

# South London MatNeoSIP 5<sup>th</sup> QI Event: Sustain and Share

Health Innovation Network

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# Welcome and Housekeeping

2

# Agenda

Item	Speaker	Time
Welcome and Introduction	Chair	14:15 - 14:20
<p><b>Looking back.....</b></p> <ul style="list-style-type: none"> <li><b>Kings College Hospital</b>- Optimum cord management-“Hurry-up and Wait”</li> <li><b>Lewisham &amp; Greenwich Hospital</b> -Improving compliance with Delayed Cord Clamping (DCC) for preterm babies &lt; 34 weeks</li> <li><b>Croydon Hospital</b> - Maintaining normothermia on admission to the neonatal unit</li> </ul>	<p>Vivette Wallen-Mitchell, Lead Neonatal Nurse. Dr Mirna Krishnan, Neonatal Registrar</p> <p>Dr Siddhartha Paliwal, Consultant Paediatrician, Neonatal lead, Queen Elizabeth Hospital Woolwich</p> <p>Dr Drupti Jogia, Paediatric Registrar, Dr Alina Petric, Paediatric SHO</p>	14:20 - 14:55
<p><b>Present....</b></p> <p><b>Fishbowl:</b> (Facilitated by Hebe Davies-Colley HIN MatNeoSIP Lead)</p> <p>Lessons learnt, what made the process work/not work, how will the work be continued and sustained</p>	<p><b>King’s College Hospital</b> - Dr Ravi Bhat, Consultant Neonatologist</p> <p><b>Lewisham and Greenwich NHS Trust</b> - Dr Siddhartha Paliwal, Consultant Paediatrician, Neonatal lead, QEH</p> <p><b>Croydon University Hospital</b> - Dr Drupti Jogia, Paediatric Registrar</p> <p><b>Guy’s and St Thomas’ NHS Foundatin Trust</b> - Dr Maria Zaid, Senior Neonatal Clinical Fellow</p>	14:55 - 15:25
<b>Break</b> - posters to view around the room	All	15:25 - 15:40
<p><b>Looking forward....</b></p> <p>Updates from the SWL LMNS Neonatal workstream and SEL LMNS OPTiC (Pre-term Optimisation group)</p>	<p>Dr Justin Richards, Consultant Neonatologist, Neonatal Network Lead, South London</p> <p>Mel Howie, Maternity Project Manager SEL Local Maternity and Neonatal System</p>	15:40 - 16:10
<b>National MatNeoSIP forward view</b>	Charlie Merrick, NHS England, Senior Improvement Manager MatNeoSIP	16:10 - 16:30
<b>Close</b> - cake and networking	All	16.30-17.00

# Deferred Cord Clamping- Quality Improvement Project.- DH and PRUH 2022-2023

**Dr Mirna Krishnan**, Dr Elizabeth Sleight, Vivette Wallen-  
Mitchell, Sharon Howard-Lee, Daphne Kelly, Sheila  
English, Dr Lisa Long, Dr Carolina Zorro, Dr Ravindra Bhat

**King's College Hospital NHS  
Foundation Trust (KCH FT)**



DCC  
(Deferred Cord  
Clamping)  
or  
Optimal Cord  
Management  
(OCM)

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Delaying the umbilical cord clamping until after 1 minute or after pulsation has stopped

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This allows blood flow from the placenta to the baby. This is known as placental transfusion

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Evidence and recommendation:

WHO, NICE, RCOG, UK and European resuscitation council recommend delayed cord clamping for at least 1 minute

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NNAP introduced DCC as a new pilot measure in 2020

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BAPM toolkit on Optimum cord management was published in Dec 2020

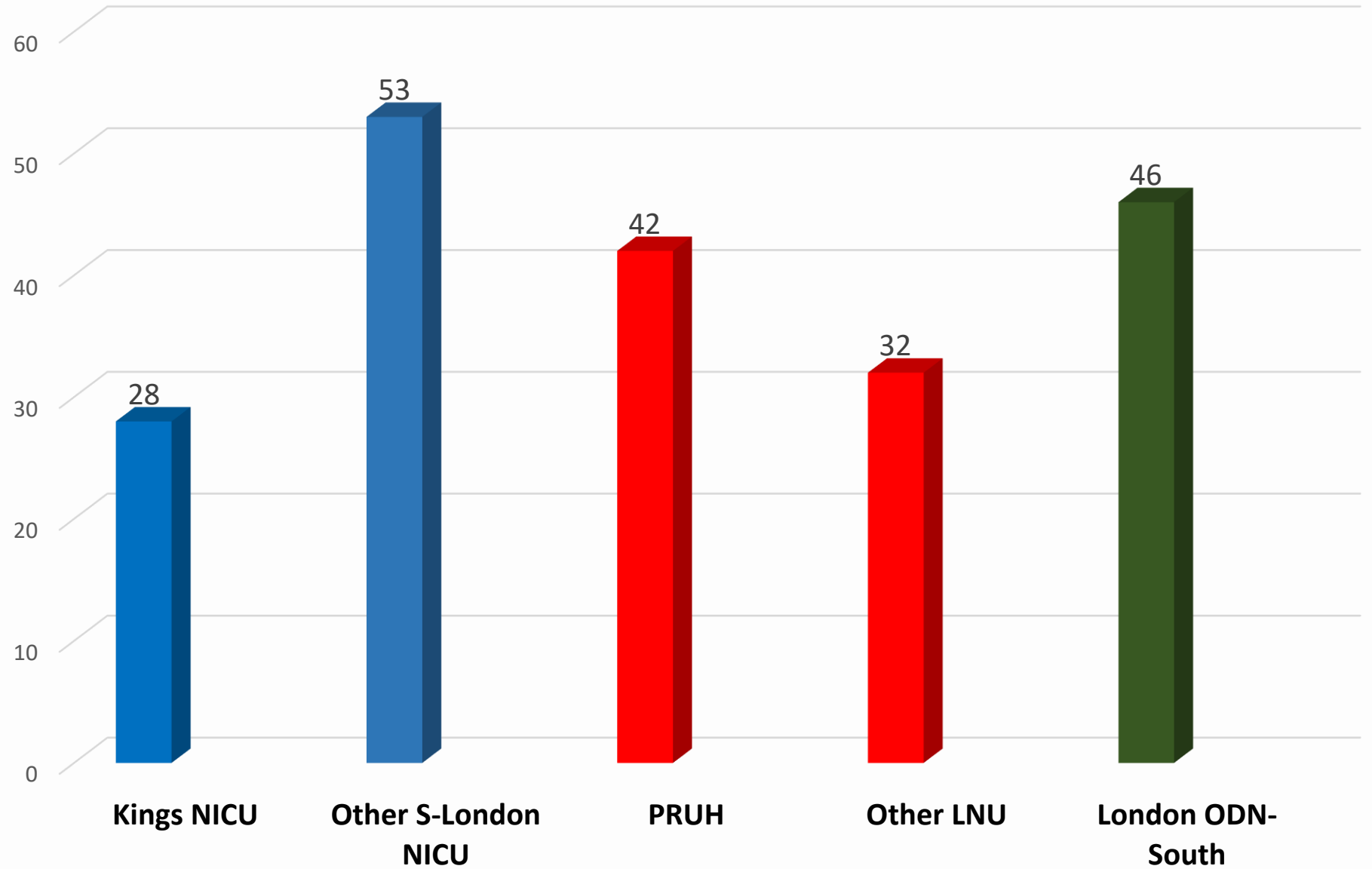
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Many units have embarked on QIP on DCC

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Practice varies widely across different units in the country

DCC rate (%) in babies born <34 weeks-NNAP JAN-JUN 2022 Data



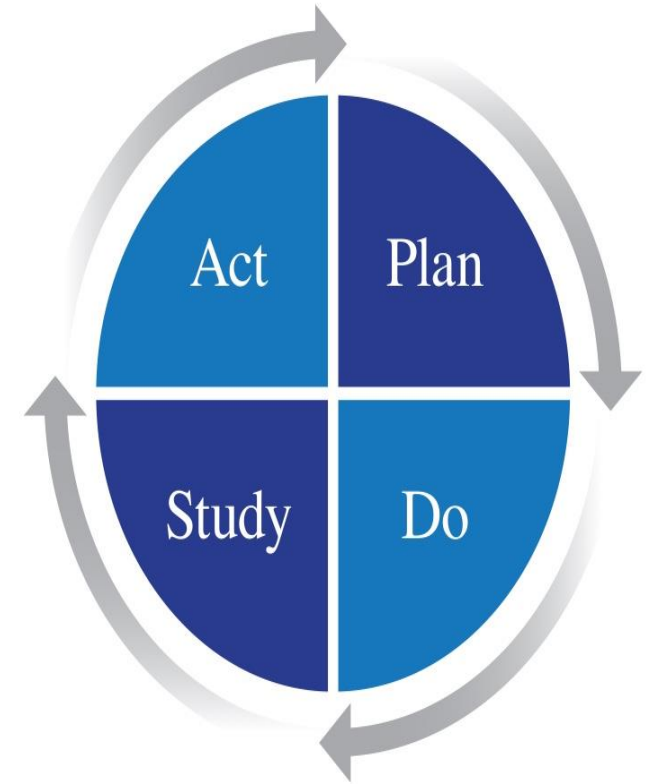
**How do we compare?**

# Deferred Cord Clamping QIP

What do we aim to achieve?

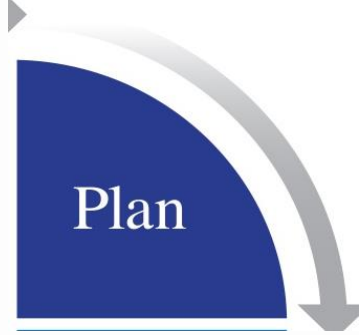
DCC rate for < 34 weeks-  
to be >80%

100% documentation of DCC  
on Badgernet Record





# Plan:

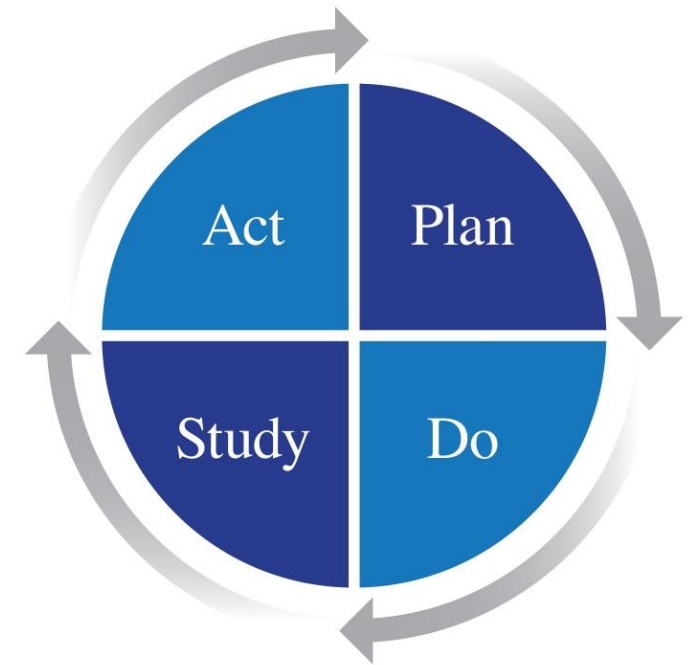


Review the latest DCC data in our unit

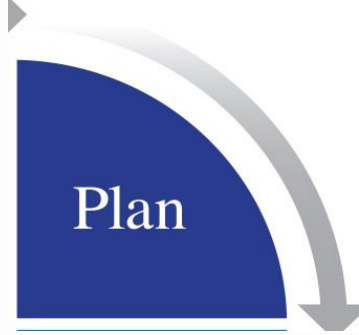
Awareness/Education

Training by Simulation

Involving the MDT



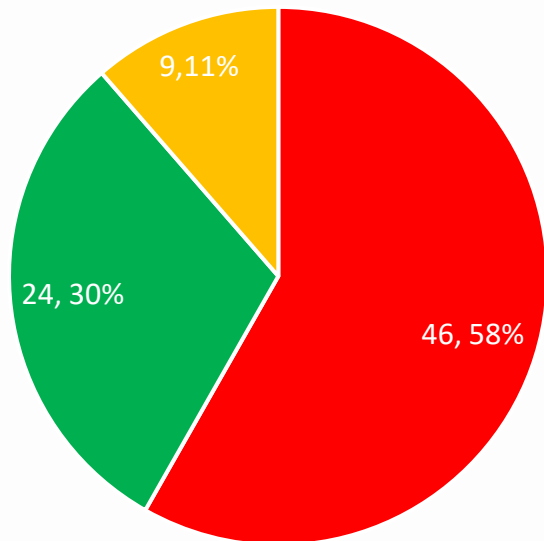
# DCC data Jan-July 2022



## Denmark Hill

- Number of babies born < 34 weeks – 79
- Number of babies who had DCC of 1minute- **24(30%)**

Number, %

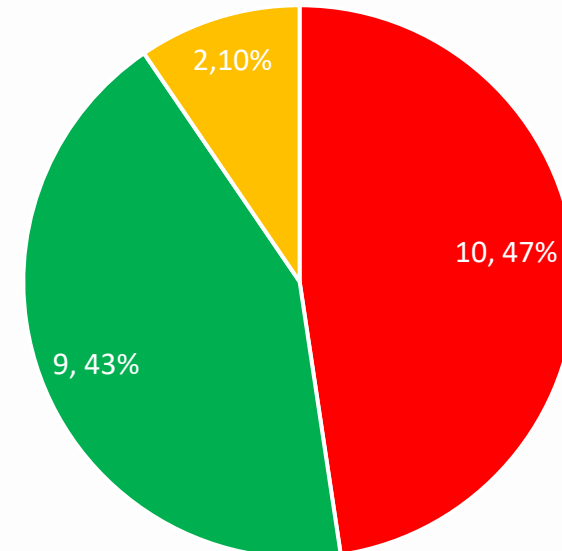


■ ICC ■ DCC > 1 min ■ DCC < 1 min

## PRUH

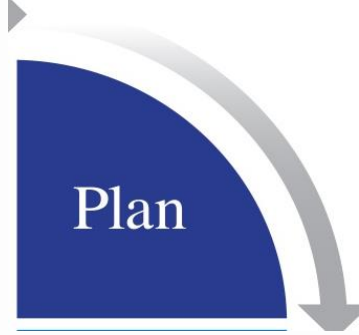
- Number of babies born < 34 weeks – 21
- Number of babies who had DCC of 1minute- **9(43%)**

Number, %



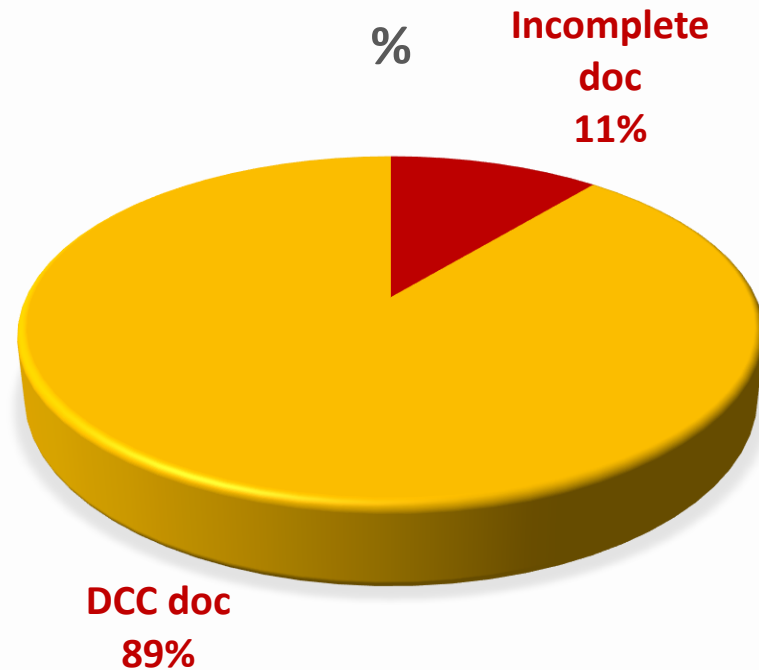
■ ICC ■ DCC > 1 min ■ DCC < 1 min

# DCC documentation rate Jan-July 2022



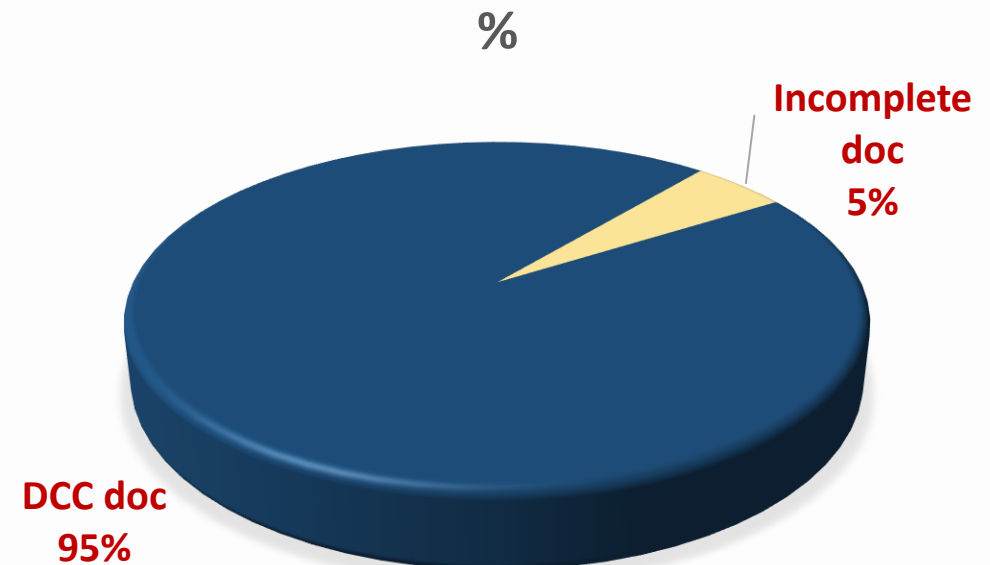
Total babies at DH- 79

- DCC done documentation-71
- Incomplete documentation- 8



Total babies at PRUH- 21

- DCC done documentation-20
- Incomplete documentation- 1



# Education and Awareness

- Posters
- Presentations in study days

## Deferred Cord Clamping (DCC)



Defer cord clamping for at least a minute in both term and preterm babies

### Positioning during DCC:

Caesarian: Baby between maternal thighs

Vaginal birth :

- Below the level of placenta. **This is a must in preterm deliveries**
- Baby on mother's chest or abdomen in term babies.

### Contraindications and cautions:

- Baby needs resuscitation
- Mother haemodynamically unstable
- Vasa previa, snapped cord
- Complete placental abruption
- Known hydrops foetalis/ MCDA twins
- Foetal congenital abnormalities

DCC in preterm babies (<34 weeks) will be audited from December. Clearly document the reason if DCC cannot be done.

## Deferred cord clamping in preterm babies



- Reduces preterm mortality
- Improves cardiovascular stability
- Reduces the need for blood transfusion
- Reduces Intraventricular haemorrhage and Necrotising Enterocolitis



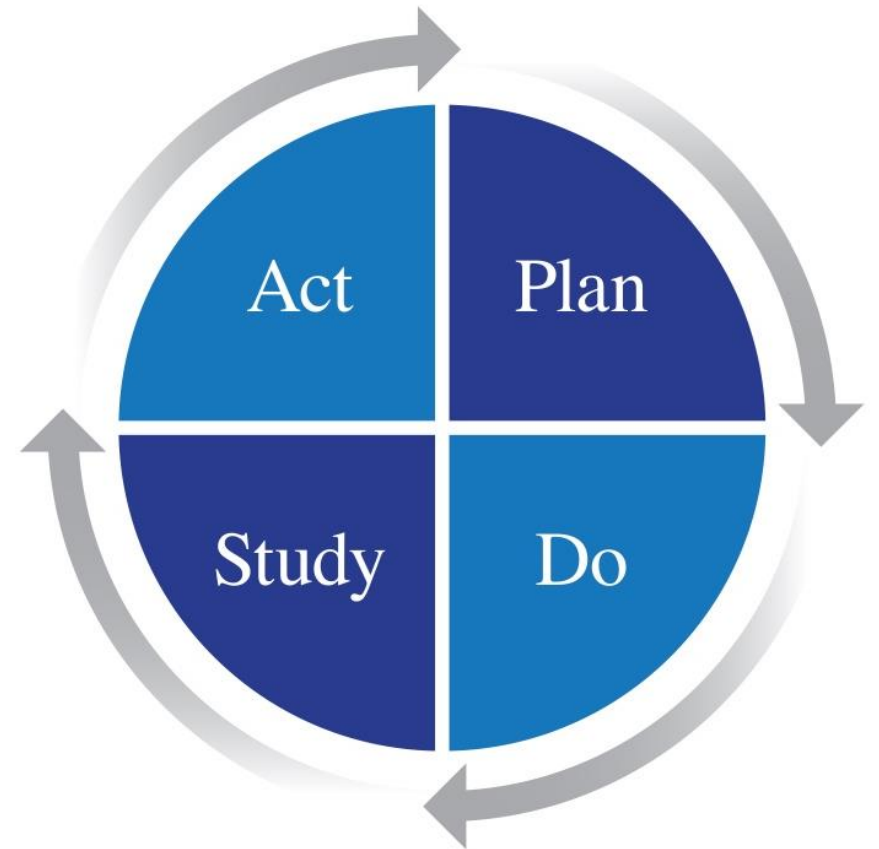
Training the staff- Simulation

# DO/STUDY

-Prospective review of management of preterm babies at birth

-Looking through the Badgernet records and feedback to the team

-Monthly dashboards to motivate the team



# Monthly dashboard

## DEFERRED CORD CLAMPING IN PRETERM BABIES: -NOVEMBER-22

DCC >1min 16%, <1min 16%  
Valid reason for not doing DCC 66%  
Missed opportunity 16%

Babies born between at gestation  $\leq 34$  weeks: n= 6

Had DCC: >1 min  
n=1

Had DCC: <1 min  
n=1

Did not have DCC: n=4

Reasons:  
1. Born in poor condition  
2. Required face mask peep

Missed opportunity for DCC : 1  
(cried after 30 sec )

