumbfounded we had done so well in a service where we hadn't put any resources. I finally found people were listening. [Care for multiples] wasn't just "another" specialty in midwifery. People finally sat up and listened.

”

Unit 8
Midwife
(interview)



4.3.2 Increased continuity of carer

Having more specialist staff is anticipated to improve continuity of carer as parents are likely to see

the same staff members during their antenatal care.

"Better Births", the report of the

National Maternity Review, recommended that the NHS in England should roll out continuity of carer to a much greater number of women. This reflects an aspiration that "women should have continuity of the person looking after them during their maternity

journey, before, during and after the birth. This continuity of care and relationship between care giver and receiver has been proven to lead to better outcomes and safety for the woman and baby, as well as offering a more positive and personal experience"⁽³²⁾

In qualitative responses to Tamba's survey, parents expecting multiples clearly would value this approach:



Parent 16

“ [I] always saw the same consultant who did most of the scans and was excellent. The care we received was second to none and we can't sing her praises highly enough. If I could nominate her for some kind of recognition award I would. ”



I only saw the specialist multiple consultant on one occasion about 30 weeks and he was great and knowledgeable. I was very anxious as I had had wrong and conflicting information from other consultants.



Parent 22



Parent 20

“ The many consultants we saw couldn't answer our questions, it was only on the penultimate visit when we saw the twins specialist that we were informed accurately of how the pregnancy was progressing. Numerous conversations with different consultants made my pregnancy very stressful. I saw many sonographers - some had an idea, some didn't. ”



As there was a different midwife covering every antenatal clinic, I had to explain my pregnancy each time.



Parent 4

Amongst staff in units that had had both their audit and re-audit (27) 81% said the continuity of care for women expecting multiples had improved over the period of the project. No-one felt it had got worse:

Unit 3
Midwife
(interview)



“ I have seen from the changes we have made the benefits of having continuity of sonographer - and how much that is improving patient experience and their ability to build a relationship with the person caring for them, and in terms of consistency of measurements, the scan report, and the management pathway. ”

4.3.3 Teamwork

69% of staff in units that had had both their audit and re-audit (26) said the team-working between obstetricians, midwives and sonographers had improved. No-one felt it had got worse. This confirms the qualitative comments

on more effective teamwork included in the case studies above on establishing an antenatal multiple birth clinic (4.2.2) and building a multi-disciplinary team approach (4.2.5).

4.3.4 Other changes

The qualitative research also revealed additional steps being introduced to improve care in other areas as a result of or, at least, coinciding with, the MEP such as increasing parental education

sessions, securing resources for a midwife to visit parents at home postnatally, care plan proformas being developed for intrapartum and post-natal care, and changing policies relating to water births.

“ The project motivated and encouraged us to improve, even in areas it wasn't focusing on. ”

Unit 1 Midwife
(interview)

“ The project has changed my personal practice in discussions I have with women under my care. ”

Unit 13
Obstetrician
(survey)

“ The birth suite is developing a pro forma for twin women in labour. NICU are also involved because they have seen what we're doing. They have used us as a spring board. ”

Unit 4
Midwife
(interview)

4.4 Barriers faced and overcome

The project revealed common barriers faced by units when implementing the changes above,

and suggestions for how they might be overcome.

4.4.1 "Deskilling"

Changes that involved creating specialist roles could present significant barriers to change, particularly around the issue of "deskilling" (i.e. that by placing the specialism for multiples with one member of the team, other members of the team will not have as much contact with multiples and, therefore, lose control or the

opportunity to develop their skills in caring for them). In general, larger units tended to be more accustomed to having specialist roles. One of Tamba's midwifery consultant reported that making the case for an MDT and a specialist clinic was more challenging for smaller units with fewer multiple pregnancies.

Tamba
Midwifery
Consultant 3



“ For those units the focus was more on care pathways and making sure all midwives know where resources are. It was better to use a team leader to educate a small team rather than put all the onus on one midwife. ”

In others it was clear that some compromises had been found to facilitate this change in practice:

“ De-skilling is an issue with a specialist service. There was resistance from ultra-sonographers who felt they were being de-skilled, so we introduced a deputy that rotates so others can still be involved. IVF consultants like to see their own pregnancies. Some didn't want to give them up. Our compromise was for them to work alongside a consultant lead for multiples, so they will still have an overview. ”



Unit 3
Midwife
(interview)



Tamba
Midwifery
Consultant 3

“ There needs to be practical compromise. There doesn't have to be one consultant lead. Narrowing it down from six to two is a step in the right direction. It is less about a named role, more about making sure someone is taking responsibility. ”

4.4.2 Influencing sonography teams

All three of Tamba's midwifery consultants spoke about sonography being a hard area in which to effect this change, especially where sonographers work for the whole hospital, not only maternity. It was reported that many sonographers enjoyed variety in their work and that there are concerns about developing repetitive strain injury (RSI) if sonographers were only scanning multiple pregnancies. This concern is compounded by the issue of

obesity in pregnant women increasing the physical demands on sonographers. There were also additional barriers relating to staffing and capacity issues due to the implementation of the Growth Assessment Protocol (GAP) national scanning initiative⁽³³⁾. It may be that having a clear process for all to follow, rather than having a specialist scanning multiple pregnancies all the time, would be a more effective method of facilitating change in this area.

“ We have 8-10 sonographers here but not one of them is keen to join the multiple team - they say it is stressful scanning twins and there are also concerns about RSI. Midwives love continuity, it is a fabulous way to work - but I don't think sonographers are in that headspace, maybe if they experienced it they would understand that it is an easier and more satisfying way to work, you feel like you can really make a difference if you have got to know someone along the way and they trust you. ”

Unit 6
Midwife
(interview)



4.4.3 Resources and priority

Another barrier was ensuring the improvements identified by the audit were given the appropriate priority and resources (whether that be time or money). This was particularly challenging for those

leading the project who needed to influence change outside of their team or area of control. The qualitative feedback highlights these issues:

“

Our lead midwife oversees multiples, but it is not a specialist role and she doesn't have protected hours - the barriers are finding resource and getting all the MDT to agree that is important compared with the other pulls on their resources. We want a one stop clinic - but that needs organisation. We would need to release a consultant and a midwife to just concentrate on twins, that has knock on effects on other staff - the organisational aspects are challenging.”

Unit 2
Midwife Sonographer
(interview)



“

[The barriers are] personnel and finance. Our department has many pressures to improve care, and other areas are seen as higher priority e.g. SGA screening, smoking cessation and maternal mental health.”

”



Unit 14
Obstetrician
(survey)



Unit 15
Consultant Radiologist
(survey)

“

Funding is a barrier in terms of clinic time and staff availability to ensure consistency of follow up, and in terms of enabling ultrasound to have dedicated numbers and members of staff assigned to the scanning of multiples.”

”

The case study on building a multi-disciplinary team above (4.2.5) reveals the level of tenacity and persistence needed to positively influence others.

Qualitative feedback from the external evaluation revealed other methods that were deployed to ensure the project was given high enough priority by others such as engaging colleagues early in the project (especially the baseline audit) and linking the project to wider priorities or projects being undertaken by the trust - therefore tapping into to others' motivation to achieve those other objectives.

For example, aligning the project's objectives to recommendations within *"Better Births"*⁽³⁴⁾ (such as personalised care, continuity of carer, multi-professional working) and *"Saving Babies Lives - A care bundle for reducing stillbirth"*⁽³⁵⁾ was considered useful. In addition, one project lead used compliance with the CQC framework to drive change and it was also reported that NICE's endorsement of the project had helped leads bring it to the attention of others.

It should be recognised that the actions achieved, qualitative feedback and case studies all

demonstrate that changes in practice that make a significant impact on the care provided can be made at low or zero cost. For example, Tamba's Multiple Pregnancy Care Pathway, endorsed by NICE, is available for all units to implement at no cost. Additional resources are also

available from Tamba. Furthermore, the NHS tariffing system provides units with additional funding for multiple pregnancies. A unit receives £1,693 more for the antenatal care of a multiple pregnancy than a singleton⁽³⁶⁾.

» Case study: A parent's view

Vicky, mother to twins Sam and Joe, describes the antenatal care she received in one of the participating hospitals as "a really positive experience."

Key to her care was regular appointments with a specialist multiple midwife (whom she describes as "absolutely fantastic, like going to see a friend") and a specialist multiple consultant: "they instilled a lot of confidence in me, and I was happy to trust them with my care." When it came to sonography, Vicky saw a different professional each time.

Having continuity of midwifery and obstetric care was important for Vicky and allowed her to raise issues and concerns more easily. "If you see different people, they need time to read through your notes to familiarise themselves with your case. It can get quite repetitive answering the same questions over and over again.

You can feel like a number rather than a patient, so you don't open up as much. I discussed a whole range of problems with my multiple specialist midwife that I probably would not have opened up with if I had seen a different person each time." At the time Vicky attended her midwife and consultant clinics in tandem which meant she had lots of appointments. The unit has subsequently introduced a multiples antenatal clinic to avoid this.

During her antenatal care Vicky received plenty of information about possible risks and complications. "I was told from the off I was a high-risk pregnancy and I was very well informed and aware of what to look out for. I had lots of scans. The team were on top of things, one scan was a bit funny and my midwife was straight onto it and sent me for a glucose test to see if there were signs of gestational diabetes." She also discussed

the timing of the birth and delivery choices and welcomed the fact that her consultant provided "unemotional and medical" information and her midwife was available to chat options through: "it was really good to have both - it would also have been good to have a clearer explanation of the benefits of delivering naturally. I was told of how it might benefit me in terms of recovery, but I would have been more receptive to information about how it would benefit the babies."

Another piece of advice from Vicky would be for sonographers to be able to provide information about the Tamba website, especially if there is not a dedicated multiple sonographer in the unit.

All in all, Vicky was "thrilled" with the care she received. "I felt pretty special, like I had a VIP pass to the hospital!"



5

Changes to
NICE adherence

A NOTE ON STATISTICAL SIGNIFICANCE

In the following analysis "p-values" help to determine the statistical significance of the results. A 5% (0.05) significance level has been

applied to the calculations. If the p-value is smaller than this, the result is said to be statistically significant (i.e. it is considered unlikely to have occurred by chance alone).

