

Overview of the Improvement Journey

How to use this toolkit

This improvement activity referred to in this toolkit is not intended to be read as a guideline which mandates a standard improvement journey for all units. Instead it is a practical resource from which units who wish to improve compliance rates of antenatal optimisation measures can select the most suitable interventions for their particular context. For example, there are some units that may achieve high compliance with ‘antenatal education’ but where this is superficial it may have no impact on time to first expressing and time to receive colostrum. The improvement solution for each unit may be different. Individual units are encouraged to interrogate their own processes in order to understand where and how optimisation measures are applied in their local setting and select interventions which are best suited to their context.

The following table shows the steps that are commonly taken on an improvement journey. Each step is discussed further in subsequent sections.

Table 2. The Improvement Journey



| | Approach | Methods and Tools | Outcome |
|--|--|---|--|
| 1. Define the problem | Identify the problem and how large it is | Forcefield analysis Fishbone diagram Case review Process mapping Pareto chart Learn from experts Driver diagram | Define the problem, diagnose why the problem occurs and what improvement would look like |
| 2. Develop a shared purpose | Form a team of enthusiasts | Engaging a team Engaging stakeholders Optimise context | Establish a shared objective and a culture for change |
| 3. Plan and implement changes | Formulate, prioritise and test solutions | Project Charter QI Methodology | Complete a formalised plan of proposed improvements |
| 4. Test and measure improvement | Test, review and re-test improvements | PDSA Measurement Run chart Statistical Process Control Chart Days between Chart | Determine whether improvement has resulted in change |
| 5. Implement, embed and sustain | Implement widely and ensure sustainability | Education Communication Motivation Governance | Shared learning and embedding changes into practice |

Phase One: Define the Problem

Where are we now?

It is important to understand your local data, and to benchmark where possible in the context of regional, national and international standards (NSQI 11,12) observing any changes over recent years. To achieve this your team should understand how to look at your local data, what questions to ask and where to access benchmarking data such as Badgernet National reports and comparison charts, the network data dashboards, [NNAP Online](#) and [Nightingale, Vermont Oxford Network](#) as examples. Finally, being able to convey these data to the wider team clearly and concisely will facilitate a stronger commitment to the implementation of quality improvement interventions.

1. Process Measures:

- Parental involvement (such as Bliss Baby Charter evidence, BFI audit or Badgernet data on parental involvement in care, presence on ward rounds and early communication with parents)
- Proportion of mothers who give birth at <34 weeks gestation who received specific antenatal information about the importance of MBM for preterm babies
- Proportion of mothers who give birth at <34 weeks gestation who were supported to express within 4 hours of birth
- Time to first availability of MBM
- Time to first skin to skin contact
- Frequency of skin to skin contact in the first 24-48 hours after birth

2. Outcome Measures:

- Time to receipt of first MBM feed in babies <34 weeks gestation
- Percentage of babies <34 weeks gestation having MBM as their first feed
- Percentage of babies <34 weeks gestation who receive 'any' MBM and 'exclusive' MBM on
 - Day 1 of life
 - Day 14 of life
- Percentage of babies <34 weeks gestation who receive formula milk in the first 14 days of life

It may also be useful to ask:

- a. Are your data both accurate and complete? Do you have missing data?
- b. How have your data changed over time?
- c. How does this compare with other units in your network?

How did we get here? Brainstorming Barriers and Enablers

Despite the importance of MBM, establishing a full milk supply can be extremely challenging for mothers of very preterm babies for multiple reasons – the breast tissue is not as extensive, co-morbidities and risk factors relating to the prematurity can predispose the mother to suboptimal milk supply, and the mother has to induce and maintain lactation mechanically due to the infant's oral immaturity. These challenges can be even greater for mothers of multiples but can be addressed with high quality perinatal multidisciplinary support which continues throughout the neonatal journey.

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Supporting MBM provision and later breastfeeding, is a complex multidisciplinary intervention. Understanding barriers and shaping effective solutions requires input from all team members across maternity and neonatal care: everyone’s view is valid and essential. Exploring parental perspective and feedback can be very insightful:

“Whilst I was laid in bed for 3 days prior to delivery, there was no discussion of expressing at all. After birth, I was left to sleep and was not encouraged to hand express. It was like I wasn’t their problem as my baby was too early to be cared for on the unit.”
Lindsay Cracknell, parent of a preterm baby.

It can be useful to brainstorm barriers to each of the five core elements. Some suggestions and examples are shown below. How many of these could apply to your unit? Could you identify other enablers?

Table 3. Barriers and Enablers

| Core element | Barriers | Enablers |
|---|--|--|
| Parents as equal partners in their baby’s care: Parents are empowered to take part in all elements of their baby’s care, facilitating strong close and loving attachments | Physical separation of mother and baby. The environment in a neonatal unit can be intimidating for parents making it much harder to build a relationship with their baby. Some units may have access restrictions that can preclude parents being with their baby. Conflicting demands on parent’s availability to be with their baby. Lack of staff education about family integrated care. | Family Integrated Care. Framework or similar (for example Bliss ¹⁷ , UNICEF BFI ¹²). |
| Antenatal education: Educating families about the value of MBM in prematurity, importance and process of early expressing | Preterm birth can lead to information giving being rushed, incomplete, inconsistent and not absorbed fully prior to birth. Maternal health, exhaustion and anxieties can impede understanding. Lack of staff education about the importance of antenatal discussions about MBM. | High quality antenatal counselling and lactation plans for high risk mothers. Parent information leaflet, videos and other resources (see Appendix 4) Checking safety of maternal medications with specialist formulary antenatally. |
| Initiation of expressing soon after birth (aim within 2 hours): with easy access to support, training and equipment | Staff may not feel they have sufficient time to teach expressing skills. Lack of equipment (eg breast pumps) for use in delivery rooms. Lack of staff knowledge or focus about urgency of initiation of expressing . Lack of resources to empower mothers to express for themselves. The severity of maternal illness both before and after birth. | Perinatal education regarding technique and timing. Provision of “Colostrum kits” Prioritise multi-disciplinary support immediately after birth. |
| Early Colostrum (ideally within 6 hours of birth and | Staffing resources and/or poor communication between teams to get colostrum to baby. | Staff education programme about the importance of early oral colostrum. |