• Badger documentation of DCC: 84%

## DEFERRED CORD CLAMPING IN PRETERM BABIES: FEB-23

DCC >1min 66%, <1min 11%  
Valid reason for not doing DCC 22%

Babies born between at gestation  $\leq 34$  weeks: n= 9

Had DCC: >1 min  
n=6

Had DCC: <1 min  
n=1

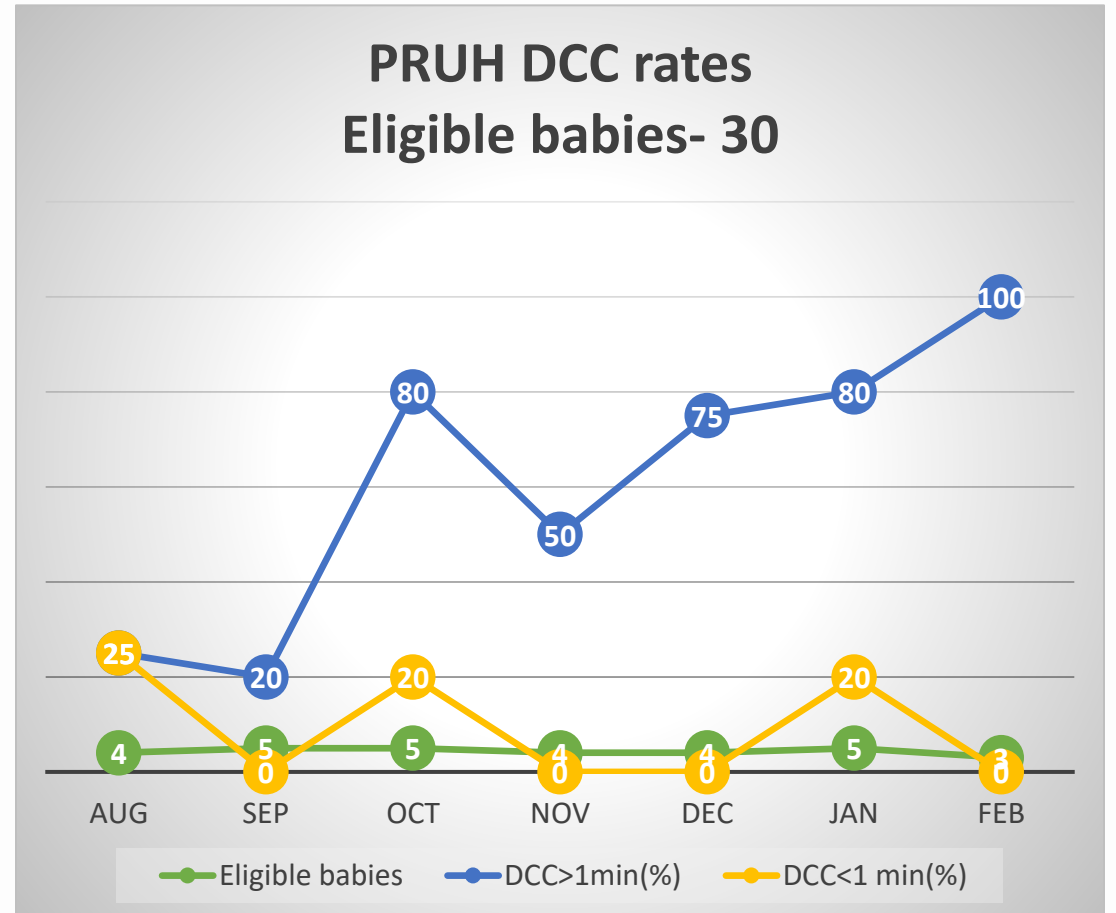
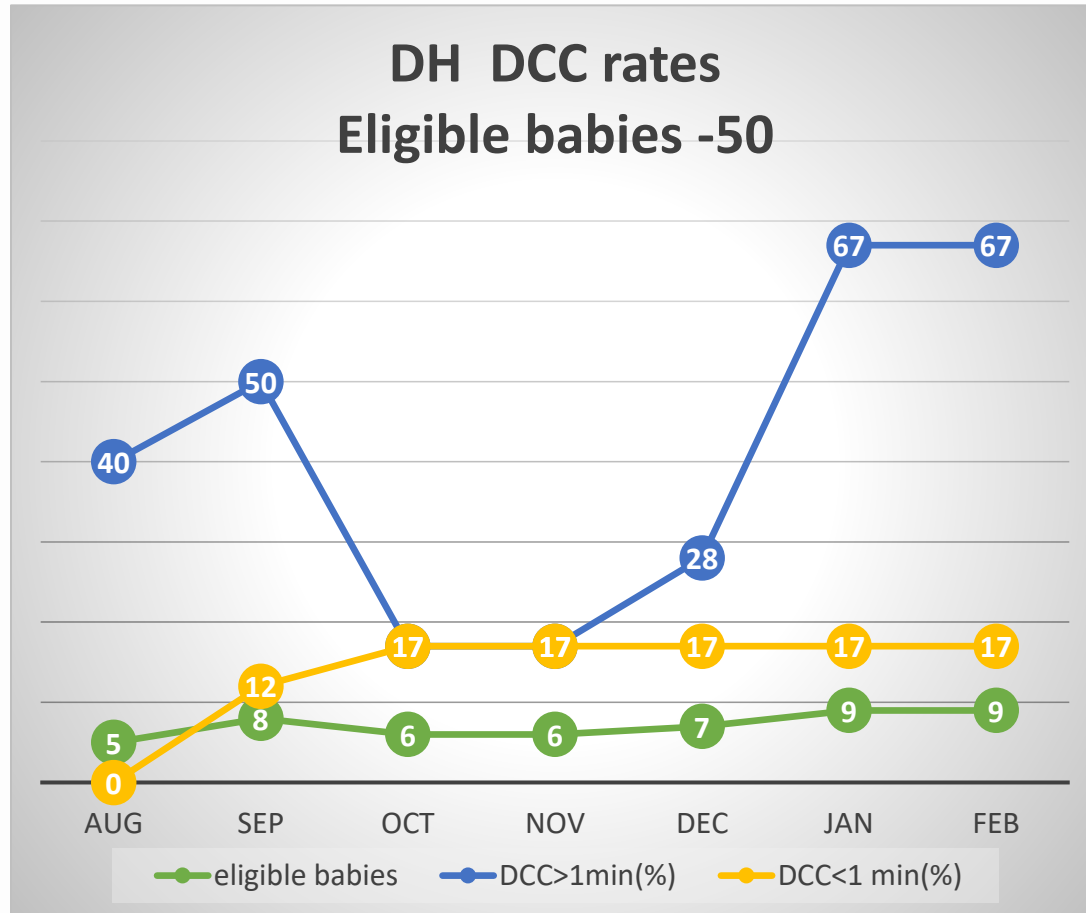
Did not have DCC: n=2

Reasons:  
1. Born in poor condition  
2. Required face mask peep

Missed opportunity for DCC : None

• Badger documentation of DCC: 100%

# Monthly data Aug 22-Feb 23

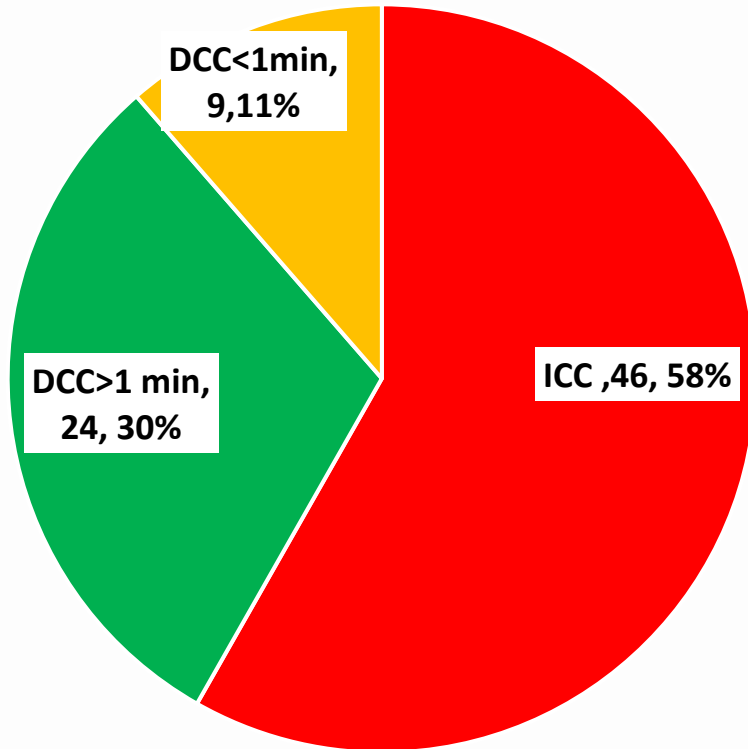




# DCC data at 7 months DH

**30% (Jan -July 22)**

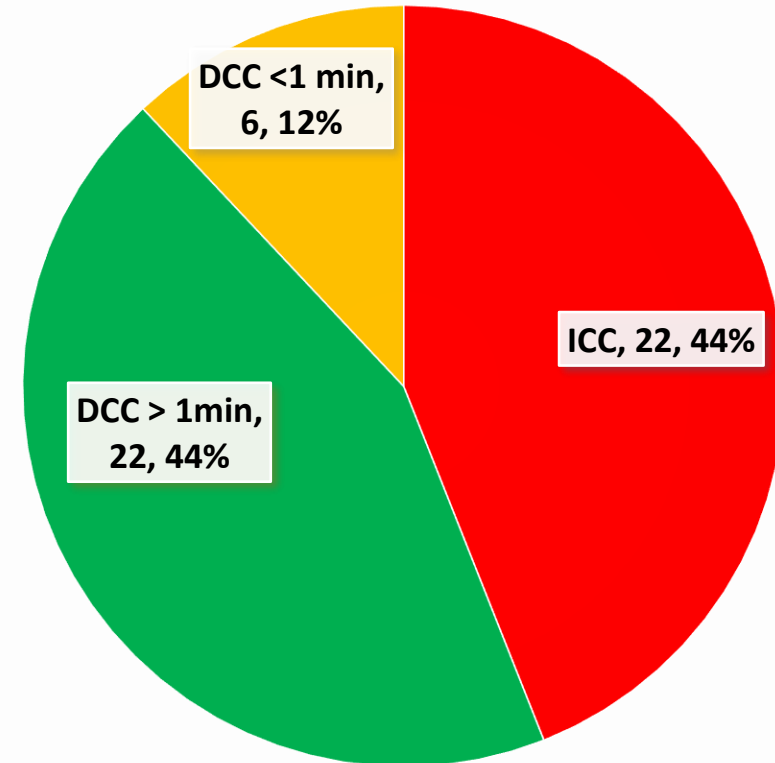
Eligible babies-79



■ ICC ■ DCC > 1 min ■ DCC < 1 min

**44% (Aug 22 – Feb 23)**

Eligible babies-50

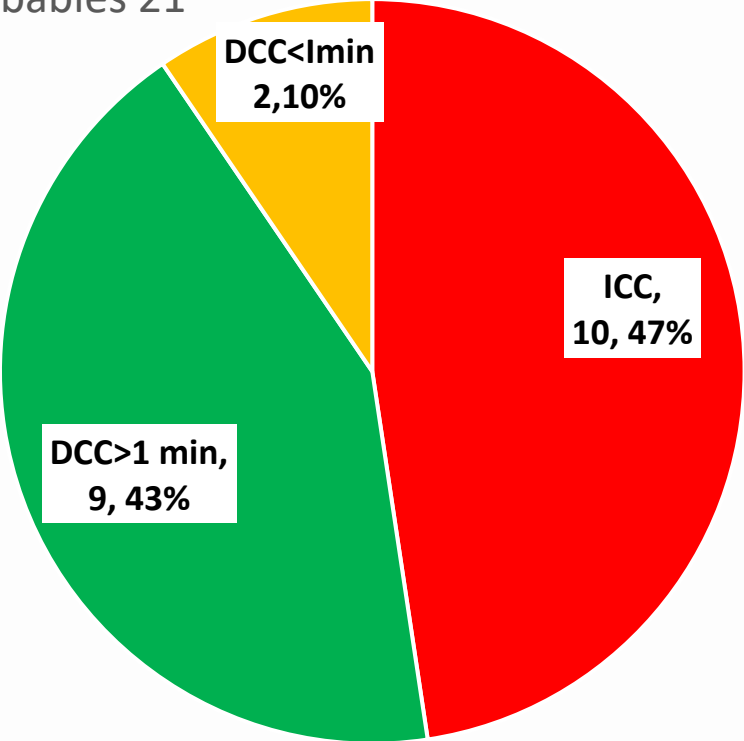


■ ICC ■ DCC > 1 min ■ DCC < 1 min

# DCC data at 7 months PRUH

43% (Jan-July 22)

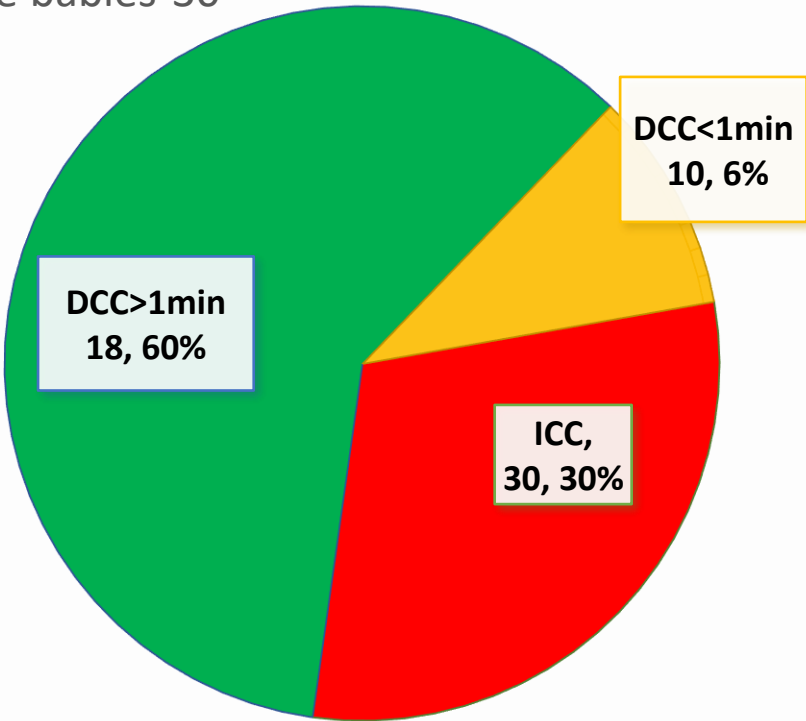
Eligible babies 21



■ ICC ■ DCC > 1 min ■ DCC < 1 min

60% (Aug 22 – Feb 23)

Eligible babies-30

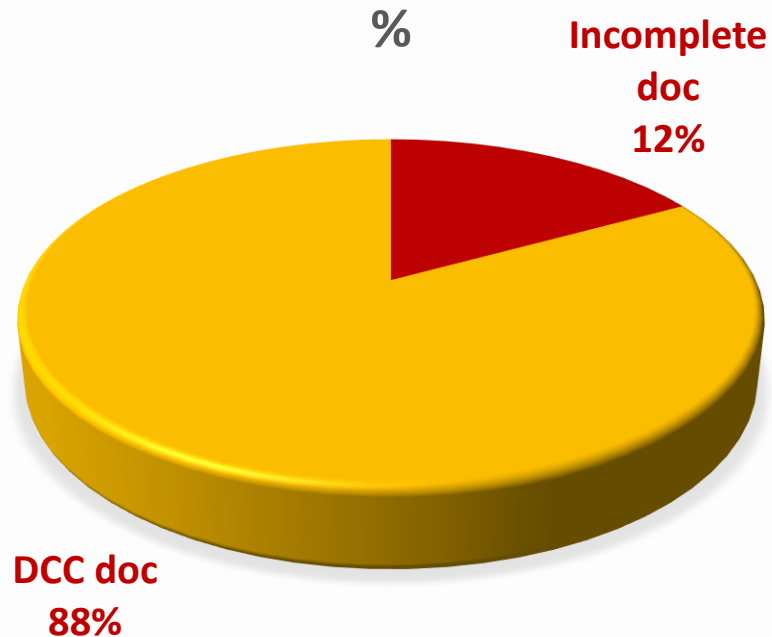


■ ICC ■ DCC > 1 min ■ DCC < 1 min

# DCC documentation rate Aug 22-Feb 23

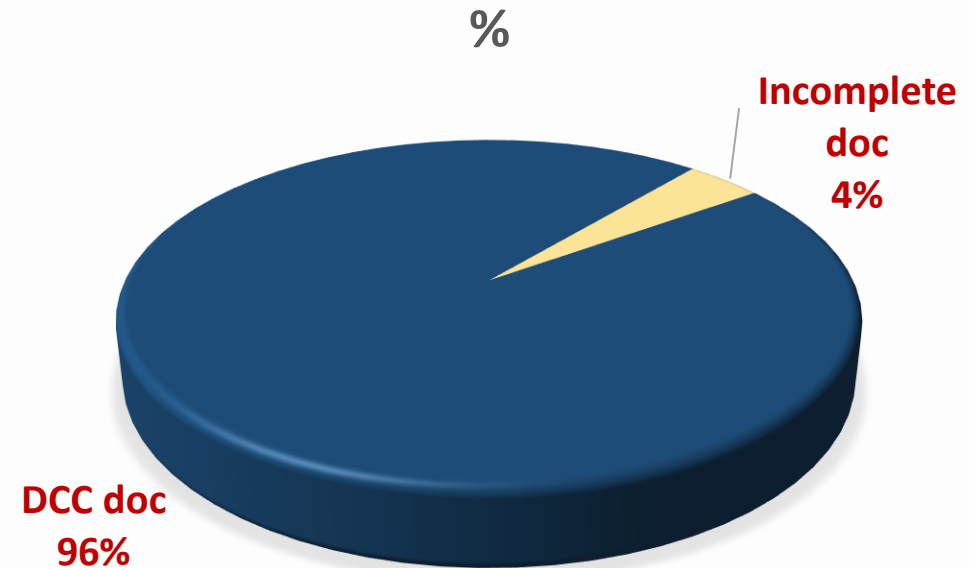
Total babies at DH- 50

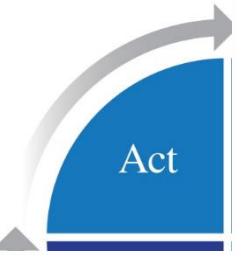
- DCC done documentation-44
- Incomplete documentation- 6



Total babies at PRUH- 30

- DCC done documentation-29
- Incomplete documentation- 1





Feedback to the team –  
Encourage Obstetricians  
to stimulate the baby if  
HR>100 and not  
breathing

Complete DCC  
documentation in  
Badger

## VCH – Deferred Cord Clamping – Making it Standard Practice

Deferred Cord Clamping- Making it Standard Practice		
Version Number	1	Please complete all fields
Is this a new guideline?	Yes	
If no, please state the title of superseded guideline		
Guidance type Clinical Guideline, Protocol, Care Pathway, PIL other.	Clinical Guideline	
Summary This is a couple of sentences to help people assess whether the document is the guidance they need. Description text viewable on search.	To aid decision making regarding Deferred Cord Clamping (DCC) and its implementation for newborns who may need resuscitation / stabilization	
Review date needs to be reviewed by. All local guidelines need to have a full review at least every 3 years.	18/04/2026	
Any drugs-related information included? Guidelines that include any kind of medication need to be reviewed and approved by a specialty Lead Pharmacist. Specialty Lead Pharmacists may judge that the guideline needs to be approved at Drugs & Therapeutics Committee.	No	Name of specialty Lead Pharmacist consulted
Lead Specialty responsible for reviewing and ratifying the document	Neonatal Medicine	
Principal author responsible for the document's authorship, update and governance. Please state full Name and Job Title.	Dr Mirna Krishnan, Neonatal Specialty Registrar	
Secondary Author(s) please state full Name and Job Title.	Dr Elizabeth Sleight, Neonatal Consultant Dr Brindha Muthasamy, Neonatal Consultant Ms Lisa Long, Obstetric Consultant (DH) Mr Alex Steshenko, Obstetric Consultant (PRUH) Ms Sharon Howard- Lee, Midwife (PRUH) Ms Tenu Harding, Midwife (DH)	
Specialties/staff groups affected for the latest version only. All staff affected by this document need to be consulted. Please include full Name, Job Title, e-signature (if	Midwifery, Obstetric, Neonatal Medical and Neonatal Nursing	

# Next steps...

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DISSEMINATION OF  
GUIDELINES

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INTACT CORD STABILISATION,  
LIFESTART TROLLEY

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CONTINUE EDUCATION,  
SIMULATION



# Reaudit : 2nd PDSA Cycle (Mar23-Aug23)

## Problems Identified.

- Incomplete documentation in Badgernet
- Improve the confidence of the team to perform DCC and reduce missed opportunity

P

Awareness/Education  
-Guidelines and Presentation

L

Simulation and training

A

Posters and emails

N

How to document in Badger

- Baby Details
- Admission To Unit
- Parent Details
- Siblings / Guardian / Visitor
- Previous Pregnancies
- Maternal Medical / Antenatal History
- Labour and Birth**
- Management at Birth
- GP and Professionals
- CRIB II

Date and Time Membranes Ruptured [ ] at [ ]

Duration of Membrane Rupture [ ] Hours [ ] Mins

Maternal pyrexia in labour more than 38C  No  Yes  Unknown

Intravenous Intrapartum antibiotics given  No  Yes

IV Intrapartum Antibiotics Last Dose [ ] at [ ]

**Delivery**

Presentation Immediately Before Delivery [ ]

Mode of Delivery

- Emergency caesarean - not in labour
- Emergency caesarean - in labour
- Elective section - not in labour
- Elective section - in labour
- Vaginal - forceps assisted
- Vaginal - spontaneous
- Vaginal - ventouse assisted
- Vaginal - kiwi assisted
- Breech birth, spontaneous, assisted or partial

Baby delivered in water  Yes  No

Stabilised before cord clamped  Yes  No  N/A

Condition at birth Born in good condition

Was cord clamping immediate  Yes  No  Unknown ★

Reason clamping immediate In order to manage gastroschisis

'Stripping' of blood from cord  Yes  No  Unknown

- Baby Details
- Admission To Unit
- Parent Details
- Siblings / Guardian / Visitor
- Previous Pregnancies
- Maternal Medical / Antenatal History
- Labour and Birth**
- Management at Birth
- GP and Professionals
- CRIB II

**Labour**

Onset of labour  Spontaneous  Induced  None

Onset [ ] at [ ]

2nd stage onset [ ] at [ ] Length [ ] hours [ ] mins

Liquor State at RoM Clear

Labour history [ ]

Drugs in Labour [ ]

Date and Time Membranes Ruptured [ ] at [ ]

Duration of Membrane Rupture [ ] Hours [ ] Mins

Maternal pyrexia in labour more than 38C  No  Yes  Unknown

Intravenous Intrapartum antibiotics given  No  Yes

**Delivery**

Presentation Immediately Before Delivery Cephalic - unspecified

Mode of Delivery

- Emergency caesarean - not in labour
- Emergency caesarean - in labour
- Elective section - not in labour
- Elective section - in labour
- Vaginal - forceps assisted
- Vaginal - spontaneous
- Vaginal - ventouse assisted
- Vaginal - kiwi assisted
- Breech birth, spontaneous, assisted or partial

Baby delivered in water  Yes  No

Condition at birth Baby was born in a good condition and cried immediately after birth and received DCC of 1 min

Was cord clamping immediate  Yes  No  Unknown ★

Time from birth to clamp 1 mins 0 secs

'Stripping' of blood from cord  Yes  No  Unknown

# Badgernet Documentation

# DCC dashboard

## DEFERRED CORD CLAMPING IN PRETERM BABIES: JULY-AUGUST-23

DCC >1min 70%, <1min 18%  
Valid reason for not doing DCC 12%  
Missed opportunity 18%

Babies born between at gestation  $\leq 34$  weeks: n= 17

Had DCC:>1min  
n=12

Had DCC:<1min  
n=3

Did not have DCC: n=2



### Reasons:

1. 23 weeks, baby was already born and neonatal team were crash bleeped
2. 27 weeks born under GA with maternal HELLP syndrome.