Key points

- Every one of the 27 units measured increased their overall NICE QS46 adherence⁽³⁷⁾ between the baseline audit and the re-audit 12 months later.
- Across all 27 test units there was a statistically significant improvement in overall adherence of +18%p⁽³⁸⁾ ($p < 0.0001$).
- Units in group two had the largest average increase in overall adherence (+30%p), with an average overall adherence at re-audit of 76%.
- Across all 27 test units, adherence increased in all seven NICE QS46 statements measured - the level of increase was statistically significant for six of the seven statements.
- Adherence to statement five (monitoring for fetal complications) increased the most from 49% to 83% (34%p)
- Units that took steps to introduce or improve the required actions⁽³⁹⁾ saw large increases in adherence for the related NICEQ46 statement compared with units that needed to take action but did not⁽⁴⁰⁾.
- Units that implemented a higher proportion of their required actions (i.e. those not present at baseline) tended to see greater increases in their overall adherence.

5.1 Changes in overall adherence by unit and group

Every one of the 27 units measured⁽⁴¹⁾ improved their overall NICE QS46 adherence between the baseline audit and the re-audit 12 months later.

In total, there was a statistically significant improvement in overall adherence of +18%p ($p < 0.0001$).

The largest increase for an individual unit was 50%p (from 33% at baseline to 83% at re-audit). Three units increased their adherence by less than 10%p as they already had high levels of adherence at baseline, so had limited opportunity to make big increases. All three had overall adherences of more than 90% at re-audit.

All but two units had increased their overall adherence to over 50% at re-audit.

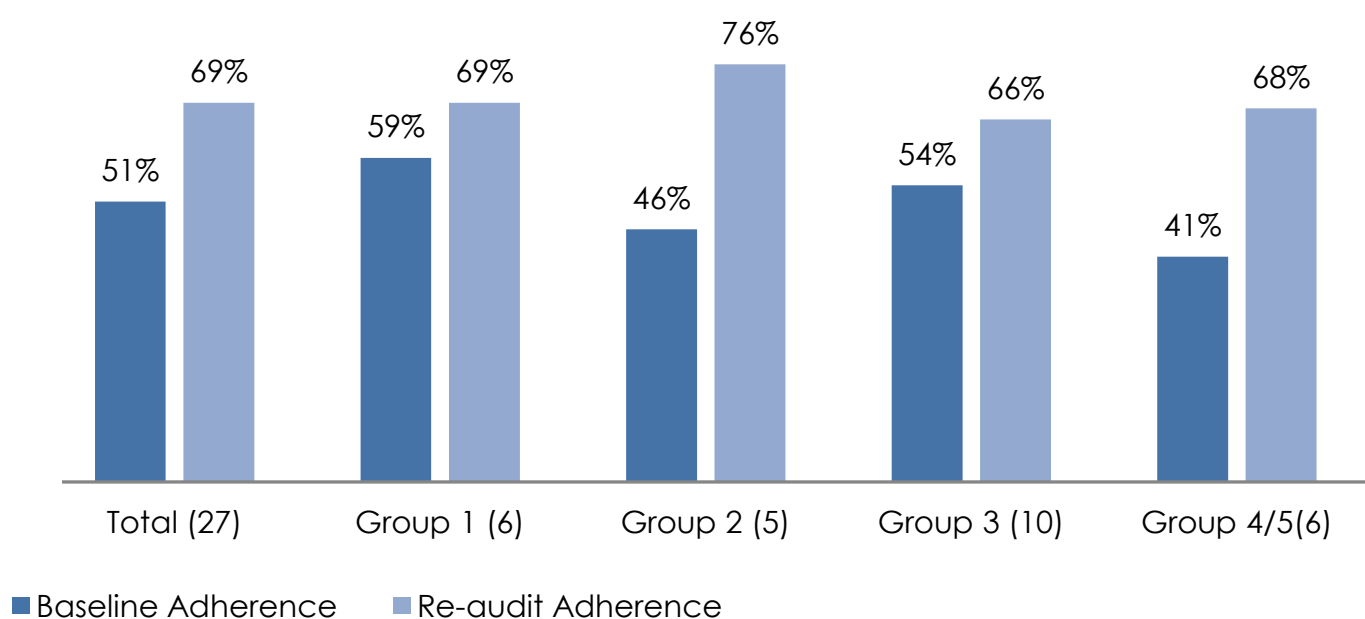
Units in group two had the largest average increase in overall adherence (+30%p), with an average overall adherence at re-audit of 76%.

The average improvements in overall adherence were statistically significant for groups one (+10%p, $p=0.0313$), three (+12%p, $p=0.0020$), and four (+27%p, $p=0.0313$).

Although it saw the largest improvement, the result for group two was not statistically significant ($p=0.0625$).

FIGURE 1 Changes in overall adherence by group

Changes in overall adherence to NICE QS46



5.2 Changes in adherence by NICE Q46 statement

5.2.1 Overview

Across all 27 test units, adherence increased in all seven NICE QS46 statements measured.

In six of the seven statements adherence increased by statistically significant levels. Only statement one (determining the chorionicity and amnionicity of the pregnancy by 14 weeks) did not - but adherence was already high

(90%) so there was little opportunity to reach statistical significance.

As noted above, the adherence figure for statements three, four and five was an average of "sub-statements". In total eight sub-statements were measured, and adherence increased by a statistically significant amount in seven of them.

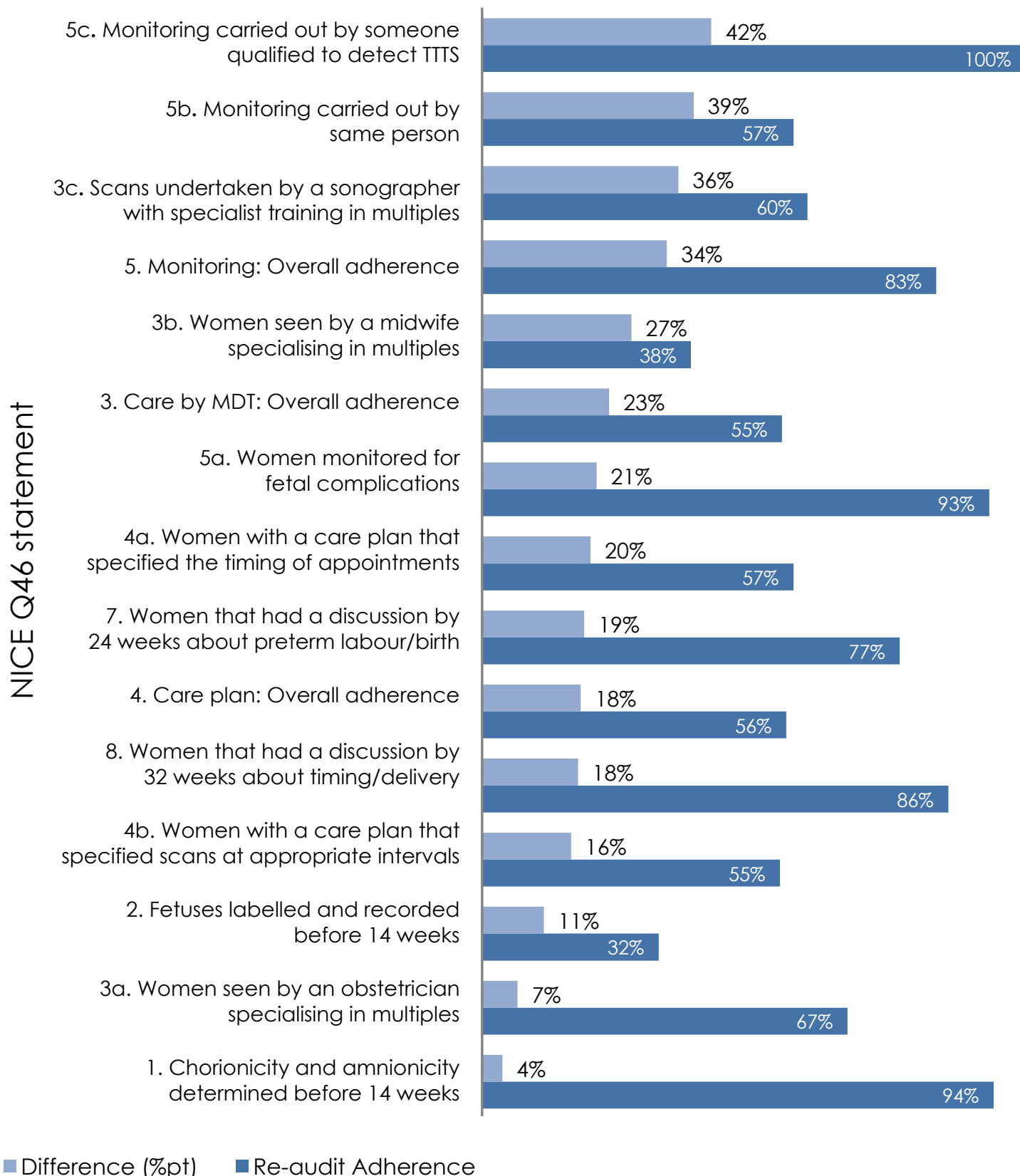


TABLE 13 Changes in adherence by statement and sub-statement

Statement	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1 Chorionicity and amnionity determined < 14 weeks	90%	94%	4%p	No	0.2771
2 Fetuses labelled and recorded < 14 weeks	21%	32%	11%p	Yes	0.0272
3 Care by MDT: Overall adherence	32%	55%	23%p	Yes	<0.0001
3a Women seen by an obstetrician specialising in multiples	61%	67%	7%p	No	0.4811
3b Women seen by a midwife specialising in multiples	11%	38%	27%p	Yes	0.0025
3c Scans by a sonographer with specialist training in multiples	24%	60%	36%p	Yes	0.0004
4 Care plan: Overall adherence	38%	56%	18%p	Yes	0.0065
4a Women with care plan specifying timing of appointments	37%	57%	20%p	Yes	0.0069
4b Women with care plan specifying appropriate scans	38%	55%	16%p	Yes	0.0156
5 Monitoring: Overall adherence	49%	83%	34%p	Yes	<0.0001
5a Women monitored for fetal complications	72%	93%	21%p	Yes	0.0005
5b Monitoring carried out by same person	18%	57%	39%p	Yes	0.0003
5c Monitoring carried out by someone qualified to detect TTS	58%	100%	42%p	Yes	0.0007
7 Women that had a discussion by 24 weeks about preterm labour and birth	58%	77%	19%p	Yes	0.0025
8 Women that had a discussion by 32 weeks about timing and modes of delivery	68%	86%	18%p	Yes	0.0032

FIGURE 2 Changes in adherence by statement and sub-statement

Increases in average overall NICE Q46 adherence by statement



5.2.2 Statement 1: Chorionicity and amnionicity determined before 14 weeks

Across all units, average adherence to statement one increased by 4%p (from 90% to 94%). The largest increase in adherence was in group one (11%p), but adherence in group four/five decreased by 4%p. None of the observed group-level changes were found to be

statistically significant. Hull (group 1) had a statistically significant 56%p increase in adherence to this statement ($p=0.0062$). 13 (48%) test units had 100% adherence at baseline, and 16 (59%) had 100% adherence at re-audit (ten had 100% adherence at both audits).