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| | | |
|---|--|--|
| always within 24 hours): MBM to be the first enteral feed given to baby, whenever possible | Lack of understanding of neonatal staff that almost all babies can receive buccal colostrum safely. Lack of prioritisation of colostrum in baby's cares. | Systems to expedite transfer of colostrum to neonatal unit. |
| Early and regular parental physical contact with their baby: Delivery room physical contact, skin-to-skin contact early and often | Lack of unit experience/ policy/procedure to safely offer delivery room contact. Lack of resources and confidence of all staff to safely support skin-to-skin contact. Lack of awareness of staff of the ongoing benefits of skin-to-skin contact. Parental belief that incubator is safest place for baby. | Delivery room physical contact. Skin-to-skin contact early and often. |

Further suggestions for barriers and enablers can be found in the Scottish Improvement Science Collaborating Centre Evidence into Practice: [Breastfeeding and kangaroo skin-to-skin care for babies & families in neonatal units](#)⁷³.

How did we get here? QI tools

There are many tools to help your team understand your current practice and identify how to improve. You do not need to use all of these tools but should explore which of these exercises works best for your team⁵ (NSQI 13). All of these tools are explained further and templates available in the BAPM QI Made Easy pages ([‘Investigating your Current Practice’](#))⁷⁴

- 1) **Forcefield analysis** - this tool balances the positive and negative drivers influencing MBM outcomes and scores assigned to describe the strength of each force. Study, plan and act to strengthen the weaker positive forces and diminish the resisting forces (Figure 4).
- 2) **Fishbone diagram** - cause and effect analysis tool. This is a useful tool for categorising factors which influence MBM outcomes (Figure 5).
- 3) **Case review** - suggest using Bliss Baby Charter, BFI audit tools and consider parent journey reviews to identify where the barriers and facilitators are.
- 4) **Process mapping** - think about the journey that the baby and family take from pregnancy, through delivery through to postpartum care and initial neonatal unit stay and think about the factors within the process, culture and the environment that may contribute (Figure 6).

Figure 4. An example of a forcefield analysis for provision of early exclusive MBM