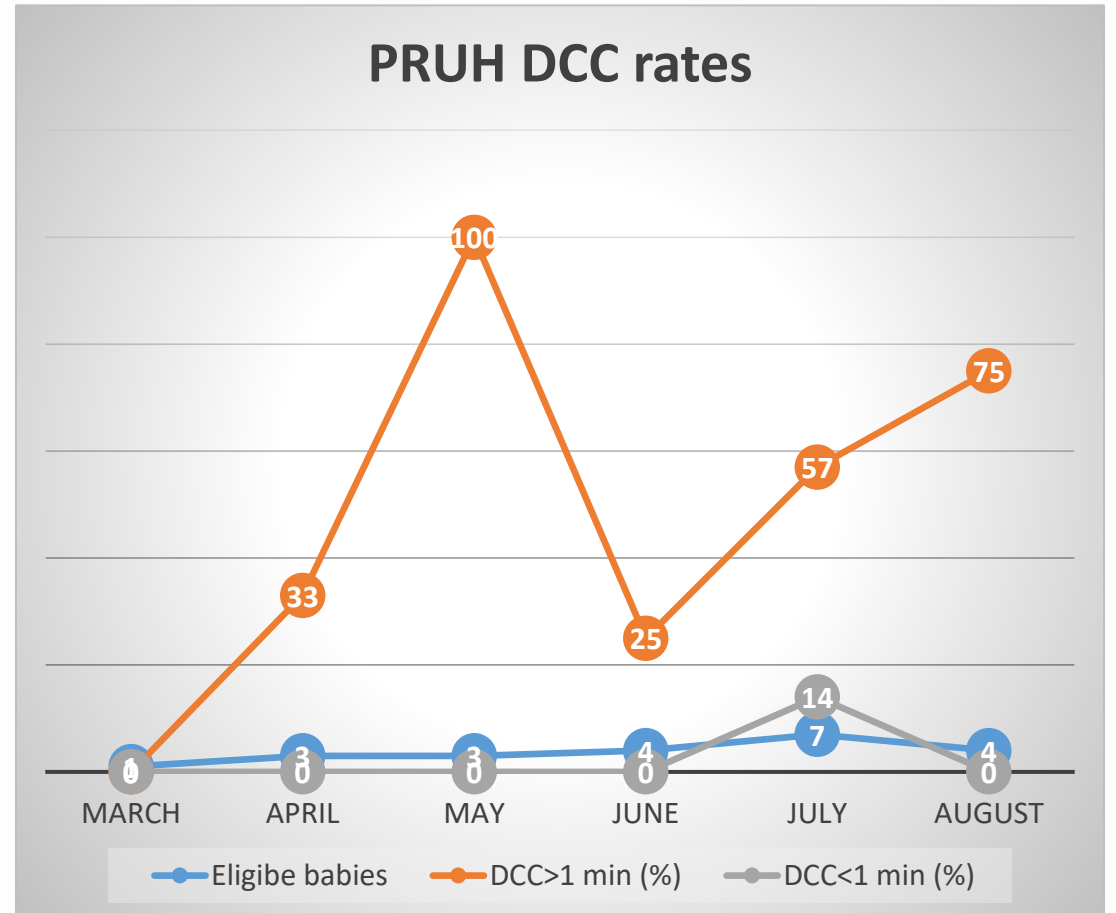
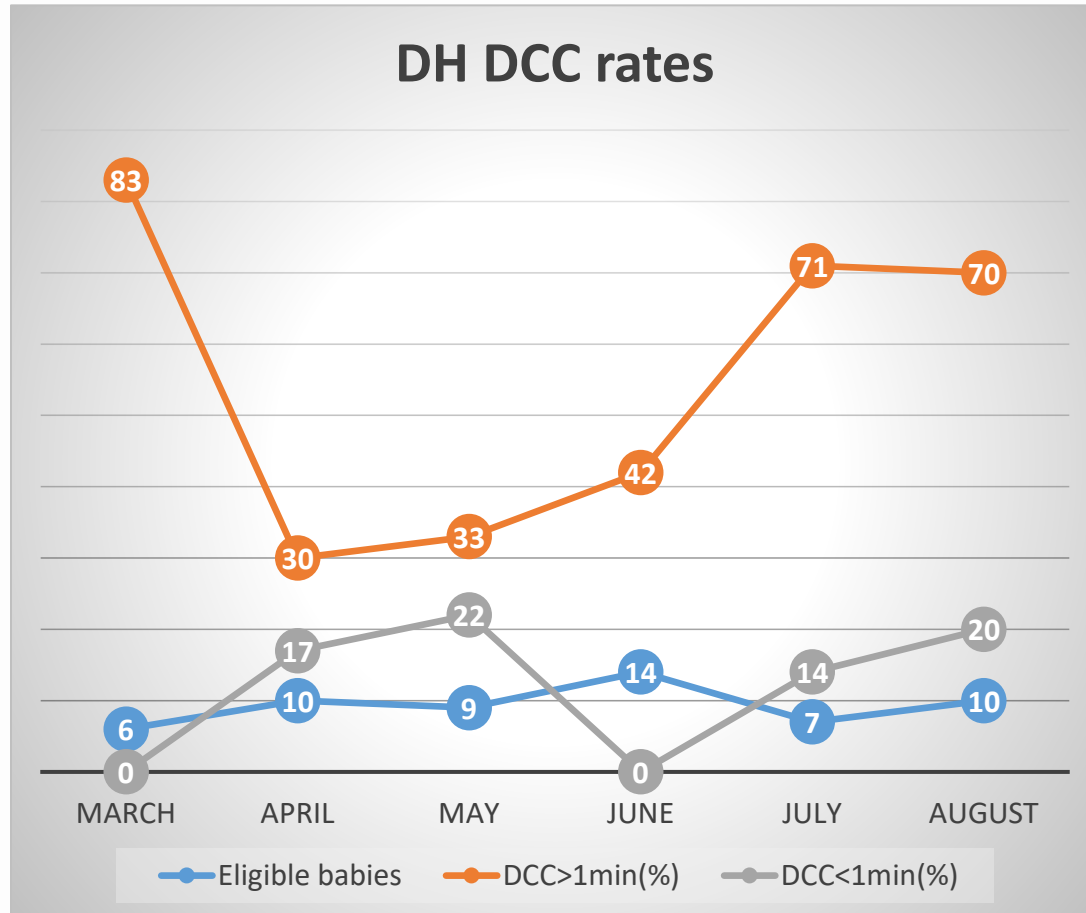
### Missed opportunity for DCC : 3

(Preterm pale floppy, HR improved immediately after bringing to resuscitaire- presence of life starter would help in babies who had DCC for <1 min )

- **Badger documentation of DCC: 100%**  
Well done team !!!



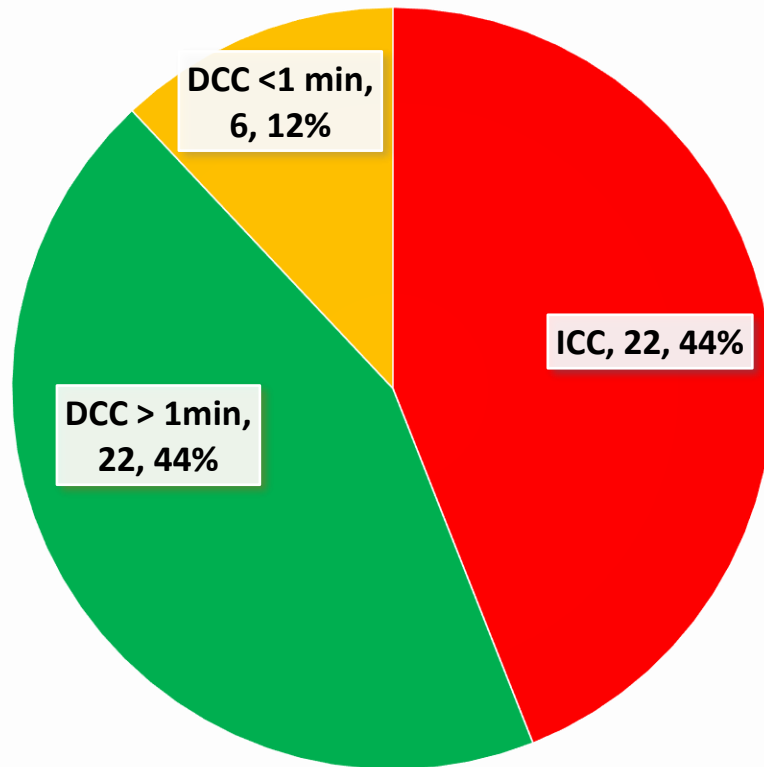
# Monthly data March 23-August 23



# DCC data at 7 months DH

**44% (Aug 22 – Feb 23)**

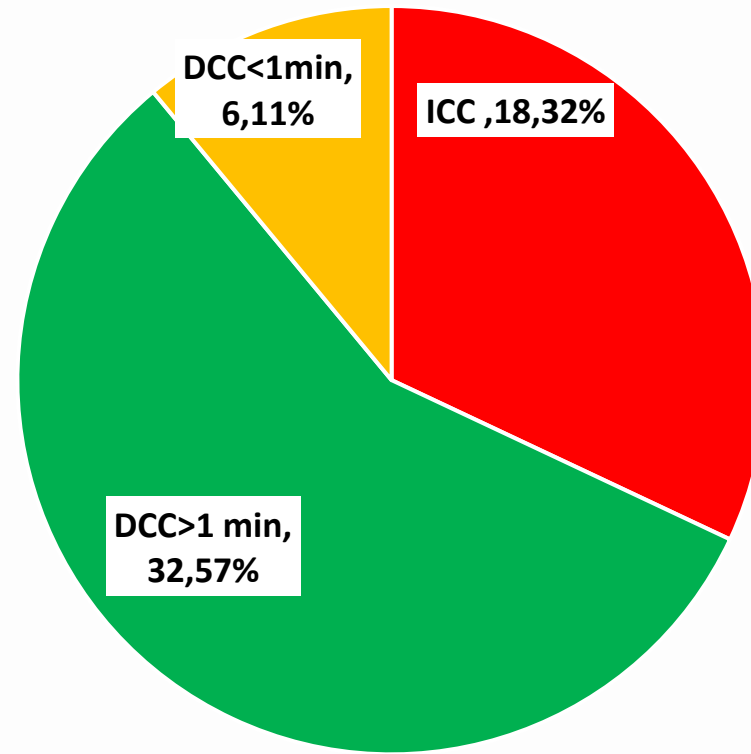
Eligible babies-50



■ ICC ■ DCC > 1min ■ DCC < 1min

**57% (Mar 23 – Aug 23)**

Eligible babies-56

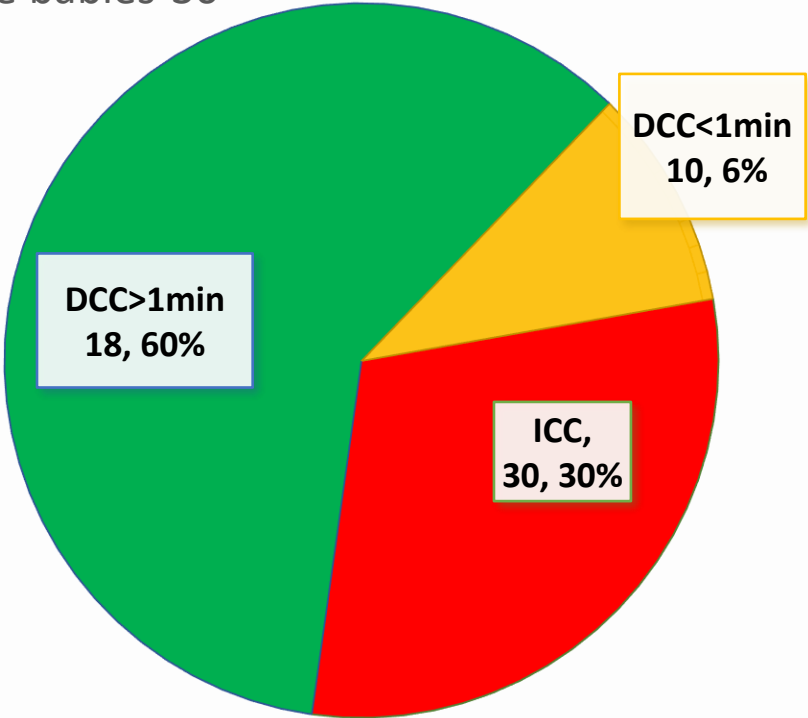


■ ICC ■ DCC > 1min ■ DCC < 1min

# DCC data at 7 months PRUH

60% (Aug 22 – Feb 23)

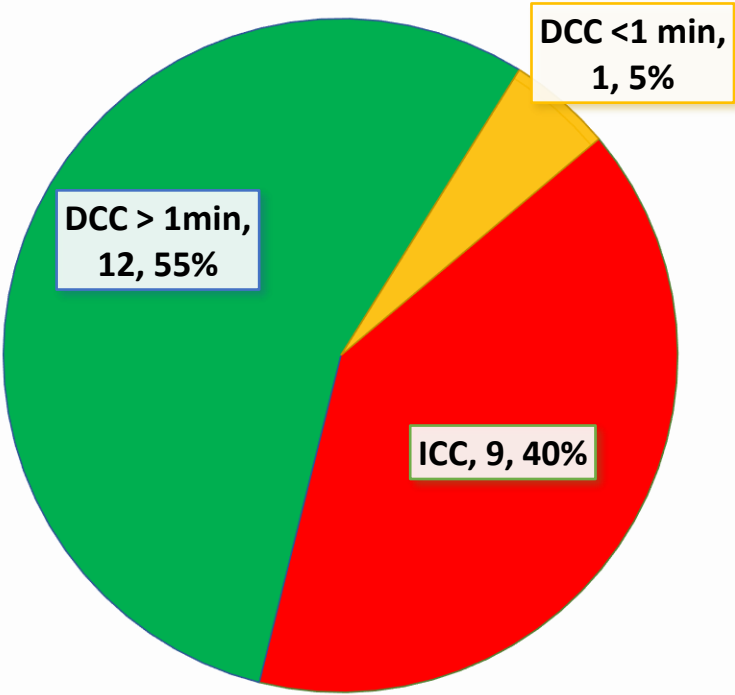
Eligible babies-30



■ ICC ■ DCC > 1min ■ DCC < 1 min

55% (Mar 23 – Aug 23)

Eligible babies-22

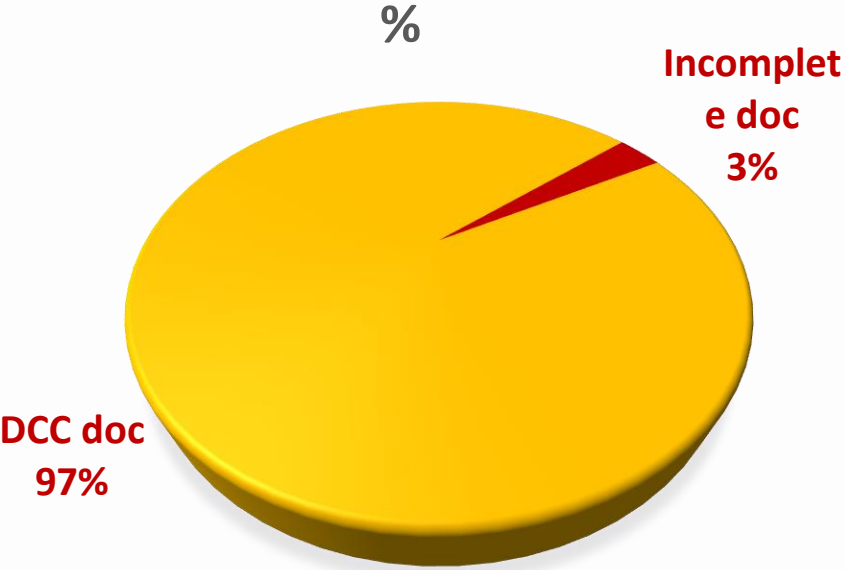


■ ICC ■ DCC > 1min ■ DCC < 1 min

# DCC documentation rate (Mar23-Aug23)

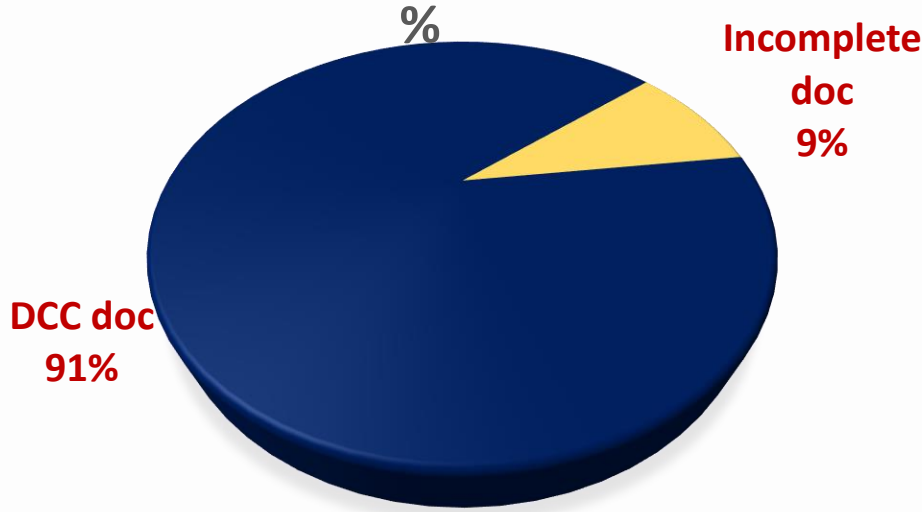
Total babies in DH 56

- DCC done documentation-54
- Incomplete documentation- 2



Total babies in PRUH 22

- DCC done documentation-20
- Incomplete documentation- 2





Feedback to the team –  
Encourage Obstetricians to  
stimulate the baby

Familiarise with DCC  
guidelines and reduce the  
missed opportunity

To complete DCC  
documentation in Badgernet

## VCH – Deferred Cord Clamping – Making it Standard Practice

Deferred Cord Clamping- Making it Standard Practice		
Version Number	1	Please complete all fields
Is this a new guideline?	Yes	
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Next steps...

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INTACT CORD  
STABILIZATION

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LIFESTART TROLLEY

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CONTINUE EDUCATION,  
SIMULATION



# Summary

## Denmark Hill

- DCC Rates improved from 30% (2022) to 57% (2023).
- Badger documentation rates improved from 71%(2022) to 97% (2023)

## PRUH

- DCC Rates improved from 43% (2022) to 55% (2023).
- Badger documentation rates- 95%(2022) to 91% (2023)

Quality Improvement Project  
**Improving compliance with  
Delayed Cord Clamping (DCC)  
for preterm babies < 34 weeks**

**Moustafa Eldalal- Paediatric Clinical Fellow**

**Dr Sid Paliwal, Consultant paediatrics**

Queen Elizabeth Hospital

Lewisham & Greenwich NHS Trust

London, UK



# Improving compliance with Delayed Cord Clamping (DCC) for preterm babies < 34 weeks

**DCC ?**

**Why DCC ?**

**Why this project ?**



[https://www.babycenter.com/pregnancy/your-body/what-are-the-benefits-of-delayed-cord-clamping\\_10402183](https://www.babycenter.com/pregnancy/your-body/what-are-the-benefits-of-delayed-cord-clamping_10402183)

## AIM

- ❖ Identify our unit's current progress.
  - ❖ Determine causes of Immediate cord clamping.
  - ❖ Identify areas for improvement.
  - ❖ Use this information to determine a reasonable aim and recommendations for improvement.
- 
- **Primary goal** → all babies <34 weeks who are **born in good condition except contraindicated**.
  - **Secondary goal** → **differentiate** babies who are born in poor condition and needing resuscitation from those needing support during the transition while allowing for DCC.

# Improving compliance with Delayed Cord Clamping (DCC) for preterm babies < 34 weeks

## Population

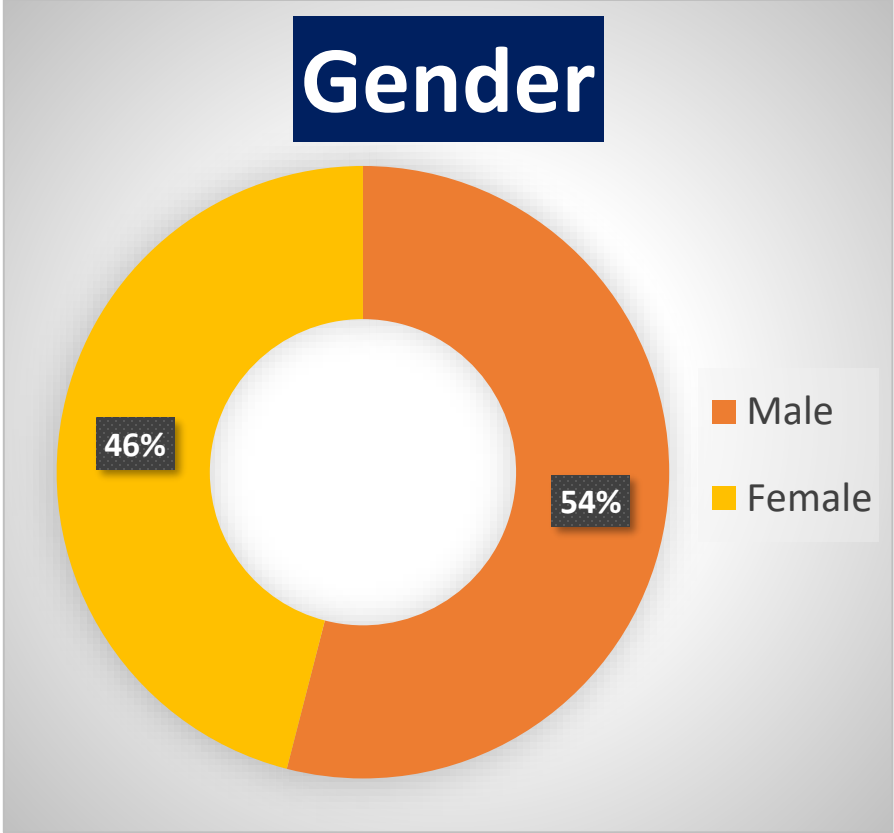
- Babies < 34 weeks
- Sep 21- Sep 22 → 82 babies
  - Oct 22 – August 23 → 53 babies

## Weight

- Median weight is 1483 grams
- 54% of babies were < 1500 g

## Gestation

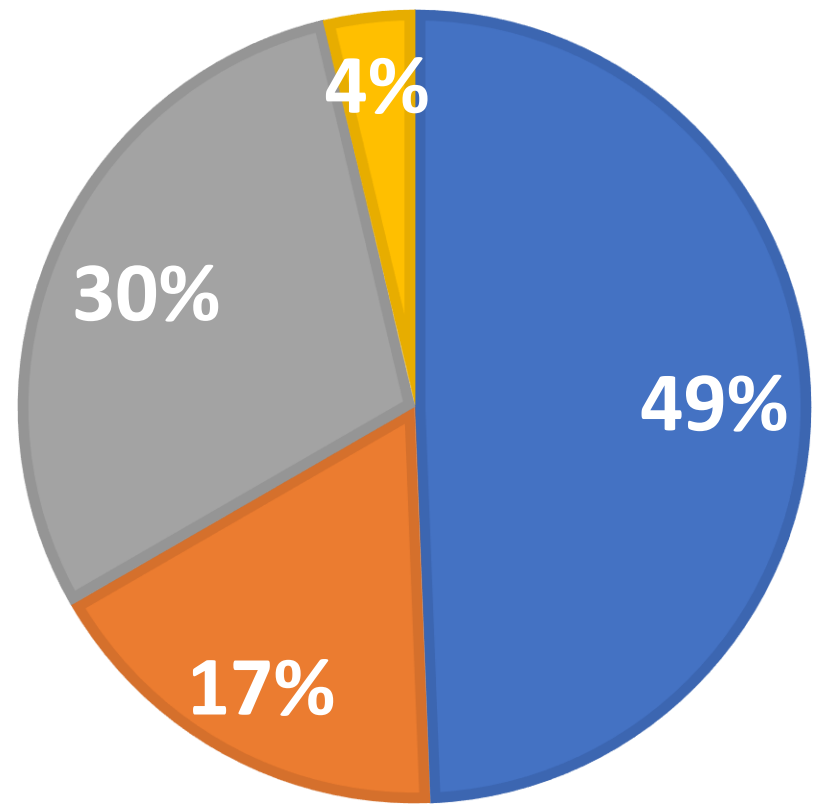
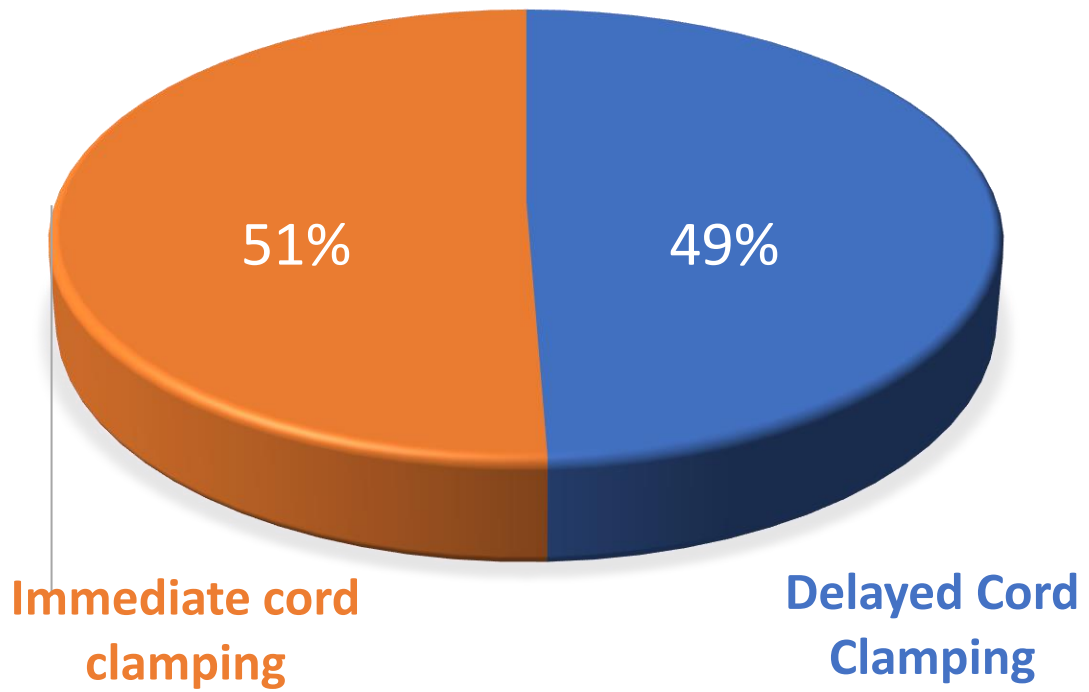
- 22 weeks to 33 weeks
- Median 31 weeks



DATA FROM SEP 21 - SEP 22

CAUSES OF IMMEDIATE CORD CLAMPING

■ DCC ■ Good condition ■ Poor condition ■ Contraindication



## Areas For Improvement

- ❖ Aim for all babies who are eligible to have DCC (100%).
- ❖ Explore more about those who were born in poor condition.
- ❖ Ensure **thermal regulation** is maintained.



