



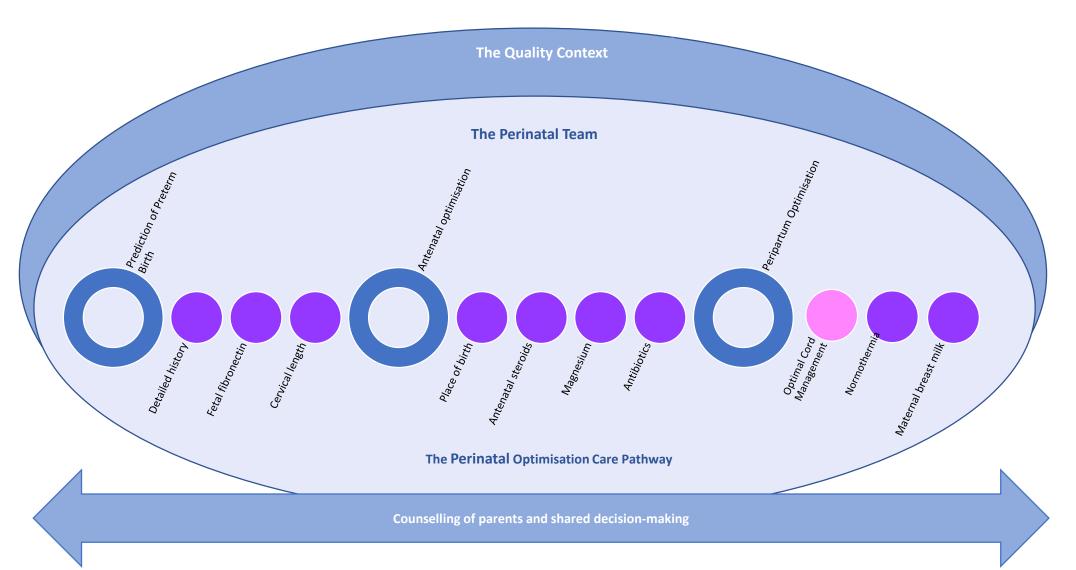


## Optimal Cord Management in Preterm Babies: A Quality Improvement Toolkit

British Association of Perinatal Medicine In collaboration with the National Neonatal Audit Programme December 2020



## The Perinatal Optimisation Care Pathway





## Purpose of toolkit

- To support the implementation of optimal cord management in all preterm babies less than 34 weeks gestation, defined by waiting at least 60 seconds before clamping the umbilical cord.
- To support clinicians leading and participating in QI in maternity units by providing practical resources in the form of a toolkit and supporting materials
- This toolkit will:
  - Provide the evidence base for optimal cord management in preterm babies less than 34 weeks gestation
  - Facilitate units in interrogating their own data and processes in order to undertake selected quality improvement activities suited to the local context
  - Assist units in interpreting and monitoring the results of their QI activity
  - Provide and signpost resources to facilitate QI to improve optimal cord management in all preterm babies less than 34 weeks gestation





#### Rationale for OCM

- Optimal Cord Management reduces death in preterm babies by nearly a third
- The number of babies needing to receive OCM to prevent a death is around 30-50 overall and may be as low as 20 in the least mature babies
- OCM also:
  - Increases BP and reduces the need for inotropes
  - Reduces the need for blood transfusion





#### Evidence and professional recommendations for OCM in preterm babies

- Mortality. Preterm babies have reduced mortality risk of at least 27% if they receive OCM (NNT=33-55). Babies ≤28 weeks have reduced mortality risk of 32% if they receive OCM (NNT=20)
- Cardiovascular benefits. Preterm babies have higher mean blood pressure (mean increase 2.87 mmHg, (95% CI 1.09-4.64 mmHg) and lower requirement for inotropes (RR 0.37, 95% CI 0.17 to 0.81)
- Blood transfusion requirements. OCM reduces red blood cell transfusion by 9-10% during the first 6 weeks
- OCM is recommended by WHO, ILCOR, NICE, BAPM and other national and international guidelines