TABLE 14 Changes in adherence to QS46-1

Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	82%	93%	11%p	N	0.343
2	88%	96%	8%p	N	0.1003
3	95%	97%	2%p	N	0.5282
4/5	92%	88%	-4%p	N	>0.9999
Total	90%	94%	4%p	N	0.2771

5.2.3 Statement 2: Fetuses labelled and recorded before 14 weeks

Across all units, average adherence to statement one increased by 11%p (from 21% to 34%). The largest increase in adherence was in group two (19%p), but adherence in group one decreased slightly by 3%p. None of the observed group-level changes were found to be

statistically significant. Bolton (group two) showed a statistically significant 86%p increase in adherence to this statement ($p=0.0001$). Two test units had 100% adherence at baseline, and one had 100% adherence at re-audit (one had 100% adherence at both audits).

TABLE 15 Changes in adherence to QS46-2

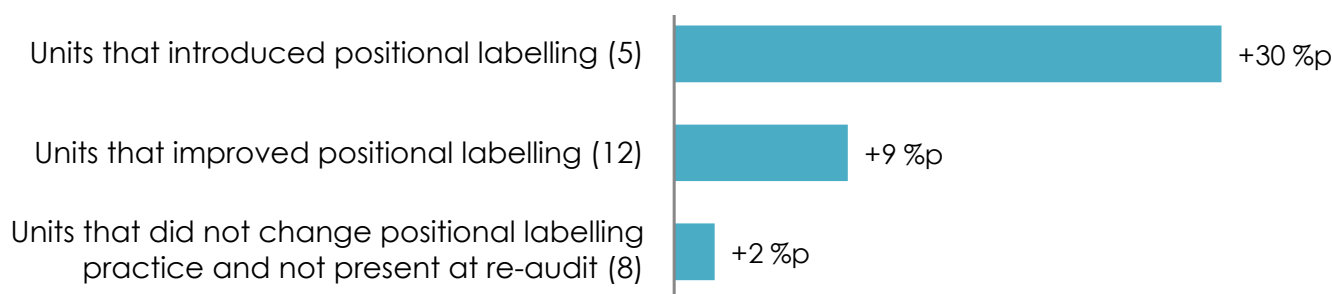
Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	49%	46%	-3%p	N	0.7874
2	8%	37%	29%p	N	0.0625
3	18%	26%	9%p	N	0.2719
4/5	10%	26%	16%p	N	0.0579
Total	21%	32%	11%p	Y	0.0272

We saw above (4.2.6) that five test units introduced positional labelling and 12 improved their practice in this area during the project. The units that introduced the change saw the largest increase in adherence (an average of 30%p

across those units). The eight units who did not make any change (and where positional labelling was still not present at the re-audit) had the lowest average increase in adherence (2%p).

FIGURE 3 Adherence to QS46-2 by relevant action taken

Average improvement to NICE QS46-2 adherence (%p)



5.2.4 Statement 3: Care by a Multi-Disciplinary Team (MDT)

As noted above (3.2.4) statement three was a combination of three different observations (being seen by a specialist obstetrician, a specialist midwife, and a sonographer with specialist training in multiple pregnancies).

Adherence to the statement overall increased by a statistically significant 23%p.

Every group improved their adherence with the greatest increase being in group two (41%p).

TABLE 16 Changes in adherence to QS46-3 overall

Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	39%	57%	18%p	N	0.0739
2	34%	75%	41%p	N	0.0625
3	36%	46%	10%p	N	0.0801
4/5	15%	51%	36%p	N	0.0591
Total	32%	55%	23%p	Y	<0.0001

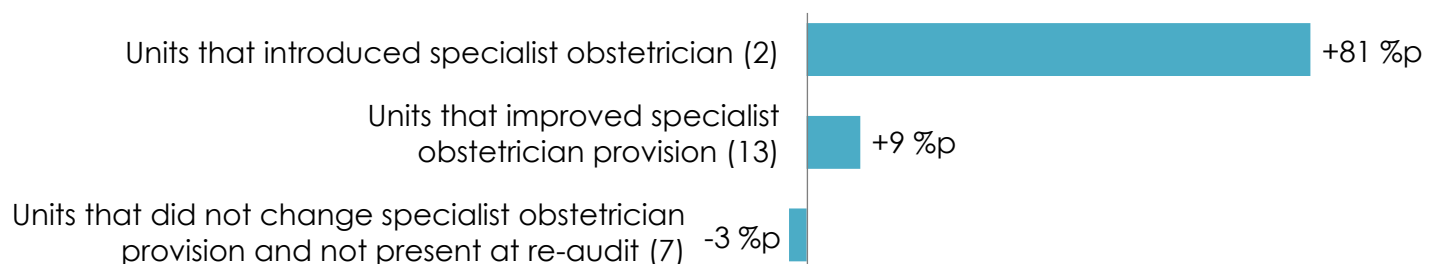
SPECIALIST OBSTETRICIAN (3a)

Adherence to the specialist obstetrician aspect to statement three increased by 7%p, however most of the increase was from group four/five (31%p).

Three units showed statistically significant improvements to their adherence to this sub-statement - Hull (group one, p=0.0186), Stockport (group four, p<0.0001) and Carlisle (group four, p<0.0001).

TABLE 17 Changes in adherence to QS46-3a

Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	65%	68%	3%p	N	0.8551
2	87%	92%	5%p	N	0.5839
3	57%	52%	-6%p	N	0.2702
4/5	39%	70%	31%p	N	0.2012
Total	61%	67%	7%p	N	0.4811

FIGURE 4 Adherence to QS46-3a by relevant action taken**Average improvement to NICE QS46-3a adherence (%p)**

Two test units introduced a specialist obstetrician and 13 improved their provision (see 4.2.3 above). The two units that introduced the change saw an increase in adherence (an average of 81%p across those units). Those who improved their provision had an increase of 9%p and those who did not make any change (and where the provision of a specialist obstetrician was still not present at the re-audit) had the lowest average increase in adherence (-3%p).

SPECIALIST MIDWIFE (3b)

Adherence to the specialist

midwife aspect to statement three increased in every group and by a statistically significant average of 27%p. Group two experienced the most positive change (61%p).

Seven units showed statistically significant improvements to their adherence to this sub-statement - Cambridge (group one, p<0.0001), Coventry (group two, p<0.0001), Ashford and St Peters (group two, p=0.0055), Luton (group two, p<0.0001), Basildon (group three, p=0.0373), Kingston (group three, p=0.0007) and West Cumberland (group four, p<0.0001).

TABLE 18 Changes in adherence to QS46-3b

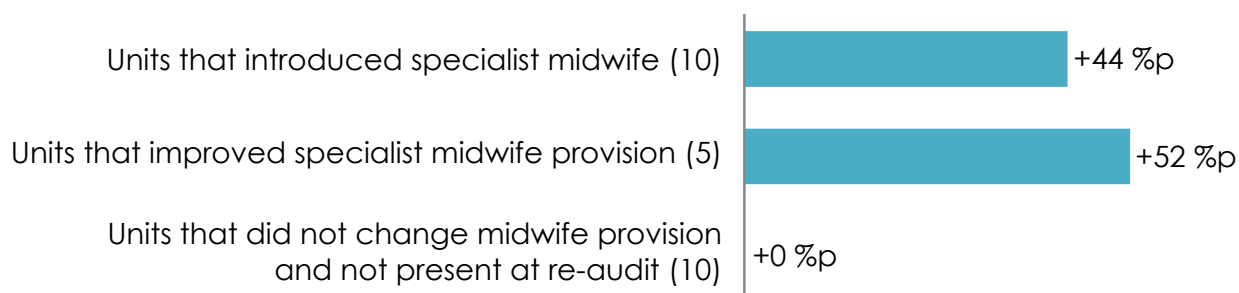
Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	17%	40%	23%p	N	0.3711
2	8%	69%	61%p	N	0.1003
3	15%	32%	17%p	N	0.1003
4/5	0%	21%	21%p	N	0.3711
Total	11%	38%	27%p	Y	0.0025

Units that introduced or improved their specialist midwife provision (see 4.2.4 above) saw large average increases in their adherence. Those that did not

make the change and had no evidence of specialist midwife provision at saw no increase (essentially 0% adherence at both baseline and re-audit).

FIGURE 5 Adherence to QS46-3b by relevant action taken

Average improvement to NICE QS46-3b adherence (%p)



SONOGRAPHER WITH SPECIALIST TRAINING (3c)

The proportion of cases where scans were undertaken by a sonographer with specialist training in multiples increased by a statistically significant 36%p across all test units. Groups two and four saw the biggest increase (57%p and 56%p respectively).

Ten units showed statistically significant improvements to their

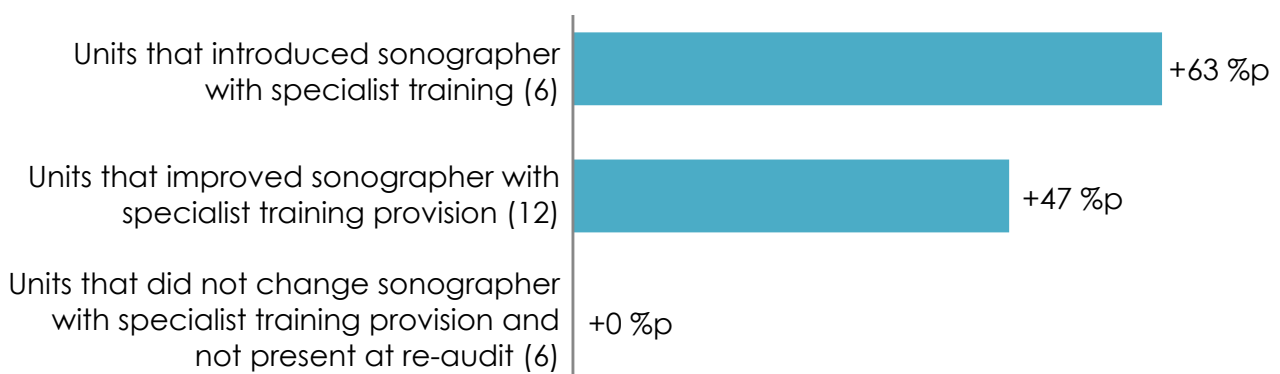
adherence to this sub-statement - Southampton (group one, $p=0.0055$), Burnley (group two, $p=0.0152$), Ashford and St Peters (group two, $p<0.0001$), Bolton (group two, $p<0.0001$), Princess Alexandra (group three, $p=0.0108$), St Helier (group three, $p=0.0010$), Surrey (group four, $p=0.0010$), Stockport (group four, $p=0.0010$), West Cumberland (group four, $p<0.0001$) and Dorchester (group five, $p=0.0001$).