**Optimal Cord Management**

<b>Name:</b>	1- Was Neohelp bag used?	3- DCC done for 1 minute? _____ If not, what was the reason? <ul style="list-style-type: none"> <li>Placental abruption or early separation</li> <li>Maternal concerns e.g. shock/seizure/PPH</li> <li>Cord issues i.e. snapped, indsed, limited cord length</li> <li>A requirement for immediate resuscitation.</li> <li>Other (please specify):</li> </ul>
<b>DOB:</b>		
<b>MRN:</b>		
<b>Gestation:</b>		
<b>Mode of Delivery:</b>	2- Admission Temp?	
<b>Name:</b>	1- Was Neohelp bag used?	3- DCC done for 1 minute? _____ If not, what was the reason? <ul style="list-style-type: none"> <li>Placental abruption or early separation</li> <li>Maternal concerns e.g. shock/seizure/PPH</li> <li>Cord issues i.e. snapped, indsed, limited cord length</li> <li>A requirement for immediate resuscitation.</li> <li>Other (please specify):</li> </ul>
<b>DOB:</b>		
<b>MRN:</b>		
<b>Gestation:</b>		
<b>Mode of Delivery:</b>	2- Admission Temp?	
<b>Name:</b>	1- Was Neohelp bag used?	3- DCC done for 1 minute? _____ If not, what was the reason? <ul style="list-style-type: none"> <li>Placental abruption or early separation</li> <li>Maternal concerns e.g. shock/seizure/PPH</li> <li>Cord issues i.e. snapped, indsed, limited cord length</li> <li>A requirement for immediate resuscitation.</li> <li>Other (please specify):</li> </ul>
<b>DOB:</b>		
<b>MRN:</b>		
<b>Gestation:</b>		
<b>Mode of Delivery:</b>	2- Admission Temp?	



High quality of care for every patient every day

Wait!



**Delayed Cord Clamping**

Allow smooth transition to extra-uterine life by allowing time for extra blood to be transfused to baby while waiting for their lungs to be fully expanded.

**Idea**



1- Reduce mortality by third  
2- Improve cardiovascular stability (inotropes less used)  
3- Improve haematological indices 4- Lower need for blood transfusion.

**Benefits**



➢ Twin-to-twin transfusion  
➢ Compromised cord integrity e.g. snapped cord  
➢ Haemorrhage

**Potential Contra-indications**



*If the placenta delivered with baby*  
Hold the placenta above baby with gentle pressure (with cord milking if > 28 weeks)

**Special situation**



**Aim**  
To wait for **at least 60 seconds** before clamping the cord for all preterm babies < 34 weeks

**Evidence**  
*NICE (2014)*  
"Do not clamp the cord earlier than 1 minute from the birth unless there is concern about the integrity of the cord or the baby has a heart rate below 60 beats/min that is not getting faster"

**Be mindful**  
Thermal regulation by using (sterile) plastic bag  
Stabilisation during DCC, > 90% of preterms will start breathing with/ without stimulation. Optimising head position, opening airway and gentle stimulation is usually enough. Less than 5% will need inflation breath.

**What if ...**  
Oxytocic needed for 3rd stage labour.  
Oxytocin can be given and will not affect the placental blood transfusion.

**What if ...**  
The cord is immediately clamped.  
The venous return to the heart, which the placental provides, will be reduced by 30-50% → reduced cardiac out put and risk of reduction in the HR.

References: BAPM optimal cord management toolkit, NLS 5th addition & NICE guidelines.

## TIMELINE

October 2022

- **Teaching sessions** & increase awareness *in October 2022*
- Review Proforma to Identify areas for improvement
- **Poster** *in November 2022*

March 2023

- Re-check the progress

# Improving compliance with Delayed Cord Clamping (DCC) for preterm babies < 34 weeks

## Delayed Cord Clamping for babies < 34 weeks

In theatre	In Delivery Suite
Neonatal Registrars need to be <i>scrubbed-in with sterile gowns and gloves</i>	No need to scrub in
<ol style="list-style-type: none"><li>Place the baby on mum.</li><li>If &lt; 32 weeks → put the baby in plastic bag.</li><li>If <b>baby is not breathing</b> → The aim is to avoid immediate cord clamping. Start the initial steps of the NLS algorithm and support the transition for the first 30 seconds by gentle but deliberate stimulation of the baby, opening the airway and placing the head in neutral position.</li><li>Assess at 30 seconds (in theatre) Feel heartbeat by placing fingers on baby's chest.</li><li>If HR &lt; 60, cut the cord and move to the resuscitaire. If not, continue <i>stimulation</i> and <i>support the airway</i> by putting head in neutral position to help the baby to start breathing until 60 seconds of delayed cord clamping. ( The baby is still receiving oxygenated blood from the cord).</li><li>Cut the cord and move to the resuscitaire.</li></ol>	

### POSITION

❖ All babies

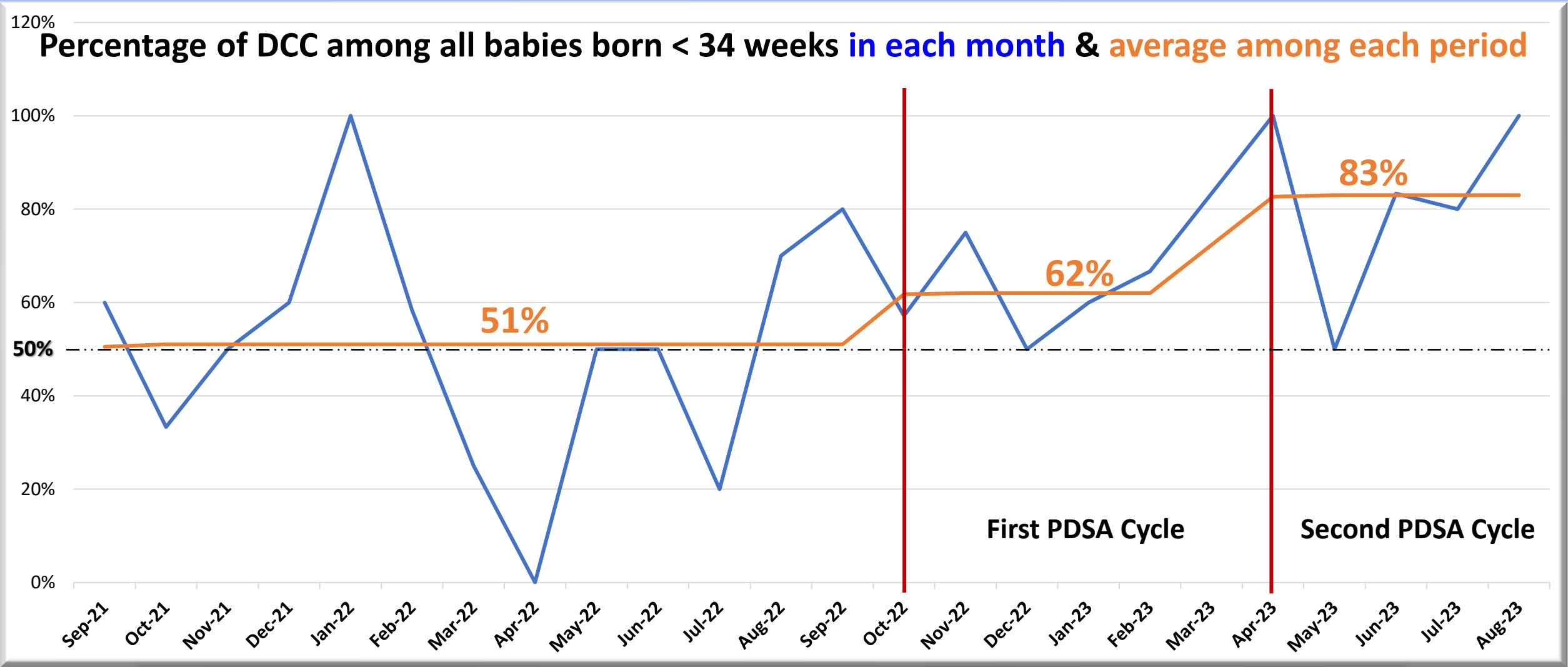
### AREAS

❖ Babies born





# Improving compliance with Delayed Cord Clamping (DCC) for preterm babies < 34 weeks



**Percentage of DCC among all eligible babies born < 34 weeks**  
**(Born in good and poor condition excluding absolute contraindications e.g. haemorrhage)**

## POSITIVE FINDING

- ❖ More babies had DCC [Average of 83% over last 5 months]  
[Average of 72% over the whole period of the project (11 months)].
- ❖ Able to differentiate babies born in poor condition from those who improve with stimulation.
- ❖ All babies had at least 30 seconds of DCC  
(from 30 seconds to 57 seconds).
- ❖ Maintaining 100% of DCC in all babies who are born in good condition.

## FUTURE STEPS

- ❖ **Patient information leaflet**  
(Using Tommy's App).
- ❖ Plan to **resuscitate with intact cord**  
for all preterm babies.

✓ **Resuscitation with intact cord**  
Either **Standard resuscitaire** or  
**Mobile resuscitaire**



Hutchon, David. (2014). Evolution of neonatal resuscitation with intact placental circulation. *INFANT*. 10. 58.

## References

1. Madar, J., Roehr, C. C., Ainsworth, S., Ersdal, H., Morley, C., Rüdiger, M., Skåre, C., Szczapa, T., Te Pas, A., Trevisanuto, D., Urlesberger, B., Wilkinson, D., & Wyllie, J. P. (2021). European Resuscitation Council Guidelines 2021: Newborn resuscitation and support of transition of infants at birth. *Resuscitation*, 161, 291–326. <https://doi.org/10.1016/j.resuscitation.2021.02.014> [Date of visit 01/10/2022].
2. Optimal Cord Management Toolkit. Optimal Cord Management in Preterm Babies: A Quality Improvement Toolkit: British Association of Perinatal Medicine; 2020. Available at: <https://www.bapm.org/pages/197-optimal-cord-management-toolkit> [Date of visit 01/10/2022].
3. Murphy, M. C., McCarthy, L. K., & O'Donnell, C. P. F. (2020). Crying and breathing by new-born preterm infants after early or delayed cord clamping. *Archives of disease in childhood. Fetal and neonatal edition*, 105(3), 331–333. <https://doi.org/10.1136/archdischild-2018-316592> [Date of visit 13/08/2023].



**THANK**

**YOU**

**Moustafa Eldalal**

**Paediatric Clinical Fellow**



<https://www.pinterest.com.au/pin/562387072187498631/>

# Normothermia on admission audit

Paediatric Registrar Drupti Jogia

Paediatric SHO Alina Petric

NNU Matron Caroline Nyawira



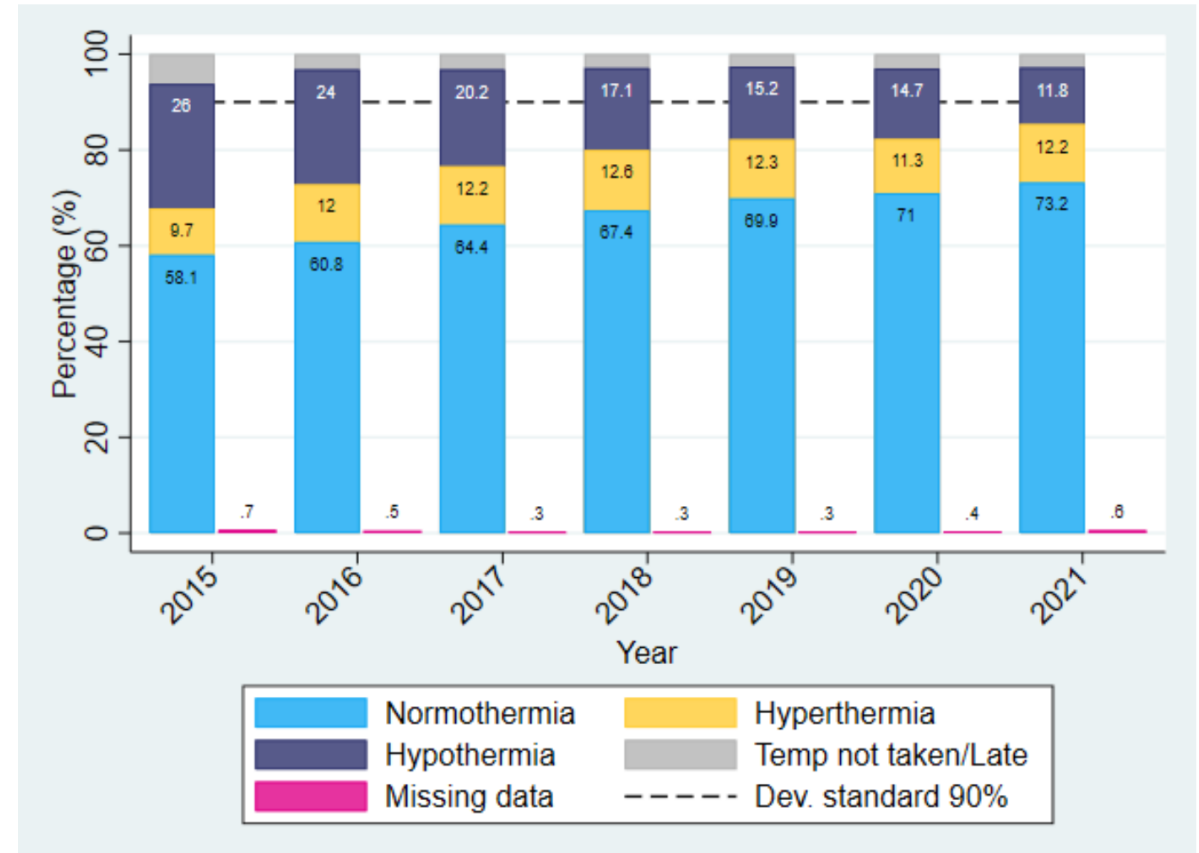
**Croydon Health Services**  
NHS Trust

# CUH NNU

- Level 2 unit
- Accepts neonates over 28 weeks gestation if twins or over 27 weeks gestation if singleton
- 22 cots
- Over 3000 babies a year are delivered at the trust

# National Neonatal Audit Programme (NNAP)

- Part of the **optimal perinatal care** – temperature on admission
- Aim >90% babies born less than 32 weeks gestational age to have temperature between 36.5-37.5°C in the first hour of birth
- International Liaison Committee on Resuscitation (ILCOR) 2015 strongly links suboptimal temperatures to increases in mortality and morbidity in preterm infants.





# Our audit aims

- Normothermia (i.e. a temp of 36.5-37.5) on admission to Neonatal Unit for all babies regardless gestational age within 4 months
- Evaluate current hypothermia rate with current measures in place
- Aim to reduce rates of hypothermia within 4 months by understanding what is the main cause and how we can improve it

# Methodology

- Retrospective study – reaudit September - December 2022
- Data collection using BadgerNet and Cerner
- Data collected:
  - Date of birth
  - Gestational age
  - Area admitted from
  - Temperature of area
  - 4 temperature measurements
- Exclusion criteria:
  - Missing data
  - Transfers
  - Re-admission
  - Admission from A/E

# Measures In Place

## Existing Measures

### For term babies

- Pre heat resuscitaire
- Warm towels
- Hats (when available)

### For preterm babies

- Pre heating resuscitaire
- Transwarmer
- Neobag
- Adequate size hat

## Transport to NNU

- If from LW/Theatre -transport incubator
- If from PNW - cot

## **NEWLY ADDED**

### **Admission temperature check list**

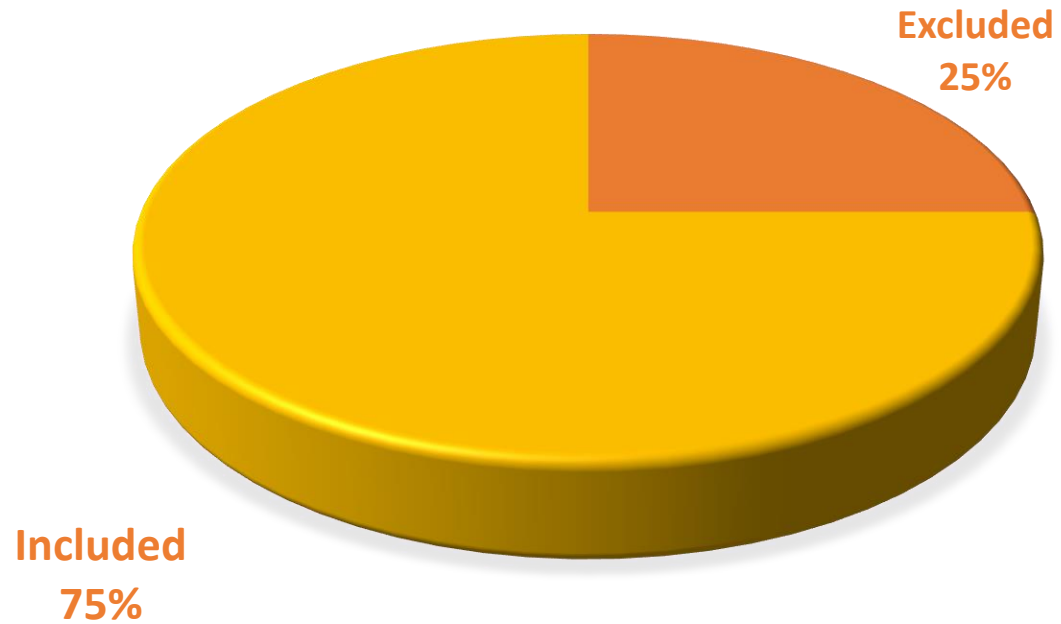
- On resuscitaire prior transfer
- In transfer incubator prior transfer
- In transfer incubator on arrival to the unit
- In incubator within 15 min of admission

# Results

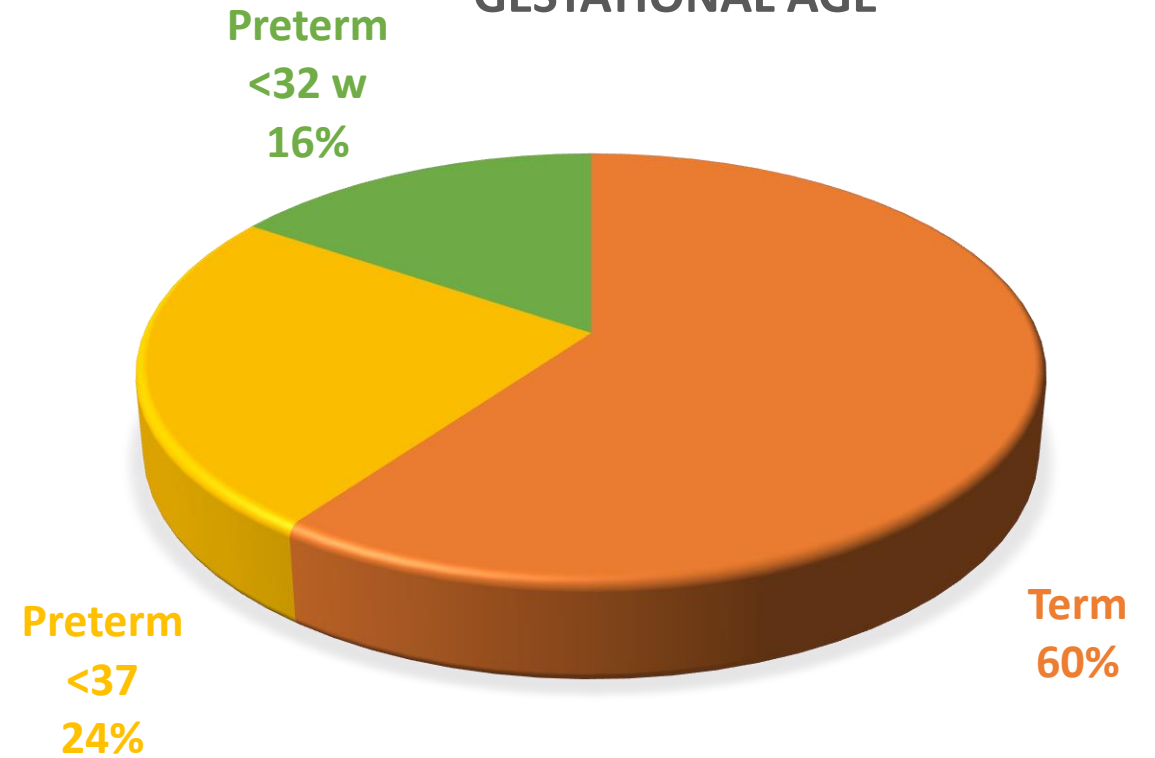
	April, May, June 2022	Sept, Oct, Nov, Dec 2022
Total admission	-	120
Total admission to NNU after excluding missing data, transfers, re-admission from home or A/E	56	90 (75%)
Hypothermic admission	18 (32%)	4 (4%)
Premature admission	30 (54%)	37 (33%)
Missing data	-	3 (3%)