# The drivers for Optimal Cord Management in Preterm Babies within the UK



#### **Best Practice Flowchart for Optimal Cord Management**

1		•Usual equipment for stabilisation of
		•Thermal and respiratory support ap
		•Consider temperature, saturation of
	Equipment	•Consider need for sterility
l		•Consider use of 'Preterm OCM Equi
		<ul><li>Role allocation within the team for:</li></ul>
		<ul><li>Checking &amp; setting up stabilisation</li></ul>
		<ul> <li>Assistance with sterile preparation</li> </ul>
	Prepare	<ul> <li>Thermal care responsibility</li> </ul>
l		<ul> <li>Maintaining airway and stimulating</li> </ul>
		Position resuscitation/stabilisation e
		Position team members (consider us
	Position	<ul> <li>Plan positioning of baby and ensure reach the baby</li> </ul>
l		<ul> <li>Plan move to resusciatire</li> </ul>
		Before birth ensure all the team are
		management and that aims for dura
		Routine pre-birth huddle can impro
	Communicate	•Incorporate perinatal team discussion
		or Pre-op safety Checklist at caesare
	\ \ \	•Start clock as soon as baby is born
		<ul> <li>Oxytocin should be given to the mot</li> </ul>
	Birth and	<ul> <li>Provide gestation-appropriate therm</li> </ul>
	Thermal Care	<ul> <li>Baby placed on/near maternal legs/a</li> </ul>
		<ul> <li>Optimise airway patency</li> </ul>
		<ul> <li>Deliberate and gentle stimulation of</li> </ul>

- Usual equipment for stabilisation of preterm baby PLUS
- •Thermal and respiratory support appropriate for gestation
- •Consider temperature, saturation or other monitoring during OCM
- Consider need for sterility
- •Consider use of 'Preterm OCM Equipment Grab Bag'

- •Checking & setting up stabilisation equipment
- •Assistance with sterile preparation of equipment (if needed)
- •Thermal care responsibility
- Maintaining airway and stimulating breathing

#### Position resuscitation/stabilisation equipment, check plugs and gas supply

- Position team members (consider use of pit stop diagram)
- Plan positioning of baby and ensure if respiratory support being used that it can reach the baby
- Plan move to resusciatire
- Before birth ensure all the team are engaged with the plan for optimal cord management and that aims for duration and support are agreed
- Routine pre-birth huddle can improve communication
- Incorporate perinatal team discussion of optimal cord management during WHO or Pre-op safety Checklist at caesarean section births
- Start clock as soon as baby is born
- Oxytocin should be given to the mother as routine and not delayed
- Provide gestation-appropriate thermal care (eg bag, sterile suit)
- Baby placed on/near maternal legs/abdomen or on adjacent platform if used

#### Respiratory Support

- Optimise airway patency
- Deliberate and gentle stimulation of baby and their own respiratory effort
- Aim to ensure lung inflation prior to cord clamp
- If using respiratory support equipment (eg PEEP, face mask support) apply this

#### Cord Clamped

- After at least 60 seconds, clamp cord, move baby to resuscitation platform
- •Stabilisation and thermal care continues as per NLS guidance
- •Transfer to Neonatal Unit after parental contact and update
- Document optimal cord management and duration on Badger

Wait at least 60 seconds



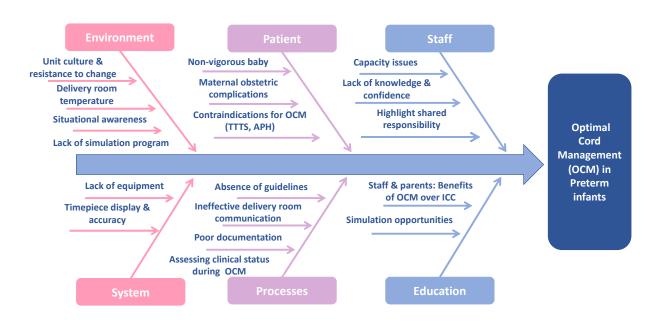
## The Improvement Journey

	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 retest improvements	PDSA Measurement Run chart Statistical Process Control Chart Days between Chart	Determine whether improvement has resulted in change
<ol><li>Implement, embed and sustain</li></ol>	Implement widely and ensure sustainability	Education Communication Motivation	Shared learning and embedding changes into practice



## Phase One: Define the Problem

- Understand your local data, both now and in recent past
- Consider data in context of national standards/benchmarking
- Use one or two of the following tools to understand your data:
  - Forcefield analysis
  - Fishbone diagram
  - Case review
  - Process mapping
  - Pareto chart
- Develop an improvement plan using a driver diagram
- Learn what works by talking to high performing units
- Listen to parents





## Phase Two: Develop a Shared Purpose

#### 1. Engage your team

- An overall project lead (can be medical or nursing)
- Parent representation
- People with QI expertise
- Data analyst
- Service manager
- Staff educators (maternity and neonatal)
- Other multidisciplinary representation including a range of seniority from neonatologists/paediatricians, neonatal nurses, midwives, obstetricians, labour ward and maternity operating theatre representatives





## Phase Two: Develop a Shared Purpose

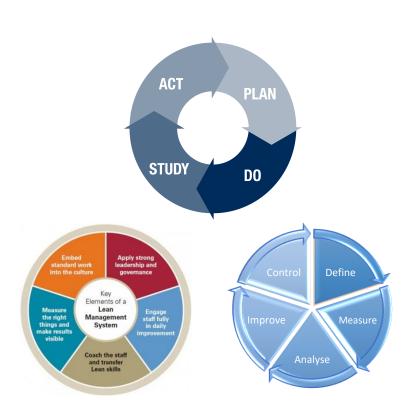
2. Engage your stakeholders:
Which teams need to be reached to make your project successful?