TABLE 19 Changes in adherence to QS46-3c

Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	35%	61%	26%p	N	0.1775
2	8%	65%	57%p	N	0.0975
3	35%	55%	19%p	N	0.0592
4/5	6%	62%	56%p	N	0.0975
Total	24%	60%	36%p	Y	0.0004

As with specialist midwives, units that introduced or improved their provision of a sonographer with specialist multiple training (see 4.2.5 above) saw large average increases in their adherence. Those

that did not make the change and had no evidence of provision of a sonographer with specialist multiple training at re-audit saw no increase (essentially 0% adherence at both baseline and re-audit).

FIGURE 6 Adherence to QS46-3c by relevant action taken**Average improvement to NICE QS46-3c (%p)**

5.2.5 Statement 4: Care plan

Across all units, average adherence to statement four (which is a combination to two aspects - see below) increased by 18%p (from 38% to 56%). Overall this increase is statistically significant.

Although every group increased their adherence (with group two increasing it the most - 39%p), none of these group-level changes were found to be statistically significant.

TABLE 20 Changes in adherence to QS46-4 overall

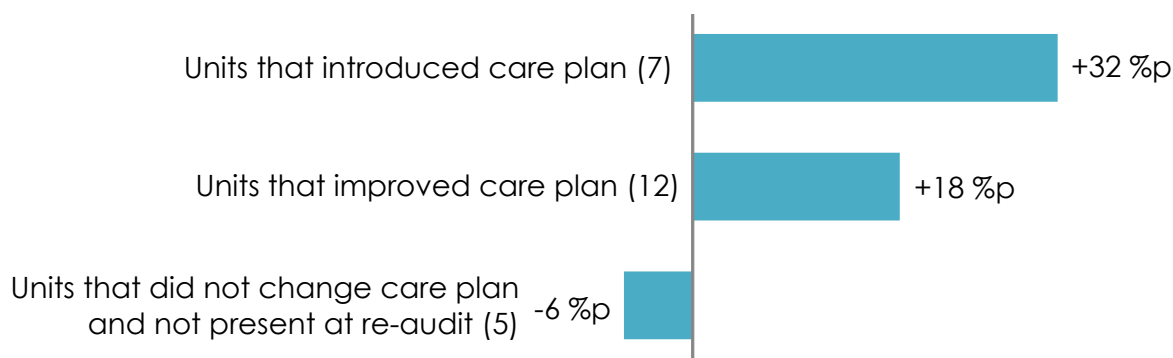
Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	42%	44%	3%	N	0.8551
2	34%	73%	39%	N	0.0625
3	38%	50%	11%	N	0.2012
4/5	36%	64%	28%	N	0.0591
Total	38%	56%	18%	Y	0.0065

The largest increase (32%p) in adherence was seen in the seven

units who introduced a multiple pregnancy care plan (see 4.2.1).

FIGURE 7 Adherence to QS46-4 by relevant action taken

Average improvement to NICE QS46-4 adherence (%p)



MDT APPOINTMENTS (4a)

Average adherence to the care plan specifying the timing of MDT antenatal care appointments increased by a statistically significant 20%p from 37% to 57%. Group two saw the highest increase (43%p).

Six units showed statistically

significant improvements to their adherence to this sub-statement - Southampton (group one, p<0.0001), Coventry (group one, p<0.0001), Ashford and St Peters (group two, p=0.0031), Grimsby (group three, p=0.0237), Stockport (group four, p=0.0010) and Carlisle (group four, p=0.0351).

TABLE 21 Changes in adherence to QS46-4a

Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	37%	50%	13%	N	>0.9999
2	24%	67%	43%	N	0.0625
3	39%	51%	12%	N	0.1814
4/5	45%	65%	20%	N	0.3613
Total	37%	57%	20%	Y	0.0069

SCANS AT CORRECT INTERVALS (4b)

Average adherence to the care plan specifying scans at correct intervals appropriate for the type of multiple pregnancy increased by a statistically significant 16%p from 38% to 55%. Groups two and four saw the highest increase (35%p).

Six units showed statistically

significant improvements to their adherence to this sub-statement - Ashford and St Peters (group two, p=0.0007), Luton (group two, p=0.0300), Scunthorpe (group three, p=0.0053), St Helier (group three, p=0.0351), Stockport (group four, p<0.0001) and Carlisle (group four, p=0.0351).

TABLE 22 Changes in adherence to QS46-4b

Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	47%	38%	-8%p	N	0.5839
2	43%	78%	35%p	N	0.0625
3	37%	48%	10%p	N	0.3613
4/5	28%	63%	35%p	N	0.0591
Total	38%	55%	16%p	Y	0.0156

5.2.6 Statement 5: Monitoring for fetal complications

Of all the NICE QS46 statements, this saw the largest increase in adherence (34%p). This overall increase was statistically significant - as were the increases for groups one, three and four.

Three units increased their overall statement five adherence to 100%

at re-audit (no units were 100% at baseline) Only one test unit out of 27 saw a decrease in their overall statement five adherence.

TABLE 23 Changes in adherence to QS46-5 overall

Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	53%	81%	28%p	Y	0.0355
2	40%	88%	48%p	N	0.0625
3	66%	79%	14%p	Y	0.0098
4/5	26%	88%	62%p	Y	0.0313
Total	49%	83%	34%p	Y	<0.0001

This overall result is an average of three measurements detailed below.

CASES MONITORED FOR FETAL COMPLICATIONS (5a)

The proportion of cases monitored for fetal complications increased by 21%p - with group four/five seeing the largest increase (44%p). The proportion of test units with 100% adherence increased from

9/27 (33%) at baseline to 17/27 (63%) at re-audit.

Five units showed statistically significant improvements to their adherence to this sub-statement - Coventry (group two, p=0.0033), Luton (group two, p=0.0096), Grimsby (group three, p=0.0039), Carlisle (group four, p=0.0019) and Dorchester (group five, p=0.0325).

TABLE 24 Changes in adherence to QS46-5a

Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	79%	87%	8%	N	0.3711
2	65%	98%	33%	N	0.1003
3	85%	94%	9%	N	0.1362
4/5	49%	92%	44%	Y	0.0313
Total	72%	93%	21%	Y	0.0005

MONITORING UNDERTAKEN BY THE SAME PERSON (5b)

The proportion of cases monitored for fetal complications by the same person increased by 39%p - with group four/five again seeing the largest increase (68%p). The proportion of test units with 100% adherence increased from 0/27 (0%) at baseline to 4/27 (15%) at re-audit.

Ten units showed statistically significant improvements to their

adherence to this sub-statement - Coventry (group two, p=0.0177), Burnley (group two, p=0.0010), Ashford and St Peters (group two, p<0.0001), Bolton (group two, p=0.0049), Cornwall (group three, p=0.0108), Poole (group three, p=0.0031), Epsom (group three, p=0.0181), East and North Herts (group three, p=0.0062), Stockport (group four, p=0.0110) and West Cumberland (group four, p<0.00001).

TABLE 25 Changes in adherence to QS46-5b

Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	29%	56%	27%p	N	0.1775
2	7%	67%	60%p	N	0.1003
3	26%	43%	17%p	N	0.1925
4/5	4%	72%	68%p	Y	0.0313
Total	18%	57%	39%p	Y	0.0003

MONITORING UNDERTAKEN BY SOMEONE QUALIFIED TO DETECT TWIN-TO-TWIN TRANSFUSION SYNDROME (TTTS) (5c)

The proportion of cases where monitoring was carried out by someone qualified to detect TTTS increased by 42%p (to 99.7%). All but one of the 282 cases examined in the re-audit adhered to this criterion. The proportion of test units with 100% adherence increased from 12/27 (44%) at baseline to 26/27 (96%) at re-audit.

13 units showed statistically significant improvements to their

adherence to this sub-statement - Hull (group one, p=0.0005), Southampton (group one, p=0.0010), Bristol (group one, p=0.0023), Coventry (group two, p=0.0028), Burnley (group two, p=0.0010), Ashford and St Peters (group two, p<0.0001), Basildon (group three, p=0.0128), Cornwall (group three, p=0.0325), Surrey (group four, p=0.0182), Stockport (group four, p=0.0088), West Cumberland (group four, p<0.0001), Carlisle (group four, p<0.0001) and Dorchester (group five, p=0.0003).

TABLE 26 Changes in adherence to QS46-5c

Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	52%	100%	48%p	N	0.0975
2	49%	98%	50%p	N	0.1814
3	86%	100%	14%p	N	0.1814
4/5	25%	100%	75%p	N	0.0533
Total	58%	100%	42%p	Y	0.0007

5.2.7 Statement 7: Discussions by 24 weeks about preterm labour and birth

Across all units, average adherence to statement seven increased by 19%p (from 58% to 77%). This increase was statistically significant.

All groups increased their adherence. The largest increase was in group two (26%p), but none of the observed group-level changes were found to be statistically significant. The proportion of test units with 100%

adherence increased from 4/27 (15%) at baseline to 7/27 (26%) at re-audit.

Four units showed statistically significant improvements to their adherence to this statement - Coventry (group two, $p < 0.0001$), Basildon (group three, $p = 0.0361$), Epsom (group three, $p = 0.0124$), and St Helier (group three, $p = 0.0039$).

TABLE 27 Changes in adherence to QS46-7

Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	70%	74%	4%p	N	0.5862
2	55%	81%	26%p	N	0.2012
3	57%	79%	21%p	N	0.0587
4/5	49%	72%	24%p	N	0.1056
Total	58%	77%	19%p	Y	0.0025

5.2.8 Statement 8: Discussions by 32 weeks about timing of birth and modes of delivery

Across all units, average adherence to statement eight increased by a statistically significant 18%p (from 68% to 86%).