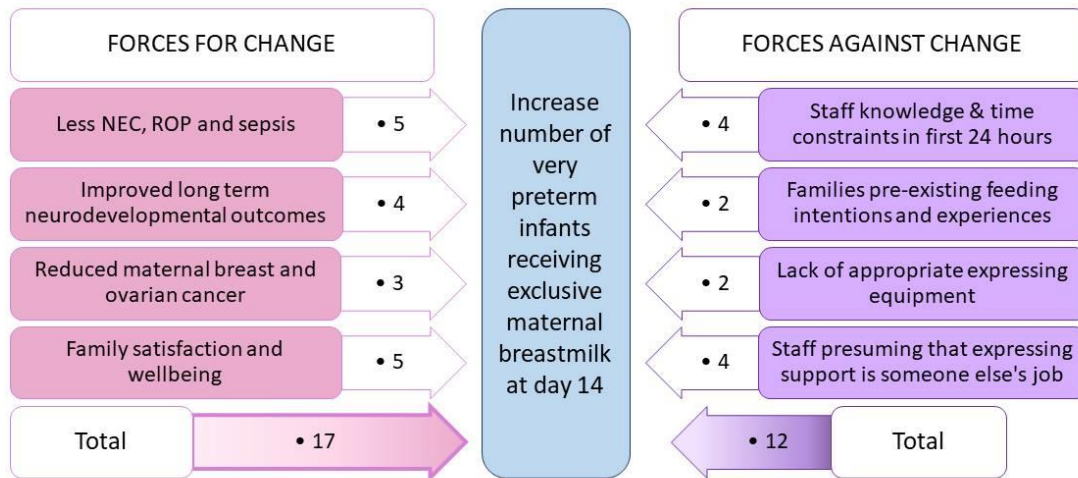


Figure 5. An example of a fishbone diagram for early colostrum delivery

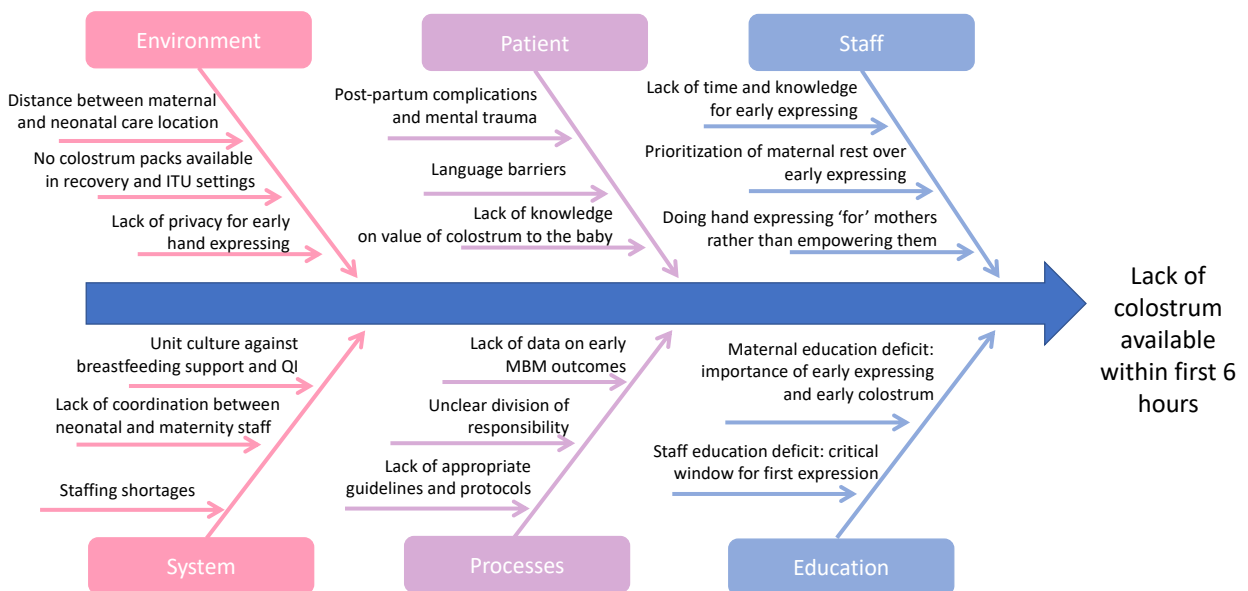
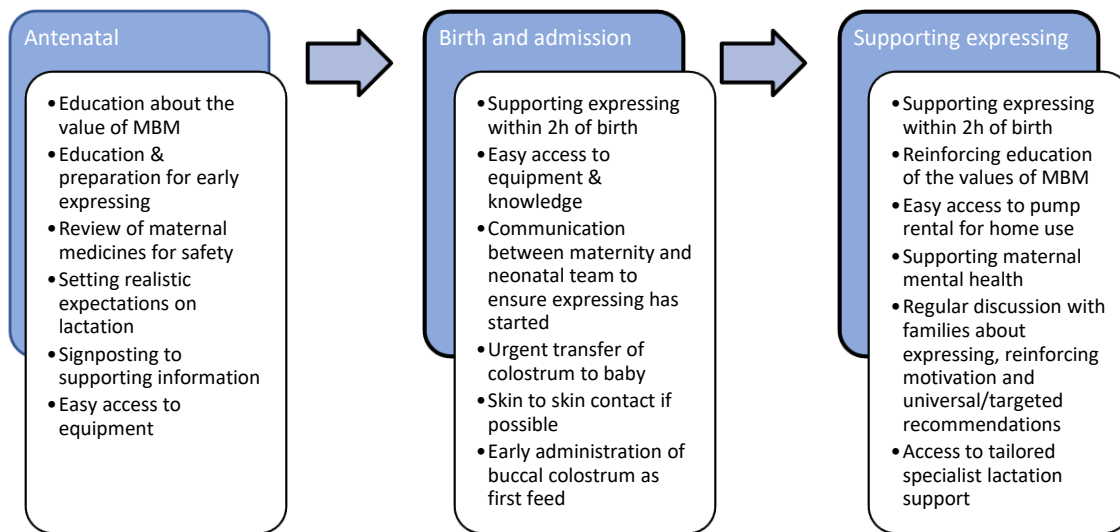


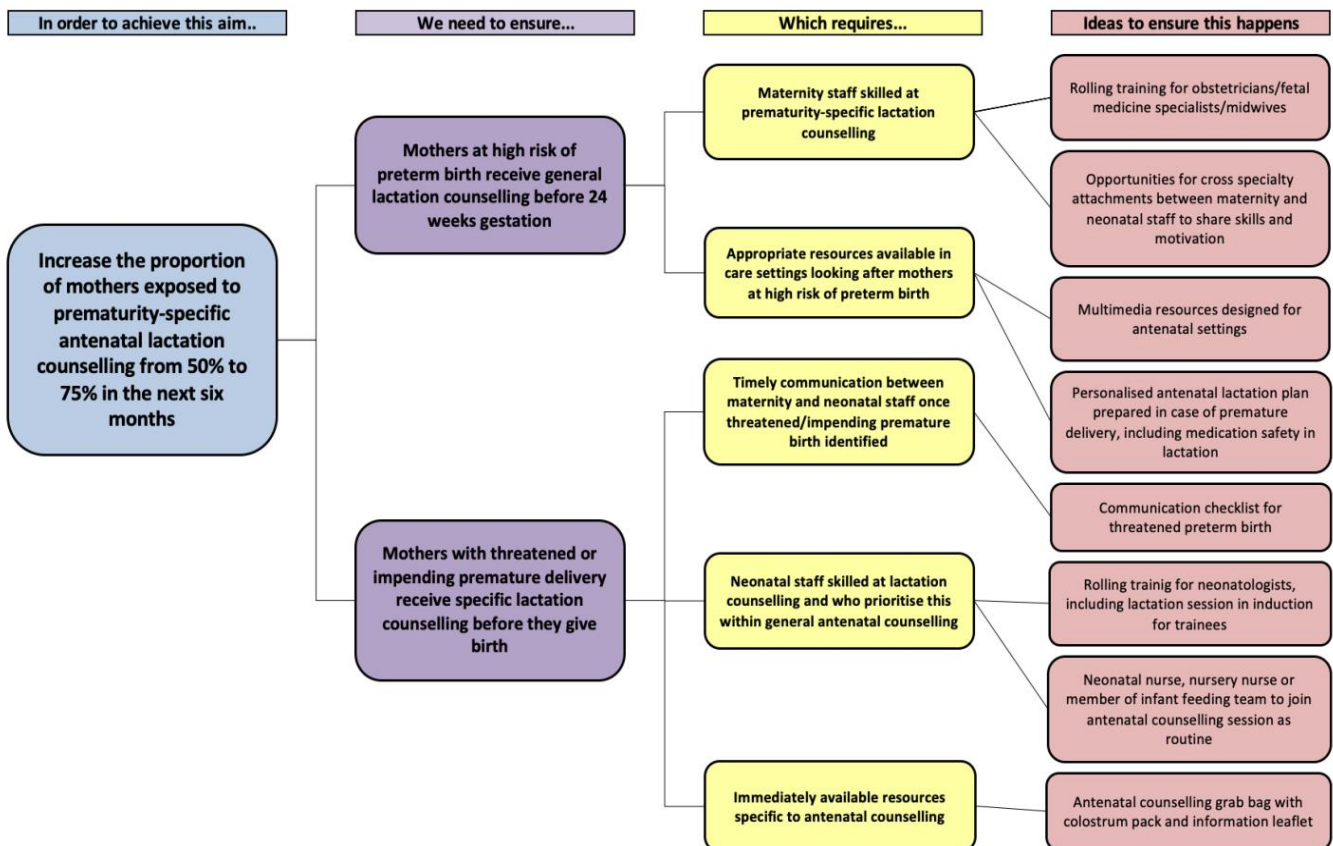
Figure 6. Process mapping for perinatal interventions for maximal MBM provision



The Improvement Plan

Using one or more of these tools will identify potential areas for improvement and ideas for change. These ideas can be pulled together into a driver diagram to apply a clear and organised structure to your project, implementing evidence-based strategies within a multidisciplinary team setting.