# Results

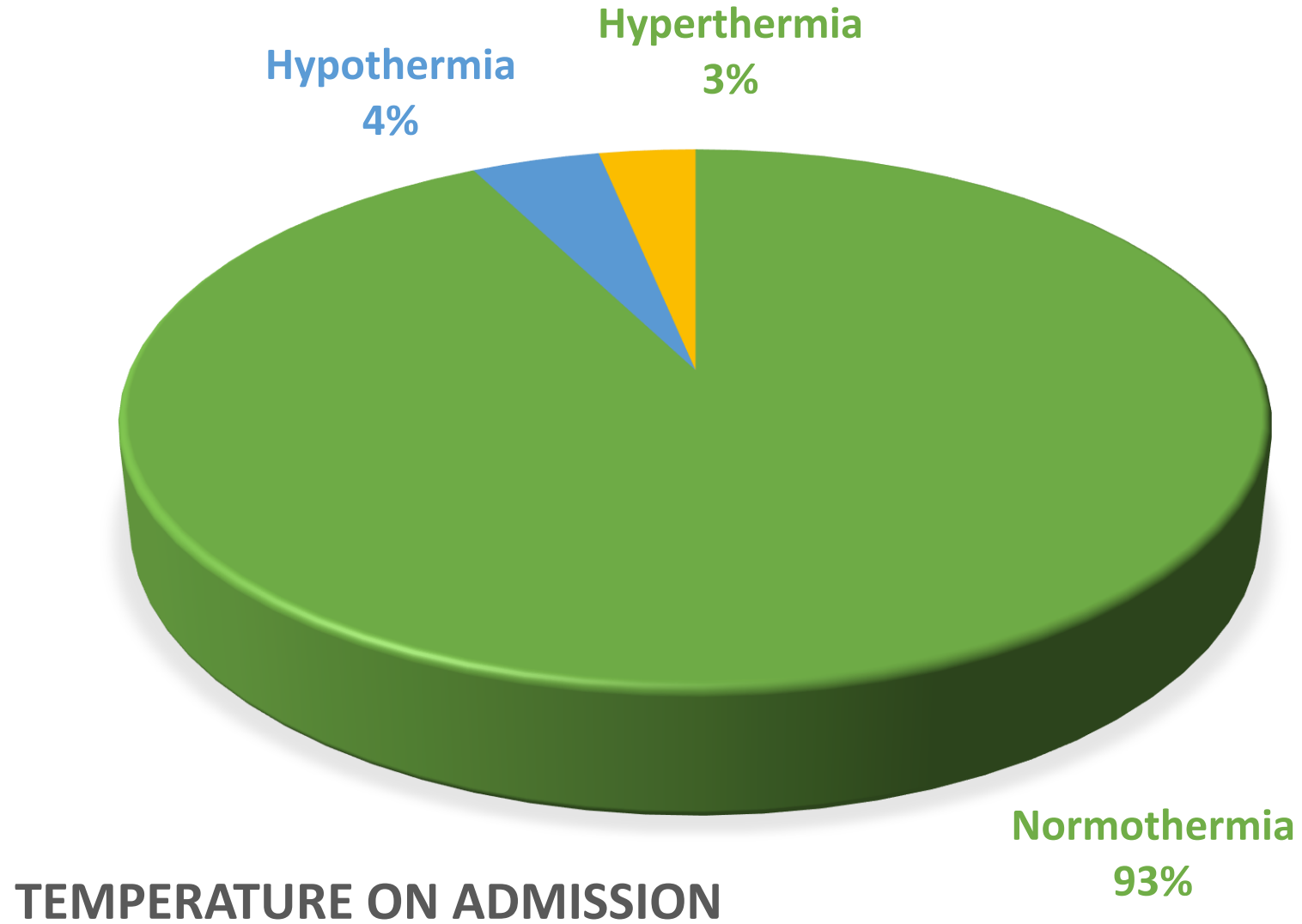
### TOTAL NNU ADMISSIONS



### GESTATIONAL AGE

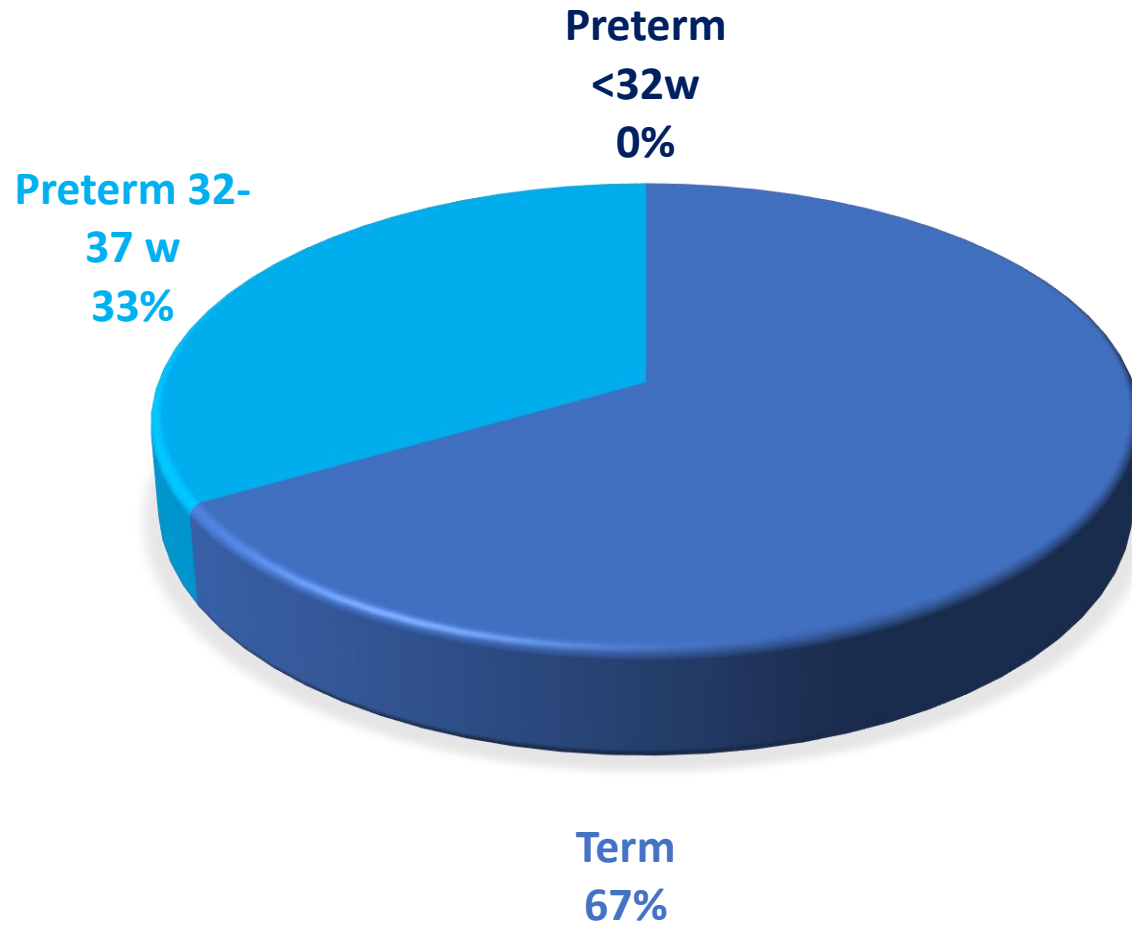


# Results

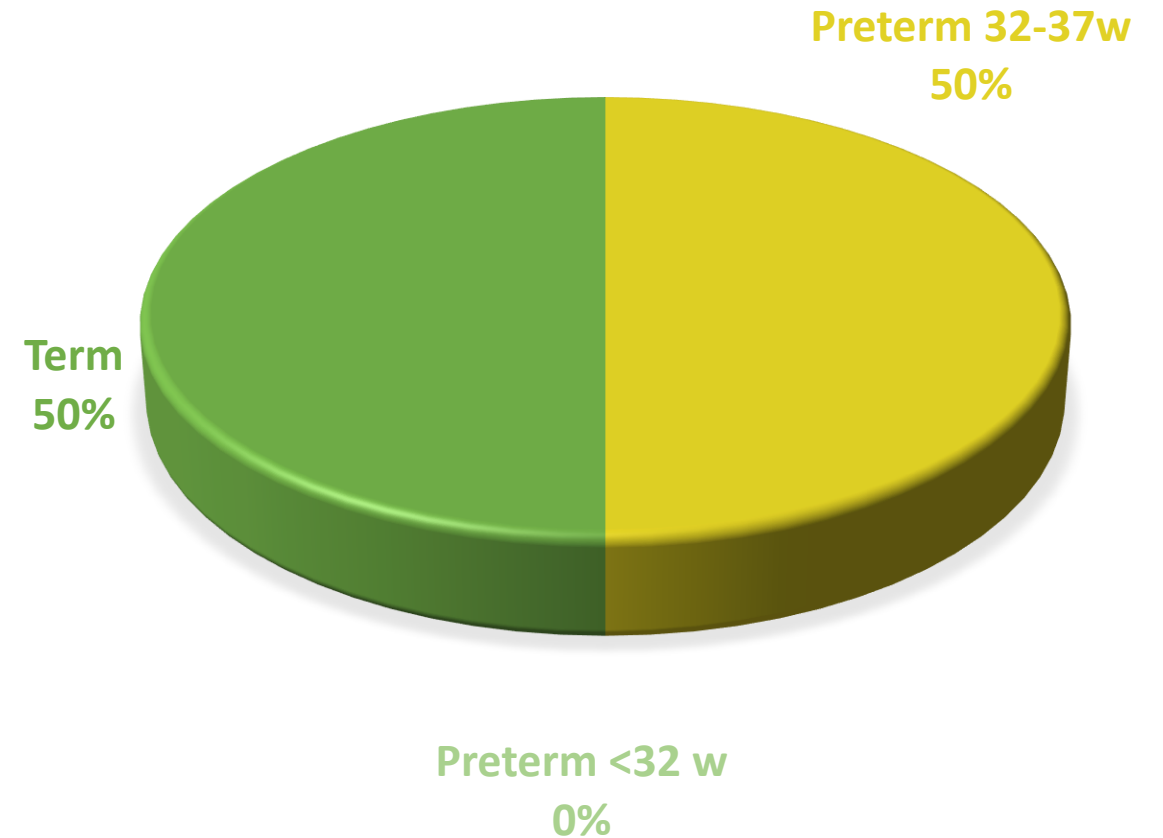


# Results

### HYPERTHERMIA- GESTATIONAL AGE

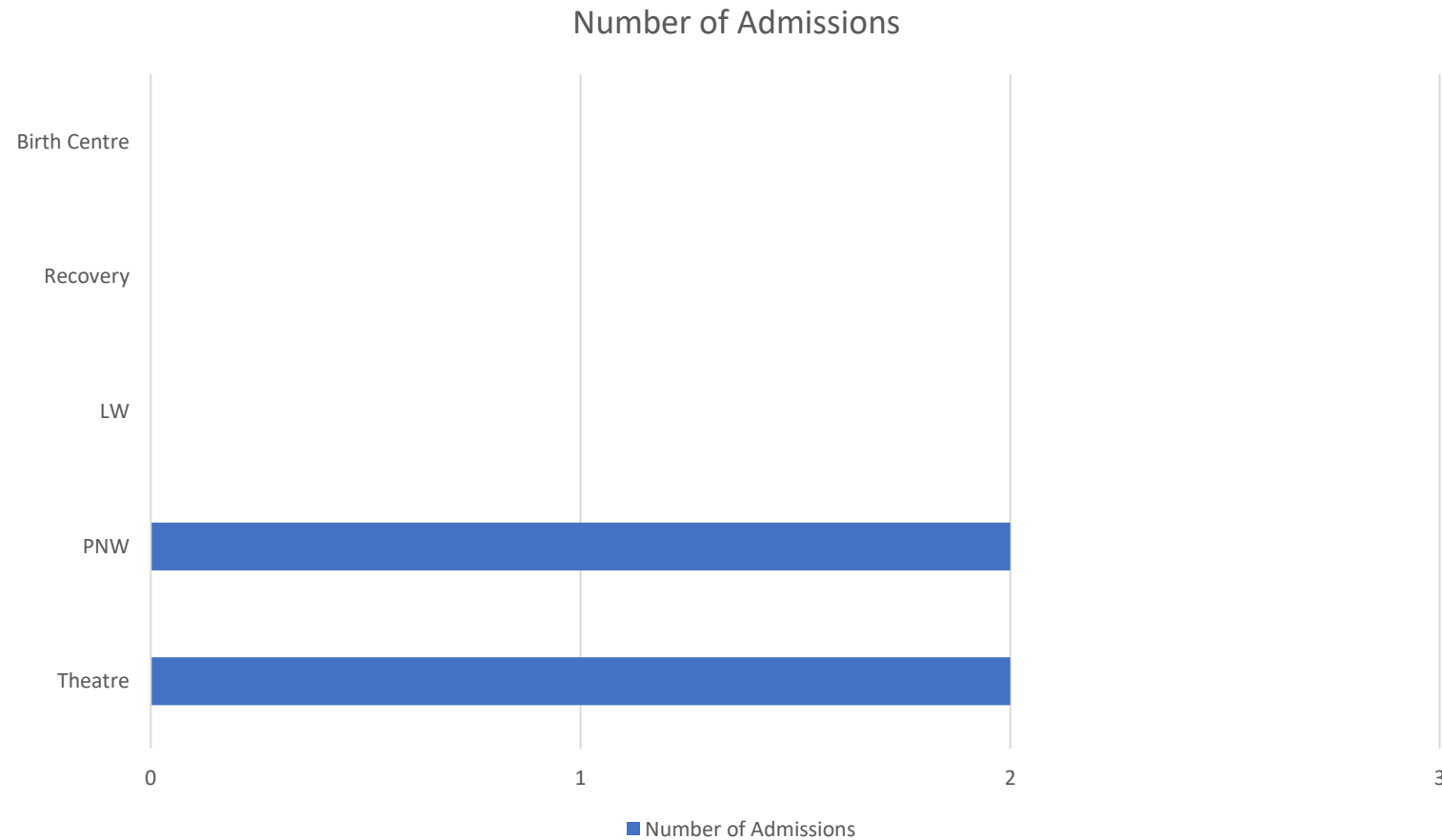


### HYPOTHERMIA- GESTATIONAL AGE



# Results

Areas hypothermic neonates admitted from





# Results

<b>Pre transfer temperature</b>	Sept 3/16	1 low
	Oct 14/26	3 low
	Nov 15/27	1 low
	Dec 9/21	0 low + 1 high
<b>Temperature In incubator prior transfer</b>	Sept 0/16	no documented temperatures
	Oct 3/26	All normothermic
	Nov 9/27	4 low
	Dec 10/21	1 low + 1 high
<b>Temperature in incubator on arrival to NNU</b>	Sept 0/16	no documented temperatures
	Oct 3/26	All normothermic
	Nov 10/27	1 low
	Dec 8/21	All normothermic

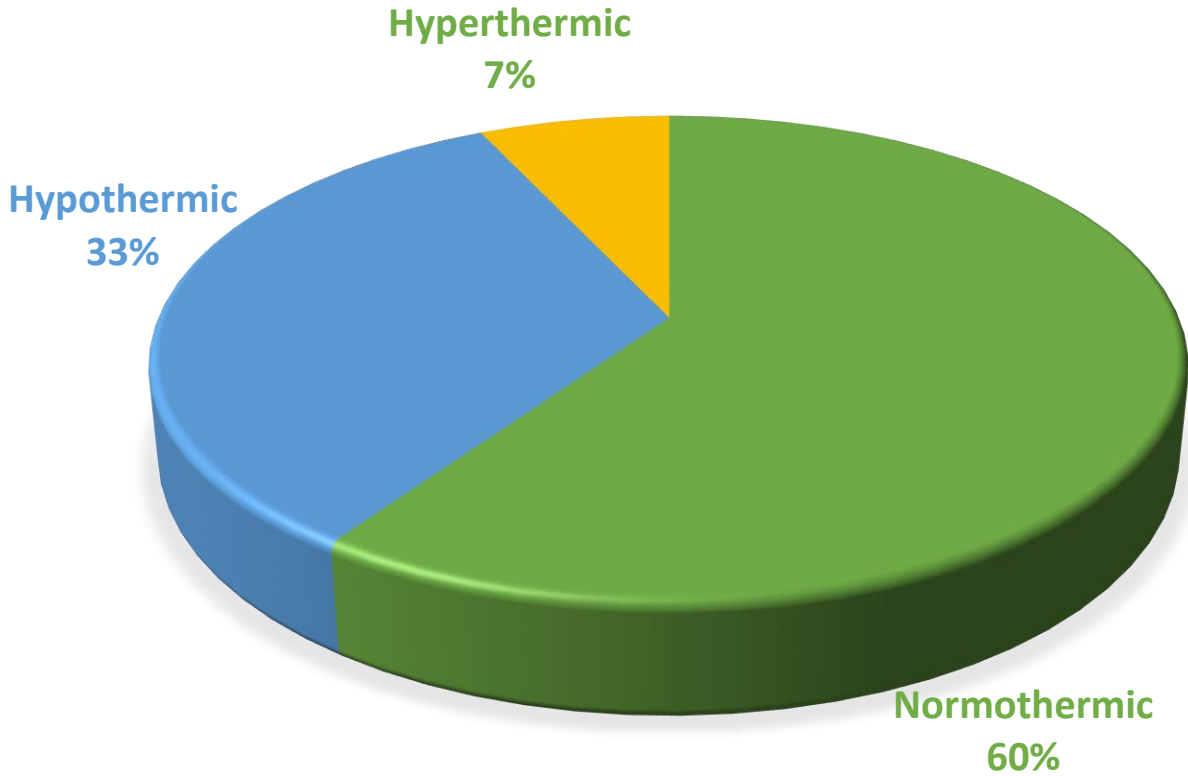
Temp of area	18/93
Temp 19C-25C	19C - baby was not hypothermic
Coldest place - theatre	
Warmer place - LW room	

# SUMMER VS WINTER

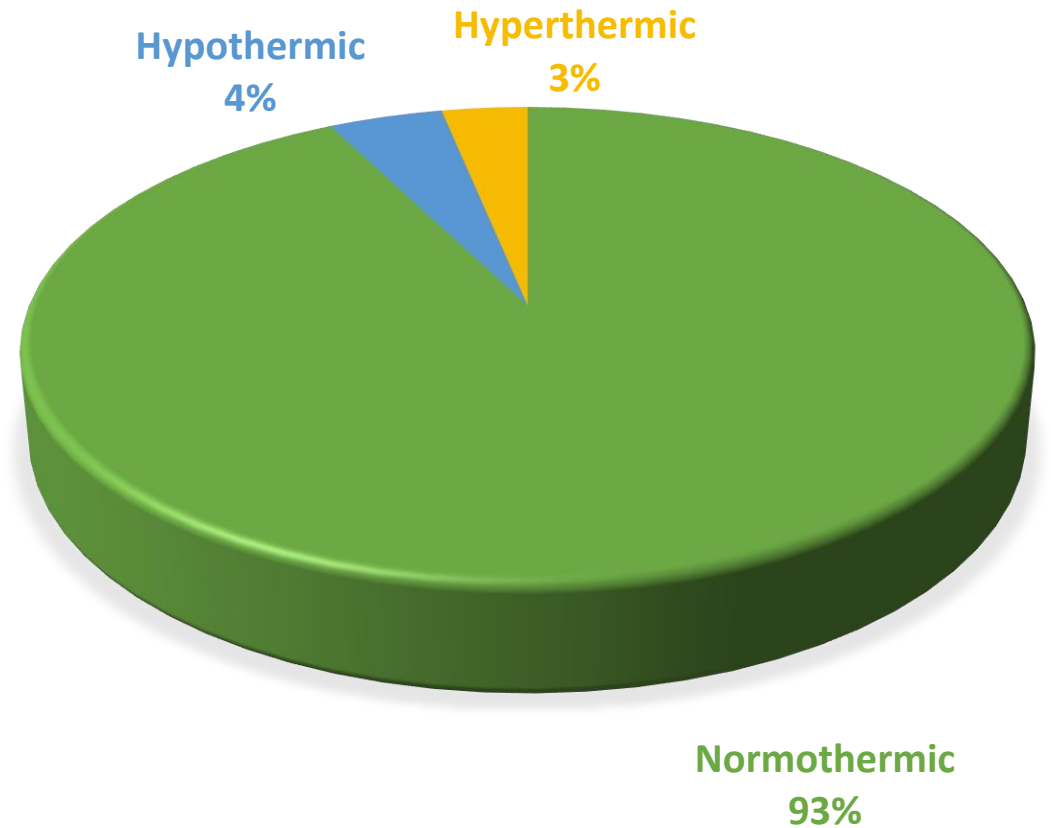


Croydon Health Services  
NHS Trust

## ADMISSION TEMPERATURE 2022- SUMMER



## ADMISSION TEMPERATURE 2022-WINTER



# Conclusions

- Significant improvement in achieving normothermia amongst all admissions regardless of gestational age in winter audit
- NNAP data 100% normothermia for neonates <32 weeks
- Theatre and postnatal ward were equally reported to be coldest place of admission
- It is well known that theatre has the coldest environment temperature; we can not comment on environment temperature on PNW as there are no room thermometers
- Current measures in place are adequate for achieving normothermia

# Recommendations

- Improving documentation – to be included in induction
- Continue measuring 4 temperatures
- Have normothermia champion on each shift (doctors, nurses)
- Room thermometer in postnatal ward
- Liaise with theatre coordinator/maternity coordinator –theatre environmental temperature could be increased in case of extreme preterm birth without impact on surgery/mother (aim 26<sup>o</sup>C)

# Discussions



# Thank you !



**Big thank you to the CUH Neonatal Team  
for keeping our babies warm!**

# Fishbowl Discussion



---

# Break

64





# SWL Local Maternity & Neonatal System Neonatal workstream

**12<sup>th</sup> June 2023**

**11:15 am – 12:45 pm**

**Microsoft Teams**

# QI in SW London LMNS



# Initial Discussions – 2022

## Key Themes Identified

- Perinatal optimisation - based on PERIPREM / BAPM / MATNEOSIP
- Focus on key areas that involve maternity and neonatal teams

Priorities for Neonatal Workstream



Brainstorm 2022

## Decision to focus on 5 areas:

- Temperature optimisation
- Right place of birth
- Keeping mothers and babies together
- Deferred Cord Clamping
- Maternal breast milk at discharge

## Data from scorecards used as basis for improvement

- Produced by COG
- Benchmark across London to gauge progress
  
- No funding for work
- Identified that senior staff happy to lead, but often time restricted
- Aim defined to recruit trainees across patch to implement change