All groups increased their adherence. The largest increase was in group four/five (29%p) and this was the only change found to be statistically significant at group-level. The proportion of test units with 100% adherence increased from 4/27 (15%) at baseline to

10/27 (37%) at re-audit.

Six units showed statistically significant improvements to their adherence to this statement - Coventry (group two, $p = 0.0033$), Burnley (group two, $p = 0.281$), Ashford and St Peters (group two, $p = 0.0108$), St Helier (group three, $p = 0.0039$), Stockport (group four, $p = 0.0075$), and Bournemouth (group five, $p = 0.0325$).

TABLE 28 Changes in adherence to QS46-8

Group	Baseline Adherence	Re-audit Adherence	Difference (%p)	Statistically significant?	p-value
1	78%	88%	9%p	N	0.3613
2	60%	80%	20%p	N	0.3125
3	71%	85%	14%p	N	0.0797
4/5	60%	89%	29%p	Y	0.0313
Total	68%	86%	18%p	Y	0.0032

5.3 Relationship between action taken and overall adherence

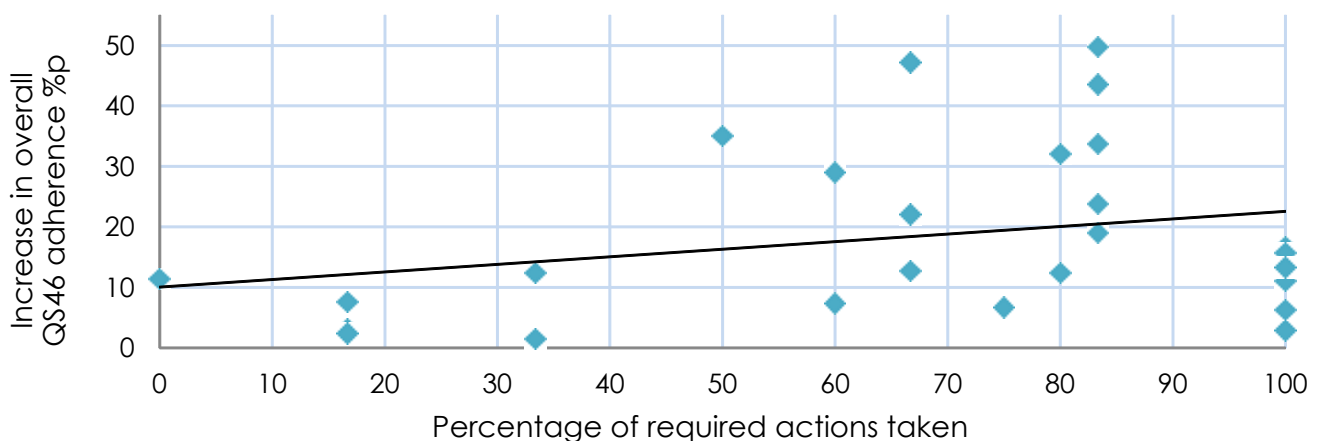
It has been noted above that the units that took action to introduce or improve a specific area of adherence saw larger increases in adherence in that area compared with those units who needed to take action but did not.

Furthermore, units that implemented a higher proportion of their required actions (i.e. those not present at baseline) tended to see greater increases in their

overall adherence. As can be seen in the graph below, no units that implemented a low percentage of their required actions saw a high positive change in their overall adherence. The trendline shows a weak but positive correlation between the proportion of required actions units implemented and their levels of increased adherence, estimated to be 0.27 (95% CI = -0.135 to 0.592; p=0.1889).

FIGURE 8 Percentage of required changes made and increased overall adherence

Changes made and increased adherence





6

Changes to
patient outcomes

Key points

- Six units saw statistically significant reductions in at least one patient outcome (one for emergency C-sections, four for neonatal admissions and one for neonatal deaths and neonatal admissions)

STILLBIRTHS

- At baseline it was observed that increased adherence to QS46 statements seven (discussions by 24 weeks on preterm labour and birth) and eight (discussions by 32 weeks on timing and delivery) were correlated with a lower still birth rate in group one ($r=-0.89^{(42)}$, $p=0.02$ and $r=-0.9$, $p=0.01$ respectively).

- At follow-up there was some weak evidence ($p=0.0257$) of re-audit level stillbirth rates being lower for units with an engaged maternity champion compared to those without (by approximately -0.009% ; 95% CI = -0.017% to -0.001%).

- Although in the 12 months between audits there was not a significant change in multiple stillbirth rates, the evidence from St George's University Hospital, which was an exemplar unit and an early adopter of NICE QS46, saw a 70% reduction (from 14 per 1000 in 2012 to 4 per 1000 in 2016) in twin stillbirths over a five year period. Over a longer period of time (2000-2019) and with an increased cohort, comparing the pre implementation 32/2250 vs. post implementation 5/1147 rates, the result becomes statistically significant ($p=0.008$).

- If all units were able to replicate this prolonged high standard of stillbirth care a 70% uniform reduction would equate to saving the lives of up to 100 stillborn babies in five years. This would result in a twin stillbirth rate of 1.85 per thousand which is lower than the 2016 singleton stillbirth rate of 3.86⁽⁴³⁾.

NEONATAL DEATHS

- There was no significant change in the multiple neonatal death rate between the audits. Only one unit saw a statistically significant reduction. The majority of neonatal deaths are a result of prematurity and a significant proportion are

spontaneous. None of the NICE Quality Standards have focused on prevention of spontaneous preterm births. The NICE guidance on which they are based is currently being updated and will potentially address this point.

NEONATAL ADMISSIONS

- In the 12 months between audits, 65% of units showed a reduction in their neonatal admissions rate for multiples. This may be as a result of a reduction in iatrogenic interventions. Across all units there was an average reduction of 5.8%p. This was not found to be statistically significant.

- There is statistically significant evidence ($p=0.0011$) of a greater increase in the adherence of NICE QS46-5 overall (monitoring for fetal complications) between baseline and re-audit being associated with a larger decrease in the neonatal admissions rate.

- If all units in England (157) achieved similar improvements in care practice and NICE adherence that would represent 1,308 fewer admissions in a year, with a cost saving of £8million.

EMERGENCY CAESAREAN SECTIONS

- In the 12 months between audits, 60% of units showed a reduction in their emergency caesarean section rate for multiples in the 12 months between baseline and re-audit. Across all units there was an average reduction of 3.1%p. This was not found to be statistically significant.

- If all units were able to implement the changes in care practice to achieve this reduction that would represent 634 fewer emergency caesarean sections per year.

- There is statistically significant evidence ($p=0.0436$) of a greater increase in the adherence of NICE QS46-2 (positional labelling) between baseline and re-audit being associated with a larger decrease in the emergency C-sections rate.

6.1 Stillbirths

This outcome looked at the proportion of multiple fetuses of over 24 weeks gestation that did not show signs of life.

Low stillbirth rates were observed across the test units at both baseline and re-audit, with an average across the groups (for the 25 test units of 0.4% to 1.0% at baseline, and 0.7% to 1.4% at re-audit). The following analysis for stillbirths should be considered in the light of that small sample size.

Seven out of 25 test units (28%) with complete data observed no stillbirths at both baseline and re-

audit (all in groups three and four). 11 (44%) observed no still births at re-audit (in groups one, three and four).

Across all test units with data at baseline and re-audit, the average change in the stillbirth rate over 12 months was an increase of +0.2%p, though this change was non-significant at the 5% level ($p=0.6951$). No group saw a decrease (group three stayed the same). None of the results at group level are statistically significant. There was no statistically significant change at a unit level.

TABLE 29 Changes in stillbirths

Group	Baseline rate	Re-audit rate	Difference (%p)	Statistically significant?	p-value
1	1.0%	1.4%	0.4%	N	0.5625
2	0.7%	0.8%	0.1%	N	0.8125
3	0.7%	0.70%	0.0%	N	> 0.9999
4/5	0.4%	0.8%	0.4%	N	> 0.9999
Total	0.7%	0.9%	0.2%	N	0.6951

The proportion of units below the 2014 national average for stillbirths (1.2%⁽⁴⁴⁾) decreased from 80% at baseline to 72% at re-audit (not statistically significant).

The project's interim findings (looking at the baseline audit figures only) observed that increased adherence to QS46 statements seven (discussions by 24 weeks on preterm labour and birth) and eight (discussions by 32 weeks on timing and delivery) were correlated with a lower still birth rate in group one ($r=-0.89$ ⁽⁴⁵⁾, $p=0.02$

and $r=-0.9$, $p=0.01$ respectively).

There was also some weak evidence ($p=0.0257$) of re-audit level stillbirth rates being lower for units with a maternity champion compared to those without (by approximately -0.009%p; 95% CI = -0.017%p to -0.001%p).

It is likely that 12 months may not be a long enough period to see the impact of increased adherence on this outcome. One of the exemplar units (St George's University Hospital) has monitored

the impact of adherence to guidelines on twin stillbirths over a longer period and found that it took 18-24 months to implement the guidelines and see the improvement in outcomes. It saw a 70% reduction (from 14 per 1000 in 2012 to 4 per 1000 in 2016) in twin

stillbirths over a five year period. Over a longer period of time (2000-2019) and with an increased cohort, comparing the pre implementation 32/2250 vs. post implementation 5/1147 rates, the result becomes statistically significant ($p=0.008$).

6.2 Neonatal deaths

This outcome looked at the proportion of multiple fetuses of any gestation with signs of life that died before 28 days of age.

Low neonatal death rates were observed across the units at both baseline and re-audit, with an average across the groups (for the 25 test units) of 0.2% to 2.1% at baseline, and 0.5% to 2.2% at re-audit. As with stillbirths, the following analysis for neonatal deaths should be considered in the light of the small sample size.

Six of the test units (24%) with complete data observed no neonatal deaths at both baseline and re-audit, and therefore no change between baseline and re-

audit (all in Groups three and four). 11 (44%) observed no neonatal deaths at re-audit (across all Groups).

Across all test units with data at baseline and re-audit, the average change in neonatal death rate was an increase of +0.1%p, though this change was non-significant at the 5% level ($p=0.7936$). Group one was the only group to show a decrease (-0.5%p), but none of the results at group level are statistically significant.

One unit, Norwich (group one), saw a statistically significant reduction in their neonatal death rate (from 3.2% to 0%, $p=0.0336$).