Figure 7. An example of a driver diagram for improving practice in antenatal education



Learning from parents and other experts

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It can also be helpful to speak to other units about how they have optimised early MBM for preterm babies. High performing units and those who have made significant improvements over time can be identified from [NNAP online](#)¹. Parental input and consultation is vital for QI teams in all aspects of perinatal optimisation, but particularly for teams who are striving to improve early MBM for preterm babies. Users of this toolkit should seek to engage parents from the initiation of the project. Some teams and parents have shared examples below.

Network Collaboration

Working collaboratively across a Network to highlight initiatives around early MBM, develop standard resources, teaching and audit packages. Producing accessible resources for parents and staff in different formats. Leaflets & videos to support and educate on aspects of early MBM. *Sara Clarke, Network Dietitian, WMNODN*

Checklists

Using an expressing checklist, such as BFI or local version, helps to ensure that mothers get off to the best start as what happens in the first few hours and days has a big impact in the longer term on milk supply. *Cathy Budd, Infant Feeding Specialist Nurse*

Parental Perspective

A joined-up approach between SCBU staff and midwives could be beneficial to explain and promote what a mother can do before and after her preterm baby is born. There are so many leaflets - a chat / advice with someone goes a long way. Some people may not understand everything or even read them at all!

Lindsay Cracknell, parent of baby born at 25 weeks

Perinatal communication

Optimising opportunities for the neonatal team to discuss what benefits early breast milk can make to a premature baby whilst the mother is in a Delivery Suite or Antenatal Ward. For instance at GWH in Swindon we give parents "liquid gold" packs in which benefits are reiterated and syringes supplied to start expressing.

Tanya Miles, Midwife, Swindon

Goals

Don't talk about breast feeding, talk about breast milk. Start with small goals to express colostrum, then aim for first 14 days. This gives parents time to explore how they want to feed their baby without feeling pressurised into the whole breast feeding journey

Sara Clarke, Network Dietitian WMNODN

Equipment

Having enough electric breast pumps available both on the unit and for mothers to take home has been essential. It emphasises how much we value their milk and takes away the added stress of finding/ buying a pump on the day they have to leave their baby behind. *Cathy Budd, Infant Feeding Specialist Nurse*

Phase Two: Develop a Shared Purpose

Engaging your multidisciplinary team

One of the key components to any successful project is having an implementation team that are engaged, resilient, enthusiastic and committed to working together to create the right culture for change⁵ (NSQI 2, NSQI 15).

Need to engage the whole team
“supporting MBM production is everyone’s responsibility”

**Sara Clarke, Network Dietitian,
WMNODN**

Short, bespoke half hour sessions with Receptionists and Housekeepers helped us to explain the key elements of involving parents in their baby’s care so they were aware of the importance of a welcoming environment and also the benefits of breast milk as they make up all the expressing packs, colostrum packs etc

Cathy Budd, Infant Feeding Specialist Nurse

Teams should ideally be around 4-8 members and include:

- A Project lead (could be from any part of the multidisciplinary team)
- Multidisciplinary representation including neonatologists/paediatricians, neonatal nurses, midwives, obstetricians, infant feeding team, speech and language therapists, specialist dietitians, peer support workers, other healthcare staff (eg maternity or clinical support workers, nursery nurses)
- Parent representation (NSQI 10)
- People with expertise in QI and data analysis (NSQI 17)

When forming your team consider:

- **Who** are the most influential people within the maternity/neonatal team? – these may not be the most senior staff members. Consider inviting those who are unsure or oppositional to understand perspective and secure buy in from the outset.
- **What is the culture** like amongst members of the perinatal multidisciplinary team? Are maternity and neonatal teams equally invested in the goal of your MBM QI work?
- **Where** are the areas likely to be affected by any changes – do you need to engage staff from outside of your unit team, for example peer support workers or volunteers?
- **Why** should people want to be involved in your project – share your vision and think how you are going to engage people and maintain their commitment?
- **What** is your expectation of team members – what will they be required to do in terms of time and effort?
- **How often** will you meet?
- **When** are people available and are your time commitments realistic?
- **What else** is going on? Are there existing workstreams with overlapping agendas that could be pulled together to prevent duplication (eg: UNICEF BFI, Bliss Baby Charter). Are there other QI projects which may have to take priority?

Find out if your local hospital has a central improvement team who can facilitate projects and provide valuable skills and knowledge in designing and implementing improvement work. Local data analysts may also be useful in helping to collect, analyse and display data.

Stakeholder engagement

Who else needs to be involved?

Start by brainstorming the groups of people likely to be affected by the proposed change (NSQI 2). Within the topic of early MBM for preterm babies, they are likely to include: neonatologists/paediatricians, neonatal nurses, midwives, obstetricians, labour ward teams, infant feeding teams, speech and language therapists, specialist dieticians, peer support workers, other allied health professionals (e.g. maternity or clinical support workers, nursery nurses, pharmacists). Maternity Voice Partnerships may have a very useful role to play in supporting local teams to design their MBM project. Within the topic of MBM, stakeholder engagement from parent groups and understanding the parent experience is essential.

These groups need to be:

1. **Prioritised**- in terms of the power they have to make your project succeed or fail
2. **Understood**- how are they likely to feel or react to the proposed changes?
3. **Informed**- devise a communication plan to sustain interest and win over doubters. This plan should include modalities of communication (e.g. presentations, emails, newsletters), frequency (monthly, weekly, daily) and key messages you want to deliver.