# MATNEOSIP

- At this time MATNEOSIP projects commenced in SWL
- Different trusts chose different areas of improvement
- DCC featured heavily
- Increased project support allowed services to drive some of these projects

## Where are we now in SWL

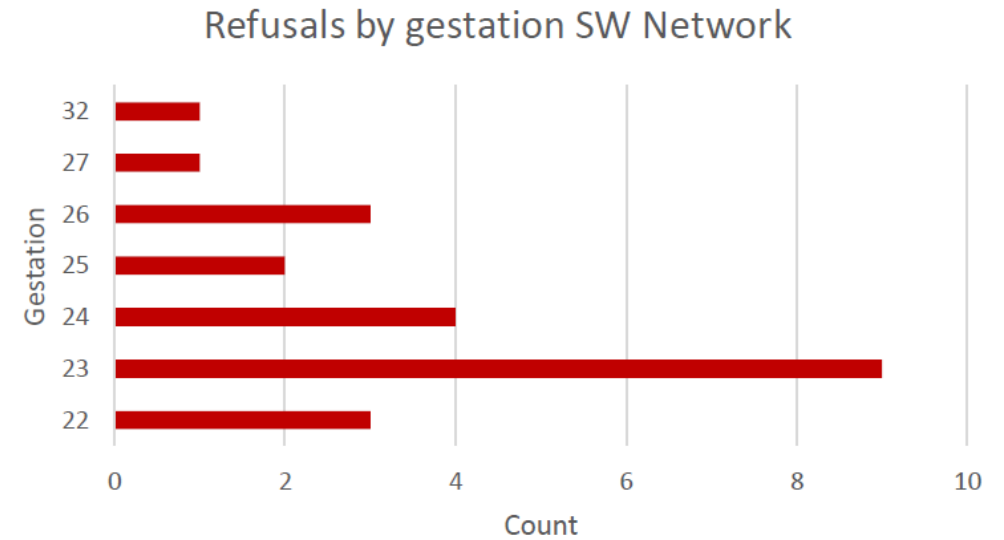
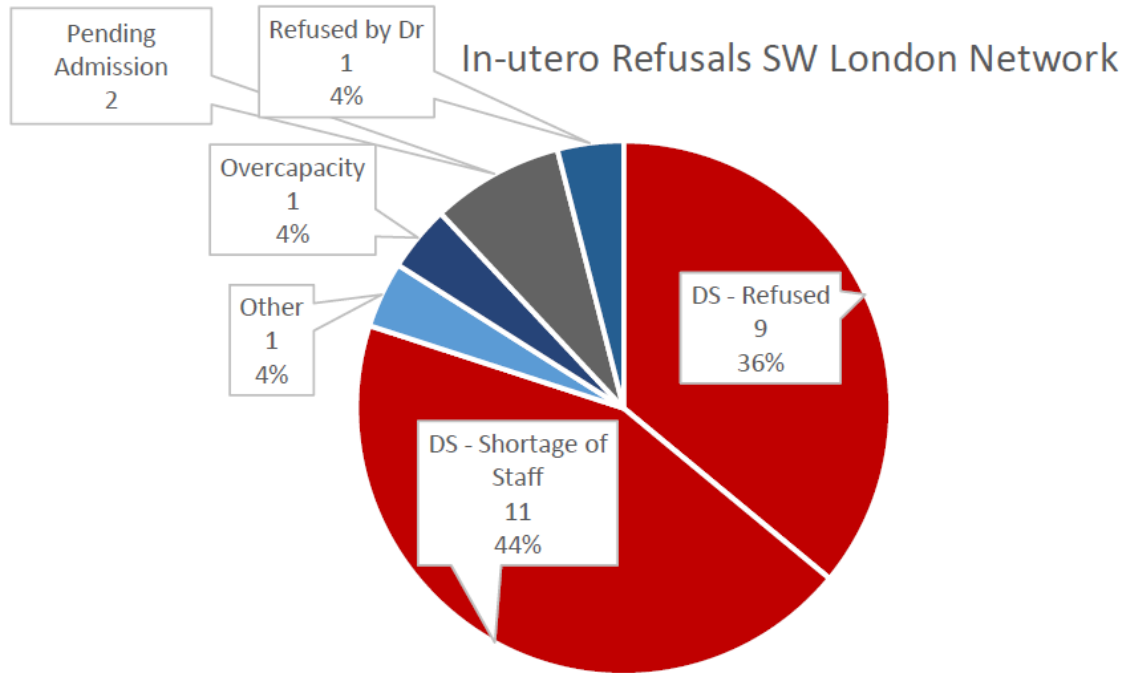
- Appointment of 2 leads with defined time to lead change
- Sandeep Shetty and Caroline Nyawira – 4hrs/week each
- Has permitted significant progress forwards
- Monthly meeting of implementation group



# In God we trust, all others must bring data... W. E. DEMING

- Data manager or data aware clinician/nurse identified for each trust
- Clinical lead identified for each trust
- Work to look at some key themes already undertaken
  - Refusal of IUTs
  - Data quality
    - Different Trusts recording data differently – definitions
    - Reliability of data

# In-utero refusals last 12m - SWL



# Why it matters

	In – Utero (n, %)	Ex – Utero (n, %)
Antenatal Steroids (complete course)	33/35 (94.3%)	7/17 (41.2%)
Antenatal magnesium Sulphate	29/35 (82.9%)	14/17 (82.4%)
Admission temperature (normothermia)	31/35 (88.6%)	11/17 (64.7%)
Pulmonary Haemorrhage	1/35 (2.9%)	5/17 (29.4%)
IVH (Grade 3 B/L or U/L Grade 4)	7/35 (20%)	6/17 (35.3%)
Surgical NEC	2/35 (5.7%)	4/17 (23.5%) (LNU)
Severe BPD	15/35 (43%)	6/17 (35.3%)
Death	3/35 (8.6%)	3/17 (17.6%)

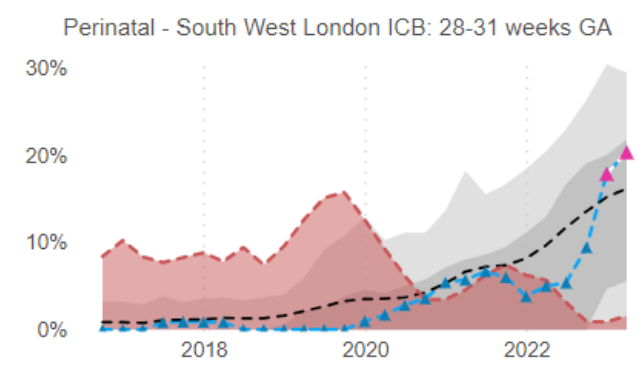
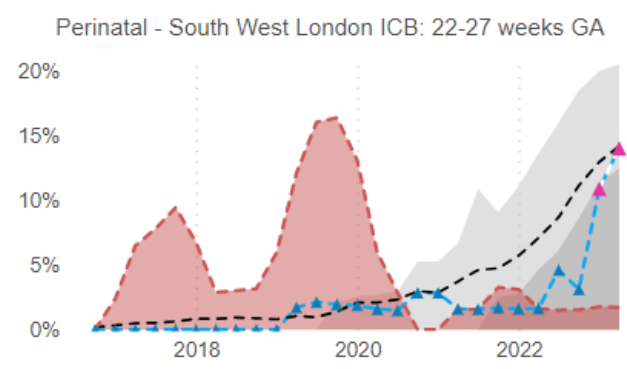
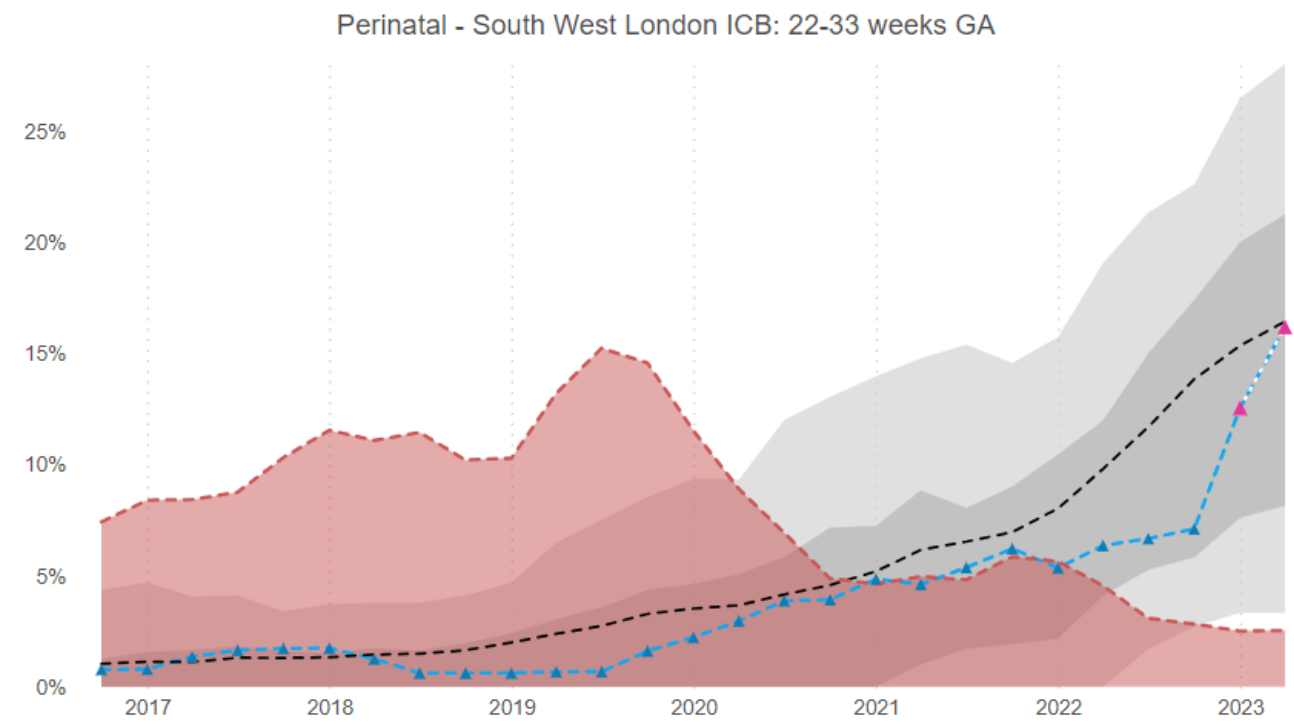
# Current QI Workplan

- Monthly Meeting
- Postnatal Ward / TC
- Optimisation of Perinatal care (inc. CNST Safety action 6)
  - AN steroids/  $\text{MgSO}_4$
  - DCC
  - Temperature on Admission
  - Breast Feeding D2
- In-utero transfer – implementation of new pan London pathway
- Hospital at home – phototherapy and POPAT

## Live Data...


Proportion of babies <34 weeks receiving all optimal perinatal care measures for which they are eligible (steroids, MgSO<sub>4</sub>, DCC, temperature, birth in an NICU, breastmilk on D2)

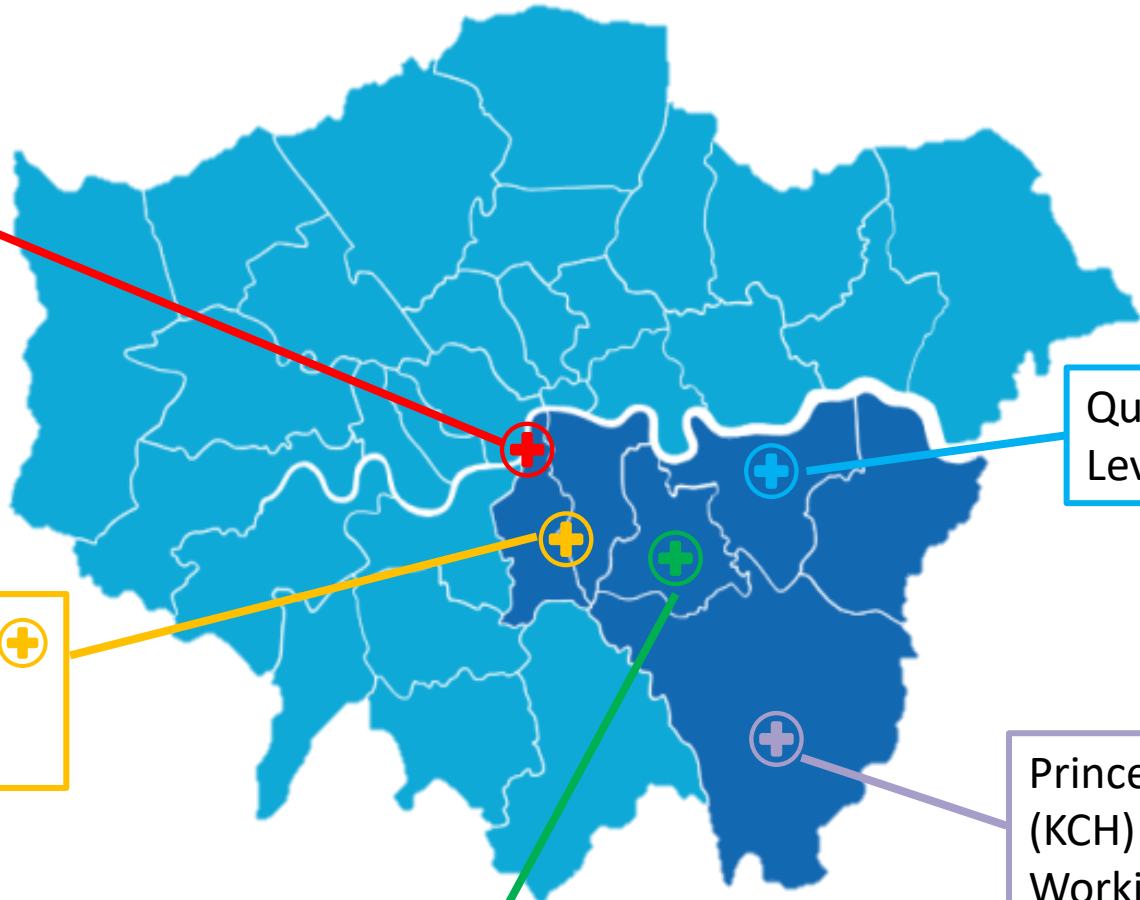
Microsoft Power BI





# SEL LMNS OPTiC Workstream

# Our Patch


St Thomas' Hospital (GSTT)   
Evelina Children's Hospital  
Level 3 NICU  
Maternal Medicine Centre for SEL



Queen Elizabeth Hospital (LGT)   
Level 2 NNU

Denmark Hill Site (KCH)   
Level 3 NICU  
MMN Centre – Neuro + Liver

University Hospital Lewisham (LGT)   
Level 2 NNU

Princess Royal University Hospital (KCH)   
Working towards Level 2 NNU  
status, caring for babies >29 weeks.

# Our Population

Our population is 2,038,754 and will rise by 9.5% over the next seven years.

The most common languages are English, Polish, Punjabi, Nepalese, Portuguese and Spanish

Lambeth and Southwark have the 2<sup>nd</sup> and 3<sup>rd</sup> largest lesbian, gay and bisexual communities in England.

37.5% of women/birthing people are overweight or obese

There are approximately 20,000 – 22,000 deliveries in SEL every year.

67.42% of women/birthing people live in the 5 most deprived areas in SEL (IMD data Mar 21 – Feb 23)

Lambeth, Greenwich, Lewisham and Southwark rank in the top 15% of the most deprived boroughs across the country.

Up to 1 in every 12 women/birthing people smoke during pregnancy.





## LMNS Core Team

Jacqui Kempen – Head of Maternity  
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Mel Howie – Project Manager  
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Monica Franklin – Project Manager  
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## Co- Chairs/ Leads

Devi Subramanian – Obstetric Co-Chair  
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Gina Brockwell – Midwifery Co- Chair  
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Tim Watts – Neonatal Lead  
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Vivette Wallen Mitchel – Neonatal Nurse  
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[vivette.wallen-mitchell@nhs.net](mailto:vivette.wallen-mitchell@nhs.net)

Karen Turnock – Neonatologist Transformation Lead  
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**Quality Surveillance:** 6 weekly surveillance group across the LMNS with a focus on quality and safety surveillance and sharing and learning as a peer group. If a theme or issue is picked up task and finish groups are set up to focus on the concern.

**Equity and Equality:** : Focus on E+E action plan implantation over the next 3 to 5 years. Examples of work include delivery of a pilot of parent education in several different languages and funding for a pilot to deliver the maternity mates programme in southwark.

**Workforce and Education:** : Newly set up and the current focus is on recruitment and retention, training compliance and labour ward coordinator development. Future focus will be on training and educating as a system.

**Public Health:** : Current focus on creating a SEL wide infant feeding strategy and a SEL pre-conception strategy. Other areas of focus include obesity, vaccinations and immunisations.

**Pelvic Health:** : Pilot of a pelvic health service has been successfully implemented with roll out in 2024.

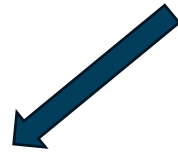
**Fetal wellbeing:** Implementing Element 4 of Saving Babies Lives Care bundle with a focus on standardising guidelines and training across SEL. Particular focus at present is ongoing risk assessments.

**Smoke Free Pregnancies:** Working group supporting the implementation of Maternity specific smoke free pregnancy pathways as per the NHS Long Term Plan. The aim is to roll out equitable services across the system and ultimately reducing smoking at booking and delivery.

**Maternal Medicine Network:** System wide service in place for those with complex medical needs ensuring equitable access to high quality specialist input, ensuring women are cared for by the right people in the right place. Education programme also in place with includes monthly education huddles for MDT staff.

**Choice and Personalisation:** Focus on the information given to women, birthing people and staff, personalised care plans and continuity of carer for those most in need.

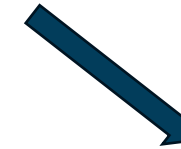
## Optimising Pre-term Birth and improving Term Care



*Ensuring high quality pre-term optimisation care across the system.*

Areas of focus:

- LMNS Neonatal ODN Dashboard to review perinatal optimisation progress
- Implementing Saving Babies Lives Care Bundle V3 (Element 5)
- Implementing the Pan-London IUT Guideline with particular focus on sharing the learning from place of birth exception reporting and making subsequent service improvements



*Focusing on keeping mothers and babies together by ensuring high quality postnatal care for babies.*

Areas of focus:

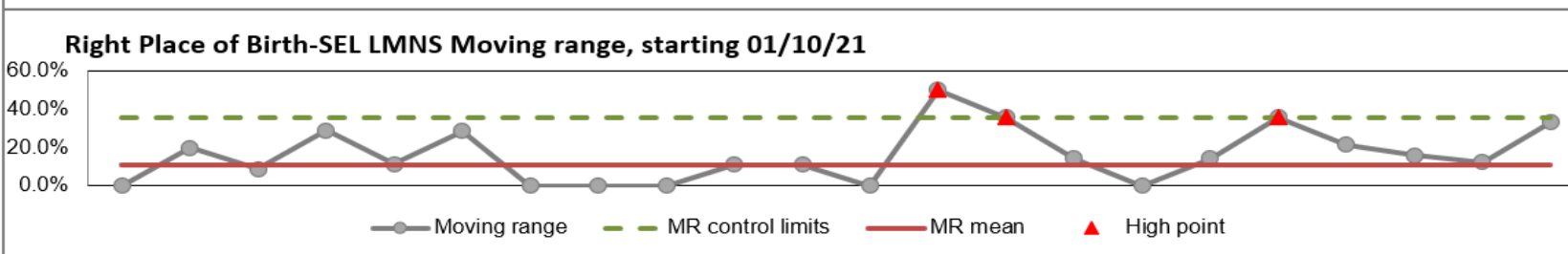
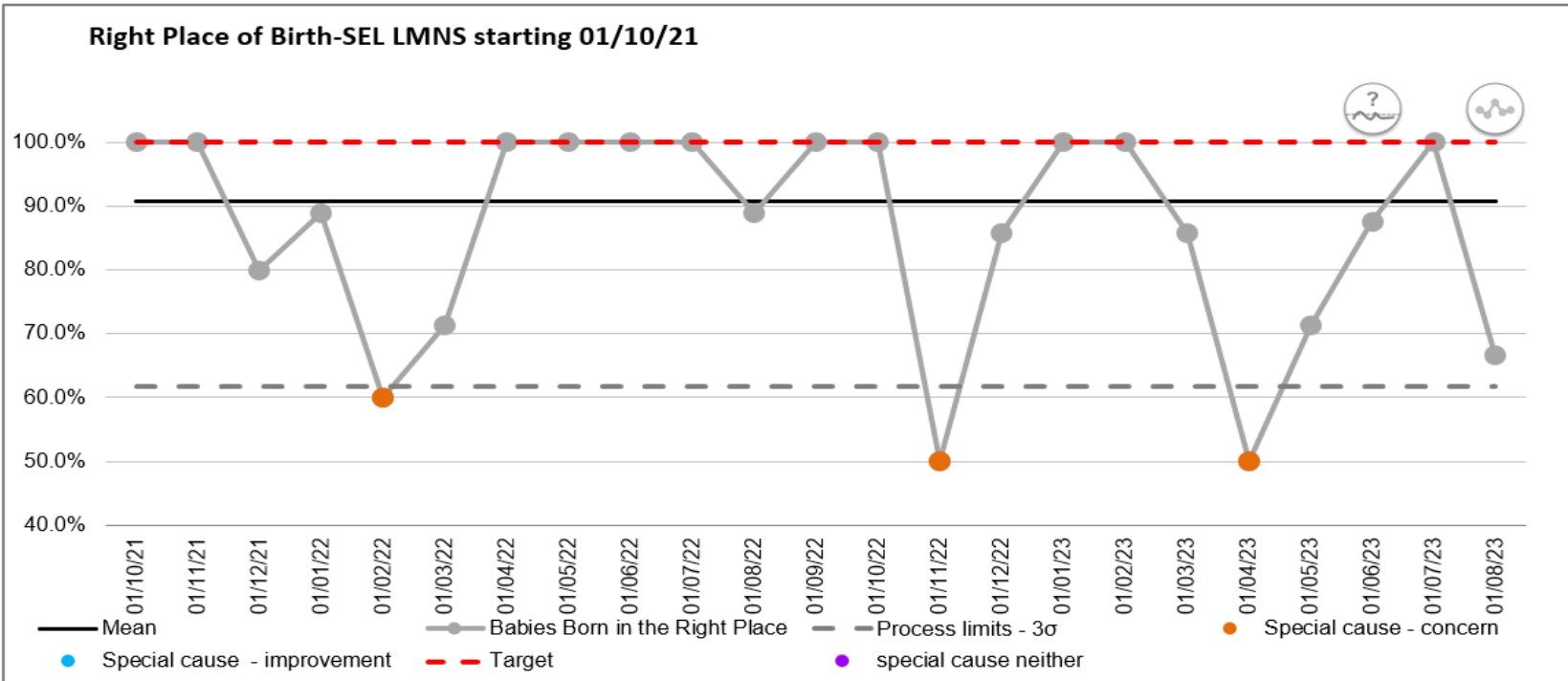
- Implementing the SEL LMNS Transitional Care guidance
- Standardising the way TC data is collected and presented to allow for comparability and improvement across the sector
- Highlighting common themes/challenges in TC care and working to create system wide solutions