TABLE 30 Changes in neonatal deaths

Group	Baseline rate	Re-audit rate	Difference (%p)	Statistically significant?	p-value
1 ⁽⁴⁶⁾	1.90%	1.3%	-0.5%	N	0.6875
2	2.1%	2.2%	0.2%	N	0.8125
3	0.3%	0.5%	0.2%	N	0.5839
4/5	0.6%	1.1%	0.5%	N	0.5839
Total	1.0%	1.2%	0.1%	N	0.7936

The proportion of units below the 2014 national average for neonatal deaths for multiples (1.1%) increased from 56% at baseline to 64% at re-audit.

As with stillbirths, 12 months may not be a long enough period to see the impact of increased adherence on neonatal deaths. The majority of neonatal deaths

are a result of prematurity and a significant proportion are spontaneous. None of the NICE Quality Standards focus on prevention of spontaneous pre term births. The NICE guidance on which they are based is currently being updated and is due to be published by the end of 2019.

6.3 Neonatal admissions

This outcome looked at the numbers of babies admitted to neonatal care as a proportion of multiple fetuses.

15 out of 23 (65%)⁽⁴⁷⁾ of the test units with complete data showed a reduction in their neonatal admission rate for multiples in the 12 months between baseline to re-audit. Five units saw a statistically significant reduction in their neonatal admission rate.

Southampton (group one, from 46% to 24%, $p < 0.0001$), Norwich (group one, from 82% to 69%, $p = 0.0082$), Cornwall (group three, from 58% to 38%, $p = 0.0066$), Surrey (group four, from 64% to 25%, $p < 0.0001$) and Carlisle (group four, from 53% to 19%, $p = 0.0137$).

Across the "test" units with

complete data, overall there was an average -5.6%p decrease in the neonatal admission rate for multiples. This change was non-significant at the 5% level ($p = 0.1424$). Group four/five showed the largest decrease (14%p). This reduction equates to 200 fewer admissions in 12 months across the 24 units with complete data.

Anecdotally this reduction may be due to improved scanning practices identifying risks earlier, leading to closer monitoring and a reduction in early intervention if treatment is not required - though this hypothesis would need further investigation.

TABLE 31 Changes in neonatal admissions

Group	Baseline rate	Re-audit rate	Difference (%p)	Statistically significant?	p-value
1	48.3%	44.5%	-3.8%	N	0.8125
2	47.7%	42.0%	-5.7%	N	0.125
3	47.2%	46.2%	-1.0%	N	0.6406
4/5	39.3%	25.3%	-14.0%	N	0.2188
Total	45.5%	39.70%	-5.8%	N	0.1424

The proportion of units below the 2014⁽⁴⁸⁾ national average for neonatal admission for multiples (36.7%) increased from 35% at baseline to 44% at re-audit.

Statistical modelling was undertaken to test the hypothesis that increased adherence leads to improved patient outcomes. There is statistically significant evidence ($p=0.0011$) of a greater increase in the adherence of NICE QS46-5 overall (monitoring for fetal

complications) between baseline and re-audit being associated with a larger decrease in the neonatal admissions rate (having also accounted for the effect of baseline neonatal admissions⁽⁴⁹⁾). It is estimated that for each additional 1%pt increase in adherence to NICE QS46-5, the neonatal admission rate decreases by a further -0.29%pts (95% Confidence Interval [CI] = -0.45%p to -0.13%p).

Discussions with units that experienced a statistically significant reduction in neonatal admissions revealed the following.

Norfolk And Norwich University Hospital experienced statistically significant reductions in neonatal deaths ($p=0.0336$) and admissions to the neonatal unit ($p=0.0082$). Although it is very difficult to attribute this change to one factor, Mr Richard Smith, Consultant at Norfolk and Norwich University Hospitals, felt that the fact sonographers improved the way they determine chorionicity and label the foetuses as a result of the

Maternity Engagement Project is likely to have improved the identification of higher risk, monochorionic twins who would then be followed up more closely, and also reduce the chances of the twins being labelled differently at subsequent visits.

A statistically significant reduction in neonatal admission rates was observed at Royal Surrey County Hospital ($p<0.0001$). Miss Renata Hutt, Consultant Obstetrician & Gynaecologist at Royal Surrey, felt that several factors might have contributed to this reduction, including a change in policy by their neonatal network that now requires babies under 31 weeks to be transferred from

the unit (previously it was 28 weeks). Miss Hutt believes that comparing data relating to chorionicity and mean gestation of neonatal admissions would help to clarify what might be behind this reduction. However, following the Maternity Engagement Project, the unit has ensured that senior sonographers are scanning multiples. This step, combined with a close relationship with their tertiary unit (St George's), may mean that TTTS is being detected and treated earlier - so these pregnancies may be lasting longer, reducing the likelihood of needing neonatal care.

6.4 Emergency caesarean sections

This outcome looked at the proportion of multiple pregnancies that required an emergency caesarean section.

15 out of 25⁽⁵⁰⁾ (60%) of the test units with complete data showed a reduction in their emergency C-section rate for multiples in the 12 months between baseline and re-audit. One unit (group two) showed a statistically significant decrease in their emergency C-section rate - falling from 84% to 32% ($p < 0.0001$).

Across the "test" units with complete data, overall there was an average 3.1%p decrease in the emergency C-section rate for multiples, though this change was non-significant at the 5% level ($p = 0.4261$). Group two showed the largest decrease (10.4%p). This reduction equates to 105 fewer emergency caesarean sections in 12 months across the 25 units with complete data.

TABLE 32 Changes in emergency C-section rate

Group	Baseline rate	Re-audit rate	Difference (%p)	Statistically significant?	p-value
1	32.3%	35.6%	3.4%	N	0.5625
2	47.3%	36.9%	-10.4%	N	0.625
3	38.8%	41.3%	2.5%	N	0.9453
4/5	39.1%	32.4%	-6.7%	N	0.0938
Total	39.10%	36.0%	-3.1%	N	0.4261

The proportion of units below the 2014⁽⁵¹⁾ national average for emergency C-sections for multiples (35.3%) increased from 36% at baseline to 52% at re-audit.

Statistical modelling revealed statistically significant evidence ($p = 0.0436$) of a greater increase in the adherence of NICE QS46-2 (positional labelling) between

baseline and re-audit being associated with a larger decrease in the emergency C-sections rate.

It is estimated that for each additional 1%pt increase in adherence to NICE QS46-2, the emergency C-section rate decreases by a further -0.15%pts (95% CI = -0.30%pts to -0.005%pts)⁽⁵²⁾.

6.5 Potential project impact

As detailed earlier in the report, overall, units saw a 5.8% reduction in neonatal admissions in the 12 months of the project. If all units in England (157) achieved similar improvements in care practice and NICE adherence that would represent 1,308 fewer admissions in a year, with a cost saving on £8million.

Similarly, units saw a 3.1% reduction in emergency caesarean sections. If all units were able to implement the changes in care practice to achieve this reduction that would represent 634 fewer emergency

caesarean sections each year.

If units were able to achieve high levels of adherence to guidelines over a longer period than this project, they could anticipate reducing twin stillbirths by 70% after five years. If all units were able to replicate that standard of care this would equate to saving the lives of up to 100 stillborn babies each year after this five year period. This would result in a twin stillbirth rate of 1.85 per thousand which is below the 2016 singleton stillbirth rate of 3.86.





7

Process
learning

Key points

- » Units were highly satisfied with how the project was conducted. 82% of professionals in the units would recommend that all maternity units get involved in the project (no-one disagreed).
- » 77% of professionals agree the initial audit was a fair reflection of the situation (7% disagreed) and 85% agreed the re-audit was an accurate reflection of the changes their unit had made (11% disagreed).
- » 90% of professionals who had completed the project agreed that *"if we hadn't done the Maternity Engagement Project we would not have achieved as much positive change"* (only 6% disagreed).
- » 74% of professionals agreed *"The Maternity Engagement Project was the catalyst for positive change in care for women expecting multiples in our unit"* (14% disagreed).
- » The main piece of process learning was to conduct the follow-up re-audit later to give units longer than 12 months to deliver their action plan (perhaps after 18 to 24 months).

This section summarises the key learning from the external

evaluation of the Maternity Engagement Project (see 3.3.1).



7.1 Units' experience of participating in the project

Overall, units were very positive about their experience of working with Tamba on the MEP with a majority of professionals surveyed (35)⁽⁵³⁾ describing Tamba's approach as "professional",

"supportive" and "collaborative". The predominately positive experience of the units was reflected in the qualitative feedback.

Unit 6
Midwife
(interview)



“

The involvement from Tamba has exceeded my expectations. My contacts were always helpful, efficient and professional.

”

Recommending others participate in the MEP was used as a proxy for overall satisfaction. 82% of professionals surveyed (33) would

recommend that all maternity units get involved in the Maternity Engagement Project (with only 6% disagreeing⁽⁵⁴⁾).

7.2 Units' feedback on the support provided

7.2.1 The audits

The audit process itself was beneficial to the units as a means of reflecting on current practice and what might be improved. 89% of professionals who had had both

audits at the time of the evaluation survey (28) agreed that the audits were useful in helping identify areas to improve.

“ The audit has highlighted areas, such as early labelling of twins, where we had clear guidelines, but these were not being followed as accurately as they should have been. ”

Unit 9
Obstetrician
(survey)



“ The project helped to identify the gaps - that was really valuable. Nothing was provided for these high-risk women who end up in hospital. We were providing lots of things for lots of other high-risk pregnancies but not for these poor women - when we said that it was an eye opener. ”

Unit 4
Midwife
(interview)



Most professionals felt that the audit was measuring the right things and that the process of being audited was "straightforward", "well planned" and "positive". 77% of all professionals who responded to the evaluation survey (44) agreed the

- initial audit was a fair reflection of the situation (7% disagreed).
- Where dissatisfaction with the measurement process existed, it centred on the auditors' unfamiliarity with a specific unit's notes or system.



Unit 9
Obstetrician
(interview)

“ Our systems seem to be marked down. The auditors had in their head a mode of care that exists in other hospitals. Our system is different. Some hospitals do have consultants do the scan to assess fetal growth restriction and feto-fetal transfusion syndrome. We don't, but we review the scan immediately. ”

85% of all re-audited respondents to the survey (27) agreed the re-audit was an accurate reflection of

- the changes made (11% disagreed).

7.2.2 The action plan

The action plan generated by the initial audit was also considered a useful tool to guide and focus implementation. 71% of

professionals who had had both audits at the time of the evaluation survey (28) agreed that the actions in the plan were achievable.