Prioritise us
Understand us
Inform us

- Senior and junior paediatricians/neonatologists
- Neonatal nurses
- Senior and junior obstetricians
- Midwives of all grades of seniority
- Maternity Care Assistants and Maternity Support Workers
- Maternity operating theatre staff including anaesthetic teams
- Parent groups



## Phase Three: Plan and Implement Changes



Construct a Project Charter:

Detail your proposed improvement, including the resources required and the potential benefits to patients

- Formulate, prioritise and test solutions using established QI methodology, e.g:
  - Model for Improvement and PDSA cycles
  - LEAN
  - Six Sigma



### Phase Four: Test and Measure Improvement

#### 1. Collect the best data for your needs

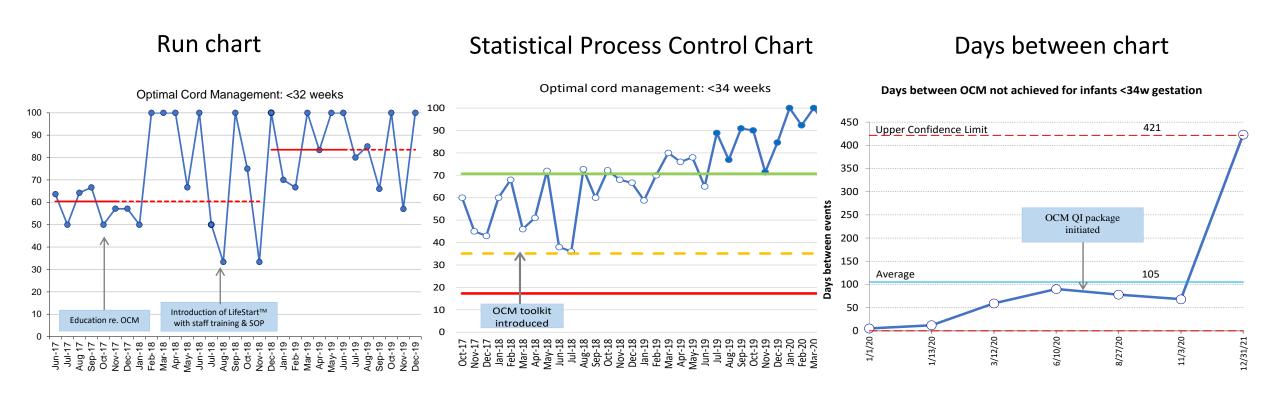
- Outcome measures: reflect the impact on the patient e.g. mortality, NEC, IVH
- Process measures: the way systems and processes work to deliver the desired outcome e.g. number of babies receiving OCM with cord clamping greater than 60 seconds
- Balancing measures: this is what may be happening elsewhere in the system
  as a result of the change e.g. the number of babies admitted with a
  temperature outside the normal range





## Phase Four: Test and Measure Improvement

2. Use well-described methods to analyse and display your data:







- Spread:
  - Dissemination: formal, e.g. presentations
  - Diffusion: informal, e.g. word of mouth
- Exception reporting:
  - Case review for noncompliant cases
- Barriers and loss of motivation:
  - Understand
    - Talk to key individuals
    - Observe clinical practice in action
    - Use a questionnaire to survey staff
    - Brainstorm with a focus group
  - Find solutions
    - Re-examine your change idea
    - Use impactful parent stories
    - Use lessons from high performers
    - Re-market your message
    - Use incentivisation to engage



## QI tools and templates

#### **BAPM Quality Webpages**

Specific BAPM resources at <a href="https://www.bapm.org/qimadeeasy">https://www.bapm.org/qimadeeasy</a>

- Planning your QI project
- Investigating your current practice
- Planning your change idea
- Interpreting your data

Other QI resources at BAPM QI Signpost: <a href="https://www.bapm.org/signpost-qi-resources">https://www.bapm.org/signpost-qi-resources</a>



# Organisational standards, guidelines and initiatives

NNAP Online. National Neonatal Audit Programme: Royal College for Paediatrics and Child Health

Maternity and Neonatal Safety Improvement Programme: NHS Improvement

Maternity and Children's Quality Improvement Collaborative- Scottish Patient Safety Programme

Neonatal Service Quality Indicators: Standards relating to structures and processes: British Association of Perinatal Medicine; 2017

PERIPrem Care Bundle: West of England Academic Health Sciences Network 2020

Preterm Perinatal Wellbeing Package: Maternity and Children Quality Improvement Collaborative, Scottish Patient Safety Programme. Health Improvement Scotland;

Preterm Labour and Birth: National Institute for Clinical Excellence; 2019