## 12 month rolling summary

OPTIMAL PERINATAL OUTCOMES	Standard	London	SEL	NICUs		LNUs		
				Evelina	King's	PRUH	Lewisham	QE Woolwich
<b>Antenatal Steroids</b> <i>Mothers delivering 23-33wks given full course 7 days prior to birth</i>	Benchmark	53.9% 1043/1935	53.3% 202/379	54.4% 80/147	53.2% 42/79	50.0% 21/42	49.2% 30/61	58.0% 29/50
Data Completion (Antenatal steroids 2022)	</> 5% Ldn	95.0%	99.2%	98.0%	100.0%	100.0%	100.0%	100.0%
<b>Antenatal Magnesium Sulphate</b> <i>Mothers delivering &lt;30wks given magnesium 24 hours prior</i>	= > 90%	84.6% 593/701	87.2% 102/117	87.7% 50/57	87.9% 29/33	71.4% 5/7	77.8% 7/9	100.0% 11/11
Data Completion (Magnesium sulphate)	</> 5% Ldn	98.4%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<b>&lt;27 week / &lt;800 gram births by first unit of admission</b> <i>Mothers delivering &lt;27wks or &lt;800g in a centre with NICU</i>	Outlier Analysis	79.7% 303/380	84.3% 59/70	38	21	6	0	5
Data Completion (Births in a centre with a NICU)	</> 5% Ldn	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<b>Optimal Cord Management</b> <i>Babies born &lt;34wks have their cord clamped =&gt; 1 minute</i>	Benchmark	59.4% 1262/2125	63.9% 288/451	68.2% 118/173	51.5% 52/101	60.4% 29/48	72.6% 53/73	64.3% 36/56
Data Completion (Deferred cord clamping)	</> 5% Ldn	98.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<b>Admission Temperature for very preterm babies</b> <i>Babies born &lt;32wks, temp 36.5–37.5 and measured in 60 mins of birth</i>	= > 90%	76.5% 1535/2007	78.7% 317/403	82.5% 132/160	80.2% 73/91	69.8% 30/43	68.5% 37/54	81.8% 45/55
Data Completion (Admission temperatures)	</> 5% Ldn	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<b>Term Admissions</b> <i>Babies born =&gt;37wks, admitted for =&gt;24hrs and within 28days of birth</i>	< 6%	3.9% 4212/108265	3.7% 764/20776	4.0% 258/6375	4.7% 187/3984	3.7% 135/3635	2.3% 73/3144	3.1% 111/3637
Data Completion (Avoidable term admissions)	</> 5% Ldn	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<b>Breastmilk feeding in the first 2 days of life</b> <i>Babies born &lt;34wks receive any of mother's milk in first 2 days</i>	Benchmark	45.2% 935/2070	36.7% 155/422	34.8% 57/164	31.7% 32/101	35.9% 14/39	56.7% 38/67	27.5% 14/51
Data Completion (Breastmilk first 2 days)	</> 5% Ldn	86.7%	77.3%	48.4%	91.6%	96.2%	100.0%	96.1%
<b>Breastmilk feeding at day 14</b> <i>Babies born &lt;34wks receive any of mother's milk at day 14</i>	Benchmark	86.0% 1343/1561	81.8% 251/307	80.7% 96/119	77.9% 53/68	72.0% 18/25	92.6% 50/54	82.9% 34/41
Data Completion (Breastmilk on day 14)	</> 5% Ldn	98.0%	97.7%	97.5%	94.1%	100.0%	100.0%	100.0%
<b>Type and duration of respiratory support</b> <i>Babies born &lt;32wks receiving non-invasive respiratory support</i>	>= 80%	43.6% 627/1437	42.9% 106/247	38.0% 41/108	34.5% 20/58	36.8% 7/19	57.1% 20/35	66.7% 18/27
Data Completion (Breastmilk at discharge)	</> 5% Ldn	94.7%	98.0%	99.1%	98.3%	84.2%	100.0%	100.0%

# Place of Birth Exceptions

Mother's who deliver at <27 weeks OR <28 weeks for multiples OR <800g birthweight at a centre with a NICU



**Review process:**

- Place of birth exceptions are monitored by the ODN and reported on the dashboard
- Exceptions are reviewed and discussed within the OPTiC workstream

**Key learning points:**

- 7 babies born in centres without a NICU so far in 2023, 2 pending review
- In 3 out of the cases reviewed, the women were being seen at tertiary centres due to being high risk of PTB but presented at 'booked' hospital – how can we change this advice?
- Importance of consultant input for complex decision-making eg CTG interpretation, need for urgent IUT, and having a supportive presence for busy shifts
- The importance of referral of women identified at risk of preterm birth to Preterm Clinics

**Engagement:** Maintaining high levels of engagement across the MDT in each of our 3 trusts in SEL LMNS

**Capacity:** Ongoing challenges with Maternity and Neonatal Capacity in our Level 3 centres, this is further challenged by the tertiary care pathways into Harris Birthright Centre and Evelina

**Geography:** Distances between our Level 2 and Level 3 centres which can affect patient access

**Neonatal Nursing Staffing:** Commitment to staffing Transitional care as per the BAPM/LMNS guidance

**Perinatal Mortality Oversight:** Challenges with maintaining oversight of Neonatal Deaths in the LMNS and ensuring robust processes in place for learning from these events, there will be a SEL ICS Learning from Deaths (including Maternal and Neonatal) which aims to assist with this

**Early breastmilk** – support to enable early breastmilk feeds

**Vacancies:** Significant midwifery vacancies and sickness rates across the system which affects clinicians ability to be involved in system wide working and learning

**EPIC:** The recent change to EPIC electronic record system – unsure at present what the implications on data collection and submission to regional/national data collection

# Priorities for 2024

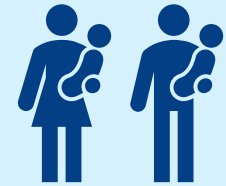
**Pre-Term Birth  
Pathways**



**SL Parent Passport**



**Adding the N to  
MNVP**



**Patient Information for  
High Risk PTB Care**



**Community Engagement**





# Any questions?



England

# National MatNeoSIP Update

Presented by:  
**Charlie Merrick**



# Key updates

SBLv3 – covers all the elements of the preterm optimisation pathway. There are ambitions set for five of the interventions.

Additional two more interventions Volume-Targeted-Ventilation and Caffeine.

Clevermed/Badgernet/System C

Quality Control – what is this and next steps

Ambition of an action learning set for volume targeted ventilation

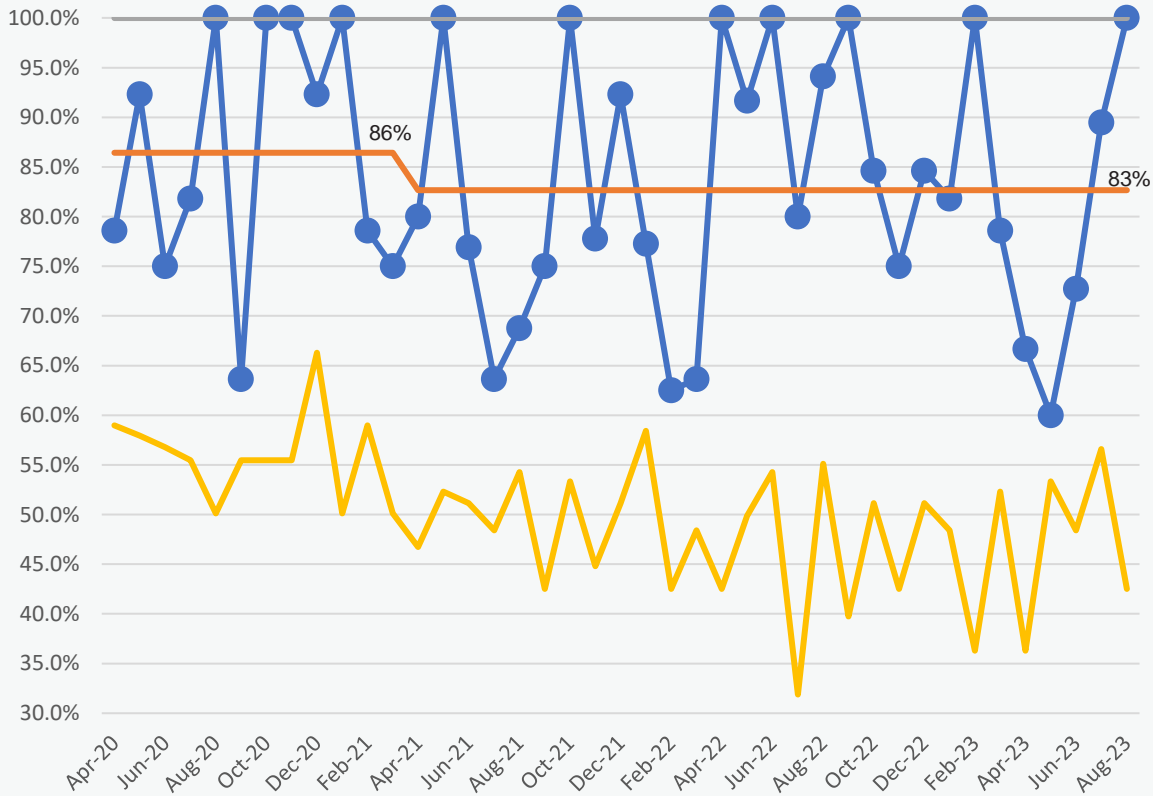
Deterioration MEWS testing

Digital specification

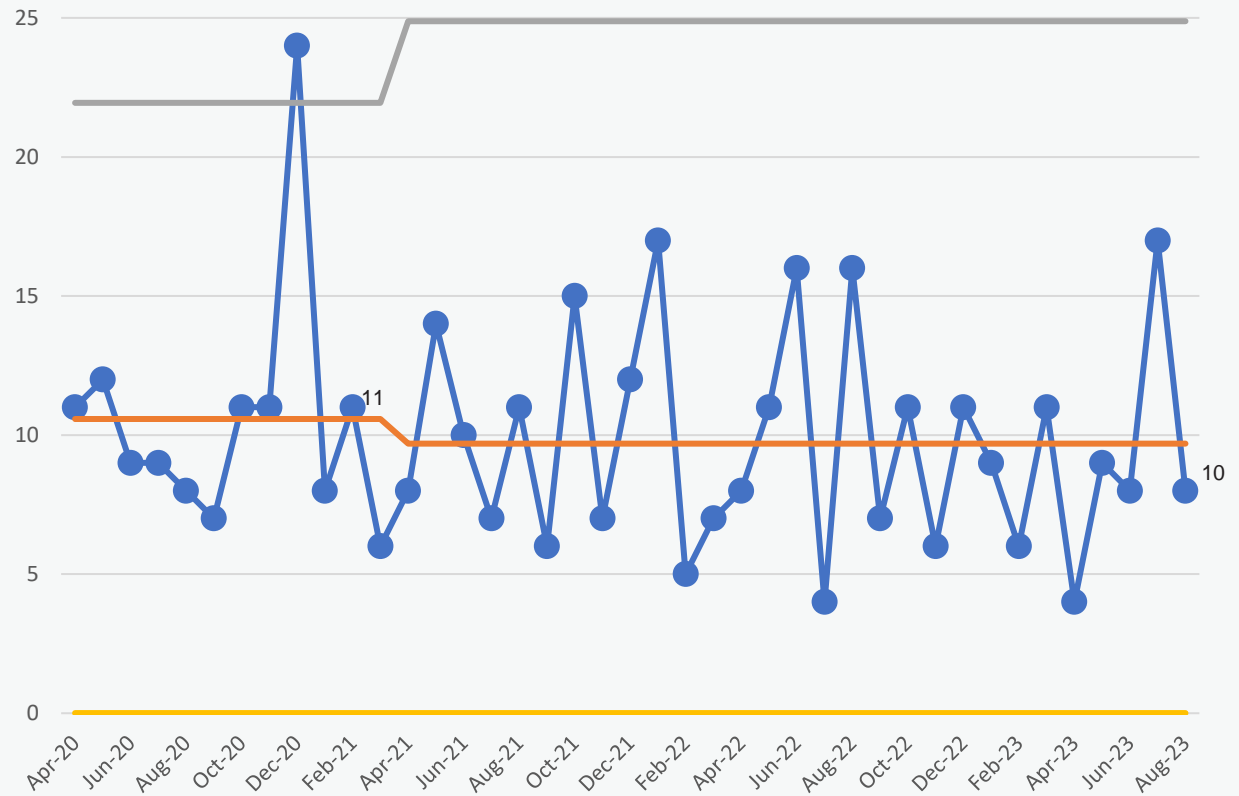
NEWTT2 Testing

# Place of Birth

Percentage receiving Optimising place of birth  
Health Innovation Network South London  
Apr-2020 to Aug-2023

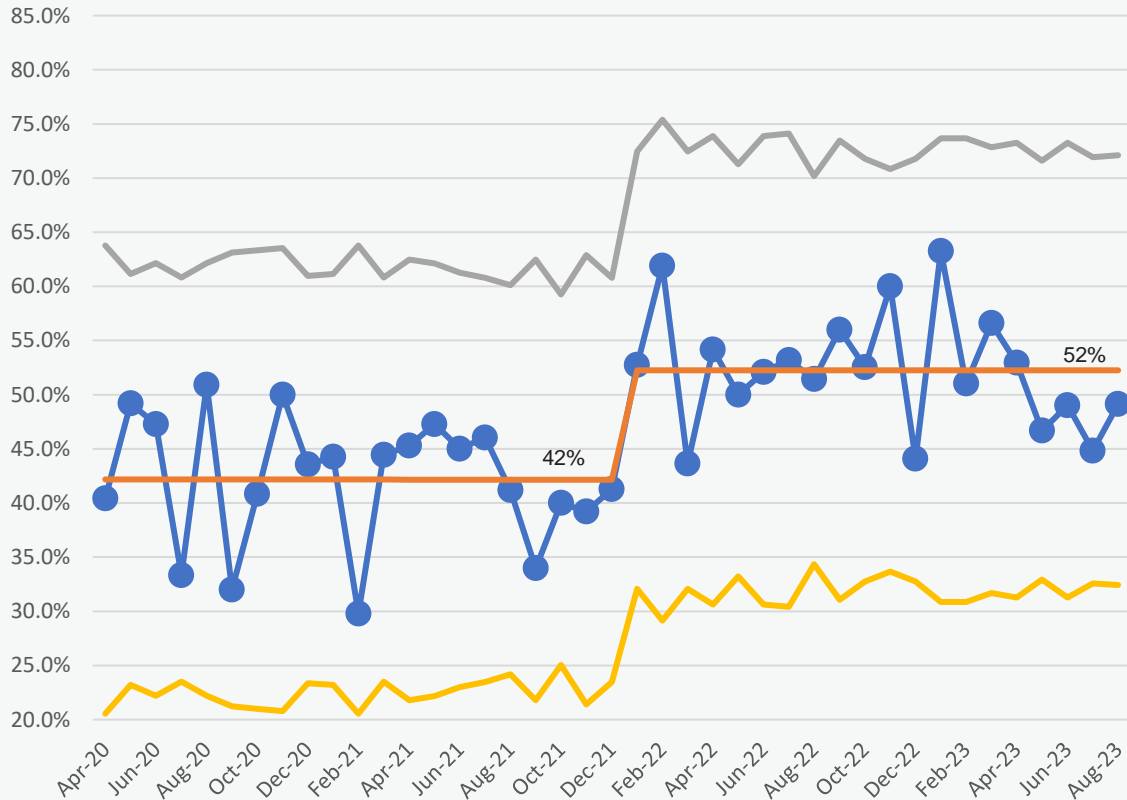


Number receiving Optimising place of birth  
Health Innovation Network South London  
Apr-2020 to Aug-2023

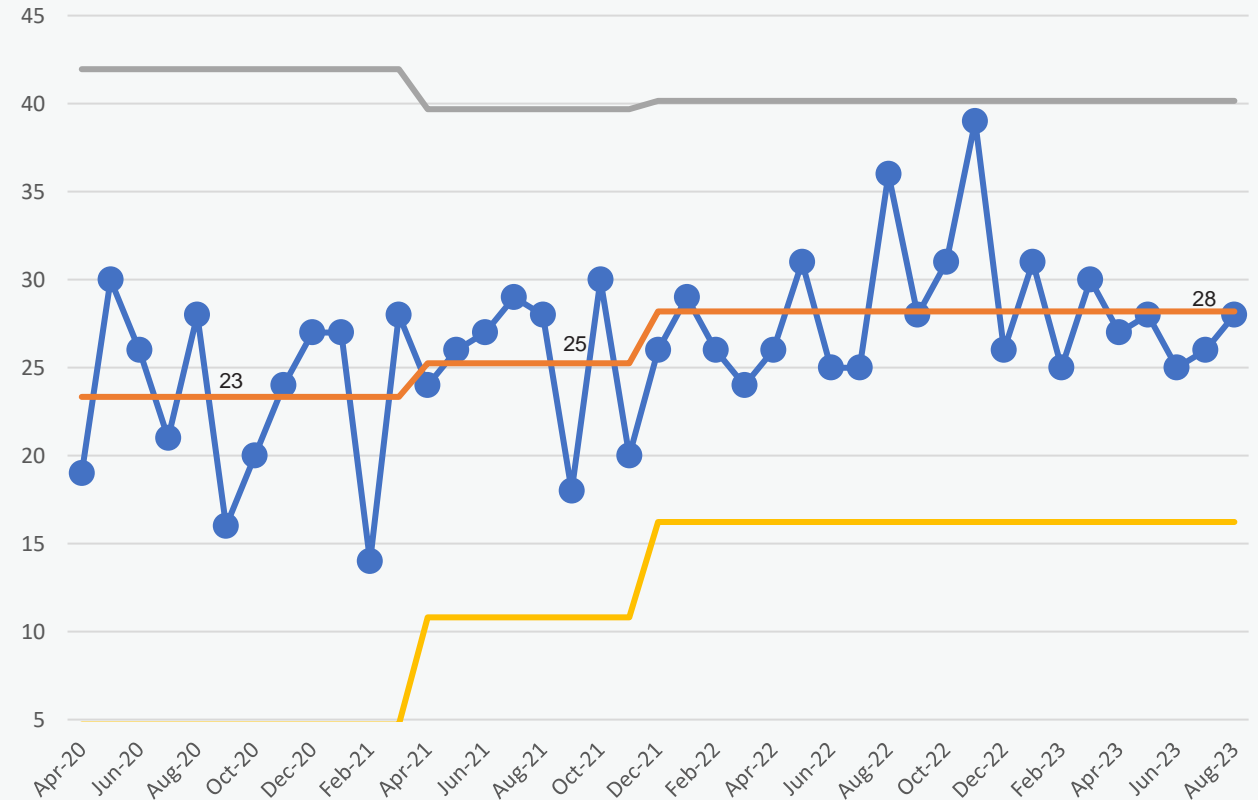


# Antenatal Corticosteroids

Percentage receiving Optimal antenatal steroids  
Health Innovation Network South London  
Apr-2020 to Aug-2023

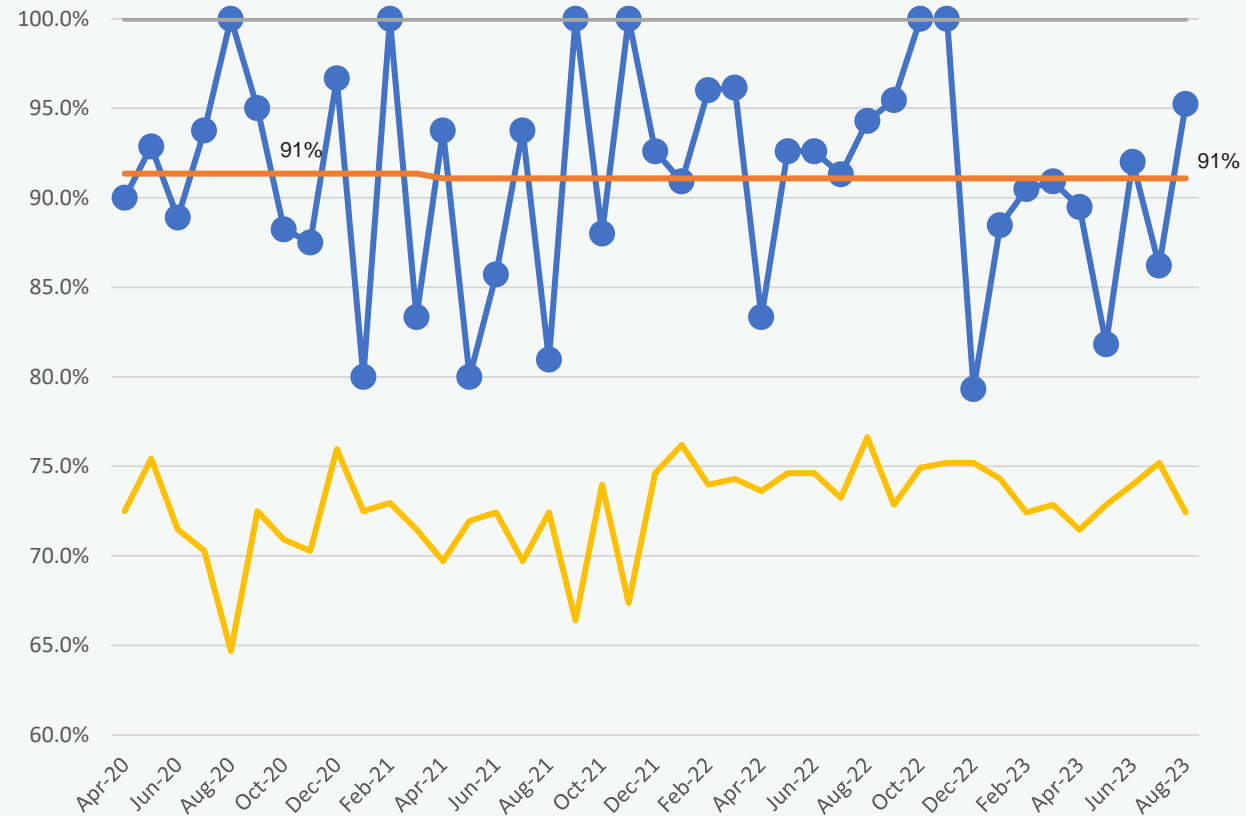


Number receiving Optimal antenatal steroids  
Health Innovation Network South London  
Apr-2020 to Aug-2023