7.2.3 Ongoing support

Those leading the project reported that they had received excellent

support from the Tamba midwifery consultant they worked alongside.

“ They [Tamba] didn't just tell us what we needed to do, they gave us advice on how to do it. ”



Unit 3
Midwife
(interview)



Unit 5
Midwife
(interview)

“ I had wonderful support, incredibly helpful, focussed - knowledgeable, committed, non-judgemental, really, really kind and sympathetic. She [the Tamba midwifery consultant] understood we didn't have the same resources as other trusts. I felt I could ask her anything. ”

7.3 Tamba's role in facilitating change

The external evaluation survey revealed that a vast majority of respondents attributed the positive change they have witnessed to their involvement with the Maternity Engagement Project.

90% of professionals that had had both the baseline audit and re-audit at the time of the survey (21) agreed that *"if we hadn't done the Maternity Engagement Project we*

would not have achieved as much positive change" (only 6% disagreed) and 74% agreed *"The Maternity Engagement Project was the catalyst for positive change in care for women expecting multiples in our unit"* (14% disagreed).

Feedback from the qualitative research supports the overall positive impact of the project on participating units.

Having an external organisation involved also helped project leads to instigate change:



Unit 8
Midwife
(survey)

“ Since the Tamba audit, the [multiple] service has been better recognised through our trust and further funded hours have been allocated to the specialist midwife to begin a continuity of carer model. This is all due to the positive feedback that we had received from Tamba. The trust has now invested in the multiples service as they can clearly see the benefits to the patients, the patient experience has improved vastly. ”



“ We were aware of inconsistent care provided by the medical team from a previous audit. I had tried to challenge this before but hadn't moved forward. But because this was an external project it made people listen within the department. When you know you are being monitored externally and people are coming back a year later to measure change - that definitely helps move things along. ”

Unit 3
Midwife
(interview)



7.4 Learning for future implementation

As we have seen above, units were highly satisfied with the project delivery. However, four key

suggestions were made for how things might be improved or developed in subsequent projects.

7.4.1 A later re-audit

One theme in the qualitative feedback was for units to have longer than 12 months to deliver

their action plan (perhaps 18 to 24 months).

Unit 2
Midwife Songrapher
(survey)



“ The re-audit was too soon for us really. It was 12 months since the initial audit but only a maximum of 6 months since we had had the opportunity to start to implement changes. A bigger window between the audits would have given a better demonstration of the changes we've implemented. ”

This feedback from the units was strongly echoed by the Tamba midwifery consultants, one felt that

the 12-month period should start from delivery of the action plan rather than the initial audit.

“

We gave the units a year to make the changes, but we weren't giving them the action plan until 3-4 weeks after we'd been in - if we were lucky, as it took a long time to ensure everyone could make the conference call. They had less than a year. ”

Tamba
Midwifery
Consultant 2



7.4.2 Provide multi-disciplinary support

The support provided by Tamba to units for implementation was given by specialist midwives. Some units suggested that it would have been

useful to have also had obstetrician and sonographer involvement in the support package.

“

Professionals listen to experts in their own profession [Involving others in the support] would add more weight and may be better valued. It is supposed to be a multi-disciplinary approach. The review was midwifery lead, but the plan is an MDT plan, it addresses MDT issues. ”

Unit 3
Midwife
(interview)



7.4.3 Provide more opportunities for sharing between units

Peer learning is greatly valued by respondents and several would have welcomed more opportunities to share experiences,

information and best practice - potentially building a community of multiple midwives.

7.4.4 Link with other bodies and initiatives

Some respondents felt that Tamba needed to align itself to influential bodies such as Local Maternity

Systems and Clinical Commissioning Groups in order to effect change.

“ It would encourage maternity units to engage if the LMS and CCG are monitoring their success. ”

Unit 3
Midwife
(survey)



“ Tamba need to engage with the Maternity Transformation Programme - especially the safety workstream. It is important if they want to continue this work. The main one would be Maternal and Neonatal health safety collaborative - this is in line with their work. ”

Steering Group
Member 3



Another opportunity would be to work with Maternity Champions. As part of Safer Maternity Care (2016) The Department of Health and Social Care's action plan for making NHS maternity services some of the safest in the world, Maternity Clinical Networks were asked to designate a Maternity Safety Champion as the local

quality improvement adviser, coach and conduit for sharing learning from national and international research and from local investigations or initiatives. The role also includes fostering relationships between Maternity Clinical Networks and Neonatal Operational Delivery Networks.⁽⁵⁵⁾

7.4.5 Develop the way the project is measured

As well as having a later re-audit (see 7.3.1), units made other suggestions to develop the project's measurement process further:

- Consider capturing elective caesarean sections as well as emergency ones - as reducing

the elective rate would be a useful target.

- Focus on preventable stillbirths and neonatal deaths as these are where the greatest benefits will arise from improving care. Definitions would need to be agreed as to what would constitute a preventable death. ▶

7.4.5 Develop the way the project is measured (continued)

The midwifery consultants and Steering Group members also suggested:

- Auditing more than ten patient files - or the number of files audited being proportionate to the size of the unit. This would require more audit time and, therefore, resource.
- Having clearer definitions of what competencies are required from someone to be considered a "specialist".
- Focusing on the National Maternity Safety Ambition Outcomes - a national ambition to reduce pre-term births.⁽⁵⁶⁾
- Capturing the demographic profile of a hospital's catchment area - to analyse factors such as rural or urban settings, or levels of deprivation.

In addition to these suggestions, Fiveways who conducted the external evaluation

recommended:

- Reviewing whether it is possible to have a control/comparison group that has not had a similar intervention.
- Developing a scale that can be used to measure "distance travelled" in terms of key actions required to increase adherence. Progress along this scale can be measured at audit, re-audit and during quarterly update calls. An example of a six-point scale might be (1) "Not present", (2) "Present but not optimum", (3) "Changes accepted", (4) "Changes planned", (5) "Changes made - not optimum", (6) "Present".
- Introducing metrics to capture unit engagement. This could also be a scale or proxies could be developed such as attendance at training, use of the CPD area or participation in quarterly review calls.





8

Conclusion and recommendations

As can be seen from the results above, the Maternity Engagement Project has successfully demonstrated that actions taken to improve care practice for multiple pregnancies lead to improved adherence to NICE QS46, improved patient outcomes for neonatal admissions and emergency caesarean sections, and an associated cost saving for units.

All 27 participating units increased their overall NICE QS46 adherence, and across all units this increase was statistically significant. Units that implemented a higher proportion of the actions to improve working practice identified by Tamba tended to see a greater increase in their overall adherence to NICE QS46.

Six individual units (of 25 with complete data) saw statistically significant reductions in one or more patient outcomes.

Across all sites, statistically significant links were established between increased adherence to NICE QS46 statement five (monitoring for fetal complications) and decreased neonatal admissions, and increased adherence to NICE QS46 statement two (positional labelling) and decreased emergency caesarean sections.

If all units in England implemented similar changes to increase adherence in NICE QS46, within a year neonatal admissions could be reduced by 1,308 with a cost saving of £8 million and emergency caesarean sections could be reduced by 634.

These results were achieved in just 12 months - it is likely that the association between improved adherence and improved outcomes will become more apparent if measured over a

longer period, and that decreases in stillbirths and neonatal deaths will be noticed (as in the St George's experience).

Importantly, participating units felt supported to make the changes by Tamba's expert advice and the charity's role as an "external" auditor. Many of the changes recommended and made did not require increased financial resources, rather a commitment to review care planning and ensure existing working practices were implemented consistently.

In addition to changes directly related to practice change - units reported the project had helped to raise the profile and understanding of multiple pregnancy care, and that it had prompted improvements in continuity of carer and teamwork within their unit.

These findings will be of interest to individual hospitals and maternity teams looking to implement NHS England's Saving Babies Lives Care Bundle which explicitly recommends using the NICE guidance for multiple pregnancies. Furthermore, the CQC's hospital inspection framework checks whether units are delivering care for multiple pregnancies in accordance with this guidance. As a result of what this project has achieved in just 12 months, the following recommendations are made for a range of stakeholders:

Health Professionals

- Work alongside the maternity safety champions in your trust to identify changes required to improve the care of multiple pregnancies.
- Contact Tamba now for resources and practical support. We can help develop an action plan and provide practical help to drive change within your hospital.

NHS England

- Raise awareness amongst Local Maternity Systems that this project is a key contributor to meeting the Ambition, especially improvements in continuity of carer among a vulnerable group, as set out in the Long-Term Plan.
- Ensure that Local Maternity Systems are aware that twin and triplet pregnancies continue to be explicitly recognised in commissioning frameworks, tariff requirements, and care bundles.

NHS Improvement

- Share the results of this project across maternity safety champions and ensure it is understood that this project is a key contributor to meeting the Better Births ambition, especially improvements in continuity of carer among a vulnerable group, as set out in the Long-Term Plan.

NHS Resolution

- Check that trusts applying for the Maternity Incentive Scheme understand that in order to meet the twin specific requirements of Element Two (risk assessment, prevention and

surveillance of pregnancies at risk of fetal growth restriction) of the Saving Babies Lives Care Bundle (2019), they need to implement the standards set out in NICE QS46 or a local variation, and that Tamba can support them to do that.

Care Quality Commission

- Ensure the inspection framework for antenatal care continues to focus on care for multiple pregnancies being provided in line with NICE QS46.
- Check feedback to trusts highlights the Tamba resources and support that are available to help them make improvements to their care practice where appropriate.

Health Education England

- Provide CPD opportunities for teams to improve their skills and knowledge available in the care of multiple pregnancies.

The Department of Health and Social Care

- Ensure the Maternity Engagement Project receives ongoing support both to reach new units and to monitor outcomes achieved by participating units over a longer period.
- Acknowledge that the Maternity Engagement Project is a key contributor to achieving the Better Births ambition, especially improvements in continuity of carer among a vulnerable group, as set out in the Long-Term Plan.