Context

It is a worthwhile activity at this stage to review the context in which you wish to implement your changes. Although the changes you wish to implement have been successful elsewhere, differences in the culture and the context between units may result in variable results. Useful information can be obtained from the results of your Safety Culture Survey which may indicate how well staff feel listened to, how ready your unit is for change, or what might be needed to optimise communication (NSQI 3). The [BAPM Neonatal Service Quality Indicators](#) resource provides a helpful framework for units and networks who wish to optimise their culture for delivering successful quality improvement projects⁹.

Phase Three: Plan and Implement Changes

Project Charter

It can be useful to construct a Project Charter at the start of this phase to detail your proposed improvement, including the resources required and the potential benefits to patients. A Project Charter is a format endorsed by many Trust Improvement Teams, will provide direction and a sense of purpose and may give your project increased leverage with management. [NHS Improvement](#)⁷⁵ and [NHS Education for Scotland](#)⁷⁶ have examples.

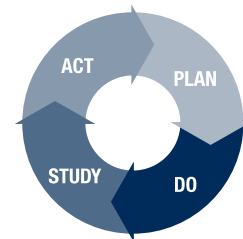
Formulate, prioritise and test solutions

There are a number of methodologies that can be adopted to implement a quality improvement strategy. No single quality improvement method is better than others; what matters more is having a consistent approach that you are familiar with and skilled in applying. The Model for Improvement is a widely recognised approach within healthcare and is frequently associated with positive outcomes for improvement and will be used here as an illustration.

The Model for Improvement

Ask yourself:

- What is it you want to achieve?
- How will you know that a change is an improvement?
- What changes can you test that will result in an improvement?



For each change idea, a PDSA cycle can be used:

Plan

- Which intervention(s) to try first? This may be the intervention most likely to make an impact, the easiest to implement or the one that will best win hearts and minds.
- How will this intervention be introduced into clinical practice?
- Who and what will be required to make this happen?
- Predict what you think the change might be?

Do

- When and how will this plan be carried out? A timescale is useful. Document problems and unexpected observations.

Study

- Use established tools to analyse your data (see [Phase 4](#)). Has your change idea resulted in improvement? Is this a real improvement? Does your data suggest your change idea needs modified? Why might this be so? Compare your data to your predictions.

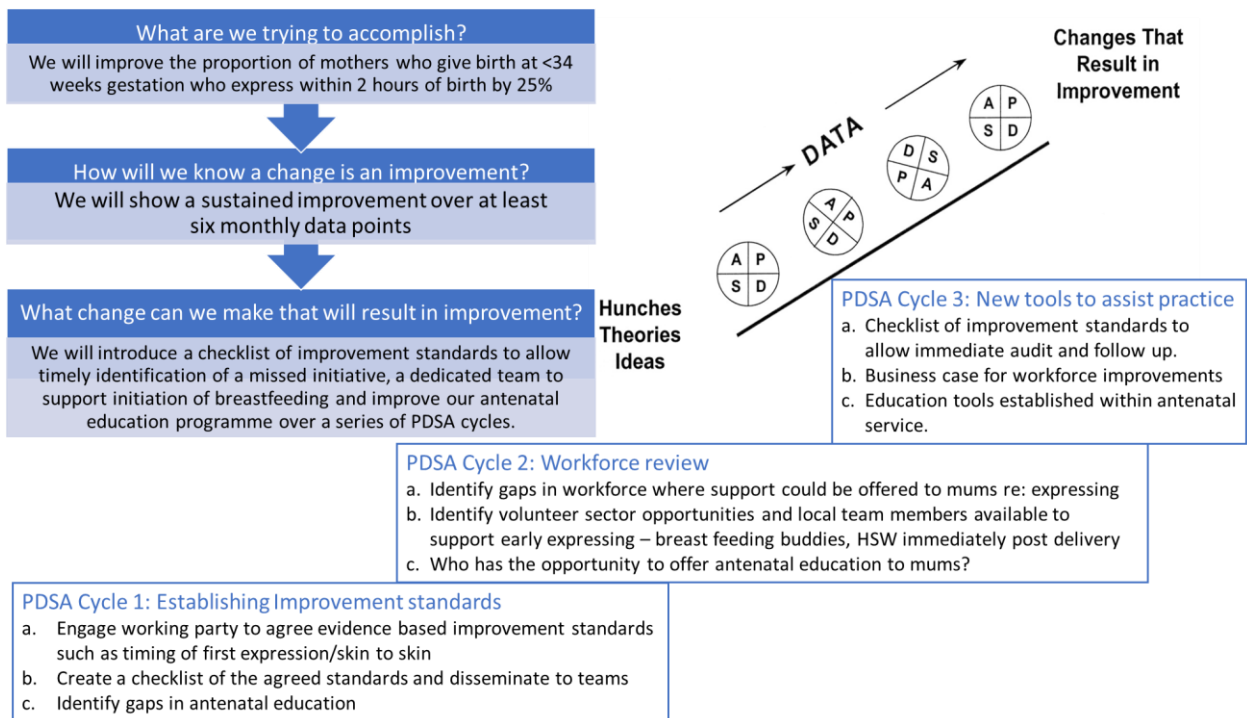
Act

- Identify and carry out any modifications needed to this change idea to make it more effective, using further PDSA cycles as needed i.e. Adapt, Adopt or Abandon

Below, the Model for Improvement is used to work through an example of implementation of planned changes to optimise MBM for preterm infants. More information on using the Model for Improvement can be found on the [BAPM QI Made Easy](#) pages ('Planning your Change Idea')⁷⁴.

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Figure 8. Example Model for Improvement to improve time to first expression of MBM



EXAMPLE

Phase Four: Test and Measure Improvement

In this phase, improvements are tested, reviewed and re-tested through a series of PDSA cycles to decide what works and what does not i.e. is the intervention producing the impact that we expected it would?