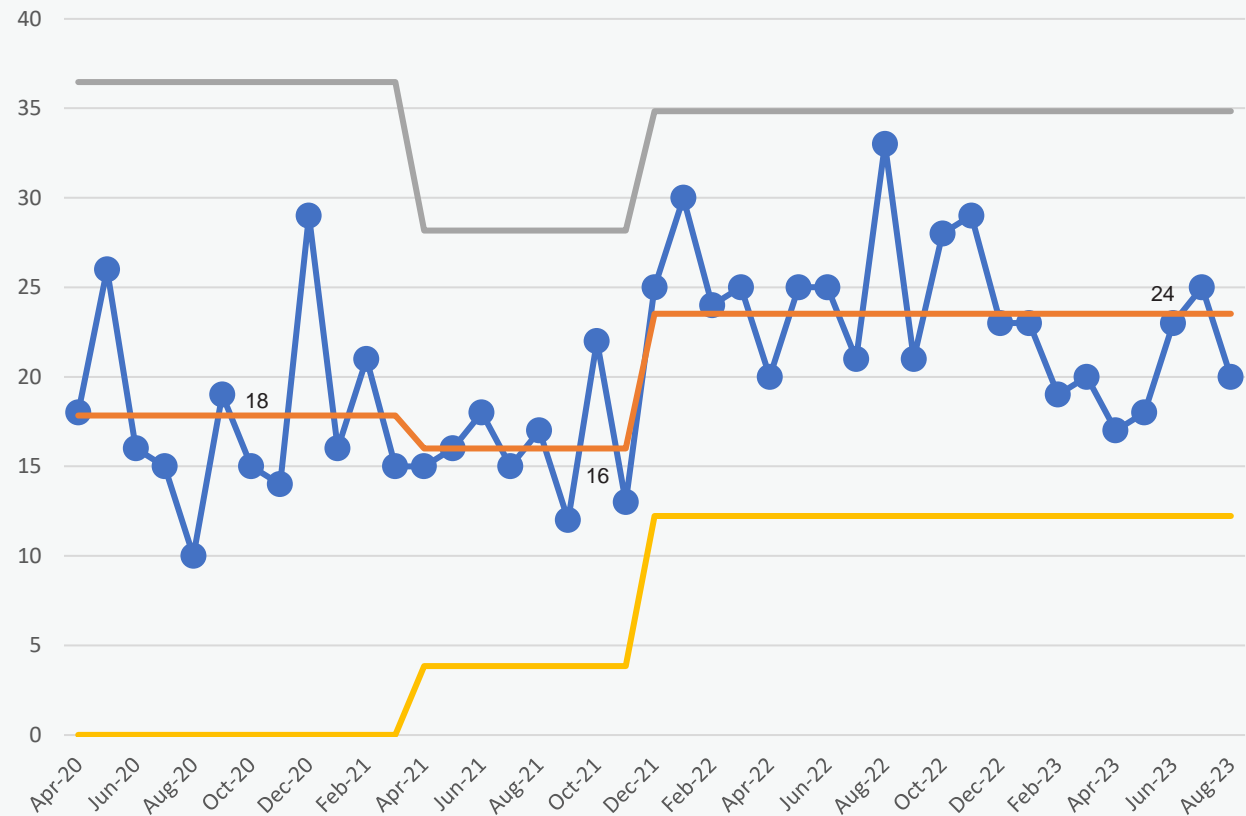


# Magnesium Sulphate

Percentage receiving Antenatal Magnesium Sulphate  
Health Innovation Network South London  
Apr-2020 to Aug-2023

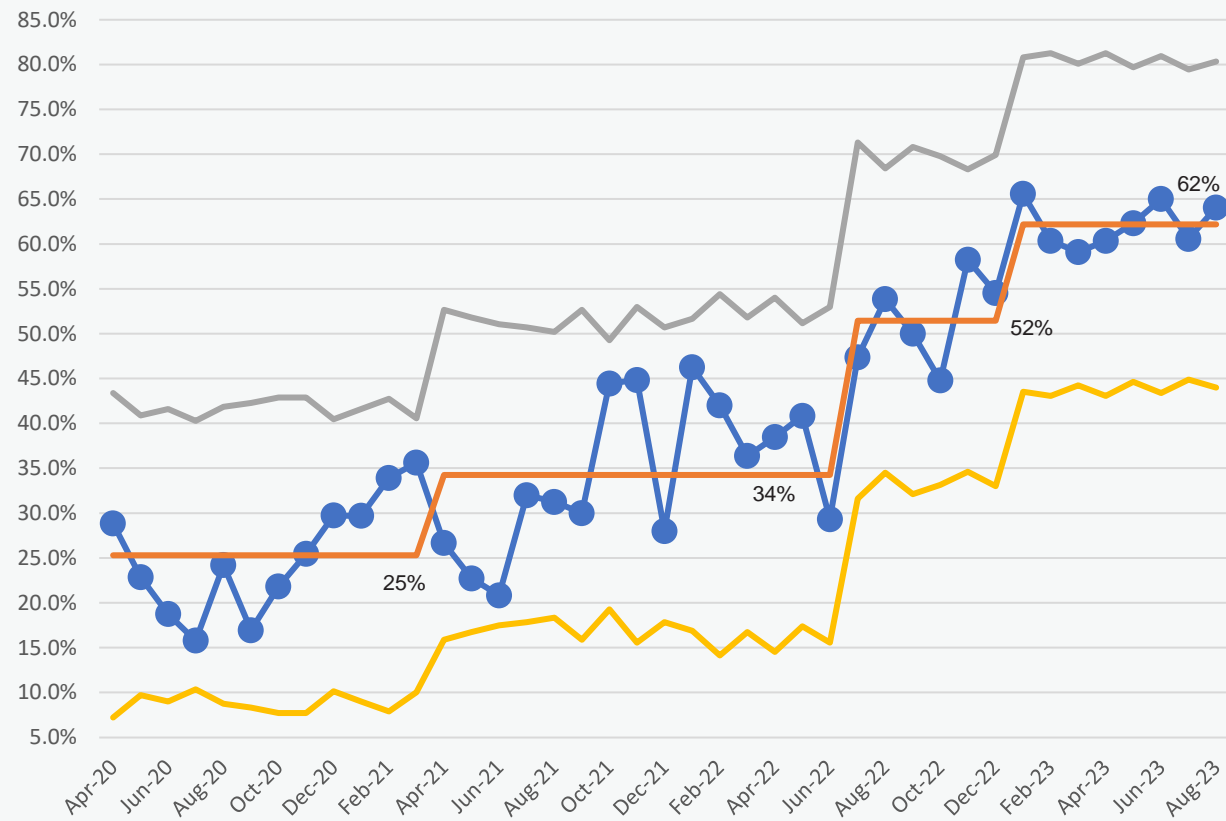


Number receiving Antenatal Magnesium Sulphate  
Health Innovation Network South London  
Apr-2020 to Aug-2023

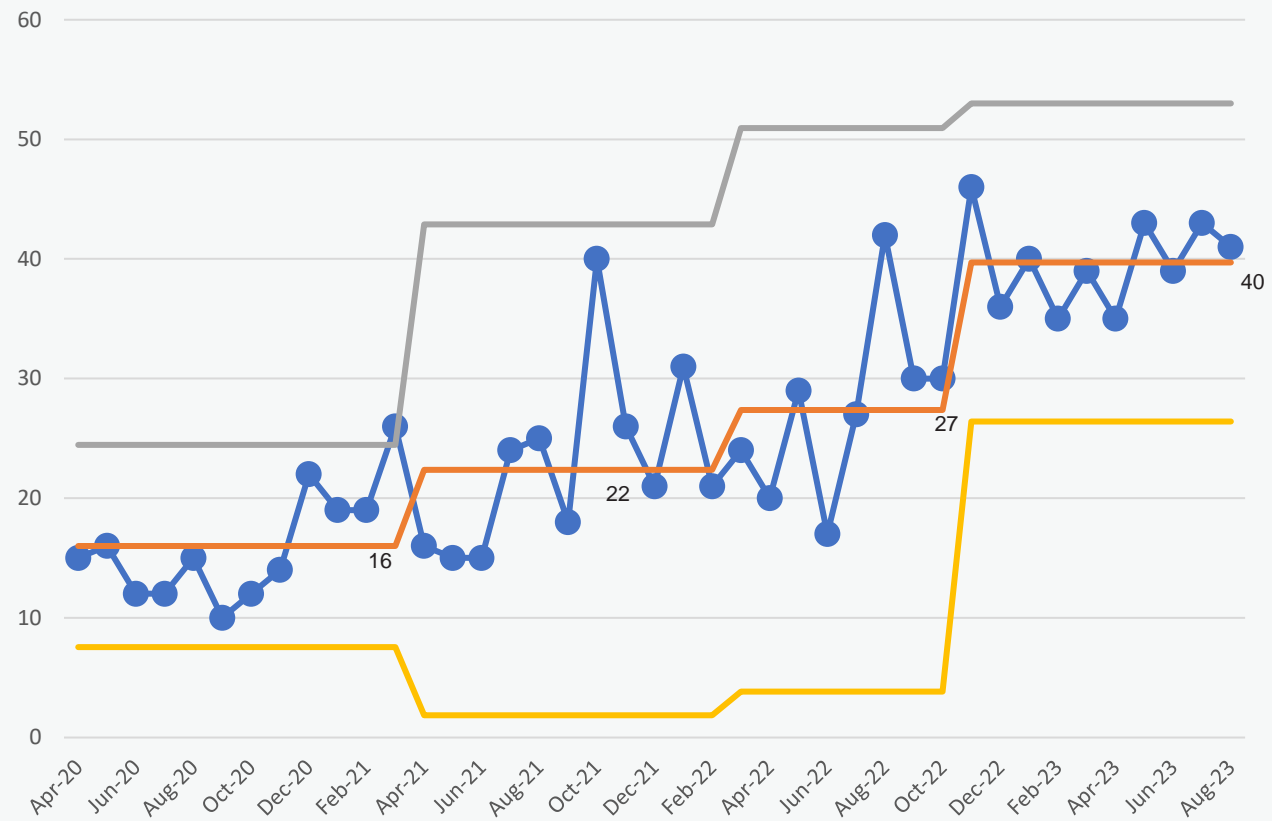


# Optimal Cord Management

Percentage receiving Optimal cord management  
Health Innovation Network South London  
Apr-2020 to Aug-2023



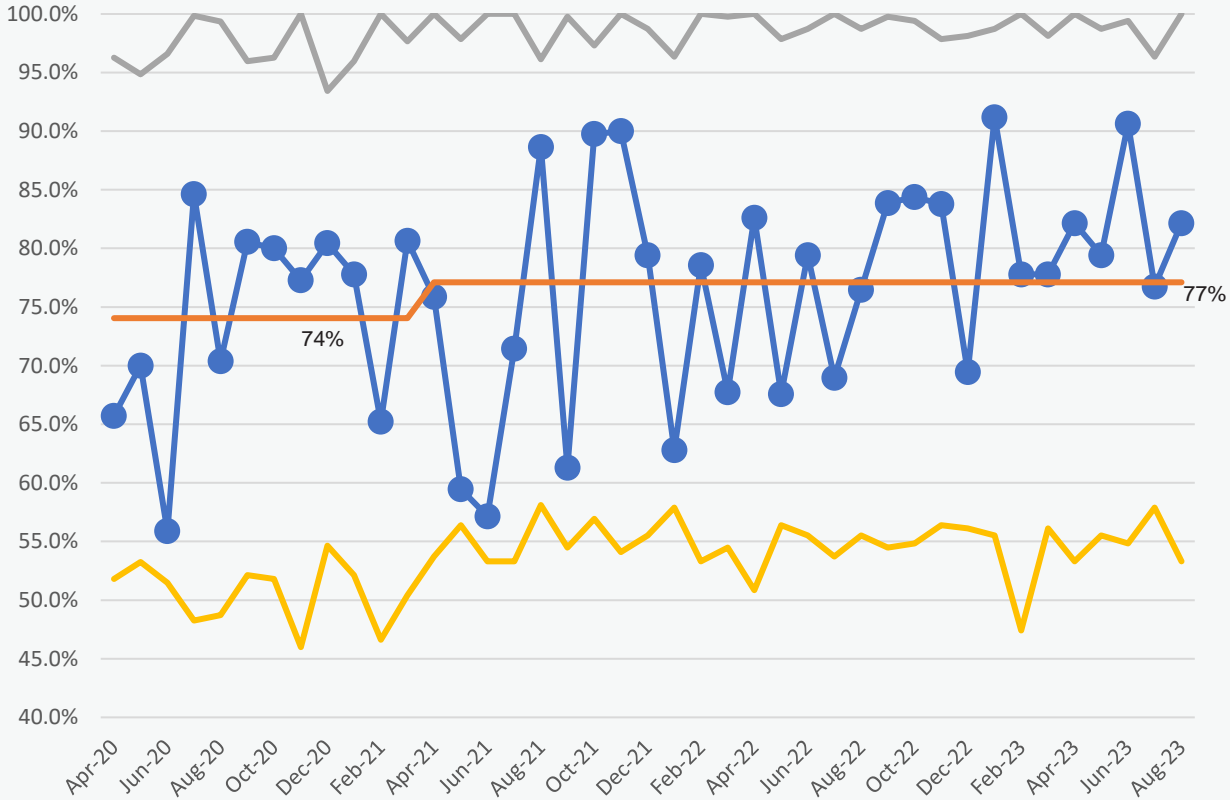
Number receiving Optimal cord management  
Health Innovation Network South London  
Apr-2020 to Aug-2023



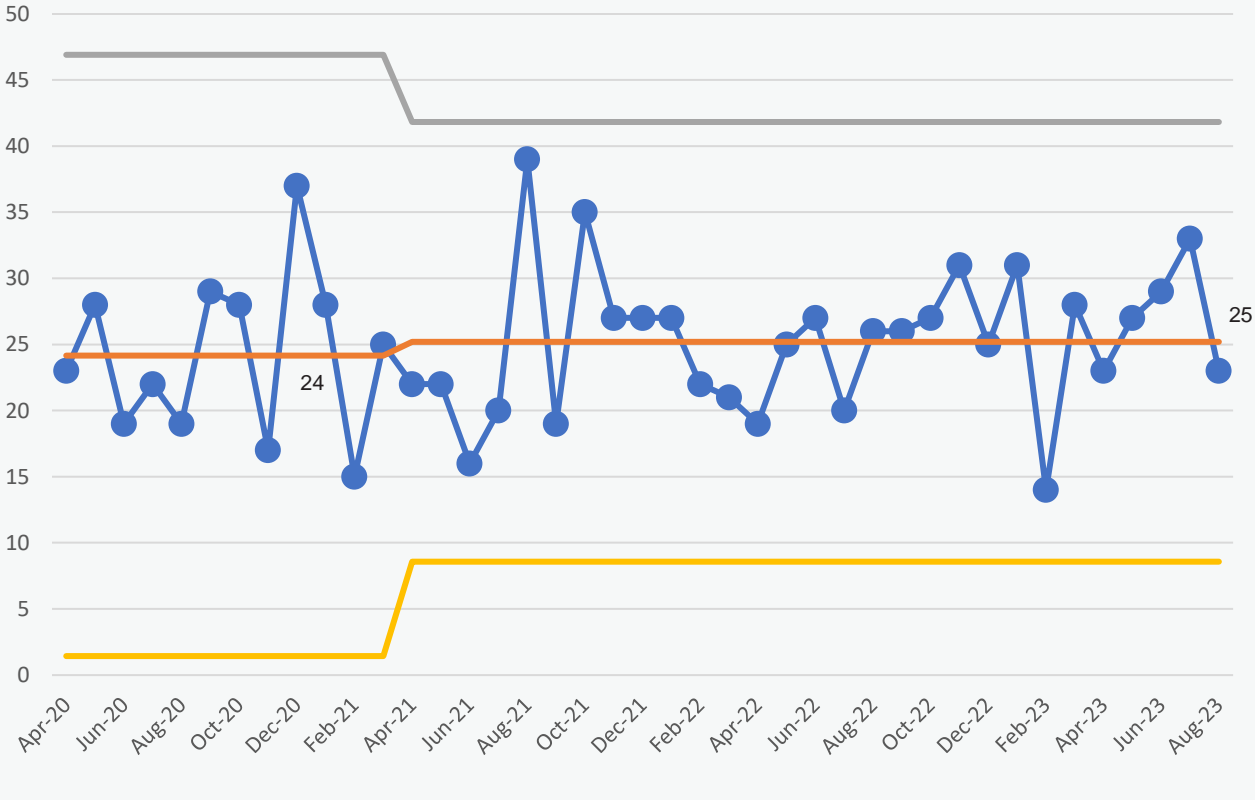


# Normothermia

Percentage receiving Normothermia  
Health Innovation Network South London  
Apr-2020 to Aug-2023



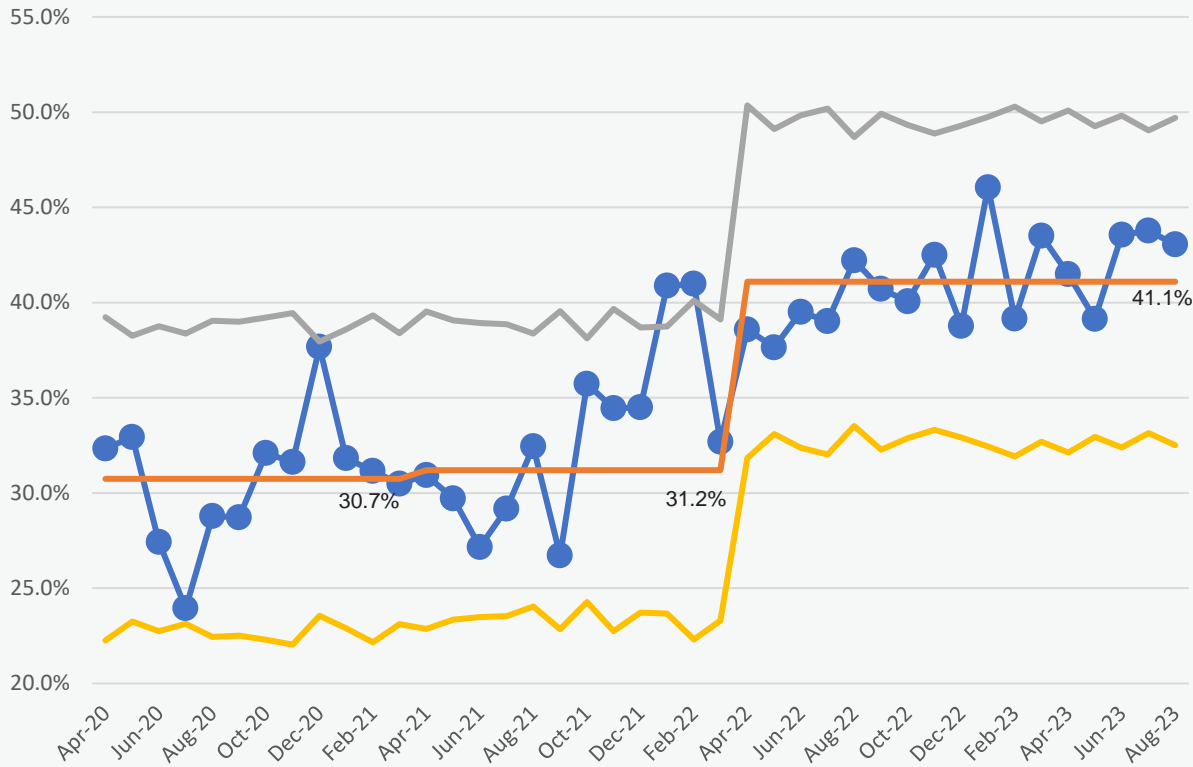
Number receiving Normothermia  
Health Innovation Network South London  
Apr-2020 to Aug-2023



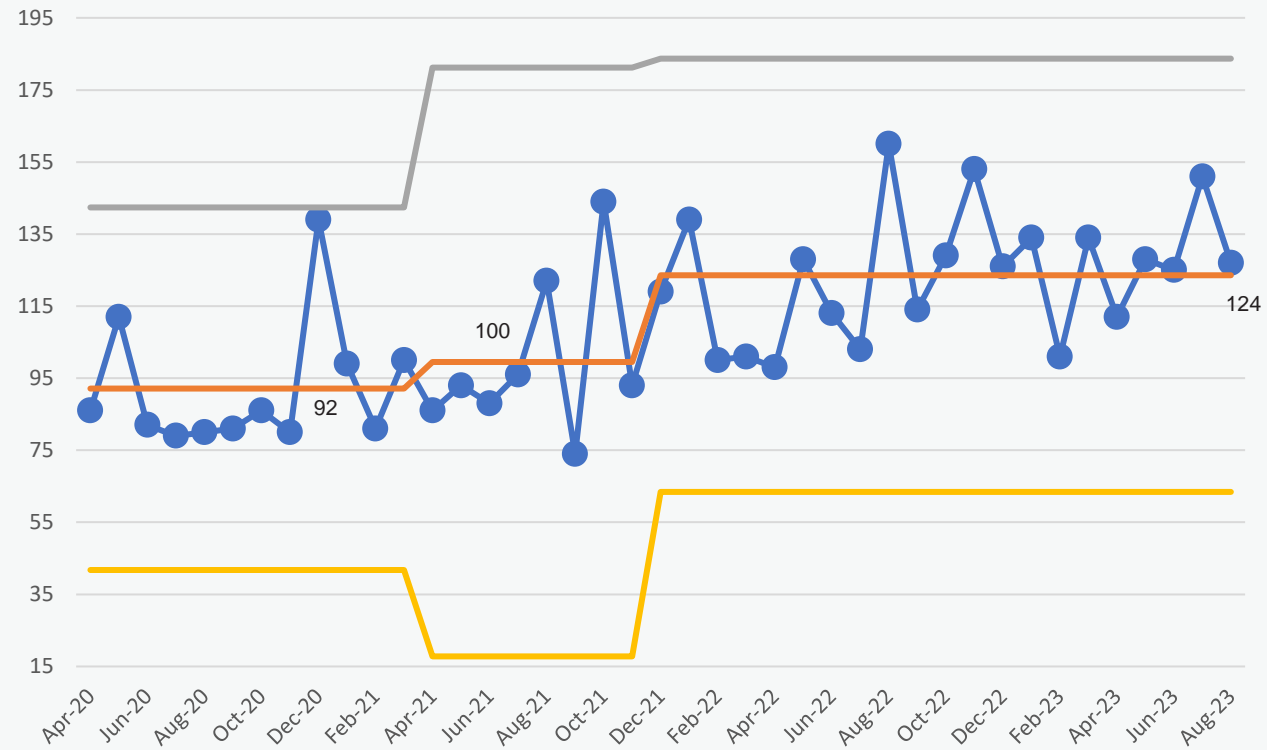


# Total number of interventions

Percentage receiving Total interventions  
Health Innovation Network South London  
Apr-2020 to Aug-2023



Number receiving Total interventions  
Health Innovation Network South London  
Apr-2020 to Aug-2023



# Outcome data

## Optimisation Pathway

### Headlines

#### Health Innovation Network South London Apr-2020 to Aug-2023



22

836 women giving birth at less than 30 weeks of gestation received magnesium sulphate within the 24 hours prior to birth.

This potentially means that 22 babies will not develop cerebral palsy, and a cost saving to welfare and society of between £17,600,000 and £22,000,000.



3

32 women in preterm labour at less than 34 weeks of gestation received intravenous intrapartum antibiotic prophylaxis to prevent early onset neonatal Group B Streptococcal (GBS) infection irrespective of whether they have ruptured amniotic membranes.

This potentially means that 3 babies were born without group B strep.



21 -  
35

Between 21 and 35 babies born at less than 34 weeks gestational age potentially survived because their umbilical cord was clamped at or after one minute after birth.

\* based on BadgerNet data (approx 94% of organisaitions)



431

Nationally, 15,968 women gave birth at less than 30 weeks of gestation and received magnesium sulphate within the 24 hours prior to birth.

This potentially means that 431 babies will not develop cerebral palsy, and a cost saving to welfare and society of between £344,800,000 and £431,000,000.



29

Locally, 1,089 women gave birth at less than 30 weeks of gestation and received magnesium sulphate within the 24 hours prior to birth.

This potentially means that 29 babies will not develop cerebral palsy, and a cost saving to welfare and society of between £23,200,000 and £29,000,000.

\* Data is derived from April 2018 to March 2023 dataset collated by Unity (covering 100% of units), and a new dataset from BadgerNet starting in April 2023 (covering approx 94% of units)



# Next Steps

Further work with Clevermed/Badgernet/System C

Further iterations to the preterm dashboard

Action Learning Set on VTV

Implementation of Quality Control

Continue to drive improvement in all areas of the preterm optimisation

Starting to develop new specification for 24/25 commission

Implementation of the digital specification MEWS

# Thank you!

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