NICE works

References

1. MBRRACE-UK - UK Perinatal Deaths for Births from January to December 2016) www.npeu.ox.ac.uk/downloads/files/mbrance-uk/reports/MBRRACE-UK%20Perinatal%20Surveillance%20Full%20Report%20for%202016%20-%20June%202018.pdf
2. Visintin, C., Mugglestone, M. A., James, D., Kilby, M. D., & Guideline Development, G. (2011). Antenatal care for twin and triplet pregnancies: summary of NICE guidance. *BMJ*, 343, d5714. doi:10.1136/bmj.d5714
3. NICE Excellence (2013). Multiple pregnancy: twin and triplet pregnancies. See www.nice.org.uk/guidance/qs46
4. See www.npeu.ox.ac.uk/downloads/files/mbrance-uk/reports/MBRRACE-UK%20Perinatal%20Surveillance%20Full%20Report%20for%202016%20-%20June%202018.pdf
5. www.sciencedirect.com/science/article/pii/S0002937816308687
6. MBRRACE-UK - UK Perinatal Deaths for Births from January to December 2016) www.npeu.ox.ac.uk/downloads/files/mbrance-uk/reports/MBRRACE-UK%20Perinatal%20Surveillance%20Full%20Report%20for%202016%20-%20June%202018.pdf
7. Chauhan, S. P., Scardo, J. A., Hayes, E., Abuhamad, A. Z., & Berghella, V. (2010). Twins: prevalence, problems, and preterm births. *Am J Obstet Gynecol*, 203(4), 305-315. doi:10.1016/j.ajog.2010.04.031
8. See www.cerebralpalsyguidance.com/cerebral-palsy/risk-factors/multiple-births/ cites research that found that there were 2.3 incidents of cerebral palsy per 1,000 singleton births, 12.6 per 1,000 in twins, and 44.8 per 1,000 in triplets.
9. Visintin, C., Mugglestone, M. A., James, D., Kilby, M. D., & Guideline Development, G. (2011). Antenatal care for twin and triplet pregnancies: summary of NICE guidance. *BMJ*, 343, d5714. doi:10.1136/bmj.d5714
10. NICE Excellence (2013). Multiple pregnancy: twin and triplet pregnancies. See www.nice.org.uk/guidance/qs46
11. Antoniou, E., McCarthy, A., Turier, H., Roberts, N., & Reed, K. (2017). Twin pregnancy and neonatal care in England. Retrieved from: www.tamba.org.uk/document.doc?id=903
12. Draper E.S., Kurinczuk, J., Kenyon S, on behalf of MBRRACE-UK (2017). Term, singleton, intrapartum stillbirth and intrapartum-related neonatal death. Centre for Medicine, Department of Health Sciences, University of Leicester: Leicester.
13. See Ham, C., Berwick, D., & Dixon, J. (2016). Improving quality in the English NHS: A strategy for action. Retrieved from www.kingsfund.org.uk/units/default/files/field/field_publication_file/Improvingquality-Kings-Fund-February-2016.pdf and Leatherman, S., & Sutherland, K. (2008). The quest for quality in the NHS: refining the NHS reforms. Retrieved from www.nuffieldtrust.org.uk/research/the-quest-for-quality-in-the-nhs-refining-the-nhs-reforms
14. Draper E.S., Kurinczuk, J., Kenyon S, on behalf of MBRRACE-UK (2017). Term, singleton, intrapartum stillbirth and intrapartum-related neonatal death. Centre for Medicine, Department of Health Sciences, University of Leicester: Leicester.
15. Statement six which recommends referrals and / or consultation with tertiary level provider was excluded from the project as this referral was often not required.
16. The Caldicott Principles were developed in 1997 following a review of how patient information was handled across the NHS. They set out six Principles that organisations should follow to ensure that information that can identify a patient is protected and only used when it is appropriate to do so.
17. NICE do not define what a "specialist" is. For specialist midwives the project developed a job description to clarify the role however the issue of defining specialist sonographers was problematic. Some units stated that all sonographers were specialists in multiples - defining specialism by what you do (i.e. they see multiple pregnancies so therefore they are specialists) rather than any qualification or expertise. In such cases, Tamba midwifery consultants needed to probe further to determine what sonographers might do in certain situations to define their level of specialism. Following this some trusts were open to change their stance, but others were not.
18. The use of multiple growth charts does not appear in NICE guidance; however, they were a resource some units introduced during the project. Previously, units may have measured twin babies using singleton growth charts, with clinicians using their judgement to decide how the babies were progressing. However, twins are normally smaller than singletons so comparing them to singleton growth charts could mean that decisions were made to deliver twins earlier than necessary (assuming they weren't growing sufficiently), increasing the risk and sometimes causing harm.

19. From January 2017 to February 2019, 1022 professionals in total (from all units) have signed up to this resource.
20. MBRRACE-UK (Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries in the UK) is a collaboration led from the National Perinatal Epidemiology Unit (NPEU) at the University of Oxford. The aim of MBRRACE-UK is to provide robust information to support the delivery of safe, equitable, high quality, patient-centred maternal, newborn and infant health services.
21. Groupings are referred to in the MBRRACE Perinatal Mortality surveillance report published June 2018 www.npeu.ox.ac.uk/downloads/files/mbrance-uk/reports/MBRRACE-UK%20Perinatal%20Surveillance%20Full%20Report%20for%202016%20-%20June%202018.pdf pages 16,17.
22. One test unit in group two subsequently withdrew from the project. The statistics in this report are therefore calculated for 27 test units.
23. Results for groups four and five are combined in the analysis below.
24. Two units from group five were included to involve the Dorset Local Maternity System - their results have been combined with the group four units.
25. Patient safety incidents and patient satisfaction were originally included as measurable patient outcomes. However, this information was not typically broken down between multiples and singletons, so it was subsequently excluded from the project's analysis.
26. See www.tamba.org.uk/document.doc?id=985
27. See www.nice.org.uk/guidance/cg129/resources/endorsed-resource-multiple-antenatal-care-pathway-4844249677
28. Areas may have been assessed as being "improved" where the existing practice was adapted to more closely meet the NICE guidelines or was implemented more consistently. This might be someone who previously had an interest in multiples being given a named specialist role or ensuring cover for times when specialists were on leave or absent.
29. Results for one unit that took action on monochorionic births only have been excluded from this table
30. Results for one unit that took action on monochorionic births only have been excluded from this table
31. Results for one unit that took action on monochorionic births only have been excluded from this table
32. See www.england.nhs.uk/wp-content/uploads/2017/12/implementing-better-births.pdf
33. Identification and monitoring of fetal growth restriction, specifically implementing the use of the Growth Assessment Programme (GAP) is a component of Saving Babies Lives, NHS England's stillbirth "care bundle" (2016) that confirmed best practice to reduce stillbirth rates. However, GAP is not recommended for multiple pregnancies. See Tamba - "Reducing Stillbirths in Multiple Pregnancies and the NHS Stillbirth 'Care Bundle'" www.tamba.org.uk/document.doc?id=738
34. See www.england.nhs.uk/wp-content/uploads/2017/12/implementing-better-births.pdf
35. See www.england.nhs.uk/wp-content/uploads/2016/03/saving-babies-lives-car-bundl.pdf
36. See https://improvement.nhs.uk/documents/1044/2017-18_and_2018-19_National_Tariff_Payment_System.pdf
37. Overall adherence is an average of the levels of adherence to each of the seven NICEQS46 statements measured.
38. The unit "%p" is used for "percentage points"
39. i.e. graded A and B (see section 4.1)
40. i.e. graded D and E (see section 4.1)
41. The two exemplar units that conducted their audits independently were excluded from this analysis (see 3.2.4)
42. The "r" value is the coefficient of correlation - this measures the linear relationship (correlation) between a dependent-variable and an independent variable. It's value varies between -1 and 1 : 1 means perfect correlation, 0 means no correlation, positive values means the relationship is positive (when one goes up so does the other), negative values mean the relationship is negative (when one goes up the other goes down).
43. Uniform reduction of 70% across all units is based on the assumption that all units have the same starting point. MBRRACE report - www.npeu.ox.ac.uk/downloads/files/mbrance-uk/reports/MBRRACE-UK%20Perinatal%20Surveillance%20Full%20Report%20for%202016%20-%20June%202018.pdf. Stillbirth figure for singletons in 2016 is 3.86 and 6.16 for twins. Calculation based on 30% giving a value: $6.16 \times 0.3 = 1.848$ (or 1.85 rounded)

44. All national averages quoted in this section are from the National Neonatal Research Database (NRNRD) 2014
45. The "r" value is the coefficient of correlation - this measures the linear relationship (correlation) between a dependent-variable and an independent variable. It's value varies between -1 and 1 : 1 means perfect correlation, 0 means no correlation, positive values means the relationship is positive (when one goes up so does the other), negative values mean the relationship is negative (when one goes up the other goes down). Read more: www.businessdictionary.com/definition/coefficient-of-correlation-r.html
46. Larger tertiary units receive the most serious cases, and this will reflect in their patient outcomes.
47. Four test units did not supply complete data.
48. Data were only available for 2014 and 2016. For consistency with the national averages previously discussed with the units and presented in the project's interim report, 2014 data were used for comparison with the re-audit results in the project.
49. The analysis revealed that units with a high patient outcome figure at baseline have, on average, a larger decrease in that outcome from baseline to re-audit. This is because those units with a higher baseline rate have the greater potential for a decrease in the outcome. The results from the statistical modelling have accounted for these baseline effects.
50. Two units in group 3 did not submit patient outcome data at re-audit.
51. Data were only available for 2014 and 2016. For consistency with the national averages previously discussed with the units and presented in the project's interim report, 2014 data were used for comparison with the re-audit results in the project.
52. Grimsby (Group 3), and Scunthorpe (Group 3) were excluded from this model as they had no outcome data, along with Southampton (Group 1) (see note above). Luton (Group 2) was also excluded from this model as it was outlying in terms of its change in emergency C-section rate, which negatively affected the model fit.
53. The number of responses to the relevant question is shown in brackets. This number can alter from question to question.
54. Answer options also included "neither agree nor disagree" or "I don't know".
55. See <https://improvement.nhs.uk/resources/maternity-safety-champions/>
56. These were launched after the Maternity Engagement Project had started.

Thanks to all the Tamba staff who have worked on the project and the final report:

- Jane Goringe
- Deborah Dillon
- Jade Buckland
- Amy McCarthy
- Keith Reed
- Helen Turier
- Nikki Roberts
- Alyson Chorley
- Nicky Deans
- Tanya Darlow



Tamba, Manor House, Church Hill, Aldershot, Hants, GU12 4JU

www.tamba.org.uk

maternityengagement@tamba.org.uk

Twinline - freephone helpline

0800 138 0509 (10am-1pm and 7pm-10pm seven days a week)

Registered Company Number: 3688825 | Registered Charity Numbers: 1076478 and SC041055