Measurement Strategy

Measurement is one of the 'weakest links' within improvement and a suboptimal measurement strategy creates significant obstacles to improvement. First and foremost, measurement for improvement needs to be well differentiated from the performance management aspects of data and monitoring that organisations are very 'wedded' to. The focus on 'learning' rather than 'failure' is critical.

It is reasonable to think that once we start measuring something we can 'manage' it better. However, it is paramount that this measurement should be focused on improvement rather than performance management. Using the wrong 'measure' or for the 'wrong purpose' is counterproductive in terms of improvement *"What gets measured gets managed... even when it's pointless to measure and manage it and even if it harms the purpose of the organisation to do so."*⁷⁷

Data collection

Measuring for improvement is different to the data collected for research or to prove whether clinical interventions work or not. This type of measurement asks the questions 'how do we make it work in our context?' and 'how do we know that a change is an improvement?' It is important that you collect the right data for your project (NSQI 1⁵). In terms of actual metrics, any QI work aimed at improving a preterm infant's intake of maternal breast milk ought to focus on the types of measures (see [Phase One](#)):

a) Patient outcome measures: reflect the impact on the patient e.g. breastfeeding rates. These are the most meaningful of measures and add 'value' to the patient/family as well as the healthcare professional, the organisation and society at large. These, however, generally take time to show effect and require patience and sustained efforts.

b) Process measures: the way systems and processes work to deliver the desired outcome. These focus on some aspect of the improvement process and could be used for a change idea or primary or secondary driver e.g. number of women who expressed colostrum within 2 hours. These are useful to make sure that interventions planned as part of the QI efforts are happening to plan (compliance with your change ideas). These are also much easier to measure and usually show an effect much earlier compared to the real outcome measures. If process measures are suggesting improvement, our confidence in a positive patient outcome increases.

c) Balancing measures: this is what may be happening elsewhere in the system as a result of the change. These focus on the unintended consequences of a QI intervention e.g. as part of an intervention aimed at increasing breastfeeding rates, maternal stress and anxiety rates for some women may go up if they are finding it difficult to obtain breast milk.

Improvement is a continuous process, and this necessitates regular measurement. This is the only way for us to be sure that a proposed intervention is having the impact that we think it will have. In addition to measuring and monitoring the impact of change ideas through PDSA cycles of learning, we can also

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measure outcome, process and balancing measures at a more strategic level in terms of our SMART aim, our primary and secondary drivers.

A detailed overview of measurement strategies is beyond the scope of this toolkit. Some resources from the [Institute for Healthcare Improvement](#)⁷⁸, [ACT Academy](#)⁷⁹ and NHS Institute for Innovation and Improvement ([video](#)⁸⁰ and [How-to Guide](#)⁸¹) are helpful.

Data analysis and display

How will any change be measured, assessed and displayed? Common tools to present and analyse your data include run charts, statistical process control charts and days between charts (see examples below). All require a level of knowledge and skill to collate and interpret correctly. Importantly measurement should not be a 'before and after' audit which is unreliable in measuring true change, but a continuous process over time during which your interventions/changes are evaluated and modified as appropriate.

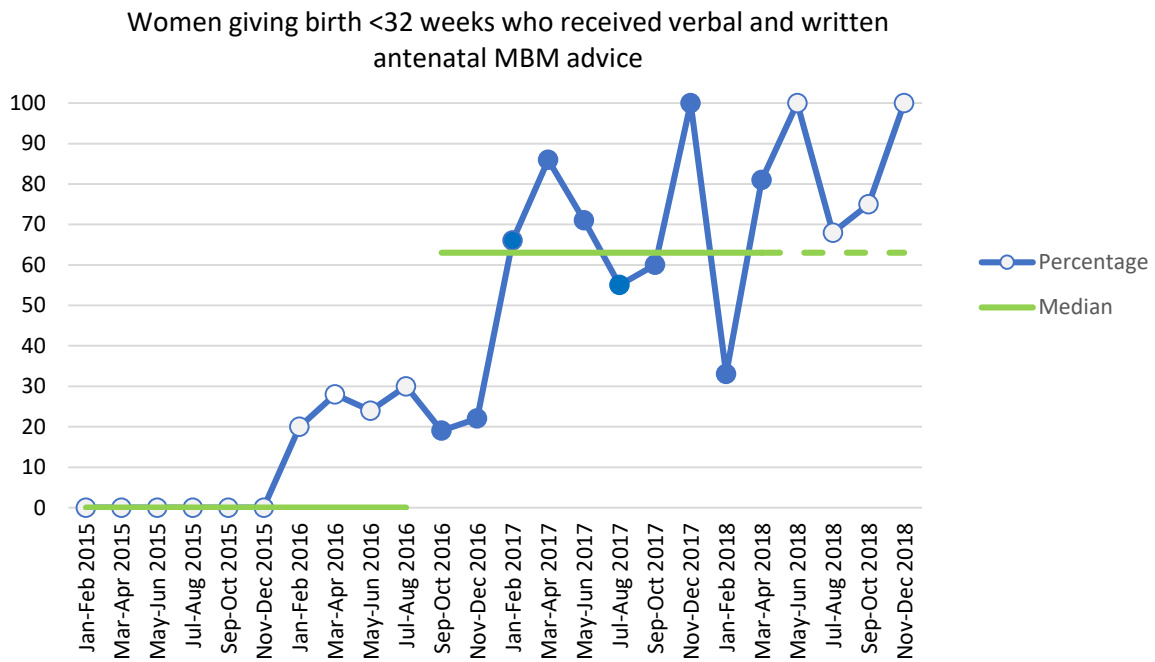
There is growing evidence to highlight that visual display of data on the 'ward' or at the 'frontline' so to say and discussion about measurements using 'huddles' and similar processes is much more effective than traditional meetings. All of the options for analysis detailed below are explained in the [BAPM QI Made Easy](#)⁷⁴ pages ('Interpreting your Data').

It is important to highlight the value of **run/statistical process control (SPC) charts** (Figures 9 and 10) as a critical tool to 'measure' improvement. It serves well to engage frontline teams in this specific QI work and display it to the relevant teams 'in their face' as this can be very effective in generating meaningful actions and sustained improvement. For in depth understanding of run charts and SPC charts please see the [NHS Improvement website](#)⁸².

While it is ideal to measure using run/SPC charts and it is important that key members of the improvement team are well versed in their use, the communication of what the measurements are telling us is focussed on who the audience for that information is. The information obtained from our measurement processes should be packaged in different ways and communicated in the most appropriate way to parents, nursing and medical neonatal teams, midwives, maternity support workers, managers, commissioners and so on (for example see Figure 11).

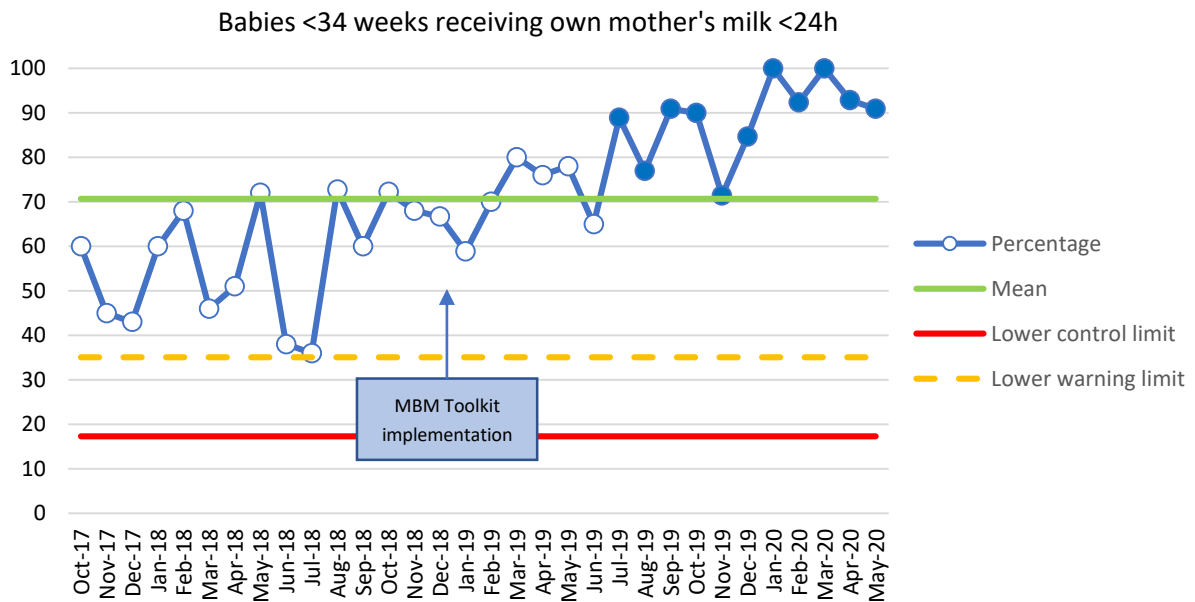
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Figure 9. Example of a Run Chart



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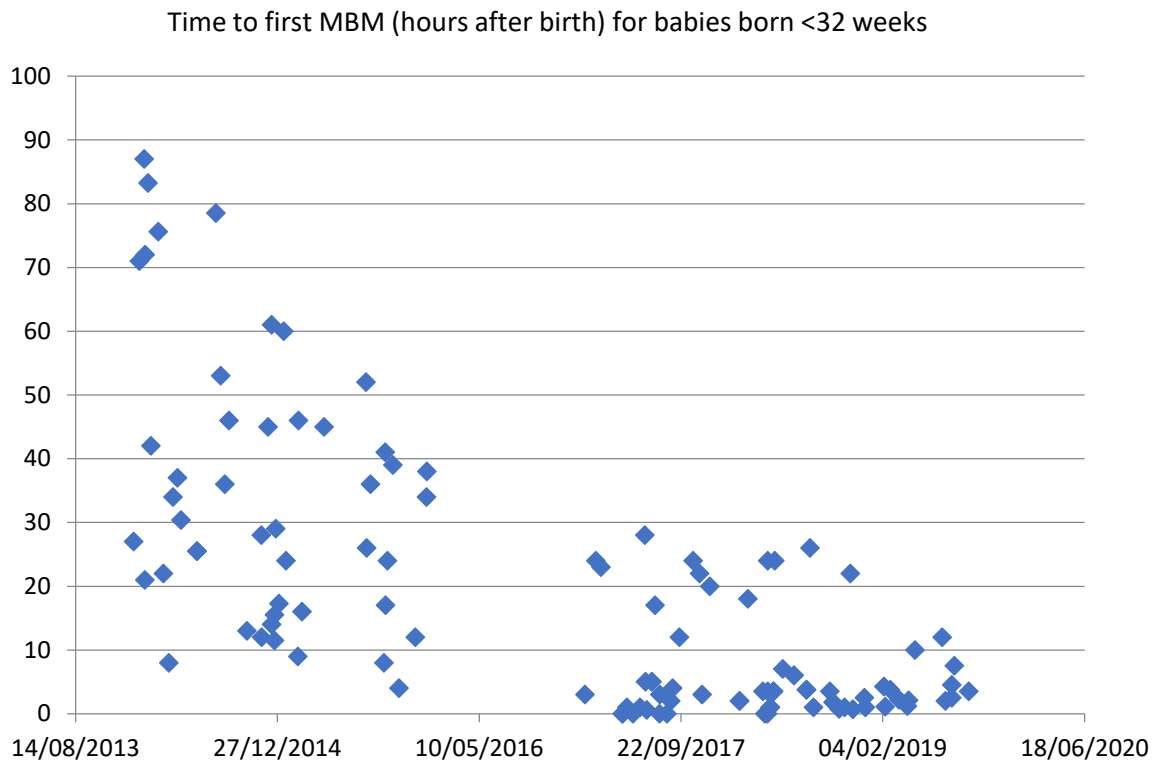
Figure 10. Example of a Statistical Process Control Chart



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Figure 11. Patient level Data Display Example of QI outcome:

On this chart, each diamond represents a baby – this can be a highly effective way to emphasise the importance of single patient level outcomes.



EXAMPLE

Phase Five: Implement, Embed and Sustain

This phase involves the wider implementation of improvements such that change becomes embedded in routine practice throughout the system and is sustained with governance arrangements.

Spread

This can involve formal methods such as *dissemination* that includes presentations, publications, leaflets, learning boards, social media, some of which may have limited reach within your department and may be better disseminated via network/LMS meetings and GIRFT benchmarking mechanisms; or informal methods of *diffusion* where word of mouth, champions and opinion leaders can accelerate your message. Consider carefully what is required for the embedding of changes within your service (NSQI 2, NSQI 18).

Sustainability

The ability of a service to implement and sustain change is dependent on various strengths and weaknesses of any one project. These can be assessed and addressed from the outset of a project and be reviewed regularly throughout the time course to improve the likelihood of sustaining improvement beyond its lifespan. A useful tool to do so is the NHS Sustainability Model ([NHS Improvement: Sustainability Model and Guide](#))

Barriers and loss of motivation

It is not unusual to find the size of a previous improvement lessen over time. It is important to understand why so that solutions can be tailored to the problem. Different approaches will be effective for different people and different situations. The following activities may be useful: talk to key individuals, observe clinical practice in action, use a questionnaire to survey staff, brainstorm with a focus group, use 'improvement huddles'. Education is a key element of overcoming barriers particularly within an interactive forum; using opinion leaders to influence others within your staffing structure; reminder systems to prompt clinicians; and ensuring feedback of data to staff in a format that they find useful; all these can help to reinvigorate and embed your changes for improvement (NSQI 2, NSQI 18⁵).

Working towards the Unicef/Baby Friendly Initiative Neonatal accreditation has helped us to focus on a training programme, with one off training days for Nurses and regular MDT training days, run in house using BFI training materials, to help embed the 3 new standards.

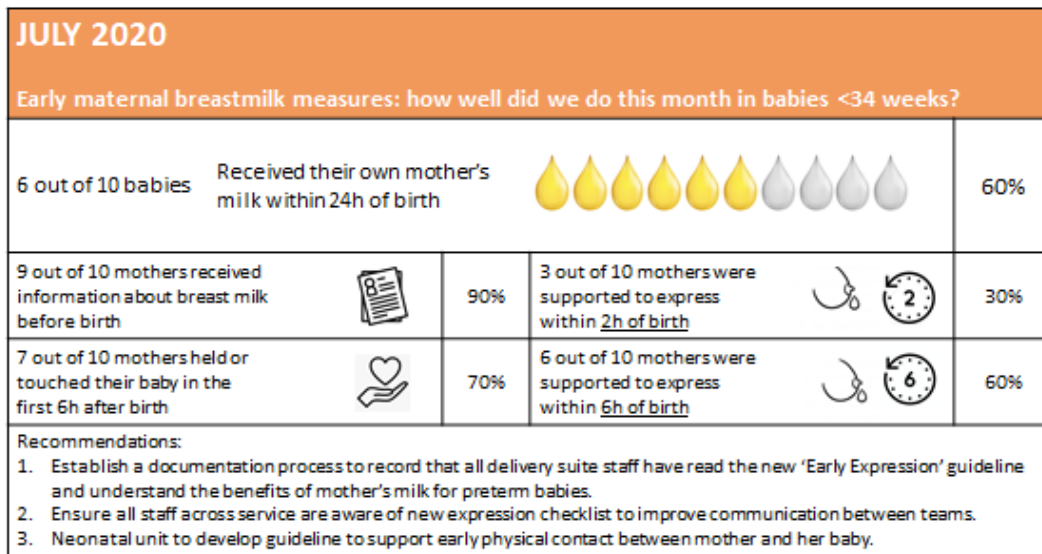
Cathy Budd, Infant Feeding Specialist Nurse

Team Feedback

Regular audits of process and outcome measures can convey progress, or highlight which areas need renewed focus and energy. Sharing this data across your whole perinatal team can be very useful, especially if displayed in an accessible, concise and impactful format. See Figure 12 for an example:

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Figure 12. Example of staff feedback poster for MBM



EXAMPLE

Parental Feedback

Never underestimate the power of patient stories to motivate and reinvigorate a team to implement change. Examples are shown here (with thanks to the parent representatives of this working group):

Knowing my daughter had been taken immediately to NICU following a two-minute cuddle on the operating table, the only thing I was able to do for her was provide some drops of liquid gold. In the twenty-four hours between delivery and our first kangaroo cuddle this was the only thing I was able to do for her from my recovery bed. My only means of helping to care for my tiny baby that I had not yet spent any length of time with. I felt lost, bewildered and unsure, but from early pregnancy I knew I wanted to breastfeed. Knowing I still had the chance to do so, and would be helped to express, despite her premature birth, gave me a small glimmer of hope that those experiences hadn't been taken away from us. During our first kangaroo care, she started to root and nuzzle towards the breast. This was one part of our journey that I now knew we didn't have to lose. It was one of the small things I could do to feel useful, to feel like a mother. The medical professionals who helped me achieve this goal, and still be feeding at 26 months, have my eternal gratitude. **Nicola Williamson, parent of a preterm baby**

After the trauma of premature birth and the unexpected loss of one of my three daughters, expressing gave me a purpose, a focus and a routine that helped me to get through my days hour by hour, and my weeks day by day. It is something that I know now looking back helped me significantly at the time, and gave me the opportunity to work towards and maintain breastfeeding for as long as I wanted. I believe that successfully expressing in the early days contributed towards me developing my relationships and bonds with my daughters in such difficult and traumatic circumstances, which I am very thankful for. There was a dedicated member of staff on the neonatal unit to support mothers with expressing and breastfeeding, who regularly checked in and supported me. **Genevieve Howell, parent of preterm triplets**

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